Clemson University

UNDERGRADUATE ANNOUNCEMENTS

2005-2006

2004-2005 Record
One hundred twelfth year
Volume 80

Clemson University
Clemson, SC 29634
864.656.3311
ENGLISH FLUENCY
Clemson University has established a policy to assure that all instructional activities are conducted by individuals possessing appropriate proficiency in written and oral use of the English language. Instructional activities include lectures, recitation or discussion sessions, and laboratories. The individuals to be certified include full-time and part-time faculty, graduate teachers of record, graduate teaching assistants, and graduate laboratory assistants for whom English is not the first language.

A student who experiences difficulty with an instructor’s written or oral English and who wishes to seek relief must do so prior to the seventh meeting of a 50-minute class and prior to the fifth meeting of a 90-minute class in regular sessions. In the five-week summer sessions, relief must be sought prior to the third class meeting.

The procedure is summarized as follows:

a. The student must quickly bring the problem to the attention of the instructor’s department chair either directly or through a faculty member such as the student’s advisor. That department chair will assess the complaint and, if deemed valid, offer an appropriate remedy within two days.

b. A student who is not satisfied with the department chair’s decision or the relief suggested, may appeal within two days to a five-member hearing panel comprised of three faculty members and two students appointed by the Senior Vice Provost and Dean of Undergraduate Studies. Students with questions should contact the Associate Dean of Undergraduate Academic Services, E-108 Martin Hall.

EQUAL OPPORTUNITY AFFIRMATIVE ACTION
Clemson University, in compliance with Titles VI and VII of the Civil Rights Act of 1964, as amended, Title IX of the Education Amendments of 1972, and Sections 503 and 504 of the Rehabilitation Act of 1973, does not discriminate on the basis of race, color, national origin, religion, sex, or disability in any of its policies, procedures, or practices; nor does the University, in compliance with the Age Discrimination in Employment Act of 1967, as amended, and Section 402 of the Vietnam Era Veterans Readjustment Act of 1974, discriminate against any employee or applicants for employment on the basis of their age or because they are disabled veterans or veterans of the Vietnam era. Clemson University conducts its programs and activities involving admission, access, treatment, employment, teaching, research, and public service in a nondiscriminatory manner as prescribed by Federal laws and regulations.

In conformance with University policy and pursuant to Executive Order 11246, as amended, Section 503 of the Rehabilitation Act of 1973, and Section 402 of the Vietnam Era Veterans Readjustment Act of 1974, Clemson University is an Affirmative Action/Equal Opportunity Employer.

Inquiries concerning the above may be addressed to the following:

Executive Secretary
Clemson University Board of Trustees
201 Sikes Hall
Clemson University
Clemson, SC 29634

Director, Office for Civil Rights
Department of Education
Washington, DC 20201

FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT
The Family Educational Rights and Privacy Act of 1974 (FERPA) affords eligible students certain rights with respect to their education records. They are as follows:

1. The right to inspect and review the student’s education records (provided the student has not waived this right) within 45 days of the day the University receives a request for access.

Students should submit to the registrar, dean, head of the academic department, or other appropriate official, a written request identifying the record(s) they wish to inspect.

The University official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the University official to whom the request was submitted, that official shall advise the student of the correct official to whom the request should be addressed.

2. The right to request the amendment of the student’s education records that the student believes are inaccurate or misleading.

Students may ask the University to amend a record that they believe is inaccurate or misleading. To challenge the accuracy of an education record, the student should write to the registrar or other University official responsible for the record and clearly identify the part of the record he/she wants changed and specify why it is inaccurate or misleading. If the University official decides not to amend the record as requested by the student, the University official will notify the student’s vice president. The vice president will then notify the student of his/her right to a hearing regarding the record. The student has the right to present to the hearing panel comprised of three faculty members and two students appointed by the Senior Vice Provost and Dean of Undergraduate Studies.

Note: The challenge of a student under this paragraph is limited to information which relates directly to the student and which the student asserts is inaccurate or misleading. With regard to a student’s grade, this right does not permit the student to contest a grade on the grounds that a higher grade is deserved, but only to show that the grade has been inaccurately recorded.

3. The right to consent to the disclosure of personally-identifiable information contained in the student’s education records, except to the extent that FERPA authorizes disclosure without consent.

One exception which permits disclosure without consent is disclosure to school officials with legitimate educational interest. A school official is a person employed by the University, a parent or guardian with whom the University has contracted (such as an attorney, auditor, or collection agent); a person serving on the board of trustees; or a student serving on an official committee, such as a disciplinary or grievance committee, or assisting another University official in performing his or her tasks. A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his/her professional responsibilities.

Upon request, the University discloses education records without consent to officials of another school in which a student seeks or intends to enroll.

4. The right to refuse to permit the designation of any or all of the following categories of personally-identifiable information as directory information, which is not subject to the above restrictions on disclosure: student’s full name, home address and telephone number, campus address and telephone number, campus e-mail address, state of residence, date and place of birth, marital status, academic class, class schedule and class roster, name of advisor, major field of study, including the college, division, department or program in which the student is enrolled, participation in officially recognized activities and sports, weight and height of members of athletic teams, dates of attendance and graduation, degrees and honors and awards received including selection to a dean’s list or honorary organization and the grade point average of students selected, and the most previous educational institution attended. Photographs, videos, or electronic images of students taken and maintained by the University are also considered directory information.

Directory information may be disclosed by the University for any purpose, at its discretion. Any student wishing to exercise his/her right to refuse to permit the designation of any or all of the above categories as directory information must give written notification to the Registration Services Office (E-206 Martin Hall) by the last day to register for the enrollment period concerned as published in the Clemson University calendar.

5. The right to file a complaint with the U.S. Department of Education concerning alleged failures by Clemson University to comply with the requirements of FERPA. The name and address of the office that administers FERPA is Family Policy Compliance Office, U.S. Department of Education, 600 Independence Avenue SW, Washington, DC 20202-4605.

FAMILY PERSONAL PRIVACY ACT
The South Carolina Family Personal Privacy Act (SC Code 30-2-10 et. seq.) defines personal information as "a record which identifies or describes an individual including, but not limited to, an individual’s photograph or digitized image, social security number, date of birth, driver’s identification number, name, home address, home telephone number, medical or disability information, education level, financial status, bank account(s) number(s), account or identification number issued by and/or used by any federal or state governmental agency or private financial institution, employment history, height, weight, race, other physical details, signature, biometric identifiers, and any credit records or reports."

Some of the information in documents which students provide to Clemson University may be personal information as defined above. Pursuant to Section 30-2-40 B, students are advised that this information may be subject to public scrutiny or release. They are also advised that personally-identifiable information contained in these educational records falls under the federal Family Educational Rights and Privacy Act of 1974, as amended (FERPA). If students elect to opt out of the release of directory information under FERPA, the University will not release any personal information except as otherwise required or authorized by law.

PATENTS AND COPYRIGHTS
All students enrolling in Clemson University do so with full understanding that

1. The University has full ownership rights in any inventions, discoveries, developments and/or improvements, whether or not patentable (inventions), which are conceived, developed, or reduced to practice or caused to be conceived, developed, or reduced to practice by undergraduates during the course of their academic activities conducted as part of any undergraduate curriculum. Any such invention will be handled by the University in the same manner as set forth in the Faculty Manual of Clemson University, the pertinent provision for which appears as Part IX entitled “Patent Policy.”

2. Copyright ownership of any research work will be determined by University policy and by policies of organizations responsible for publishing or distributing copyrighted material.

Copies of the policies on patents and copyrights are available in the individual departments and colleges and in the Special Projects Office.
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### Academic Calendar

#### Maymester 2005
- **May 16, M:** Late registration and first day of class
- **May 17, Tu:** Last day to register; late enrollment fee applies
- **May 18, W:** Last day to drop a class or withdraw from the University without a W grade
- **May 21, Sa:** Classes meet
- **May 23, M:** Last day for instructors to issue mid-term grades
- **May 24, Tu:** Last day to drop a class or withdraw from the University without final grades
- **May 28, Sa:** Classes meet
- **May 31, Tu:** Examinations
- **June 3, F:** 9:00 A.M.—Deadline to submit all grades

#### First Summer Session 2005
- **May 23, M:** Late registration
- **May 24, Tu:** Classes begin; late enrollment fee applies
- **May 25, W:** Last day to register or add a class
- **May 27, F:** Last day to drop a class or withdraw from the University without a W grade
- **June 8, W:** Last day for instructors to issue mid-term grades
- **June 9, Th:** Last day to drop a class or withdraw from the University without final grades
- **June 13, M:** Last day to order diploma for August graduation
- **June 28, Tu:** Examinations
- **June 30, Th:** 9:00 A.M.—Deadline to submit all grades

#### Second Summer Session 2005
- **July 4, M:** Holiday
- **July 5, Tu:** Orientation
- **July 6, W:** Late registration
- **July 7, Th:** Classes begin; late enrollment fee applies
- **July 8, F:** Last day to register or add a class
- **July 9, Sa:** Classes meet
- **July 12, Tu:** Last day to drop a class or withdraw from the University without a W grade
- **July 21, Th:** Last day for instructors to issue mid-term grades
- **July 22, F:** Last day to drop a class or withdraw from the University without final grades
- **August 10, W:** Examinations
- **August 11, Th:** 2:00 P.M.—Deadline to submit candidate grades
- **August 12, F:** 9:00 A.M.—Deadline to submit other grades
- **August 12, F:** Candidates for graduation may access grades
- **August 13, Sa:** Graduation

#### Fall Semester 2005
- **August 21–22, Su–M:** Orientation
- **August 22–23, M–Tu:** Late registration
- **August 23, Tu:** University Convocation and Freshmen Convocation
- **August 24, W:** Classes begin; late enrollment fee applies
- **August 30, Tu:** Last day to register or add a class
- **September 6, Tu:** Last day to drop a class or withdraw from the University without a W grade
- **September 13, Tu:** Last day to order diploma for December graduation
- **October 12, W:** Last day for instructors to issue mid-term grades
- **October 14, F:** Last day to drop a class or withdraw from the University without final grades
- **November 7, M:** Registration for spring, Maymester, and summer terms begins
- **November 23–25, W–F:** Thanksgiving holidays
- **December 8–9, Th–F:** Classes meet; exams permitted in labs only
- **December 10–17, Sa–Sa:** Examinations
- **December 19, M:** 9:00 A.M.—Deadline to submit candidate grades
- **December 21, W:** 9:00 A.M.—Deadline to submit other grades
- **December 21, W:** Candidates for graduation may access grades
- **December 22, Th:** Graduation

#### Spring Semester 2006
- **January 8–9, Su–M:** Orientation
- **January 9–10, M–Tu:** Late registration
- **January 11, W:** Classes begin; late enrollment fee applies
- **January 16, M:** Martin Luther King, Jr. holiday
- **January 18, W:** Last day to register or add a class
- **January 25, W:** Last day to drop a class or withdraw from the University without a W grade
- **February 1, W:** Last day to order diploma for May commencement
- **March 1, W:** Last day for instructors to issue mid-term grades
- **March 3, F:** Last day to drop a class or withdraw from the University without final grades
- **March 20–24, M–F:** Spring break
- **April 3, M:** Registration for fall semester begins
- **April 8–15, Sa–Sa:** Honors and Awards Week
- **April 27–28, Th–F:** Classes meet; exams permitted in labs only
- **April 29–May 6, Sa–Sa:** Examinations
- **May 9, Tu:** 9:00 A.M.—Deadline to submit candidate grades
- **May 10, W:** 9:00 A.M.—Deadline to submit other grades
- **May 11, Th:** Candidates for graduation may access grades
- **May 12, F:** Commencement
- **May 12, F:** 9:30 A.M. (Colleges AF&LS, AA&H, E&S)
- **2:30 P.M. (Colleges B&BS, HE&HD)
## Maymester 2006

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>May 15, M</td>
<td>Last day registration and first day of class</td>
</tr>
<tr>
<td>May 16, Tu</td>
<td>Last day to register; late enrollment fee applies</td>
</tr>
<tr>
<td>May 17, W</td>
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</tr>
<tr>
<td>May 20, Sa</td>
<td>Classes meet; last day for instructors to issue mid-term grades</td>
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<td>May 30, Tu</td>
<td>Examinations</td>
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<td>June 2, F</td>
<td>9:00 A.M.—Deadline to submit all grades</td>
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## First Summer Session 2006

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<tr>
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<td>May 24, W</td>
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## Second Summer Session 2006

<table>
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<th>Date</th>
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<tbody>
<tr>
<td>July 4, Tu</td>
<td>Holiday</td>
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<tr>
<td>July 5, W</td>
<td>Orientation</td>
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<td>July 6, Th</td>
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<td>August 9, W</td>
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<td>August 10, Th</td>
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<td>August 11, F</td>
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<tr>
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<td>Candidates for graduation may access grades</td>
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<td>August 12, Sa</td>
<td>Graduation</td>
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## Fall Semester 2006

<table>
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<tr>
<td>August 20–21, Su–M</td>
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<tr>
<td>August 21–22, M–Tu</td>
<td>Late registration</td>
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<tr>
<td>October 13, F</td>
<td>Last day to drop a class or withdraw from the University without final grades</td>
</tr>
<tr>
<td>November 6–7, M–Tu</td>
<td>Fall break</td>
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<tr>
<td>November 8, W</td>
<td>Registration for spring, Maymester, and summer terms begins</td>
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<tr>
<td>November 22–24, W–F</td>
<td>Thanksgiving holidays</td>
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<tr>
<td>December 7–8, Th–F</td>
<td>Classes meet; exams permitted in labs only</td>
</tr>
<tr>
<td>December 9–16, Sa–Sa</td>
<td>Examinations</td>
</tr>
<tr>
<td>December 18, M</td>
<td>9:00 A.M.—Deadline to submit candidate grades</td>
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## Spring Semester 2007

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<td>Last day to drop a class or withdraw from the University without final grades</td>
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<td>March 19–23, M–F</td>
<td>Spring break</td>
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<tr>
<td>April 2, M</td>
<td>Registration for fall semester begins</td>
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<tr>
<td>April 7–14, Sa–Sa</td>
<td>Honors and Awards Week</td>
</tr>
<tr>
<td>April 26–27, Th–F</td>
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<td>2:30 P.M. (Colleges B&amp;B and HE&amp;HD)</td>
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**Note:** Dates on this calendar were accurate at the time of printing. Dates, however, may change as conditions warrant. Current information is available on the Web at [www.registrar.clemson.edu/html/Acad_Cal.htm](http://www.registrar.clemson.edu/html/Acad_Cal.htm).
ADMINISTRATION

UNIVERSITY GOVERNANCE AND ADMINISTRATION

The University is governed by a board of 13 members, six selected by the state Legislature and seven self-perpetuating life members, in accord with the will of Thomas Green Clemson. The Board of Trustees is primarily responsible for adopting the long-range objectives of the University and the basic policies for achieving them, providing policy instruction for long-range planning; adopting the statutes of the University; electing the president of the University; employing the secretary of the board; maintaining ownership of University assets; and overseeing the evaluation of the University.

The president is the chief executive officer of the University, providing leadership to all phases of University planning, coordinating the operations of all units of the University, carrying out major University public relations functions, evaluating the results of University plans, and appointing personnel who report to the president. The day-to-day operations of the University are administered by the president and executive officers for advancement, public service and agriculture, and student affairs.

The Provost and Vice President for Academic Affairs is the chief academic officer of the University. The Provost is responsible directly to the president for all academic matters and has administrative jurisdiction over teaching and computing services. Vice provosts assist in administering and performing duties in coordinating graduate and undergraduate curricula; supervising computer information services, the libraries, scholarship and award programs; and other duties assigned by the Provost.

Academic deans are the chief administrative officers of their individual colleges and report directly to the Provost. They provide leadership in formulating and carrying out educational policy, review and make recommendations on personnel matters, and carry out and administer the academic and financial affairs of their colleges.

BOARD OF TRUSTEES

Leon J. Hendrix, Jr., Kiawah Island, Chair
John J. Britton, Sumter, Vice Chair
Bill B. Amick, Batesburg-Leesville
Lawrence M. Gressette, Jr., Columbia
Thomas C. Lynch, Clemson
Louis B. Lynn, Columbia
Patricia H. McAbee, Greenwood
Leslie G. McCraw, Greenville
E. Smyth McKissick III, Greenville
Thomas B. McTeer, Jr., Columbia
Robert L. Peeler, Lexington
William C. Smith, Jr., Columbia
Joseph D. Swann, Greenville

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Louis P. Batson, Jr., Greenville
Fletcher C. Derrick, Jr., Charleston
W. G. DesChamps, Jr., Bishopville
Harold D. Kingsmore, Aiken
Paul W. McAlister, Laurens
D. Leslie Tindal, Pinewood
Allen F. Wood, Florence

Vice Presidents

Doris R. Helms, PhD, Vice President for Academic Affairs and Provost
John W. Kelly, PhD, Vice President for Public Service and Agriculture
Almeda R. Jacks, MEd, Vice President for Student Affairs
Christian E. G. Pritzembl, PhD, Vice President for Research and Economic Development

Chief Business Officer

vacant

General Counsel

Clayton D. Steadman, JD

Chief Human Resources Officer

Lawrence Nichols II, MSW

Director of Athletics

Terry D. Phillips, EdD, JD

Academic Affairs

Doris R. Helms, PhD, Vice President for Academic Affairs and Provost
Debra B. Jackson, PhD, Associate Provost for Academic Affairs and Assistant to the Provost
Jerome V. Reel, Jr., PhD, Senior Vice Provost and University Historian
Janice W. Murdoch, PhD, Dean of Undergraduate Studies
J. Bruce Rafter, PhD, Dean of Graduate School
Joseph F. Boykin, Jr., MS, Dean of Libraries
David B. Bullard, MS, Interim Vice Provost for Computing and Information Technology
Ralph D. Elliott, PhD, Vice Provost for Off-Campus, Distance, and Continuing Education

Student Affairs

Almeda R. Jacks, MEd, Vice President for Student Affairs
Verna G. Howell, MAEd, Associate Vice President and Executive Director of Housing
Joy S. Smith, PhD, Associate Vice President and Dean of Students
Mary F. Poore, MPA, Associate Vice President for Municipal Services
Althea L. Richardson, MBA, Assistant Vice President for Student Affairs and Executive Director of the Giant Intercultural Center
Russell C. Guill, MBA, Assistant to the Vice President for Student Affairs and Director of Public Relations and Marketing

Collegiate Deans

Calvin L. Schoulberg, PhD, Dean, College of Agriculture, Forestry, and Life Sciences
Janice C. Schach, MLA, Dean, College of Architecture, Arts, and Humanities
Bruce Yandle, PhD, Interim Dean, College of Business and Behavioral Science
Thomas M. Keinath, PhD, Dean, College of Engineering and Science
Lawrence R. Allen, PhD, Dean, College of Health, Education, and Human Development

Board of Visitors

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John H. Bailey, Columbia
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Jack W. Carter, Jr., Columbia
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T. Ashby Gressette, Columbia
Doug Harper, Greenville
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Tom L. LaRoche, North Charleston
Sallie R. Lee, Easley
James Lemon, Columbia
Carl M. Lewis, Jr., Columbia
Hubert E. Long, Jr., Leesville
Jackson Marchette, Florence
John N. Mccarter, Jr., Columbia
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William H. Moore, Greenville
David R. Moore II, Greenville
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J. Edward Norris III, Pawleys Island
Weesie W. Poole, Simpsonville
Howard N. Rawl, Pelion
Tini Reed, Greenville
Timothy F. Rogers, Columbia
Goz G. Segars, Hartsville
Michael L. Shealy, Irmo
Robert W. Shepard, Charleston
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David R. Torris, Greenville
Bill Tubman II, Clinton
Charles T. Walker, Sr., Cades
Kelley R. Whitaker, Atlanta, GA
R. Lynn Yeargin, Greenville
Daniel E. Youngblood, Easley
GENERAL INFORMATION

Additional information can be found on the Web at www.clemson.edu.

PURPOSE OF CATALOG
The purpose of this catalog is to give a general description of Clemson University and to provide prospective students with detailed information regarding the various colleges and departments within the University and curricula offered by the University. Inasmuch as the educational process necessitates change, the information and educational requirements in this catalog represent a flexible program which may be altered where such alterations are thought to be in the mutual interest of the University and its students.

The provisions of this catalog do not constitute a contract which may be accepted by students through registration and enrollment in the University. The University reserves the right to change without notice any fee, provision, offering, or requirement in this catalog and to determine whether a student has satisfactorily met its requirements for admission or graduation. The University further reserves the right to require a student to withdraw from the University for cause at any time.

Each curriculum shall be governed by the requirements in effect on the date of enrollment. If a student withdraws from the University and subsequently returns or does not remain continuously enrolled (summers excluded), the requirements in effect at the time of return will normally prevail.

STUDENT RESPONSIBILITY
All colleges and departments establish certain academic requirements that must be met before a degree is granted. Advisors, department chairs, and deans are available to help the student understand and meet these requirements; but the student is responsible for fulfilling them. If, at the end of a student's course of study, the requirements for graduation have not been satisfied, the degree will not be granted. For this reason, it is important for students to acquaint themselves with all academic requirements throughout their college careers and to be responsible for completing all requirements within prescribed deadlines and time limits.

HISTORY
When one man of wisdom and foresight can look among the despair of troubled times and imagine what could be, great things can happen. That is what the University's founder, Thomas Green Clemson, was able to do in the post-Civil War days. He looked upon a South that lay in economic ruin, once remarking that "conditions are wretched in the extreme" and that "people are quitting the land." Still, among the ashes he saw hope. Mr. Clemson envisioned what could be possible if the South's youth were given an opportunity to receive instruction in scientific agriculture and the mechanical arts. He once wrote, "The only hope we have for the advancement of agriculture (in the U.S.) is through the sciences, and yet there is not one single institution on this continent where a proper scientific education can be obtained." When he was president of the Pendleton Farmers Society in 1866, Mr. Clemson served on a committee whose purpose was to promote the idea of founding an institution for "educating the people in the sciences" and "which will in time secure permanent prosperity.

When he died on April 6, 1888, a series of events began that marked the start of a new era in higher education in the state of South Carolina, especially in the study of science, agriculture, and engineering. Mr. Clemson's passing set the stage for the founding of the university that bears his name—the beginning of a true "people's university," which opened the doors of higher education to all South Carolinians, rich and poor alike. In his will, which was signed November 6, 1886, Mr. Clemson bequeathed the Fort Hill plantation and a considerable sum from his personal assets for the establishment of an educational institution of the kind he envisioned. He left a cash endowment of approximately $80,000 as well as the 814-acre Fort Hill estate to South Carolina for such a college. The biggest obstacle in the creation of an agricultural college—the initial expense—was removed by Mr. Clemson's bequest.

On November 27, 1889, Governor Richardson signed the bill establishing the Clemson Agricultural College, with its trustees becoming custodians of Morrill Act and Hatch Act funds made available for agricultural education and research by federal legislative acts. The founding of Clemson Agricultural College supplanted the South Carolina College of Agriculture and Mechanics, which had been designated in Columbia in 1880.

Thomas Green Clemson came to the foothills of South Carolina when he married Anna Maria Calhoun, daughter of South Carolina's famous statesman John C. Calhoun.

Born in Philadelphia, Mr. Clemson was educated at schools both in the United States and France, where he attended lectures at the Royal School of Mines, studied with prominent scientists in the private laboratories of the Sorbonne Royal College of France, and received his diploma as an assayer from the Royal Mint in Paris. Mr. Clemson, then in his mid-20s, returned to America greatly influenced by his European studies. He became a great advocate of the natural sciences, achieving a considerable reputation as a mining engineer and a theorist in agricultural chemistry. He also was a gifted writer whose articles were published in the leading scientific journals of his day, an artist and a diplomat who represented the U.S. government as chargé d'affaires to Belgium for almost seven years.

Mr. Clemson had a lifelong interest in farming and agricultural affairs. He served as the nation's first superintendent of agricultural affairs (predecessor to the present secretary of agriculture position) and actively promoted the establishment and endowment of the Maryland Agricultural College in the 1850s. Though remembered today for these accomplishments, Thomas Clemson made his greatest historical contribution when, as a champion of formal scientific education, his life became intertwined with the destiny of educational and economic development in South Carolina. Although he never lived to see it, his dedicated efforts culminated in the founding of Clemson Agricultural College.

At the time of his death, Mr. Clemson was living at the Fort Hill homeplace, which today is a national historic landmark and provides a historic centerpiece for the Clemson University campus. He had inherited the house and plantation lands of his famous father-in-law, Senator Calhoun, upon the death of Mrs. Clemson in 1875.

Clemson College formally opened in July 1893, with an enrollment of 446. From the beginning, the college was an all-male military school. It remained this way until 1955, when the change was made to "civilian" status for students and Clemson became a coeducational institution. In 1964, the college was renamed Clemson University as the state legislature formally recognized the school's expanded academic offerings and research pursuits.

On November 27, 1989, the University observed the 100th anniversary of the State's acceptance of the terms and conditions of Mr. Clemson's bequest.

The enrollment of Clemson has grown from 446 students at the opening of the University to 17,110 for the first semester 2004-2005. Since the opening of the University, 93,656 students have been awarded Bachelor's degrees. During this same period, 426 Associate degrees, 25,660 Master's, 326 Education Specialist, 103 Doctor of Education, and 2,511 Doctor of Philosophy degrees have been awarded, a total of 122,682 degrees.

Today, more than a century later, the University is much more than its founder ever could have imagined. With its diverse learning and research facilities, the University provides an educational opportunity not only for the people of the State, as Mr. Clemson dreamed, but for thousands of young men and women throughout the country and the world.

THE CAMPUS
The 1,400-acre University campus is sited on the former homestead of statesman John C. Calhoun. Nestled in the foothills of the Blue Ridge Mountains and adjacent to Lake Hartwell, the campus commands an excellent view of the mountains to the north and west, some of which attain an altitude of over 5,000 feet above mean sea level.

The Norfolk and Southern Railway and U.S. Highways 76 and 123 provide easy access to the City of Clemson and to the University. Oconee County Airport is four miles from the library. Both Atlanta and Charlotte are two hours driving time away.

Campus architecture is a pleasing blend of traditional and modern facilities enhanced by a beautiful landscape of towering trees, grassy expanses, and flowering plants. Academic, administrative, and student service buildings on campus represent an insured value of $627 million. Clemson University's real estate holdings include over 32,000 acres of forestry and agricultural lands throughout the state, the majority of which are dedicated to Clemson's research and public-service missions.
Fort Hill, the former home of John C. Calhoun inherited by Thomas Clemson, and the Hanover House are listed on the National Register of Historic Places and are open to the public. The campus also has two recognized Historic Districts.

The Strom Thurmond Institute houses the institute offices, Senator Thurmond’s papers and memorabilia, and the special collections of the Cooper Library. The Institute is a part of an instructional and public-service district that includes the Brooks Center for the Performing Arts and the Maden Center for Continuing Education.

VISION STATEMENT
Clemson University will be one of the nation’s top-20 public universities.

MISSION STATEMENT
The mission of Clemson University is to fulfill the covenant between its founder and the people of South Carolina to establish a “high seminary of learning” through its historical land-grant responsibilities of teaching, research, and extended public service.

Clemson University is a selective, public, land-grant university in a college-town setting along a dynamic southeastern corridor. The University is committed to world-class teaching, research, and public service in the context of general education, student development, and continuing education. Clemson’s desire is to attract a capable, dedicated, and diverse student body of approximately 12,000 to 14,000 undergraduate and 4,000 to 5,000 graduate students, with priority to students from South Carolina.

Clemson offers a wide array of high quality baccalaureate programs built around a distinctive core curriculum. Graduate and continuing education offerings respond to the professions, while doctoral and research programs contribute to the economic future of the state, nation, and world. The University emphasizes agriculture, architecture, business, education, engineering, natural resources, science, and technology. The University also promotes excellence in education and scholarship in selected areas of the creative arts, health, human development, the humanities, and social sciences. In all areas, the goal is to develop students’ communication and critical-thinking skills, ethical judgment, global awareness, and scientific and technological knowledge. Students remain the primary focus of the University.

Just as Clemson values its students, the University also values its faculty and staff who have committed their talents and careers to advance its mission. Clemson pledges to support their work, to encourage their professional development, to evaluate their professional performance, and to compensate them at nationally competitive levels.

ACCREDITATION
Clemson University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award the Bachelor’s, Master’s, Education Specialist, and Doctor’s degrees. Curricula are accredited by AACSB International (Association to Advance Collegiate Schools of Business), Accreditation Board for Engineering and Technology, American Council for Construction Education, American Dietetic Association, American Society of Landscape Architects, Computing Science Accreditation Board, Council for Accreditation of Counseling and Related Education Programs (CACREP), National Architectural Accrediting Board, National Association of Schools of Art and Design, National Council for Accreditation of Teacher Education, National League for Nursing, NRPA/AALR Council on Accreditation, Planning Accreditation Board, and Society of American Foresters. Documentation of accreditation is available in the college deans’ offices.

ADVISING POLICY
To ensure that students receive both personal and professional assistance in navigating through curricula and University requirements toward degree completion and graduation, the following policy was adopted by the Academic Council. Each student is assigned to an academic advisor (either professional advisor or faculty advisor) upon admission to the University. Responsibilities of the student and the advisor are clearly delineated in the advising process. The University maintains continual and systematic assessment of the process. The University Academic Advising Committee is responsible for implementing specific guidelines and evaluating effectiveness.

Goal I—The following University mission statement on academic advising shall be widely disseminated and implemented:

“Academic advising is an ongoing educational process that connects the student to the University. Academic advising supports the University’s mission of preparing the student for learning beyond the confines of the academy. Academic advisors represent and interpret University policies and procedures to the student and help the student navigate the academic and organizational paths of the institution.”

Goal II—The University shall demonstrate a continuing commitment to effective academic undergraduate and graduate advising through appropriate recognition, communication, policies, and funding.

Goal III—Each college and department shall develop a plan of action for continued commitment to effective academic advising consistent with the University’s philosophy.

Goal IV—Academic advisors (faculty and professional staff) shall demonstrate effective academic advising consistent with the University, college, and departmental philosophies.

Goal V—Students shall be informed of their personal responsibilities in the advising process.

LIBRARIES
The Libraries’ Web site at www.lib.clemson.edu provides access to a multitude of information resources, including the library catalog, hundreds of databases, over 14,000 electronic journals, and information regarding library services.

The Libraries’ services include circulation, reference, interlibrary loan, class instruction, and tours. Cooper Library houses a computer lab (maintained by DCIT), Java City Cyber Cafe, Snax & Stax convenience store, and a Popular Reading and Audio-

books Collection. Equipment available includes photocopiers, scanners, fax machines, and wireless laptops in Cooper Library and a color laser printer, engineering plotter, and large-format photocopier in the Gunnin Architecture Library.

The Clemson University Libraries consist of a main library and three branches. R. M. Cooper Library, Clemson’s main library, is located at the center of campus. Most of the books and journals are located there, as well as government publications, microforms, and electronic materials. The Gunnin Architecture Library, located in Lee Hall, contains collections that focus on architecture, city and regional planning, construction science, landscape architecture, and visual arts. Special Collections, on the lower level of the Strom Thurmond Institute, houses the rare book collection, University Archives, and many manuscript collections, including the papers of John C. Calhoun and Thomas Green Clemson. The Chemistry Reading Room, located in Hunter Chemistry Lab, contains periodical literature related to chemistry.

Total holdings for the library system include more than 1.6 million items in the form of books, periodicals, electronic resources, government publications and patents, musical recordings, DVDs and videos, audios, books, and microforms.

COMPUTING FACILITIES
The Division of Computing and Information Technology (DCIT), on the Web at dcit.clemson.edu, supports the computing activities of students and employees with a comprehensive network of computers. DCIT maintains many computer labs throughout the campus, ten of which are public access. The labs contain high-end PCs running Windows XP and laser printing equipment. Students have access to the Internet, e-mail, and Microsoft Office 2003, which includes Word, Excel, and PowerPoint applications.

DCIT’s Educational Technology Services (ETS) provides computer training and support to faculty, staff, and students in the use of the MyCILE portal and Web-based course management systems (Blackboard), the Clemson computer network, E-portfolios, and many desktop applications. This training is offered as part of regular University courses, through short courses and special training programs, and through E-learning courses. Complete information about MyCILE and other ETS services is available at ets.clemson.edu.

Distance-learning processes and technologies are supported by ETS with the goal of enhancing the design, production, and delivery of an increasing selection of University distance-education courses.

An extensive array of computer hardware is housed at the Information Technology Center (ITC) in the Clemson Research Park. DCIT operates a statewide computing network incorporating processors from a variety of vendors. The major general purpose computers are an IBM e800 running the OS/390 operating system and a SUN E3000 UNIX system. Novell and Solaris servers provide computing resources for client-server computing. Approximately 5,000 computers are connected to the campus FDDI/ Ethernet network.
DCIT Support Center

DCIT provides support and consulting in a comprehensive Support Center located in the University Union. This Support Center serves those who need general computing services and laptop support and consultation. DCIT's laptop, help desk, client support, and lab support groups are housed in the Support Center. Other DCIT help desks are located in M Section Manadel Hall and in the Coop Library on Level 5. These Help Desks assist students in the use of DCIT's hardware, software, and services. Students may call 656-3494, e-mail consult@clemson.edu, or check the information and hours of operation on the Web at helpdesk.clemson.edu.

Wireless Access

The campus computer network can be accessed through wired network connections found in all on-campus residence halls and apartments or through the University's extensive wireless network. This wireless access network provides 802.11b coverage to most areas of Clemson's campus. Students wishing to connect to the wireless network are encouraged to buy a wireless card with Cisco certified extensions. More information and complete coverage details can be found at wireless.clemson.edu.

Security

Clemson University requires all users to run virus protection and install the latest OS patches on their computers. Clemson has a site license for the McAfee products, VirusScan (Windows), and Virex (MacOS), which are located on the Software Archive at download.clemson.edu.

Laptop Program

The following students are required to have laptop computers:

- College of Agriculture, Forestry, and Life Sciences—freshmen, sophomores, juniors
- College of Architecture, Arts, and Humanities—freshmen, sophomores, juniors
- College of Business and Behavioral Science—all students
- College of Engineering and Science—all students
- College of Health, Education, and Human Development—freshmen, sophomores

While students may bring any laptop that meets the minimum specifications, Clemson has worked with vendors to offer a recommended laptop at a special discounted price. The recommended laptop is from laptop.clemson.edu. It includes wireless, Windows XP Pro, Office 2003, three years of warranty, and three years of insurance. Students using the recommended laptop receive both software and hardware support. Students with different models of laptop will be responsible for loading their own software and getting the correct settings installed. Clemson will continue to support the recommended laptop for the students' duration at Clemson, while those electing to purchase and bring their own laptops will be responsible for their support.

As part of the DCIT Support Center, graduate student employees are available to perform diagnostics and software assistance. PC repair technicians are on hand to do warranty laptop repairs on the recommended Clemson laptops. To provide a quick turn around on repairs, spare parts for laptops are kept in stock. Students whose laptops need extensive repairs may check out a loaner laptop only if they have one of the recommended laptops.

For more information, see laptop.clemson.edu or e-mail LAPTOP-L@clemson.edu.

CALHOUN HONORS COLLEGE

Established in 1962, Calhoun Honors College strives to enrich the educational experience of highly motivated, academically talented students by providing opportunities for scholarship and research not always available to undergraduates.

Entering freshmen are invited to join Calhoun Honors College based on information taken from the Application for Admission to Clemson University, including high school rank and grade-point average, SAT and/or ACT scores, and other indicators of scholastic potential. No one factor alone is sufficient to warrant an invitation. In considering candidates for admission, the Honors Office extends invitations to those students who show promise of meeting the high academic standards of the Honors College. Admission is highly selective and is based, in part, on the quality of the applicant pool and the availability of space for freshmen in the Honors College.

Currently-enrolled Clemson students may apply to become members of Calhoun Honors College if they are a full-time, degree-seeking undergraduate and have earned a cumulative grade-point ratio of 3.50 or higher as full-time students at Clemson. Students must have at least four semesters remaining to complete the requirements of their degree programs. A committee appointed by the Honors Director will evaluate the applications. Approximately 20 students will be admitted, based on space availability, at the end of the fall and spring semesters.

The honors curriculum consists of two distinct programs of study. To earn General Honors, students must complete at least six honors courses of no less than three credits each. Most courses taken for General Honors also satisfy general education requirements. Departmental Honors provides opportunities for in-depth study and research in the student's major. To receive honors credit, whether for General or Departmental Honors, each honors course must be completed with a grade of A or B. Detailed information can be found in the Honors Student Handbook.

Students completing both General and Departmental Honors are recognized at an awards ceremony on the eve of commencement, at which time they are presented the B.C. Inabinet Honors Medallion. This medallion, as well as the student's diploma, transcript, and commencement program, recognizes Honors graduates as Calhoun Honors College scholars.

In addition to the intellectual challenge of Honors, advantages of membership include priority course scheduling, honors housing (on a space-available basis), extended library loan privileges, and special lectures and cultural events.

Calhoun Honors College is institutionally responsible for administering the Dixon Fellows Program which helps students prepare to compete for Rhodes, Marshall, Truman, Fulbright, and other prestigious extramural fellowships.

COOPERATIVE EDUCATION

The Cooperative Education Program is a planned program in which students combine alternate periods of academic study and periods of related work with a participating business, industry, agency, or organization. Work periods normally take place during the sophomore and junior years (including summers), while the freshman and senior years are spent in full-time study.

Students may qualify to participate in the Cooperative Education Program by satisfactorily completing 30 credit hours of academic work. Transfer students may qualify in one semester. Three, four, or five co-op work periods are projected and included in each student referral. Usually two students from the same academic area are paired to fill a full-time position.

Students enrolled in the Cooperative Education Program pay a nominal registration fee each semester or summer session which coincides with their work period. That fee enables students to maintain student status and participate in student activities and services that are normally associated with enrollment at the University; however, the fee does not cover the cost of tuition for academic courses, health service, or any of the other benefits normally associated with the standard University fee. In responding to insurance, tax, loans, and other questionnaires about status, the University classifies a student on work assignment as a full-time continuing student. The work assignment is considered an integral part of the student's education, but no academic credit is awarded for this experience.

STUDY AND WORK ABROAD PROGRAMS

Through International Programs and Services, students may choose from a variety of programs offered overseas for a semester, academic year, or summer. Programs are varied to fulfill the needs of most students, such as the exchange programs at the University of Aberdeen in Scotland, University of Newcastle in Australia, University of Stellenbosch in South Africa, and Universidad de Alicante in Spain. There are programs for every academic major at Clemson. Programs abroad are offered in Australia, Belgium, China, Czech Republic, Ecuador, England, France, Germany, Japan, Mexico, Portugal, Russia, Scotland, Spain, and more. Both Clemson Programs Abroad and the International Student Exchange Program (ISEP) allow students to enroll and pay fees directly to Clemson while they study abroad. With the ISEP and GE3 consortia programs, students study for a semester or an academic year at one of more than 80 institutions worldwide. Transfer credit usually applies within the major with prior academic department approval. Financial aid and scholarships may also transfer for many of the programs abroad.

Internships and work abroad programs are also available. Applications are usually due in October for spring programs, in February for fall and academic year programs, and in April for summer programs. Interested students are encouraged to contact International Programs and Services, E-306 Martin Hall, at the beginning of each semester and throughout the academic year to explore opportunities abroad.
RESERVE OFFICERS TRAINING CORPS
Air Force and Army
The Departments of the Air Force and the Army maintain ROTC units at Clemson University. Their mission is to produce officers of high quality for technical and non-technical careers in the U.S. Air Force and Army. Two, three, and four-year programs are available. The four-year program consists of the basic course for freshmen and sophomores and the advanced course for juniors and seniors.

Scholarships, available to selected ROTC students, pay for tuition, books, and laboratory expenses, in addition to a variable stipend ranging from $250-400 per month during the school year. Nonscholarship advanced cadets also receive a stipend. Basic course credit may be awarded to students having prior military service.

Selected advanced Air Force cadets receive flight training at government expense. Reserve or National Guard duty can be guaranteed by the U.S. Army.

Cads who complete the Advanced or Professional Course and satisfy commissioning requirements are appointed Second Lieutenants. Ample opportunity exists for graduate study in both services, with temporary deferments possible.

HONOR ORGANIZATIONS
Clemson University has a number of academic honorary societies which recognize outstanding scholarship by students, faculty, and staff.

Alpha Epsilon Delta (Pre-Medical)
Alpha Epsilon Lambda (Graduate Students)
Alpha Lambda Delta (Freshmen)
Alpha Pi Mu (Industrial Engineering)
Alpha Zeta (Agriculture)
Beta Alpha Psi (Accounting)
Blue Key (Juniors and Seniors)
Callhoun Honors Society (Honors College)
Chi Epsilon (Civil Engineering)
Eta Kappa Nu (Electrical and Computer Engineering)
Eta Sigma Gamma (Health Education)
Golden Key National Honor Society (Juniors and Seniors)
Kappa Delta Pi (Education)
Keramos (Ceramic and Materials Engineering)
Mortar Board (Seniors)
Mu Beta Psi (Music)
Omicron Delta Kappa (Leadership)
Order of Omega (Seniors)
Phi Kappa Phi
Phi Psi (Textiles)
Phi Sigma Pi (Industrial)
Pi Delta Phi (French)
Pi Tau Sigma (Mechanical Engineering)
Psi Chi (Psychology)
Sigma Tau Delta (English)
Theta Beta Pi (Engineering)
Theta Sigma Delta
Upsilon Pi Epsilon (Computer Science)
Xi Sigma Pi (Forestry)

CLEMSON UNIVERSITY EXPERIMENT STATION
The Clemson University Experiment Station is part of a nationwide system of scientists working to improve the quality of life for people in their home state, the nation, and the world.

Both undergraduate and graduate students work with researchers to develop science-based information needed to address issues such as agricultural productivity and profitability, economic and community development, environmental conservation, food safety and nutrition, and youth development.

Clemson scientists have been involved in agriculture and forestry research since 1889 when the University was founded. Today research is conducted in laboratories, farms, and forests on the Clemson campus and at five research and education centers strategically located in the state's distinct soil and climate regions. In addition, Clemson researchers collaborate with colleagues on studies that span the globe.

This research has produced more than 100 new varieties of food and fiber crops, as well as 35 patents. More than 100 scientists, in addition to support staff, are working on 300 projects funded through federal, state, and private sources, including the U.S. Department of Agriculture, the U.S. Forest Service, the South Carolina General Assembly, and the National Science Foundation.

CLEMSON UNIVERSITY FOUNDATION
The Clemson University Foundation is a nonprofit organization that solicits, manages, and administers gifts from private sources for academic programs at Clemson University.

Chartered in 1933, the Foundation is a primary component of the Advancement Program at the University. There are 36 elected members of the Board of Directors. Currently, 34 of the 36 are Clemson alumni. The Board also includes seven automatic directors, including an undergraduate student representative; 15 ex officio directors, including a graduate student representative; and 16 honorary directors.

The Foundation operates through committees that report via an Executive Committee to the Full Board. These include the Budget Review, Development, Investment, Nominations, and Policy and Bylaws Committees. The Audit Committee is responsible directly to the Board. Fund raising is managed by the Development Committee and, if applicable, a Campaign Executive Committee. This includes solicitation of annual, major, planned, corporate, and foundation gifts in support of University priorities and coordination of college-based fund-raising initiatives. Organizations affiliated with the Clemson University Foundation include the Clemson University Continuing Education/Conference Complex Corporation, the Clemson University Real Estate Foundation, and the Wallace E. Tate Foundation for Environmental Research and Education. As of June 30, 2003, the Clemson University Foundation managed more than 1,000 endowments. Its managed investment portfolio totaled $231.8 million.

CLEMSON ALUMNI ASSOCIATION
The Clemson Alumni Association's action phrase is "Your Lifelong Connection to Clemson." Their mission is to serve, to inform, to involve. The Alumni Association works for the more than 100,000 alumni located around the world, sponsoring programs to provide a link between students of yesterday, today, and tomorrow.

In conjunction with volunteers and traveling University staff, Clemson Clubs and Clemson activities are conducted around the world. Alumni are kept informed through the award-winning Clemson World magazine and on the Web at alumni.clemson.edu. Students, alumni, and constituency programs, as well as publications and electronic resources, form the basis for an array of services offered to alumni, students, parents, and friends of the University.

All services of the National Alumni Association are coordinated out of the Alumni Center, a campus focal point built, furnished, and equipped entirely by gifts from alumni specifically for that purpose. The University Visitors Center, a gift of the Class of 1944, is adjacent to the Alumni Center and is an excellent stop for anyone visiting or returning to campus.

Alumni-sponsored awards programs such as Alumni Distinguished Service, Alumni Fellows, professorships, scholarships, and awards for outstanding teaching, research, and public service are among the prestigious awards given by the University.

Alumni employees coordinate the Alumni Career Services program and the activities of the open-membership student organization, Student Alumni Association. From the Welcome Back Festival held each August to the Senior Picnic held each May, the Alumni Association provides a lifelong connection to Clemson.

CAMPUS VISITS AND TOURS
The Visitors Center serves as a "front door" to the campus and offers a variety of informational services, including guided tours, audio-visuals, general and referral information, and publications about the University and surrounding area. The Visitors Center is located adjacent to the Alumni Center. Hours of operation are Monday–Friday, 8:00 A.M.–4:30 P.M.; Saturday, 9:00 A.M.–4:30 P.M. and Sunday, 1:00–4:30 P.M. The Visitors Center is closed on University holidays.

Guided walking tours of the campus are led by students who are members of the all-volunteer University Guide Association. Tour times are Monday–Saturday at 9:45 A.M. and 1:45 P.M. and Sunday at 1:45 P.M. Tours begin and end at the Visitors Center. Visitors should try to arrive 10–15 minutes early.

Reservations are required. For a current schedule, visit www.clemson.edu/welcome/center or call 864-656-4789.
ADMISSION

Application forms may be obtained by writing the Office of Admissions, Clemson University, 105 Sikes Hall, Box 345124, Clemson, SC 29634-5124. Application forms are available beginning August 2005. Freshman candidates are especially encouraged to submit preliminary applications and sit for the SAT I or ACT during the spring semester of their junior year. Copies of both the preliminary application and the application for admission are available on the Web at www.clemson.edu/admission/.

Candidates should understand that admission is closed when all classroom space has been committed. The majority of freshman admission decisions are communicated during the middle of February. Transfer students seeking entrance in August are usually notified between February and July. Candidates must submit a nonrefundable fee of $50 with this application. This fee is not applicable toward tuition and/or other University fees.

Application Deadlines

For Freshman Applicants

Spring semester       December 15
Fall semester        
  Priority deadline   December 1
  Final deadline      May 1

For Transfer Applicants

Spring semester       December 1
Fall semester         July 1

FRESHMEN

Admission to the University is competitive and is based primarily upon high school curriculum, grades, class standing, and SAT I or ACT scores. An applicant's intended major and state residency also receive consideration. To apply for admission, a candidate must submit a high school transcript through his/her counselor and have results of the SAT I or ACT sent directly from the testing agency. In addition, all applicants for freshman admission should complete the following courses in high school:

English—4 credits
All four courses must have strong grammar and composition components, with at least one in English literature and at least one in American literature. College preparatory English I, II, III, and IV will meet these requirements.

Mathematics—3 credits
These include algebra I (for which applied mathematics I and II may count together as a substitute if a student successfully completes algebra II), algebra II and geometry.

Laboratory Science—3 credits
Two must be selected from biology I, chemistry I, or physics I.

Foreign Language—3 credits
All three must be earned in the same language.

Social Sciences—3 credits
American history is required. One-half credit of government and one-half credit of economics are also recommended.

Physical Education/ROTC—1 credit

Other—2 credits

One of these must be a fourth year of mathematics, laboratory science, or foreign language. Students interested in engineering are strongly encouraged to take a fourth year of mathematics. This course should be selected from precalculus, calculus, statistics, or discrete mathematics. The second credit must be in advanced mathematics, computer science, or a combination of these; or one unit of world history, world geography, or western civilization.

The SAT I or ACT examination scores, rank in class, academic preparation, and recommendation of the high school counselor will be weighed carefully in the decision-making process. The applicant's acceptance will be confirmed upon presentation of a final high school transcript indicating continued academic progress and graduation.

Entrance Examinations

All freshman candidates and some transfer students must submit scores from either the SAT I or ACT.

For August enrollment, it is recommended that students complete the SAT I or ACT no later than the preceding December. Registration materials for these tests are readily available at high schools or can be obtained by contacting the College Board at (609) 771-7600 or (800) SAT-SCORE or the American College Testing Service at (319) 337-1313. All candidates must have their scores reported to Clemson by contacting the appropriate testing agency. The College Board's institutional code for Clemson is 5111. The ACT code for Clemson is 3842. Photocopies of student test reports or those submitted by third parties, such as high schools and colleges, are not accepted.

International Baccalaureate (IB)

Credit Policy

Clemson University endorses the International Baccalaureate (IB) Program and awards credit for IB Higher Level scores as indicated below.

<table>
<thead>
<tr>
<th>IB Higher \ Level Grade</th>
<th>Credit Allowed</th>
<th>Toward Degree</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art/Design</td>
<td>ART 103</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Biology</td>
<td>BIOL 103, 104</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Business and Organization</td>
<td>MGT 301</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Chemistry</td>
<td>CH 101</td>
<td>(for majors requiring organic chemistry)</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>CH 101</td>
<td>(for majors not requiring organic chemistry)</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>CH 101, 102</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>CH 101, 102</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>ECON 211, 212</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>ENGL 101, 212</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>ENGL 101, 103, 212</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>EN SP 200</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>FR 101, GER 101, ITAL 101, JAPN 101, RUSS 101, or SPAN 101</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>FR 101, 102, GER 101, ITAL 101, 102, JAPN 101, RUSS 101, 102, or SPAN 101, 102</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>GEOG 101</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>HIST 173</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>HIST 101 and 102</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>MTHSC 106*</td>
<td></td>
<td>4</td>
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<tr>
<td></td>
<td>MTHSC 106</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Determined on individual basis</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PHIL 101</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PSYCH 201</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Determined on individual basis</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For students taking the calculus sequence, MTHSC 106 and 108. Upon completion of MTHSC 108 with a grade of C or better, credit will be given for MTHSC 106.

\*For students taking the calculus sequence, MTHSC 106 and 108. Upon completion of MTHSC 108 with a grade of C or better, credit will be given for MTHSC 106.
College Board Advanced Placement Program

The College Board Advanced Placement Program (AP) gives highly motivated high school students an opportunity to begin their college careers during the last year or two of high school. AP participants take college-level courses in high school, sit for nationally administered examinations in the subjects concerned, and submit test grades to Clemson for credit. Credit is awarded to those earning grades of 3, 4, or 5 on AP exams. Please be sure to include your social security number when registering for AP examinations. This will save time and ensure that credit is automatically awarded to your Clemson academic record.

<table>
<thead>
<tr>
<th>College Board Advanced Placement Examination</th>
<th>AP Grade</th>
<th>Credit Allowed Toward Degree</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECONOMICS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microeconomics</td>
<td>3, 4, 5</td>
<td>ECON 211</td>
<td>3</td>
</tr>
<tr>
<td>Macroeconomics</td>
<td>3, 4, 5</td>
<td>ECON 212</td>
<td>3</td>
</tr>
<tr>
<td>ENGLISH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Composition and Literature</td>
<td>3, 4</td>
<td>ENGL 101</td>
<td>3</td>
</tr>
<tr>
<td>Language and Composition</td>
<td>5</td>
<td>ENGL 101, 103</td>
<td>6</td>
</tr>
<tr>
<td>Both Tests</td>
<td>3, 4, 5</td>
<td>ENGL 101, 103</td>
<td>6</td>
</tr>
<tr>
<td>International English Language</td>
<td>3, 4</td>
<td>ENGL 101</td>
<td>3</td>
</tr>
<tr>
<td>GOVERNMENT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Government</td>
<td>3, 4, 5</td>
<td>PO SC 101</td>
<td>3</td>
</tr>
<tr>
<td>Comparative Government</td>
<td>3, 4, 5</td>
<td>PO SC 102</td>
<td>3</td>
</tr>
<tr>
<td>HISTORY/GEOGRAPHY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American History</td>
<td>3, 4, 5</td>
<td>HIST 101, 102</td>
<td>6</td>
</tr>
<tr>
<td>Comparative History</td>
<td>3, 4, 5</td>
<td>HIST 173</td>
<td>3</td>
</tr>
<tr>
<td>Human Geography</td>
<td>3, 4, 5</td>
<td>GEOG 101</td>
<td>3</td>
</tr>
<tr>
<td>World History</td>
<td>3</td>
<td>HIST 193</td>
<td>3</td>
</tr>
<tr>
<td>HUMANITIES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Music Theory</td>
<td>3, 4, 5</td>
<td>MUSC 205</td>
<td>3</td>
</tr>
<tr>
<td>Art History</td>
<td>3, 4, 5</td>
<td>A AH 210</td>
<td>3</td>
</tr>
<tr>
<td>Studio Drawing</td>
<td>3, 4, 5</td>
<td>ART 205</td>
<td>3</td>
</tr>
<tr>
<td>General Education</td>
<td>3, 4, 5</td>
<td>ART 103</td>
<td>3</td>
</tr>
<tr>
<td>LANGUAGES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>French Language</td>
<td>3, 4, 5</td>
<td>FR 101, 102</td>
<td>8</td>
</tr>
<tr>
<td>French Literature</td>
<td>3</td>
<td>FR 101, 102</td>
<td>8</td>
</tr>
<tr>
<td>German Language</td>
<td>3, 4, 5</td>
<td>FR 101, 102, 201</td>
<td>11</td>
</tr>
<tr>
<td>Latin (either test)</td>
<td>3</td>
<td>FR 101, 102, 201, 202</td>
<td>14</td>
</tr>
<tr>
<td>Spanish Language</td>
<td>3, 4, 5</td>
<td>GER 101, 102</td>
<td>8</td>
</tr>
<tr>
<td>Spanish Literature</td>
<td>3</td>
<td>LATIN 101, 102, 201</td>
<td>11</td>
</tr>
<tr>
<td>MATHEMATICS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calculus AB</td>
<td>3, 4, 5</td>
<td>MTHS 106</td>
<td>4</td>
</tr>
<tr>
<td>Calculus BC</td>
<td>3, 4, 5</td>
<td>MTHS 106, 108</td>
<td>8</td>
</tr>
<tr>
<td>Statistics</td>
<td>3, 4, 5</td>
<td>MTHS 203</td>
<td>3</td>
</tr>
<tr>
<td>PSYCHOLOGY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychology</td>
<td>3, 4, 5</td>
<td>PSYCH 201</td>
<td>3</td>
</tr>
<tr>
<td>SCIENCE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biology</td>
<td>3</td>
<td>BIOL 103, 104</td>
<td>8</td>
</tr>
<tr>
<td>Chemistry</td>
<td>3, 4, 5</td>
<td>BIOL 110, 111</td>
<td>10</td>
</tr>
<tr>
<td>Computer Science A</td>
<td>3, 4, 5</td>
<td>CH 101, 102</td>
<td>8</td>
</tr>
<tr>
<td>Computer Science AB</td>
<td>3, 4</td>
<td>CP SC 101</td>
<td>4</td>
</tr>
<tr>
<td>Computer Science ABD</td>
<td>3, 4</td>
<td>CP SC 101</td>
<td>4</td>
</tr>
<tr>
<td>Computer Science AB</td>
<td>5</td>
<td>CP SC 101, 102</td>
<td>8</td>
</tr>
<tr>
<td>Environmental Science</td>
<td>3, 4, 5</td>
<td>EN SP 200</td>
<td>3</td>
</tr>
<tr>
<td>Physics B</td>
<td>3, 4, 5</td>
<td>PHYS 207/209, 208/210</td>
<td>5</td>
</tr>
<tr>
<td>Physics C (Mechanics)</td>
<td>3, 4, 5</td>
<td>PHYS 122/124</td>
<td>4</td>
</tr>
<tr>
<td>Physics C (Electrical and Magnetism)</td>
<td>3, 4, 5</td>
<td>PHYS 221/223</td>
<td>4</td>
</tr>
</tbody>
</table>

Placement Tests

Mathematics Placement—Freshmen mathematics placement is determined by the applicant's score on the Clemson Mathematics Placement Test (CMPT). The CMPT is required for all freshmen and transfer students. Failure to satisfactorily complete the CMPT will result in placement in preparatory work that, in most cases, will not apply toward the general education mathematics requirement. Placement will be adjusted as needed after AP and IB scores have been received by Clemson.

Foreign Language Placement—The Department of Languages offers placement tests that students may take during summer orientation. Any student who has had at least one year of a foreign language and who decides to continue with the same language at Clemson, must take one of these tests. Applicants desiring advanced placement in a foreign language may take the College Board's SAT II Subject Test, Advanced Placement (AP) Examinations, or the International Baccalaureate (IB) Higher Level Examination. SAT II scores of 450 or higher enable students to exempt one or more language courses. These students will receive credit following the successful completion (grade of C or better) of a qualifying course at Clemson.

GED

Candidates submitting General Educational Development (GED) credentials in lieu of a high school diploma must be 19 years of age or older. Official GED score results must be received directly from the General Educational Development Testing Service along with an official copy of the high school transcript and SAT I or ACT scores. Applicants presenting the GED will be reviewed by the Undergraduate Admissions Committee.

Appeals

Any freshman or transfer candidate who is denied admission may appeal for reconsideration provided the student (1) presents new information, such as improved grades and/or class rank, improved SAT I or ACT scores; and (2) submits a letter outlining the rationale for the appeal. All appeals will be reviewed by the Office of Admissions. In some instances, appeals will be referred to the Undergraduate Admissions Committee.

Freshman students who are accepted to and enrolled in Clemson University in a conditional admissions program through the appeals process must meet the conditions of their admission or be subject to disenrollment.

Admissions Exceptions

If it is not possible to make a positive decision on the basis of previous academic performance and SAT I or ACT scores, other factors, such as special talents or high school profile, may be considered. Where appropriate, the Office of Admissions will refer such cases to the Undergraduate Admissions Committee. Student athletes who do not meet regular admissions standards may be admitted if they meet Atlantic Coast Conference (ACC) and National Collegiate Athletic Association (NCAA) eligibility requirements.
TRANSFER STUDENTS

Transfer admission is moderately competitive. To increase their chances for admission, potential students should have the following qualifications:

- completion of a year of college study with 30 semester hours (or 45 quarter hours) of transferable credit
- a minimum 2.5 grade-point ratio (3.0 preferred).

Note: Majors such as Architecture, Construction Science and Management; Nursing; Parks, Recreation, and Tourism Management (Professional Golf Management); Production Studies in Performing Arts; and some education programs have more selective admissions standards.

- freshman level math, science, and English requirements for the intended major at Clemson.

Note: Some programs have more selective admissions standards.

Application deadlines are December 1 for consideration for the spring semester and July 1 for consideration for the fall semester. In most cases, admission decisions will be made once the year of college study is completed. Summer school applicants should have all credentials sent at least two weeks prior to the beginning of the term. Admission is closed when all classroom space has been committed.

Transfer Credit

Coursework completed with a grade of C or better at other regionally accredited institutions, including correspondence courses, telecourses, and exempted courses, will be evaluated for transfer in terms of equivalent courses included in the Clemson curriculum of the student’s choice. This does not guarantee that all courses taken at other institutions will be accepted for transfer. The acceptability of each course or exemption will be based on an evaluation by the faculty concerned. Coursework earned at different institutions will not be joined to equate with one Clemson course. No course taken at a non-baccalaureate degree granting institution may be used as an equivalent or substitute for any 300- or 400-level Clemson course.

Learning experiences including, but not limited to, military service schools, non-collegiate sponsored instruction, work related experiences, etc. will not be evaluated for transfer; however, enrolled students may request credit by examination from the appropriate department for any non-transferable learning experience. For additional information, see Advanced Placement and Credit by Examination on page 25.

Students transferring may select the curriculum that was outlined in the Clemson University Undergraduate Announcements at the time they entered the sending institution, provided they have been in continuous enrollment. Further, transfer students may select any curriculum adopted subsequent to that initial curriculum. After enrolling at Clemson, if transfer students change from one major to another, they will complete all of the requirements included in the new curriculum that are in effect at the time of the change. If all work toward a degree is not completed within six years after the initial enrollment at the sending institution, the student may be required to take additional courses.

Transfer: State Policies and Procedures

Section 10-C of the South Carolina School-to-work Transition Act (1994) stipulates that the Council of College and University Presidents and the State Board for Technical and Comprehensive Education operating through the Commission on Higher Education, shall develop better articulation of associate and baccalaureate degree programs. To comply with this requirement, the Commission upon the advice of the Council of Presidents established a Transfer Articulation Policy Committee composed of four-year institutions' vice presidents for academic affairs and the Associate Director for Instruction of the State Board for Technical and Comprehensive Education. The principal outcomes derived from the work of that committee and accepted by the Commission on Higher Education on July 6, 1995 were:

- an expanded list of 72 courses which will transfer to four-year public institutions of South Carolina from the two-year public institutions,
- a statewide policy document on good practices in transfer to be followed by all public institutions of higher education in the State of South Carolina, which was accepted in principle by the Advisory Committee on Academic Programs and the Commission,
- six task forces on statewide transfer agreements, each based in a discipline or broad area of the baccalaureate curriculum.

In 1995 the General Assembly passed Act 137 which stipulated further that the South Carolina Commission on Higher Education "notwithstanding any other provision of law to the contrary, shall have the following additional duties and functions with regard to the various public institutions of higher education." These duties and responsibilities include the Commission's responsibility to "establish procedures for the transferability of courses at the undergraduate level between two-year and four-year institutions or schools."

Act 137 directs the Commission to adopt procedures for the transfer of courses from all two-year public to all four-year public institutions of higher education in South Carolina. Proposed procedures are listed below. Unless otherwise stated, these procedures shall become effective immediately upon approval by the Commission and shall be fully implemented, unless otherwise stated, by September 1, 1997.

Statewide Articulation of 72 Courses

1. The Statewide Articulation Agreement of 72 courses already approved by the South Carolina Commission on Higher Education for transfer from two- to four-year public institutions (See Appendix A) shall be applicable to all public institutions, including two-year institutions and institutions within the same system. In instances where an institution does not have synonymous courses to ones on this list, it shall identify comparable courses or course categories for acceptance of general education courses on the statewide list.

Admissions Criteria, Course Grades, GPAs, Validations

2. All four-year public institutions shall issue annually in August a transfer guide covering at least the following items:

A. The definition of a transfer student and requirements for admission both to the institution and, if more selective, requirements for admission to particular programs.

B. Limitations placed by the institution or its programs for acceptance of standardized examinations (e.g., SAT, ACT) taken more than a given time ago, for academic coursework taken elsewhere, for coursework repeated due to failure, for coursework taken at another institution while the student is academically suspended at his/her home institution, and so forth.

C. Institutional and, if more selective, programmatic requirements that may be applied to transfers.

D. Institutional procedures used to calculate student applicants' GPAs for transfer admission. Such procedures shall describe how nonstandard grades (withdrawal, withdrawal failing, repeated course, etc.) are evaluated; and they shall also describe whether all coursework taken prior to transfer or just coursework deemed appropriate to the student's intended four-year program of study is calculated for purposes of admission to the institution and/or programmatic major.

E. Lists of all courses accepted from each technical college (including the 72 courses in the Statewide Articulation Agreement) and the course equivalencies (including "free elective" category) found on the home institution for the courses accepted.

F. Lists of all articulation agreements with any public South Carolina two-year or other institution of higher education together with information about how interested parties can access these agreements.

G. Lists of the institution's Transfer Officer(s) personnel together with telephone and FAX numbers and office address.

H. Institutional policies related to "academic bankruptcy" (i.e., removing an entire transcript or parts thereof from a failed or underachieving record after a period of years has passed) so the re-entry into the four-year institution with course credit earned in the interim elsewhere is done without regard to the student's earlier record.

I. "Residency requirements" for the minimum number of hours required to be earned at the institution for the degree.

3. Coursework (individual courses, transfer blocks, statewide agreements) covered within these procedures shall be transferable if the student has completed the coursework with a "C" grade (2.0 on a 4.0 scale) or above, but transfer of grades does not relieve the student of the obligation to meet any GPA requirements or other admissions requirements of the institution or program to which application has been made.

A. Any four-year institution which has institutional or programmatic admissions requirements for transfer students with cumulative grade point averages (GPAs) higher than 2.0 on a 4.0 scale shall apply such entrance requirements equally to transfer students from regionally accredited South Carolina public institutions regardless of whether students are transferring from a four-year or two-year institution.
B. Any multi-campus institution or system shall certify by letter to the Commission that all coursework at all of its campuses applicable to a particular degree program of study is fully acceptable in transfer to meet degree requirements in the same degree program at any other of its campuses.

4. Any coursework (individual courses, transfer blocks, statewide agreements) covered within these procedures shall be transferable to any public institution without any additional fee and without any further encumbrance such as a “validation examination/instrument”, “placement examination/instrument”, “verification instrument”, or any other stricture, notwithstanding any institutional or system policy, procedure, or regulation to the contrary.

Transfer Blocks, Statewide Agreements, Completion of the AA/AS Degree

5. The following Transfer Blocks/Statewide Agreements taken at any two-year public institution in South Carolina shall be accepted in their totality toward meeting baccalaureate degree requirements at all four-year public institutions in relevant four-year degree programs, as follows:

- Arts, Humanities, and Social Sciences—established curriculum block of 46-48 semester hours,
- Business Administration—established curriculum block of 46-51 semester hours,
- Engineering—established curriculum block of 33 semester hours,
- Science and Mathematics—established curriculum block of 48-51 semester hours,
- Teacher Education—established curriculum block of 38-39 semester hours for Early Childhood, Elementary, and Special Education students only. Secondary education majors and students seeking certification who are not majoring in teacher education should consult the Arts, Humanities, and Social Sciences or the Math and Science transfer blocks, as relevant, to assure transferability of coursework.
- Nursing—by statewide agreement, at least 60 semester hours shall be accepted by any public four-year institution toward the baccalaureate completion program (BSN) from graduates of any South Carolina public associate degree program in nursing (ADN), provided that the program is accredited by the National League for Nursing and that the graduate has successfully passed the National Licensure Examination (NCLEX) and is a currently licensed Registered Nurse.

(For complete texts and information about these statewide transfer blocks/agreements, see Appendix B.)

6. Any “unique” academic program not specifically or by extension covered by one of the statewide transfer blocks/agreements listed in #4 above shall either create its own transfer block of 35 or more credit hours with the approval of CHE staff or shall adopt either the Arts/Social Science/Humanities or the Science/Mathematics block by September 1996. The institution at which such program is located shall inform the staff of the CHE and every institutional president and vice president for academic affairs about this decision.

7. Any student who has completed either an Associate of Arts or Associate of Science degree program at any public two-year South Carolina institution which contains within it the total coursework found in either the Arts/Social Sciences/Humanities Transfer Block or the Math/Science Transfer Block shall automatically be entitled to junior-level status or its equivalent at whatever public senior institution to which the student might have been admitted. (Note: As agreed by the Committee on Academic Affairs, junior status applies only to campus activities such as priority order for registration for courses, residence hall assignments, parking, athletic event tickets, etc. and not in calculating academic degree credits.)

Related Reports and Statewide Documents

8. All applicable recommendations found in the Commission's report to the General Assembly on the School-to-Work Act (approved by the Commission and transmitted to the General Assembly on June 1, 1995) are hereby incorporated into the procedures for transfer of coursework among two- and four-year institutions. (See Appendix C.)

9. The policy paper entitled State Policy on Transfer and articulation, as amended to reflect changes in the numbers of transfer blocks and other Commission action since July 5, 1995, is hereby adopted as the statewide policy for institutional good practice in the sending and receiving of all course credits to be transferred. (See Appendix D.)

Assurance of Quality

10. All claims from any public two- or four-year institutions challenging the effective preparation of any other public institution's coursework for transfer purposes shall be evaluated and appropriate measures shall be taken to assure that the quality of the coursework has been reviewed and approved on a timely basis by sending and receiving institutions alike. This process of formal review shall occur every four years through the staff of the Commission on Higher Education, beginning with the approval of these procedures.

Statewide Publication and Distribution of Information on Transfer

11. The staff of the Commission on Higher Education shall print and distribute copies of these procedures upon their acceptance by the Commission. The staff shall also place this document and the Appendices on the Commission's home page on the Internet under the title "Transfer Policies."

12. By September 1 of each year, all public four-year institutions shall have their own home page on the Internet under the title "Transfer Policies"

A. Print a copy of this entire document (without appendices).

B. Print a copy of their entire transfer guide.

C. Provide to the staff of the Commission in satisfactory format a copy of their entire transfer guide for placing on the Commission's home page on the Internet.

13. By September 1 of each year, the staff of the State Board for Technical and Comprehensive Education shall on its home page on the Internet under the title "Transfer Policies".

A. Print a copy of this document (without appendices).

B. Provide to the Commission staff in format suitable for placing on the Commission's home page on the Internet and in a list of all articulation agreements that each of the sixteen technical colleges has with public and other four-year institutions of higher education, together with information about how interested parties can access those agreements.

14. Every two-year and four-year public institutional catalog shall contain a section entitled "Transfer State Policies and Procedures." Such section at a minimum shall:

A. Publish these procedures in their entirety (except appendices).

B. Designate a chief Transfer Officer at the institution who shall:
- provide information and other appropriate support for students considering transfer and recent transfers.
- serve as a clearinghouse for information on issues of transfer in the State of South Carolina.
- provide definitive institutional rulings on transfer questions for the institution's students under these procedures.
- work closely with feeder institutions to assure ease in transfer for their students.

C. Designate other programmatic Transfer Officer(s) as the size of the institution and the variety of its programs might warrant.

D. Refer interested parties to the institutional Transfer Guide.

E. Refer interested parties to the institution's and the Commission on Higher Education's home page on the Internet for further information regarding transfer.

In order to comply with these state guidelines, the following information is noted relative to Clemson University:

Transfer Admissions Officers
Becky D. Pearson, Associate Director of Admissions
Kathryn Rice, Assistant Director of Admissions
Bonnie G. Duncan, Transfer Credit Coordinator

105 Sikes Hall
Clemson University
Box 345124
Clemson, SC 29634-5124
Phone: (864) 656-2287
FAX: (864) 656-2464

Additional information regarding transfer is contained in the brochure S. C. Technical College Transfer Guide, available through the Office of Admissions at the address above. Prospective transfer students are also encouraged to refer to the University's Web site at www.clemson.edu or the South Carolina Commission on Higher Education's Web site at www.che40.state.sc.us.
College Board College-Level Examination Program (CLEP)

This program has very limited recognition at Clemson. A few departments accept credit for CLEP subject-matter examinations; however, CLEP General Examinations are not recognized. Credit is awarded for introductory-level courses according to criteria established by the following departments: Chemistry (composition only), and Mathematical Sciences (algebra and trigonometry only). Numerical scores plus essays, required when offered as part of a CLEP examination, will be evaluated by the appropriate department. CLEP is designed primarily for adults with nontraditional learning experiences.

ADMISSIONS DEPOSIT

With the exception of certain University scholarship recipients, all accepted freshman and transfer candidates for fall semester are required to submit a nonrefundable $100 admissions deposit. This deposit is applicable toward tuition and other University fees.

HOUSING

All 2005-2006 entering freshmen are guaranteed on-campus housing. The University housing policy requires all freshmen to live in University housing, unless they live with a parent or other close adult relative. New transfer students are offered University housing as space permits.

ORIENTATION PROGRAMS

The University offers a series of orientation programs during the summer for freshmen, transfer students, and their parents. All accepted students are expected to attend one of the sessions. During orientation, students will have an opportunity to discuss their educational objectives with an advisor, to register for the fall semester, and to learn about student life and other co-curricular activities. Transfer students will have their transcripts evaluated and select appropriate courses for their first semester at Clemson. The student program fee is $70 per student, subject to change.

2005 Summer Orientation Dates

| June 13-14 | June 15 |
| June 16-17 | June 29 |
| June 20-21 | June 23-24 |
| June 27-28 | July 5-6 |
| July 7-8 |

Although students are strongly encouraged to attend summer orientation, abbreviated make-up sessions are held on August 21 for freshmen and their parents and on August 22 for transfer students and their parents. International students are expected to attend the session held on August 22 after attending the mandatory orientation for all international students which is conducted by International Programs and Services.

INTERNATIONAL UNDERGRADUATES

Admissions services for undergraduate international students are provided by the Office of Admissions. International students who come from abroad or transfer from another school must meet academic, language, and financial qualifications as determined by Clemson University. The SAT 1 or ACT is required of all international applicants (freshman or transfer). The Test of English as a Foreign Language (TOEFL) is required of applicants from countries where English is not the native language. Financial qualifications are determined by the submission of a financial certification form and bank statements verifying adequate funding. Student visa services are provided by International Programs and Services.

SPECIAL STUDENT STATUS

The special student classification is designed for high school graduates, 19 years of age or older, who wish to take a limited number of courses for personal or professional development. This program is not appropriate for individuals who are interested in earning an undergraduate degree. In addition, it is not a "trial admission" status or one for candidates who apply too late to submit credentials for consideration for regular admission. Applicants denied regular admission to Clemson are not eligible to apply as special students.

None of the usual credentials supporting an application are required of special student applicants. A cumulative maximum of 18 undergraduate credit hours may be taken. Contact the Office of Admissions, 105 Sikes Hall, Clemson, SC 29634-5124.

READMISSION OF FORMER UNDERGRADUATES

Undergraduate students who have previously attended Clemson and wish to return must secure an application for reen trance from the Registrar’s Office. Students are readmitted into the major they were in when they last attended Clemson. Change-of-major forms are available in the Enrolled Student Services Office. Former students must meet the catalog curriculum requirements for graduation in effect at the time of their return. Students are required to satisfy the University’s general education requirements in addition to curricular requirements. Any variations in curricular requirements will be considered under the substitution procedures. If all work toward a degree is not completed within six years after entrance, the student may be required to take additional courses. Other information can be obtained from the Registrar’s Office.

POSTBACCALAUREATE

Students may be accepted as postbaccalaureate if they apply to a graduate degree program but do not have the appropriate academic background. Students must be recommended by the appropriate department or program chair and should meet all other requirements for admission to the degree program with respect to grade-point ratio and standardized test scores. Postbaccalaureate students who are denied admission because of failure to meet the minimum requirements have access to the same appeal procedure as other students applying for admission.

Applicants will be classified as postbaccalaureate if they are not qualified to take at least one graduate course per semester which can be included in the minimum hours required for the graduate degree. Additionally, students required to complete eighteen or more semester hours of graduate credits prior to enrolling in graduate credits will be classified as postbaccalaureate. The postbaccalaureate status will remain in effect until the number of required graduate credit hours is less than or equal to eighteen and the student is qualified to take, each semester, a graduate course which can be included in the minimum hours required for the graduate degree. Departments or students may request postbaccalaureate status even though the above criteria are satisfied.

Once postbaccalaureate students become eligible for classification as graduate students, the decision as to eventual admission status (full or provisional) will be made based on criteria utilized by the department and Graduate School for all other applicants to the degree program. Postbaccalaureate students are expected to maintain a B average and receive no grade lower than C to qualify for admission to a graduate program.

Postbaccalaureate students can enroll in the same number of credits per semester as undergraduate students but cannot enroll in graduate courses or receive graduate assistantships. No degree or certification shall be awarded to students in a postbaccalaureate status, and such students who subsequently wish to obtain an additional baccalaureate degree must apply through the Office of Admissions. The applicability of credits earned toward the undergraduate degree will be determined by the policy pertaining to transfer students. Tuition and fees for postbaccalaureate students shall be those applicable to undergraduate students and are subject to out-of-state fees, if applicable.

Students possessing undergraduate degrees or graduate degrees who wish to enroll in graduate courses for reasons other than future admission to graduate study shall not be classified as postbaccalaureate and shall be governed by policies established by the Office of Admissions.
FINANCIAL INFORMATION

The annual State Appropriation Act imposes the general requirement that student fees be fixed by the University Board of Trustees. The Act imposes two specific requirements on the Board: (1) In fixing fees applicable to academic and general maintenance and operation costs, the Board must maintain a minimum student fee not less than the fee charged the previous year. (2) In fixing fees applicable to dormitory rental, dining halls, laundry, infirmary, and all other personal subsistence expenses, the Board must charge students an amount sufficient to fully cover the cost of providing such facilities and services.

The tuition and fees for all students—full or part time and auditing—are shown at right. Satisfactory settlement of all expenses is a requirement for completing each semester's class registration, and no student is officially enrolled until all past due accounts have been satisfied. Financial aid cannot be used to satisfy balances forward from a prior academic year.

In special cases the University will accept, at the beginning of a semester, a noninterest-bearing promissory note for a portion of the semester housing and meal plan fee. Amounts up to $450 for room and $450 for 5-7 day meal plans may be included in the note. In such cases, a note for the fall semester charges will be due October 1, and for the spring semester, March 1. Failure to pay the note when due will result in the assessment of late fees, including collection costs, denial of future deferred payment note privileges, and termination of board and/or cancellation of housing contract.

Currently enrolled students who expect to continue enrollment may make housing reservations by paying a $150 housing advance payment and by preregistering on-line during the spring semester at a time designated by the Housing Office.

New students who are offered on-campus housing accommodations must pay a nonrefundable $35 housing application fee and a $100 admissions deposit. The admissions deposit is deducted from the amount otherwise due for the first semester expenses. (Note: Policies regarding priority to offering on-campus housing are subject to change.)

TUITION AND FEES
Late Enrollment Service Charge
Registration for classes is scheduled for specific days, and definite procedures are outlined to avoid the problems incident to late registration. A student who has not completed registration until all required steps have been taken. Any student failing to complete registration on the specified class registration days will incur a late enrollment charge, which begins at $25 and increases $5 each day.

Full-time Fees
Students must be enrolled in 12 semester hours to pay full-time fees. Students enrolled in less than 12 hours or who drop below 12 hours may become ineligible for some student services, financial aid, or other programs.

<table>
<thead>
<tr>
<th>Residence Halls (per semester)</th>
<th>Regular</th>
<th>Single</th>
</tr>
</thead>
<tbody>
<tr>
<td>Johnstone (except Annex A)</td>
<td>1,100.00</td>
<td>1,650.00</td>
</tr>
<tr>
<td>Benet, Bowen, Bradley, Cope, Donaldson, Geer</td>
<td>1,585.00</td>
<td>1,275.00</td>
</tr>
<tr>
<td>Johnstone A Annex, Norris, Sanders, Wannamaker, Young</td>
<td>1,260.00</td>
<td>1,890.00</td>
</tr>
<tr>
<td>Barnett, Byrnes, Lever, Manning, Mauldin, Smith</td>
<td>1,390.00</td>
<td>2,085.00</td>
</tr>
<tr>
<td>Clemson House (room)</td>
<td>1,430.00</td>
<td>2,145.00</td>
</tr>
<tr>
<td>Holmes and McCabe</td>
<td>1,600.00</td>
<td></td>
</tr>
<tr>
<td>Stadium Suites</td>
<td>1,830.00</td>
<td></td>
</tr>
<tr>
<td>Temporary Housing</td>
<td>1,100.00</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Apartments (per semester)</th>
<th>Per Month</th>
<th>Per Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calhoun Courts (four occupants)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clemson House</td>
<td>1,685.00</td>
<td></td>
</tr>
<tr>
<td>Fraternity Area Village</td>
<td>2,220.00</td>
<td></td>
</tr>
<tr>
<td>Lightsey Bridge</td>
<td>1,765.00</td>
<td></td>
</tr>
<tr>
<td>Lightsey Bridge II</td>
<td>2,245.00</td>
<td></td>
</tr>
<tr>
<td>Thornhill Village (two occupants)</td>
<td>1,910.00</td>
<td></td>
</tr>
<tr>
<td>Thornhill Village (four occupants)</td>
<td>1,505.00</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Family Housing</th>
<th>Per Month</th>
<th>Per Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Townhouses</td>
<td>375.00</td>
<td></td>
</tr>
<tr>
<td>Duplex-2 Bedroom</td>
<td>390.00</td>
<td></td>
</tr>
<tr>
<td>Duplex-3 Bedroom</td>
<td>455.00</td>
<td></td>
</tr>
<tr>
<td>Faculty Houses</td>
<td>500.00</td>
<td></td>
</tr>
<tr>
<td>Faculty Houses (Renovated)</td>
<td>605.00</td>
<td></td>
</tr>
<tr>
<td>Thornhill Graduate Apartments</td>
<td>385.00</td>
<td></td>
</tr>
<tr>
<td>9 month</td>
<td>335.00</td>
<td></td>
</tr>
<tr>
<td>12 month</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Board Plans1</th>
<th>Per Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any Ten (10 meals), Monday–Sunday</td>
<td>925.00</td>
</tr>
<tr>
<td>Plus Any Ten (includes $200 in Paw points)</td>
<td>1,100.00</td>
</tr>
<tr>
<td>Any 15 (15 meals), Monday–Sunday</td>
<td>1,022.00</td>
</tr>
<tr>
<td>Plus Any 15 (includes $100 in Paw points)</td>
<td>1,100.00</td>
</tr>
<tr>
<td>Seven-day (unlimited access)</td>
<td>1,100.00</td>
</tr>
<tr>
<td>Plus Unlimited Access (includes $150 in Paw points)</td>
<td>1,250.00</td>
</tr>
<tr>
<td>Plus Commuter 50 (any 50 meals per semester plus $250 in Paw points)</td>
<td>552.00</td>
</tr>
<tr>
<td>Tiger Stripe Account minimum (declining balance)</td>
<td>50.00</td>
</tr>
</tbody>
</table>

Part-time Fees
Students taking less than 12 semester credit hours will be charged each semester according to the above schedule. These fees do not provide for admission to athletic events, concert series, and other such activities.

Notice to Customers Making Payment by Check
If a check is mailed for payment, it may be converted into an electronic funds transfer (EFT). This means a copy of the check will be made and the account information will be used to debit the bank account electronically for the amount of the check. The debit from the bank account will usually occur within 24 hours and will be shown on the drawer's bank account statement.

The original check will not be returned to the drawer. It will be destroyed, but University Revenue and Receivables will retain a copy of it. If the EFT cannot be processed for technical reasons, the drawer authorizes the University to process the copy in place of the original check. If the EFT cannot be completed due to insufficient funds, the University may try twice more to make the transfer. A returned item fee of $25 will be charged and collected by EFT.

1All first-year freshmen who live in University housing (excluding apartments with kitchens) are required to subscribe to one of the first six board plans for their first two semesters. All other students have the option of selecting on a semester basis or paying the prevailing cash price for individual meals. The Plus Commuter 50 and Tiger Stripe account do not satisfy the freshman requirement.
Returned Checks, EFTs, and Credit Card Payments

A check, EFT, or credit card given in payment of University expenses that is returned unpaid by the bank creates an indebtedness to the University. University Revenue and Receivables administers matters relating to the collection of all returned checks for students and non-students.

University Revenue and Receivables will represent returned items for payment of academic fees. A $25 fee will be charged for each returned item. If a check is returned or dishonored for any reason, the student's account may be debited electronically for the amount of the check plus the $25 returned item fee.

In addition, students with returned items for payment of academic fees are also subject to a late payment fee of $5 per calendar day, not to exceed $350, beginning on the last day of late registration. If the item is returned to the University in a timely manner with no response from the student or drawer, a written request to disenroll the student is made to the Registrar. If the request is approved, the percentage of refund will be applied to the debt. If the item is returned after the mid-point of the semester with no response, a decision will be made by the Director of University Revenue and Receivables and the Registrar as to the effect of disenrollment. The University may restrict subsequent payment for academic and other fees by accepting only cash, certified checks, or money orders.

Any individual who uses a two-party check for payment of University expenses will be held responsible for that check if it is returned unpaid by the bank. Items used as payment for various University services such as meal plans, housing, etc., that are later returned unpaid by the bank, give the University the right to cancel such services and cause forfeiture of any refund.

Any returned items not collected by the above procedures may be turned over to a collections agency at the University's discretion. All collection costs will be added to the debt. Transcripts and diplomas will be withheld pending payment, and the debt may be deducted from state income tax refunds.

Abuse of check payment privileges may result in the restriction of such privileges for an indefinite period of time based on the frequency and/or dollar amount, as determined by University Revenue and Receivables.

Past Due Accounts

Any indebtedness to the University which becomes past due immediately jeopardizes the student's enrollment, and no such student will be permitted to re-enroll for an ensuing semester or summer term. Billing fees and/or collection costs may be added to the indebtedness. Further, any student who fails to pay all indebtedness, including collection costs, to the University may not be issued a transcript or diploma. Unresolved debts may be turned over to a collection agency, reported to a credit bureau, and deducted from state income tax refunds. Debts include but are not limited to, parking violations, library fines, rent, academic fees, and others.

Refund of Academic Fees

(Tuition, University Fee, and Medical Fee) for Students Withdrawing, Dropping to Part Time, or Part-time Students Dropping Credit Hours

No refunds will be made on a semester's tuition and fees after four weeks from the last day to register. In the case of a withdrawal from the University, refunds will be based on the effective date of the withdrawal. In the case of a withdrawal from a course, refunds will be based on the date the student drops the course using the on-line registration system. To be eligible for a refund, the student's request must be received by University Revenue and Receivables prior to the beginning of the next fall/spring semester or subsequent summer term. Beginning with the day following the last day to register, refunds for periods of four weeks or less during fall/spring semester shall be made on the following basis. Students receiving Title IV Financial Aid follow a different policy. Contact University Revenue and Receivables, G-08 Sikes Hall, for details.

<table>
<thead>
<tr>
<th>Fall/Spring Semester</th>
<th>Percent Refund</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration day(s) in published calendar</td>
<td>100%</td>
</tr>
<tr>
<td>After last day to register:</td>
<td></td>
</tr>
<tr>
<td>One week or less</td>
<td>80%</td>
</tr>
<tr>
<td>More than 1 but not more than 2 weeks</td>
<td>60%</td>
</tr>
<tr>
<td>More than 2 but not more than 3 weeks</td>
<td>40%</td>
</tr>
<tr>
<td>More than 3 but not more than 4 weeks</td>
<td>20%</td>
</tr>
<tr>
<td>More than 4 weeks</td>
<td>0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Summer Sessions</th>
<th>Percent Refund</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration day(s) in published calendar</td>
<td></td>
</tr>
<tr>
<td>After last day to register:</td>
<td></td>
</tr>
<tr>
<td>One week or less</td>
<td>100%</td>
</tr>
<tr>
<td>More than 1 but not more than 2 weeks</td>
<td>60%</td>
</tr>
<tr>
<td>More than 2 but not more than 3 weeks</td>
<td>40%</td>
</tr>
<tr>
<td>More than 3 weeks</td>
<td>0%</td>
</tr>
</tbody>
</table>

Refund of Dining Hall Fees

See the section on Dining Services on page 21.

Refund of Housing Fees

Cancelling the contract prior to the start of the academic year

New Freshmen, New Graduate Students, New Transfer Students—If written notice of cancellation is received by the Housing Office on or before July 25, 2005, the contract is cancelled with no additional charge. After July 25, 2005, the contract is binding, and students are obligated to pay rent for the entire academic year unless they fail to enroll.

Continuing Undergraduate and Graduate Students, Co-op Students, Former Students Returning—If written notice of cancellation is received by the Housing Office on or before June 1, 2005, the contract is cancelled, and $100 of the $150 advance payment is refunded, minus any indebtedness to the University. Students who are not required to pay the $150 will be charged $50. Refunds, if applicable, will show as a credit on the following semester's bill. If the student fails to enroll the following semester, a refund check will be issued only after that semester begins. If written notice of cancellation is received by the Housing Office on or between June 2 and July 25, 2005, the contract is cancelled, but no portion of the $150 advance payment is refunded. Students who are not required to make a $150 advance payment will be charged $150 upon cancellation. After July 25, 2005, the contract is binding, and students are obligated to pay the entire academic year's rent unless they fail to enroll. In such cases, all prepaid rent, less $150, will be refunded.

Students who sign contracts after July 25, 2005, are obligated to pay the entire academic year's rent unless they do not enroll. If a student's plans change and he/she re-enrolls after cancelling, the semester charge will be added back to his/her account. The entire $150 advance payment is refunded only in cases where the University denies readmission. There will be no refund of University housing monies during the last six weeks of a semester. If any collection fees are assessed in the process of obtaining unpaid housing charges, the student will be responsible for the payment of those collection fees in addition to the unpaid housing charges.

Cancellation of contract after the start of each semester of the academic year

The contract may be terminated after the start of each semester for the following reasons only: withdrawal from school, marriage (no more than four weeks prior to the wedding date), or circumstances determined by the University to be sufficiently extenuating as to warrant cancellation. Documentary evidence will be required to show cause for cancellation. Any student qualifying for cancellation under one of these conditions will forfeit the first $150 of that semester's rental fee or the prorated amount for the days of the semester that housing is held in reservation by that student, whichever is greater.

Cancellation of contract at the end of the first semester

The contract may be terminated at the end of the first semester without penalty for the following reasons: graduation, withdrawal from school, ineligibility to continue enrollment due to a failure to meet academic requirements, completion of graduate requirements, failure to enroll a second semester, participation in Cooperative Education during second semester, or participation during the second semester in any program required by the University that takes the student away from the main campus. The contract can be cancelled at the end of the first semester with a $150 contract cancellation charge for the following reasons: marriage or circumstances determined by the University to be sufficiently extenuating as to warrant cancellation. The contract may also be cancelled at the end of the first semester by paying 50% of the first semester's rental fee ("buyout" option).
Refunds of Financial Aid for Students Withdrawing from the University

Refunds of academic fees are made in accordance with semester and summer session refund policies. First semester freshmen and first semester transfer students receiving Title IV financial aid are under a different policy based on federal guidelines. Details are available in G-08 Sikes Hall. University housing refunds are made according to the policy above. Meal plan refunds are made on a pro rata basis.

Since financial aid is expected to meet or help meet educational costs, any academic fee, housing, or meal-plan fee for students withdrawing from the University up to the amount of financial aid received for that semester or summer session, will be refunded to the Financial Aid Program(s) from which the student received assistance.

Students receiving Title IV Funds (Federal Pell Grant, Federal SEOG, Federal Perkins, Federal Stafford Loans—unsub or sub) or Federal Plus Loans who withdraw from the University are subject to the Return of Title IV Funds regulations. Students with funds from any of these programs earn their financial aid dollars while enrolled. If a student withdraws prior to completing 60% of a term, a prorated portion of the federal financial aid dollars must be considered unearned and returned to the federal programs and could cause students to owe the University a significant amount upon withdrawal.

In addition to the amount of federal aid that Clemson must return, students who received financial aid for other educational costs, including off-campus living expenses, may be required to repay a portion of those funds to the federal programs. Failure to return aid owed to the federal aid programs may result in loss of eligibility for federal aid assistance.

Federal aid funds to be returned are distributed to the programs in the following order:
- Unsubsidized Federal Stafford Loan
- Subsidized Federal Stafford Loan
- Federal Perkins Loan
- Federal Plus Loan
- Federal Pell Grant
- Federal SEOG
- Other Title IV Programs
- Non-Title IV Programs

After the refund has been applied to the Title IV and non-Title IV programs, any refund balance will be refunded to the student.

If debts were incurred before withdrawing, such as bad checks, unpaid traffic or library fines, etc., the refund will cover these obligations first. Academic fees, housing, and meal-plan refunds for students withdrawing will be paid to the student.

RESIDENT TUITION AND FEES

Application for Resident Status

Any undergraduate student or prospective student whose status concerning entitlement to payment of in-state tuition and fees is uncertain has the responsibility of securing a ruling from the University by providing all relevant information on special application forms. These forms can be obtained from the Student Financial Aid Office, G-01 Sikes Hall, and are to be completed and returned to that office at least two weeks prior to registration for any semester or summer term for which the student is attempting to qualify for payment of the in-state tuition and fee rate.

Entitlement

Eligibility for payment of in-state tuition and fees shall be determined under the provisions of Sections 59-112-10 through 59-112-100, South Carolina Code of Laws, 1976, as amended. This law is set forth in its entirety as follows (subject to further amendment by the General Assembly).

Statutes

59-112-10—Definitions. As used in this chapter:
A. The words “State Institution” shall mean those post-secondary educational institutions under the jurisdiction of the following:
(1) Board of Trustees, Clemson University;
(2) Board of Trustees, Medical University of South Carolina;
(3) Board of Trustees, South Carolina State College;
(4) State College Board of Trustees;
(5) Board of Visitors, The Citadel;
(6) Board of Trustees, University of South Carolina;
(7) Board of Trustees, Winthrop College; and
(8) State Board of Technical and Comprehensive Education.
B. The word “student” shall mean any person enrolled for studies in any state institution.
C. The word “residence” or “reside” shall mean continuous and permanent physical presence within this State, provided, that temporary absences for short periods of time shall not affect the establishment of a residence.
D. The word “domicile” shall mean a person’s true, fixed, principal residence and place of habitation; it shall indicate the place where such person intends to remain, and to which such person expects to return upon leaving without establishing a new domicile in another state. For purposes of this section one may have only one legal domicile; one is presumed to abandon automatically an old domicile upon establishing a new one. Housing provided on an academic session basis for students at State institutions shall be presumed not to be a place of principal residence, as residency in such housing is by nature temporary.
E. The words “in-state rates” shall mean charges for tuition and fees established by State Institutions for persons who are domiciled in South Carolina in accordance with this act; the words “out-of-state rates” shall mean charges for tuition and fees established by State Institutions for persons who are not domiciled in South Carolina in accordance with this act.
F. The words “independent person” shall mean a person in his majority, or an emancipated minor, whose predominant source of income is his own earnings or income from employment, investments, or payments from trusts, gifts, scholarships, loans, or payments of alimony or separate maintenance, made pursuant to court order.
G. The words “dependent” or “dependent person” mean: (1) one whose financial support is provided not through his own earnings or entitlements, but whose predominant source of income or support is payments from a parent, spouse, or guardian, and who qualifies as a dependent or an exemption on the federal tax return of the parent, spouse, or guardian; or (2) one for whom payments are made, under court order, for child support and the cost of his college education by an independent person meeting the provisions of Section 59-112-20 A or B. However, the words “dependent” or “dependent person” do not include a spouse or former spouse who is the recipient of alimony or separate maintenance payments made pursuant to court order.

H. The word “minor” shall mean a person who has not attained the age of eighteen years; and the words “emancipated minor” shall mean a minor whose parents have entirely surrendered the right to the care, custody and earnings of such minor and are no longer under any legal obligation to support or maintain such minor.
I. The word “parent” shall mean a person’s natural or adoptive father or mother; or if one parent has custody of the child, the parent having custody; or if there is a guardian or other legal custodian of such person, then such guardian or legal custodian; provided, however, that where circumstances indicate that such guardianship or custodianship was created primarily for the purpose of conferring South Carolina eligibility for tuition and fee purposes on such child or dependent person, it shall not be given such effect.
J. The word “spouse” shall mean the husband or wife of a married person.

59-112-20—South Carolina Domicile Defined for Purposes of Rates of Tuition and Fees. South Carolina Domicile for tuition and fee purposes shall be established as follows in determinations of rates of tuition and fees to be paid by students entering or attending State Institutions:
A. Independent persons who reside in and have been domiciled in South Carolina for a period of no less than twelve months with an intention of making a permanent home herein, and their dependents, may be considered eligible for in-state rates.
B. Independent persons who reside in and have been domiciled in South Carolina for fewer than twelve months, but who have full-time employment in the State, and their dependents, may be considered eligible for in-state rates for as long as such independent person is employed on a full-time basis in the State.
C. Where an independent person meeting the provisions of Section 59-112-20 B above, is living apart from his spouse, or where such person and his spouse are separated or divorced, the spouse and dependents of such independent person shall have domiciliary status for tuition and fee purposes only under the following circumstances: (1) if the spouse requesting domiciliary status for tuition and fee purposes remains domiciled in South Carolina although living apart or separated from his or her employed spouse, (2) if the dependent requesting domiciliary status for tuition and fee purposes is under the legal custody or guardianship, as defined in Section 59-112-101 above, of an independent person who is domiciled in this State; or if such dependent is claimed as an income tax exemption by the parent not having legal custody but paying child support, so long as either parent remains domiciled in South Carolina.
D. The residence and domicile of a dependent minor shall be presumed to be that of the parent of such dependent minor.

59-112-30—Effect of Change of Residency. When the domicile of a student or of the person
59-112-90—Penalties for Willful Misrepresentation. Where it appears to the satisfaction of officials charged with administration of these provisions that a person has gained domiciliary status improperly by making or presenting willful misrepresentations of fact, such persons should be charged tuition and fees past due and unpaid at the out-of-state rate, plus interest at a rate of eight percent per annum, plus a penalty amounting to twenty-five percent of the out-of-state rate for one semester; and until these charges have been paid no such student shall be allowed to receive transcripts or graduate from any State Institution.

59-112-100—Regulations. The Commission on Higher Education may prescribe uniform regulations for application of the provisions of this act and may provide for annual review of such regulations.

ARTICLE V
Determination of Rates of Tuition and Fees

(Statutory Authority: 1976 Code Sections 59-112-10 to 59-112-100)

62-600—Rates of Tuition and Fees.

A. Resident classification is an essential part of fee determination, admission regulations, scholarship eligibility, and other relevant policies of the state. It is important that such institutions have fair and equitable regulations which can be administered consistently and are sensitive to the interests of both students and the State. The Commission on Higher Education hereby establishes regulations for the Statute Governing Residence and Tuition for Fee Purposes to be applied consistently by all South Carolina institutions of higher education.

These regulations do not address residency matters relating to in-county categories used within the State's technical colleges.

B. Institutions of higher education are required by the Statute to determine the residence classification of applicants. The initial determination of one's resident status is made at the time of admission. The determination made at that time, and any determination made thereafter prevails for each subsequent semester until information becomes available that would impact the existing residence status and the determination is successfully challenged. The burden of proof rests with the student to show evidence as deemed necessary to establish and maintain their residency status.


Rules regarding the establishment of legal residence for tuition and fee purposes for institutions of higher education are governed by Title 59, Chapter 112 of the 1976 South Carolina Code of Laws, as amended.

62-602—Definitions. [SC ADX 62-602]

A. "Academic Session" is defined as a term or semester of enrollment. (62-607.B)

B. "Continue to be Enrolled" is defined as continuous enrollment without an interruption that would require the student to pursue a formal process of readmission to that institution. Formal petitions or applications for change of degree level shall be considered readmissions. (62-607.A)

C. "Dependent Person" is defined as one whose predominant source of income is support from payments from a parent, spouse, or guardian and who qualifies as a dependent or exemption on the federal income tax return of the parent, spouse, or guardian. A dependent person is also one for whom payments are made, under court order, for child support and the cost of the dependent person's college education. A dependent person's residency is based upon the residency of the person whom they are dependent. (62-602.G) (62-602.N) (62-603.B) (62-605.C) (62-607.A)

D. "Domicile" is defined as the true, fixed, principal residence and place of habitation. It shall indicate the place where a person intends to remain, or to where one expects to return upon leaving without establishing a new domicile in another state. For purposes of this section, one may have only one legal domicile. One is presumed to abandon automatically an old domicile upon establishing a new one. Housing provided on an academic session basis for student at institutions shall be presumed not to be a place of principal residence, as residency in such housing is by its nature temporary. (62-602.E) (62-602.K) (62-602.M) (62-603.A) (62-605.B) (62-605.C) (62-607.A) (62-607.B) (62-608.A) (62-608.C) (62-608.D) (62-608.A.3) (62-609.A)

E. "Family's Domicile in this State is Terminated" is defined as an employer-directed transfer of the person upon whom the student is dependent and is not construed to mean a voluntary change in domicile. Also included is a relocation of the person upon whom the student is dependent who is laid off through no fault of his own (e.g., plant closure, downsizing, etc.) who accepts employment in another state prior to relocating. (62-607.A)

F. "Full-time employment" is defined as employment that consists of at least thirty-seven and one-half hours a week on a single job in a full-time status. However, a person who works less than thirty-seven and one-half hours a week but receives or is entitled to receive full-time employee benefits shall be considered to be employed full-time if such status is verified by the employer. A person who meets the eligibility requirements of the Americans with Disabilities Act must satisfy their prescribed employment specifications in order to qualify as having full-time employment. (62-605.C.1) (62-609.A.2) (62-609.A.3)

G. "Guardian" is defined as one legally responsible for the care and management of the person or property of a minor child or one qualified to claim a dependent person based upon the five tests for dependency prescribed by the Internal Revenue Service; provided, however, that where circumstances indicate that such guardianship or custodianship was created primarily for the purpose of conferring South Carolina domicile for tuition and fee purposes on such child or dependent person, it shall not be given such effect. (62-602.C) (62-602.E) (62-602.I) (62-602.M) (62-603.B) (62-605.C)

H. "Immediately Prior" is defined as the period of time between the offer of admission and the first day of class of the term for which the offer was made, not to exceed one calendar year. (62-607.A)

I. "Independent Person" is defined as one in his/her majority (eighteen years of age or older) or an emancipated minor, whose predominant source of income is his/her own earnings or income from employment, investments, or payments from trusts, gifts, scholarships, commercial loans, or payments made in accordance with court order. An indepen-
dent person must provide more than half of his or her support during the twelve months immediately prior to the date that classes begin for the semester for which resident status is requested. An independent person cannot be claimed as a dependent or exemption on the federal tax return of his or her parent, spouse, or guardian for the year in which resident status is requested. (.62-602 N) (.62-603 A) (.62-605 C) (.62-607 B) (.62-608 B)

J. "Minor" is defined as a person who has not attained the age of eighteen years. An " emancipated minor" shall mean a minor whose parents have entirely surrendered the right to the care, custody and earnings of such minor and are no longer under any legal obligation to support or maintain such minor. (.62-602 G)

K. "Non-resident Alien" is defined as a person who is not a citizen or permanent resident of the United States. By virtue of their non-resident status "non-resident aliens" generally do not have the capacity to establish domicile in South Carolina. (.62-602 M) (.62-604 A)

L. "Parent" is defined as the father, mother, stepfather, stepmother, foster parent or parent of a legally adopted child. (.62-602 C) (.62-602 E) (.62-602 I) (.62-602 J) (.62-602 M) (.62-603 B) (.62-603 C) (.62-605 C)

M. "Reside" is defined as continuous and permanent physical presence within the State, provided that absences for short periods of time shall not affect the establishment of residence. Excluded are absences associated with requirements to complete a degree, absences for military training service, and like absences, provided South Carolina domicile is maintained. (.62-603 A) (.62-606 B) (.62-609 A) (.62-609 A 3) (.62-609 A 4) (.62-609 B)

N. "Resident" for tuition and fee purposes is defined as an independent person who has abandoned all prior domiciles and has been domiciled in South Carolina continuously for at least twelve months immediately preceding the first day of class of the term for which resident classification is sought and for whom there is an absence of domiciliary evidence in other states or countries, not withstanding other provisions of the statute. (.62-600 A) (.62-600 B) (.62-601) (.62-602 K) (.62-602 M) (.62-603 A) (.62-603 B) (.62-603 C) (.62-603 D) (.62-603 E) (.62-603 F) (.62-603 G) (.62-603 H) (.62-603 I) (.62-603 J) (.62-603 K) (.62-603 L) (.62-603 M) (.62-603 N) (.62-603 O) (.62-603 P) (.62-603 Q)


P. "Temporary Absence" is defined as a break in enrollment during a fall or spring semester (or its equivalent) during which a student is not registered for class. (.62-606 A)

Q. "Terminal Leave" is defined as a transition period following active employment and immediately preceding retirement (with a pension or annuity), during which the individual may use accumulated leave. (.62-609 A 4)

R. "United States Armed Forces" is defined as the United States Air Force, Army, Marine Corps, Navy, and Coast Guard. (.62-606 B) (.62-609 A 11)

62-603—Citizens and Permanent Residents. [SC ADC 62-603]

A. Independent persons who have physically resided and been domiciled in South Carolina for twelve continuous months immediately preceding the date the classes begin for the semester in which resident status is claimed may qualify to pay in-state tuition and fees. The twelve-month residency period starts when the independent person establishes the intent to become a South Carolina resident per section 62-605 entitled "Establishing the Requisite Intent to Become a South Carolina Domiciliary." Absences from the State during the twelve-month period may affect the establishment of permanent residence for tuition and fee purposes.

B. The resident status of a dependent person is based on the resident status of the person who provides more than half of the dependent person's support and claims or qualifies to claim the dependent person as a dependent for federal income tax purposes. Thus, the residence and domicile of a dependent person shall be presumed to be that of their parent, spouse, or guardian.

C. In the case of divorced or separated parents, the resident status of the dependent person may be based on the resident status of the parent who claims the dependent person as a dependent for tax purposes; or based on the resident status of the parent who has legal custody or legal joint custody of the dependent person; or based on the resident status of the person who makes payments under a court order for child support and at least the cost of his/her college tuition and fees.

62-604—Non-Residents, Non-Citizens, and Non-Permanent Residents. [SC ADC 62-604]

A. Except as otherwise specified in this section or as provided in section 62-609 (1) and (2), independent non-citizens and non-permanent residents of the United States will be assessed tuition and fees at the non-resident, out-of-state rate. Independent non-resident aliens, including refugees, asylees, and parolees may be entitled to resident, in-state classification once they have been awarded permanent resident status by the U.S. Department of Justice and meet all the statutory residency requirements provided that all other domiciliary requirements are met. Time spent living in South Carolina immediately prior to the awarding of permanent resident status does not count toward the twelve month residency period. Certain non-resident aliens present in the United States in specified visa classification are eligible to receive in-state residency status for tuition and fee purposes as prescribed by the Commission on Higher Education. They are not, however, eligible to receive state sponsored tuition assistance/scholarships.

B. Title 8 of the Code of Federal Regulations (CFR) serves as the primary resource for defining visa categories.

62-605—Establishing the Requisite Intent to Become a South Carolina Domiciliary. [SC ADC 62-605]

A. Resident status may not be acquired by an applicant or student while residing in South Carolina for the sole purpose of enrollment in an institution or for access to state-supported programs designed to serve South Carolina residents.

B. If a person asserts that his/her domicile has been established in this State, the individual has the burden of proof. Such persons should provide to the designated residency official of the institution to which they are applying any and all evidence the person believes satisfies the burden of proof. The residency official will consider any and all evidence provided concerning such claim of domicile, but will not necessarily regard any single item of evidence as conclusive evidence that domicile has been established.

C. For independent persons or the parent, spouse, or guardian of dependent persons, examples of intent to become a South Carolina resident may include, although any single indicator may not be conclusive, the following indica:

1. Statement of full-time employment;
2. Possession of a valid South Carolina voter registration card;
3. Designating South Carolina as state of legal residence on military record;
4. Possession of a valid South Carolina driver's license or, if a non-driver, a South Carolina identification card. Failure to obtain this within 90 days of the establishment of the intent to become a South Carolina resident will delay the beginning date of residency eligibility.
5. Possession of a valid South Carolina vehicle registration card. Failure to obtain this within 45 days of the establishment of the intent to become a South Carolina resident will delay the beginning date of residency eligibility.
6. Maintenance of domicile in South Carolina;
7. Paying South Carolina income taxes as a resident during the past tax year, including income earned outside of South Carolina from the date South Carolina domicile was claimed;
8. Ownership of principal residence in South Carolina; and
9. Licensing for professional practice (if applicable) in South Carolina.

D. The absence of indicia in other states or countries is required before the student is eligible to pay in-state rates.

62-606—Maintaining Residence. [SC ADC 62-606]

A. A person's temporary absence from the State does not necessarily constitute loss of South Carolina residence unless the person has acted in consistently with the claim of continued South Carolina residence during the person's absence from the State. The burden is on the person to show retention of South Carolina residence during the person's absence from the State. Steps a person should take to retain South Carolina resident status for tuition and fee purposes include:

1. Continuing to use a South Carolina permanent address on all records;
2. Retaining South Carolina voter's status;
3. Maintaining South Carolina driver's license;
4. Maintaining South Carolina vehicle registration;
5. Satisfying South Carolina resident income tax obligation. Individuals claiming permanent residence in South Carolina are liable for payment of income taxes on their total income from the date that they established South Carolina residence. This includes income earned in another state or country.
6. Active duty members of the United States Armed Forces and their dependents are eligible to pay in-state tuition and fees as long as they con-
continuously claim South Carolina as their state of legal residence during their military service. Documentation will be required in all cases to support this claim. South Carolina residents who change their state of legal residence while in the military lose their South Carolina resident status for tuition and fee purposes.

62-607—Effect of Change of Residence. [SC ADC 62-607]
A. Notwithstanding other provisions of this section, any dependent person of a legal resident of this state who has been domiciled with his/her family in South Carolina for a period of not less than three years and whose family’s domicile in this state is terminated immediately prior to his/her enrollment may enroll at the in-state rate. A student must continue to be enrolled and registered for classes (excluding summers) in order to maintain eligibility to pay in-state rates in subsequent semesters. Transfers within or between South Carolina colleges and universities of a student seeking a certificate, diploma, associate, baccalaureate, or graduate level degree does not constitute a break in enrollment.
B. If a dependent or independent person has been domiciled in South Carolina for less than three years, eligibility for in-state rates shall end on the last day of the academic session during which domicile is lost. Application of this provision shall be at the discretion of the institution involved. However, a student must continue to be enrolled and registered for classes (excluding summers) in order to maintain eligibility to pay in-state rates in subsequent semesters.

62-608—Effect of Marriage. [SC ADC 62-608]
A. In ascertaining domicile of a married person, irrespective of gender, such a review shall be determined just as for an unmarried person by reference to all relevant evidence of domiciliary intent.
B. If a non-resident marries a South Carolina resident, the non-resident does not automatically acquire South Carolina resident status. The non-resident may acquire South Carolina resident status if the South Carolina resident is an independent person and the non-resident is a dependent of the South Carolina resident.
C. Marriage to a person domiciled outside South Carolina shall not be the sole reason for precluding a person from establishing or maintaining domicile in South Carolina and subsequently becoming eligible or continuing to be eligible for residency.
D. No person shall be deemed solely by reason of marriage to a person domiciled in South Carolina to have established or maintained domicile in South Carolina and consequently to be eligible for or to retain eligibility for South Carolina residency.

62-609—Exceptions. [SC ADC 62-609]
A. Persons in the following categories qualify to pay in-state tuition and fees without having to establish a permanent home in the state for twelve months. Persons who qualify under any of these categories must meet the conditions of the specific category on or before the first day of class of the term for which payment of in-state tuition and fees is requested.
(1) “Military Personnel and their Dependents”. Members of the United States Armed Forces who are permanently assigned in South Carolina on active duty and their dependents are eligible to pay in-state tuition and fees. When such personnel are transferred from the State, their dependents may continue to pay in-state tuition and fees for an additional twelve months. Such persons (and their dependents) may also be eligible to pay in-state tuition and fees for a period of twelve months after their discharge from the military, provided they have demonstrated an intent to establish a permanent home in South Carolina and they have resided in South Carolina for a period of at least twelve months immediately preceding their discharge. Military personnel who are not stationed in South Carolina and/or former military personnel who intend to establish South Carolina residency must fulfill the twelve month “physical presence” requirement for them or their dependents to qualify to pay in-state tuition and fees.
(2) “Faculty and Administrative Employees with Full-Time Employment and their Dependents”. Full-time faculty and administrative employees of South Carolina state-supported colleges and universities and their dependents are eligible to pay in-state tuition and fees.
(3) “Residents with Full-Time Employment and their Dependents.” Persons who reside, are domiciled, and are full-time employed in the State and who continue to work full-time until they meet the twelve-month requirement and their dependents are eligible to pay in-state tuition and fees, provided that they have taken steps to establish a permanent home in the State. Steps an independent person must take to establish residency in South Carolina are listed in section 62-605 entitled (“Establishing the Requisite Intent to Become a South Carolina Domiciliary”).
(4) “Retired Persons and their Dependents.” Retired persons who are receiving a pension or annuity who reside in South Carolina and have been domiciled in South Carolina as prescribed in the Statute for less than a year may be eligible for in-state rates if they maintain residence and domicile in this State. Persons on terminal leave who have established residency in South Carolina may be eligible for in-state rates even if domiciled in the State for less than one year if they present documentary evidence from their employer showing they are on terminal leave. The evidence should show beginning and ending dates for the terminal leave period and that the person will receive a pension or annuity when he/she retires.

62-610—Application for Change of Resident Status. [SC ADC 62-610]
A. Persons applying for a change of resident classification must complete a residency application/petition and provide supporting documentation prior to a reclassification deadline as established by the institution.
B. The burden of proof rests with those persons applying for a change of resident classification who must show required evidence to document the change in resident status.

62-611—Incorrect Classification. [SC ADC 62-611]
A. Persons incorrectly classified as residents are subject to reclassification and to payment of all non-resident tuition and fees not paid. If incorrect classification results from false or concealed facts, such persons may be charged tuition and fees past due and unpaid at the out-of-state rate. The violator may also be subject to administrative, civil, and financial penalties. Until these charges are paid, such persons will not be allowed to receive transcripts, or graduate from a South Carolina institution.
B. Residents whose resident status changes are responsible for notifying the Residency Official of the institution attended of such changes.

62-612—Inquiries and Appeals. [SC ADC 62-612]
A. Inquiries regarding residency requirements and determinations should be directed to the institutional residency official.
B. Each institution will develop an appeals process to accommodate persons wishing to appeal residency determinations made by the institution’s residency official. Neither the primary residency official nor appellate official(s) may waive the provisions of the Statute or regulation governing residency for tuition and fee purposes.

Appeals should be sent to the Student Financial Aid Office, G-01 Sikes Hall.

DINING SERVICES
The University provides a variety of meal plans to meet student needs. The meal plan dining halls, Harcombe and Schillite, are on opposite sides of the campus and feature an unlimited seconds policy on most entrees. Students may use their meal card for pre-designated meals at the Clemson House.

Meals may also be purchased on a cash basis or using a Tiger Stripe account. Meal plans become effective when University housing is opened for occupancy at the beginning of each semester and expire after the evening meal on the day of graduation at the end of each semester. Meal plans are not effective during official University breaks.

The Eastside Food Court, the Canteen, Java City Cyber Café, and Fernow Street Café provide a wide assortment of dining selections on an ala carte, cash, credit/debit cards, or Tiger 1 Card basis. Nationally branded food concepts are available in retail dining facilities on campus. Burger King and Li’l Dino Subs can be found in the Eastside Food Court; Chick-fil-A is located at the Union Canteen; and Pizza Hut Express is available in the Fernow Street Café. All retail dining facilities accept cash, credit/debit cards, or the Tiger 1 Card.

All first-year freshmen who live in University housing, excluding apartments with kitchens, are required to subscribe to one of the following meal plans for their first two semesters: Any Ten, Plus Any Ten, Any 15, Plus Any 15, Seven Day (Unlimited Access), or Plus Unlimited Access. All other students may choose a meal plan on a semester basis or pay for individual meals. First-year freshmen living in University housing (excluding the aforementioned housing) may terminate their meal plan for one of the following reasons:
• withdrawal from the University
• change in housing assignment to an apartment with kitchen facilities
• medical condition with dietary requirements that cannot be met by Dining Services. Documentation from a medical doctor must be provided along with specific dietary requirements. This documentation will be reviewed by the Dining Services Food Service Administrator
• other circumstances determined by the University to be beyond the student’s control

Freshmen students must provide the necessary documentation for any of the above reasons before cancellation of their meal plan will be considered. Upperclassmen may terminate their meal plan for any reason. Failure to participate in a meal plan does not automatically release a student from the freshman requirement to subscribe to a meal plan.

Students may change meal plans at the Tiger 1 Card Office, located in 504 Fike Recreation Center, on Mondays only. Students may change meal plans at the billing of spring and fall semester fees with no service charge or after the first two weeks and prior to the last six weeks of the semester by paying a $35 service charge. All adjustments will be prorated, except for students withdrawing from the University. Students may upgrade meal plans during the registration period.

Meal plans cancelled for any reason after service of the first meal will result in a refund of advance payment, minus a $35 termination charge, and a weekly charge for meals available. The meals available charge applies to the meals that have been served, not those that have been eaten by the individual student. The Paw Points which are associated with the Plus plans are not refundable; however, they do carry forward to the next semester. No changes, meal plan cancellations, or refunds will be made during the last six weeks of a semester. Requests for refunds may be made at the Tiger 1 Card Office. Students will be responsible for all service charges related to changes or termination of a meal plan.

TIGER STRIPE ACCOUNT

The Tiger Stripe account is equivalent to a prepaid debit card. Under the Tiger Stripe account program, funds are deposited into the account along with payment of fees through TigerLine (864-656-8447). As items are purchased from over 200 locations that accept Tiger Stripe, the amount spent is deducted from the Tiger Stripe account balance. All students are eligible. Additional funds may be added to the account via the Tiger 1 Card Office on the Web at www.tiger1.clemson.edu. Students may also pay in person at the Tiger 1 Card Office with cash, check, or credit card; or they may call 864-656-0763 to pay with Visa, MasterCard, or Discover. Office hours are Monday–Friday, 8:00 A.M.–4:30 P.M.

Tiger Stripe accounts are non-refundable except for students withdrawing, graduating, or not returning to the University. Tiger Stripe cannot be used for the payment of tuition. Transactions are limited to $250 per day in the University Revenue and Receivables Office for the payment of incidental fees. Credit balances at the end of each semester will carry forward to the next term. (Students withdrawing must go to E-108 Martin Hall. Balances greater than $5 will be refunded.) Any indebtedness to the University will be deducted from refunds. All graduating students will be required to request a refund at the Tiger 1 Card Office two weeks prior to graduation. Any account that remains dormant for 18 months or longer will have the balance transferred to a University scholarship account. For more information, call 864-656-0763 or e-mail tiger1@clemson.edu.

Additional information is available on the Web at www.tiger1.clemson.edu.

FINANCIAL AID

The Office of Student Financial Aid administers and coordinates various types of undergraduate financial aid administered by Clemson University: scholarships, loans, grants, and work-study employment. The office works jointly with the University Scholarships and Awards Committee.

Students may apply after January 1 for financial assistance for the next academic year. Financial aid requests, based on financial need, must be supported by a processed Free Application for Federal Student Aid (FAFSA) and renewed annually. No application is required for the LIFE Scholarship.

The FAFSA must be submitted by February 15 for need-based scholarship consideration and by April 1 for the Federal Supplemental Educational Opportunity Grant (FSEOG), Federal Work-Study, Federal Perkins Loan, South Carolina State Need-Based Grant, and Clemson Community Service Grant. April 1 is the suggested deadline for application for the Federal Pell Grant, Federal Stafford Loan, Federal PLUS Loan, and private/alternative loans. PLUS and private loans require a separate application.

Transfer students applying for student loans will be considered as entering freshmen in determining maximum loan limits. Following enrollment, after the credit evaluation process has been completed, students may submit a request for additional funds due to changes in class standing.

Information regarding financial aid programs at Clemson University is available from the Student Financial Aid Office, G-01 Sikes Hall, Box 345123, Clemson, SC 29634-5123, or on the Web at www.clemson.edu/finaid.

Satisfactory Academic Progress for Financial Aid Eligibility

Students must maintain satisfactory academic progress to be eligible for financial aid. This policy contains both qualitative (grade-point ratio) and quantitative (credit hours completed) requirements. Students must meet the grade-point ratio requirement as stated under the Continuing Enrollment Policy. Students must also complete 12, 9, or 6 hours per semester according to their enrollment (full time, ¾ time, or ½ time) as of the last day to add a class. Students have a maximum of 12 full-time semesters in which to finish their degrees, or the equivalent in part-time enrollment. Duplicate credits, including courses repeated for Academic Redemption, do not count as credits completed for satisfactory academic progress. Details are available in the publication Financing Your Clemson University Education. Students wishing to appeal their academic progress status may submit a letter to the Student Financial Aid Office. This appeals process is separate from the Appeals Committee on Continuing Enrollment. Students returning under the academic renewal policy who apply for financial aid should also submit a letter to the Student Financial Aid Office to update their academic progress record. Prior terms will be counted in the 12 semesters allowed for satisfactory academic progress.

Educational Benefits for Veterans, War Orphans, and Children of Deceased or Disabled Law Enforcement Officers or Fire Fighters

The Veterans Administration provides educational assistance for veterans and children of deceased or totally disabled veterans who meet requirements of applicable laws and regulations. Any veteran or child of a deceased or totally disabled veteran should communicate with the nearest Veterans Administration Office to determine whether he/she is entitled to any educational benefits. Free tuition is available to children of South Carolina law enforcement officers or fire fighters who were totally disabled or killed in the line of duty. Certification is required from the agency of the parent's employment. Upon presentation of proof of eligibility, a student shall not become eligible for educational assistance until the beginning of the academic term.

Financial Information
STUDENT SERVICES

HOUSING

Single Student Housing

University Housing provides a "home away from home" for approximately 6,500 single students in 17 residence halls, four apartment complexes, and the Clemson House. Most rooms are double occupancy with a limited number of single rooms available. Most two-bedroom apartments accommodate four students. All University housing is equipped to meet the needs of today's college student. Approximately two weeks after acceptance to the University, housing information will be mailed to students. A signed housing contract, room preference card, and a $35 nonrefundable application fee should be returned to the Housing Office to reserve a space. For incoming freshmen or transfer students, the standard way to apply for on-campus housing is on the Web at www.housing.clemson.edu/apply. Transfer students and former students returning are offered on-campus housing if space is available.

REDFERN HEALTH CENTER

Medical Services

Redfern Health Center, an outpatient facility, operates Monday–Friday, 8:00 A.M.–5:00 P.M. (summer hours, 8:00 A.M.–4:30 P.M.). Students are seen on an appointment basis or without appointments in the Nurses Clinic. The student health center offers outpatient ambulatory care for illnesses and injuries, pharmacy, lab, x-ray, and specialty clinics including women's health and allergy/immunization clinics.

A completed medical clearance form is required of all students entering the University for the first time. Documentation of two red measles (rubella) vaccines since the student's first birthday is required. Students born before January 1, 1957, are exempt from the measles requirements. A tuberculin skin test (PPD) is required only for students coming from countries identified by the U.S. Centers for Disease Control (CDC) as a high risk for tuberculosis. Students will be screened upon their arrival at Clemson. Students with a history of a positive skin test are required to have a chest x-ray within the year prior to admission. Students not in compliance with immunization requirements will not be allowed to complete registration for the next semester.

After Hours

Emergency 911 services are available after hours. Students with questions about their health care needs should call the NurseLine at 1-888-525-1333. A registered nurse is available by telephone to answer questions and offer advice about health care needs.

Students requiring the care of a physician after hours choose from area emergency rooms and urgent care facilities including Clemson Health Center (an urgent care facility), Oconee Memorial Hospital, Anderson Area Medical Center, Palmetto Baptist Medical Center, and Greenville Memorial Medical Center. Medical costs incurred are the student's responsibility. Students should contact Redfern Health Center for nonemergency care.

The University ambulances transport on-campus medical emergencies to the closest community medical resource. The University ambulance is staffed with licensed emergency medical personnel 24 hours a day. Students are required to pay for off-campus ambulance transportation except for those medical resources within the city of Clemson for after-hours urgent care.

Counseling and Psychological Services (CAPS)

CAPS provides mental health services for a variety of issues including stress management, depression, anxiety, eating disorders, substance abuse and addictions, relationship violence, as well as others. All services are confidential. Services and charges not covered by the health fee are discussed before services are provided. Regular appointments may be made by calling the CAPS appointment line at 656-2451.

CAPS offers a walk-in clinic from 10:00 A.M.–3:00 P.M. so that students can see a counselor as soon as possible. Students are seen on a first-come, first-served basis.

CAPS provides group, individual, and couples counseling and psychotherapy to students. Students who pay the health fee are allowed ten counseling sessions per semester at no charge. Mental health crisis assistance and consultation are available 24 hours a day by calling 656-2451 during regular hours. After hours and on weekends, the on-call counselor can be reached through the University police at 656-2222.

CAPS Lifestyle Substance Abuse Services are designed to address the special needs of students and to offer early intervention before alcohol or substance abuse becomes a life-long problem. More information is available by calling 656-2451.

Psycho-education evaluations for learning and attention difficulties are available for a charge through CAPS.

Health Education/Alcohol and Drug Education

The Office of Health Education reaches out to the entire campus community and encourages the adoption of healthy lifestyles, general positive attitudes, and the modification of risky health behaviors. In addition, the office selects and trains student peer educators to become healthy role models on campus, engages fellow students in peer counseling, gives presentations on health issues relevant to college students, and collects and disseminates information about current health topics to the whole community. The Health Education program covers topics such as alcohol and other drug issues, HIV/AIDS awareness and prevention, sexual health and responsibility, dating violence, healthy sleep lifestyles, nutrition, stress management, and tobacco cessation efforts, among other topics.

Financial Considerations

Health Fee—University policy requires that all students registered for seven or more credit hours on campus during the fall or spring semester or three or more on-campus credit hours during a summer session pay the University health fee. The health fee provides access to the professional services of University physicians, nurse practitioners, counselors, and health educators at no additional cost; reduced costs for medical diagnostics; and an after-hours urgent care excess insurance benefit. Students pay for pharmaceuticals, orthopedic equipment, specialty clinics, and psychological testing. Payment is expected at the time of service and may be made by cash, check, MasterCard, Visa, or Tiger Stripe.

Health Insurance—The University offers an accident and sickness insurance plan to help cover major medical expenses. Information is available on the Web at www.studentinsurance.com. Students are strongly encouraged to have comprehensive health insurance coverage during their tenure at the University.

ACADEMIC SUPPORT CENTER

The Academic Support Center (ASC) provides comprehensive academic support programs and services that enhance students' learning potential, thereby promoting academic success and personal growth. The ASC provides a nurturing environment in which students are better able to learn how to learn as well as enhance their collegiate experiences. The Center serves as a catalyst to help achieve University goals by promoting high graduation rates, promoting excellence in advising, providing support systems to all students, and increasing freshmen retention. The ASC offers the following programs and services to all students at no charge:

Supplemental Instruction (SI) allows students enrolled in at-risk courses to work in a study group setting with peer leaders who have successfully completed the course and who have been trained to facilitate SI help sessions.

Course specific tutoring is offered each week, Sunday through Thursday, in a group setting on a walk-in basis.

Academic Skills Workshops are held throughout the academic year to enhance the learning experience and build academic skills.

One-on-one academic counseling sessions help students evaluate their study skills and develop strategies for academic success.

The ASC offers C U 101 (University Success Skills), a two-credit-hour course to assist freshmen and first-semester transfer students with developing academic and intellectual competence, exploring educational and career opportunities, establishing and maintaining interpersonal relationships, and becoming members of the Clemson Family.

The Freshman Academic Success Program (FASP) is an early alert, early warning program for freshmen who pay the health fee provides access to the professional services of University physicians, nurse practitioners, counselors, and health educators at no additional cost; reduced costs for medical diagnostics; and an after-hours urgent care excess insurance benefit. Students pay for pharmaceuticals, orthopedic equipment, specialty clinics, and psychological testing. Payment is expected at the time of service and may be made by cash, check, MasterCard, Visa, or Tiger Stripe.

Health Insurance—The University offers an accident and sickness insurance plan to help cover major medical expenses. Information is available on the Web at www.studentinsurance.com. Students are strongly encouraged to have comprehensive health insurance coverage during their tenure at the University.
The Early Success Program (ESP) is a year-long program to enhance the academic and personal success of special admission students.

Student Disability Services coordinates the provision of reasonable accommodations for students with documented disabilities.

**CAREER SERVICES**

Clemson's Michelin® Career Center offers a variety of services. Students benefit from consulting with career counselors and career library resources in choosing a major, exploring careers, and networking for part-time jobs, internships, or full-time positions. Assistance with applying to graduate and professional schools is also available.

The Career Center offers 0-credit-hour internships courses (CCINT) for students in majors that do not offer internship credit by their departments. Students can participate in either a part-time internship course or a full-time internship course. The Career Center also offers career assessments for students who are undecided about major or career direction, individual résumé and cover letter critiques, mock interviews, job search assistance, job outlook, and salary information. In addition, students can utilize CareerNet, an on-line recruiting system, to view part-time jobs, internships, full-time job positions, post résumés and to sign up for on-campus interviews.

Major events sponsored by the Career Center include a fall and spring Career Fair, Graduate and Professional School Day, and University Placement/Recruitment for Educators Program (UPREP) Teacher Fair.

Information is available from the Career Center in 316 Hendrix Center, by calling 656-6000, or on the Web at career.clemson.edu.

**DISABILITY SERVICES**

Student Disability Services coordinates the provision of reasonable accommodations for students with physical, emotional, or learning disabilities. Accommodations are individualized, flexible, and confidential based on the nature of the disability and the academic environment in compliance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990.

Students are encouraged to consult with the Disability Services staff early in the semester, preferably prior to the first day of class. Current documentation of a specific disability from a licensed professional is needed. For additional information or an appointment, contact Student Disability Services, G-23 Redfern Health Center at 656-6848. Details on policies and procedures are available on the Web at www.clemson.edu/asc.
ACADEMIC REGULATIONS

Academic regulations can be found on the Web at www.registrar.clemson.edu.

Proper discharge of all duties is required at Clemson University, and a student's first duty is his/her scholastic work. All students should be thoroughly acquainted with these basic requirements.

CREDIT SYSTEM

The semester hour is the basis of all credits. Generally, one recitation hour or two-three laboratory hours a week for a semester constitute a semester hour. Thus, in HIST 172 Western Civilization 3(3,0), as this subject is listed in the Courses of Instruction section of this catalog, the student takes three semester hours. When the course is completed satisfactorily, three credit hours are entered on the student's record. The notation "3(3,0)" means that the course carries three credits, has three clock hours of theory or recitation per week, and no laboratory hours. CH 101 General Chemistry 4(3,3) carries four semester hours, has three hours of theory and a three-hour laboratory period.

Credit Load

Except for an entering freshman who is restricted to the curriculum requirements of his/her major, the credit load for an undergraduate must be approved by the class advisor. The class advisor will approve a credit load deemed in the best interest of the student based on such factors as course requirements, grade-point ratio, participation in other activities, and expected date of graduation.

For fall and spring semesters, the maximum number of hours in which a student may enroll is 21, and 15 hours is the maximum credit load for those on probation. Permission of the student's academic advisor is required for all registration in more than 21 hours, or 15 hours for those on probation. Enrollment in summer is limited to three credit hours in Maymester, seven credit hours in first summer session, and seven credit hours in second summer session. Enrollment in additional credit hours must be approved by the student's academic advisor.

Students are not permitted to enroll in courses with overlapping class times.

Full-Time Enrollment

In fall and spring semesters, enrollment in 12 or more credit hours is considered full time. Combined enrollment in 12 or more hours in Maymester and first and second summer terms is considered full time for the summer. Enrollment in fewer than 12 credit hours is part time.

Advanced Placement and Credit by Examination

In addition to earning credit by the usual method involving classroom attendance, a student may receive credit toward his/her degree by completing a course successfully by examination only. Freshmen interested in exempting some elementary courses in this manner should participate in the College Board Advanced Placement Examination program and have the results of these tests sent to Clemson.

Certain departments will also grant credit for successful completion of College-Level Examination Program (CLEP) subject examinations which are administered by the College Board.

Enrolled students may earn credit by means of a special examination without the necessity of class attendance subject to the following requirements:

1. The applicant must present evidence that he/she has received training or taken work which is approximately equivalent to that given in the course at Clemson for which an examination is requested.

2. The applicant must not have previously failed or audited the course at Clemson.

3. The applicant must apply in writing for the examination, the request must be approved by the instructor, chair of the department in which the course is taught, and the Enrolled Student Services Office. Application forms are available in the Enrolled Student Services Office, 104 Sikes Hall.

Credit (CR) will be awarded for acceptable work in lieu of letter grades in recognition of college-level achievement as determined by College Board Advanced Placement Examination, International Baccalaureate Program, College-Level Examination Program subject examination, institutional special examinations, and similar instruments.

Transfer Credit

For Clemson students, coursework completed with a grade of C or better at other regionally accredited institutions, including correspondence courses, telecourses, and appropriate exemption credit, will be evaluated for transfer in terms of equivalent courses included in the Clemson curriculum of the student's choice. This does not guarantee that all courses taken at other institutions will be accepted for transfer. The acceptability of each course or exemption will be based on an evaluation by the faculty concerned. Coursework earned at different institutions will not be joined to equate with one Clemson course. No course taken at a nonbaccalaureate-degree granting institution may be used as an equivalent or substitute for any 300- or 400-level Clemson course. Relative to continuing enrollment, graduation, and transcripts, only grades earned at Clemson are used in computing the student's grade-point ratio. Grades earned in qualifying transfer courses will be used in calculating the student's grade-point ratio for the South Carolina Life Scholarship awards.

Learning experiences including, but not limited to, military service schools, non-collegiate sponsored instruction, work related experiences, etc. will not be evaluated for transfer; however, enrolled students may request credit by examination for any non-transferable learning experience. For additional information, see Advanced Placement and Credit by Examination above.

The student should obtain approval of each course prior to scheduling the class. By obtaining advance approval, the student is assured of receiving proper credit at Clemson upon satisfactory completion of the course. Information and forms relative to this approval may be obtained in the Enrolled Student Services Office, 104 Sikes Hall.

Learning Experiences

All "for credit" learning experiences conducted with organizations other than accredited higher education institutions must be regularly supervised by appropriate members of the Clemson University faculty or staff. The student must be enrolled at the time the credit is generated, and the level of credit (grade) is the responsibility of the faculty member(s) in the discipline from which the grade originates.

External Education Experiences

In all "for credit" external educational programs which Clemson University may have with professional, vocational, technical, clinical, and foreign study, the agreements are to be agreed to through signature of the Provost and the President. In such cases, learning experiences for which credit is awarded must be under the ultimate control and supervision of Clemson University.

GRADING SYSTEM

The grading system is as follows:

A—Excellent indicates work of a very high character, the highest grade given.

B—Good indicates work that is definitely above average, though not of the highest quality.

C—Fair indicates work of average or medium character.

D—Pass indicates work below average and unsatisfactory, the lowest passing grade.

F—Failed indicates that the student knows so little of the subject that it must be repeated in order that credit can be received.

I—Incomplete indicates that a relatively small part of the semester's work remains undone. Grade I is not given a student who made a grade F on his/her daily work. The incomplete grade is calculated as an F in the student's grade-point ratio until the work is made up and a final grade is assigned. Students are allowed thirty days after the beginning of the next scheduled session, excluding summers and regardless of the student's enrollment status, to remove the incomplete grade. Normally, only one extension for each I may be granted, and this under unusual circumstances. The extension must be approved in writing by the instructor of the course and the chair of the department in which the course was taken. The extension will indicate the nature and amount of work to be completed and the time limit. (Students under this policy are prohibited from removing the I by repeating the course.) A letter grade of I converts to F unless the incomplete is removed within the time specified.

W—Withdraw indicates that the student withdrew from the course or was withdrawn by the instructor after the first two weeks of classwork and prior to the last seven weeks of classes, not including the examination period. Proportionate time periods apply during summer and other shortened sessions. Each undergraduate student is allowed to withdraw or be withdrawn with a grade of W from no more than 17
hours of coursework during the entire academic career at Clemson University. Transfer students may withdraw from no more than 12 percent of the total work remaining to be done in the chosen undergraduate curriculum at the time of transfer to Clemson University up to a total of 17 hours of coursework, whichever is fewer. Partial credit for courses cannot be dropped. A student who exceeds these limits of hours or who is enrolled during any part of the last seven weeks of classes shall have final grades recorded. A student may withdraw from the University subject to the restrictions above. Additionally, pending approval from the provost or the provost’s designee, students may withdraw from Clemson University one time only during their academic careers prior to the final seven weeks of classes (proportionate time periods apply during summer and other shortened sessions), without reduction from their allotted W hours. Any variance from these restrictions must be approved by the provost or the provost’s designee and must be requested within 90 calendar days (exclusive of summer vacation) of the date of the last exam for the term. The student must document the circumstances supporting the request. For financial aid purposes, enrollment is defined and satisfactory academic progress levels are established as of the last day to register or add classes. Withdrawal can negatively impact financial aid eligibility if a student does not complete a sufficient number of hours. Details are available in the publication Finishing Your Clemson University Education.

**Grade-Point Ratio**

In calculating a student’s grade-point ratio, the total number of grade points accumulated by the student is divided by the total number of credit hours attempted at Clemson during the semester, session, or other period for which the grade-point ratio is calculated. For each credit hour, the student receives grade points as follows: A = 4, B = 3, C = 2, D = 1. No grade points are assigned for grades F, I, P, or W.

**Pass/Fail Option**

Juniors or Seniors enrolled in four-year curricula may take four courses (maximum of 15 credit hours), with not more than two courses in a given semester on a Pass/Fail basis. Transfer and five-year program students may take Pass/Fail courses on a pro rata basis. Only courses to be used as electives may be taken optionally as Pass/Fail.

Letter-graded courses which have been failed may not be repeated Pass/Fail.

Registration in Pass/Fail courses will be handled in the same manner as for regular enrollment. Departmental approval must be obtained via approval form and returned to the Registrar’s Office in accordance with the University calendar for adding courses. Instructors will submit letter grades to the Registration Services Office. These grades will be converted as follows: A, B, C to P (pass); D, F to F (fail). Only P (minimum letter grade of C) or F will be shown on a student’s permanent record and will not affect the grade-point ratio.

If a student changes to a major which requires a previously passed course, and this course has been taken Pass/Fail, he/she may request either to take the course on a letter-graded basis, the P be changed to C, or substitution of another course.

In the event limited enrollment in a class is necessary, priority will be given as follows: majors, letter-graded students, Pass/Fail students, and auditors.

**Dropping Classwork**

A subject dropped after the first two weeks of classwork and prior to the last seven weeks during the fall and spring semesters is recorded as W—Withdraw. Proportionate time periods apply during summer sessions.

**Mid-term Grades**

Once, near mid-term, but no later than two days before the last day students can drop courses without receiving final grades, instructors of every undergraduate course shall make available for each student (a) that student’s ranking to-date in that course or (b) that student’s course grade to-date, relative to the grading system stated in the course syllabus. More frequent feedback is strongly encouraged.

Both student and instructor are to recognize that this feedback reflects the student’s performance up to that point in time, and as such, that student’s final course grade may change based upon subsequent coursework performance(s).

The policy includes all undergraduate courses and applies to all terms, including Maymester and summer sessions.

**Final Examinations**

The standing of a student in his/her work at the end of a semester is based upon daily classwork, tests or other work, and final examinations. Faculty members may excuse from final examinations all students having the grade of A on the course work prior to the final examination. For all other students, written examinations are required in all subjects at the end of each semester, except in certain laboratory or practical courses in which final examinations are not deemed necessary by the department faculty.

Final examinations must be given on the dates and at the times designated in the final examination schedule.

**Grade Reports**

Students may use the Internet, telephone, or the campus computer network to access their end-of-term grades. Final grade reports are mailed to undergraduate students on academic probation and to other students upon request. Request forms are available in the Offices of Enrolled Student Services and Registration Services.

**Continuing Enrollment Policy**

At the end of any enrollment period, a notice of academic probation shall be placed on the grade report of an undergraduate student if his/her cumulative grade-point ratio is below 2.0, which is the minimum necessary for graduation.

In the event that a student is placed on academic probation, notification to that effect will be placed on the grade report for that session in which the student’s academic deficiency occurred and for each session the student remains on probation. The student who clears probation by returning to the graduating academic requirement (2.0) will have notice to that effect placed on the grade report for that session. No notation concerning probation is placed on the student’s permanent record.

A student on academic probation will be subject to suspension or dismissal at the end of the spring semester if his/her cumulative grade-point ratio is below the minimum cumulative grade-point ratio (MCGPR). Students entering Clemson University for the first time will not be subject to suspension or dismissal until they have attempted coursework at Clemson for two semesters, fall or spring, (not necessarily consecutive enrollment). The MCGPR is 2.0 for students with credit levels (CL) greater than or equal to 95 hours. For students with credit levels less than 95 hours, the MCGPR is given in the table below. CL in the table is the student’s credit level.

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The values in this table are based on the following formula: MCGPR = 2.25 x (CL/(CL + 12)).

In the event limited enrollment in a class is necessary, priority will be given as follows: majors, letter-graded students, Pass/Fail students, and auditors.

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Grade Protests

A student wishing to protest a final course grade must first try to resolve any disagreement with the instructor. If unable to reach a resolution, the student may follow the procedures listed under Academic Grievance Committee. Grievances must be filed within 90 calendar days (exclusive of summer vacation) of the date of the last exam for the term.

Repeating Courses Passed

A student may repeat a course passed with a grade lower than B. If the grade is a D and the student has sufficient W hours and sufficient Academic Redemption hours, the Academic Redemption Policy below will apply. Otherwise, both grades will be calculated in the grade-point ratio. In either case, credit for the course will be counted only once toward the number of hours required for graduation. For financial aid purposes, duplicate credits do not count as credits completed for satisfactory academic progress. If a student repeats a course passed with a grade of B or better, the credits attempted as well as credits and grade points earned will be removed from the cumulative summary.

Repeating Courses Failed

A student who has failed a course cannot receive credit for that course until it has been satisfactorily repeated hour for hour in a class; except that in the case of corelated laboratory work, the number of hours to be taken shall be determined by the instructor. Where separate grades for class and laboratory work are given, that part of the subject shall be repeated in which the failure occurs. Successfully repeating a course previously graded F does not erase the original F grade from the student's record. If a student repeats a course in which the previous grade was F and the student has not exhausted his/her allotment of W hours or Academic Redemption hours, the Academic Redemption Policy below will apply. Otherwise, both grades appear on the record and are computed in the cumulative grade-point ratio.

Academic Redemption Policy

The Academic Redemption Policy (ARP) allows a student to repeat up to nine hours of coursework in which a D or F was earned if he/she has sufficient W hours remaining. In all cases, the grade earned in the course used to redeem the earlier course will be used in computing the grade-point ratio and satisfying degree requirements. When the earlier grade is D and the second grade is F, the student cannot use the D grade to satisfy any degree requirement.

The ARP will apply to all enrolled undergraduate students beginning fall semester 2003. Courses taken prior to fall semester 2003 may not be considered for academic redemption. The following conditions apply:

For students with sufficient W hours, the first nine hours of repeated coursework will automatically be computed for academic redemption, and these hours will be deducted from the student's W hours. If sufficient W hours are not available, the ARP will not apply.

Both grades will remain on the transcript, degree progress report, and other official documents. For financial aid purposes, courses repeated under this policy resulting in duplicate credit do not count for satisfactory academic progress.

If a student drops a repeated course during the period in which the Academic Calendar indicates a W grade is assigned, then both the ARP hours and W hours will be subtracted from the student's remaining ARP and W hours.

The ARP shall apply only to courses taken at Clemson University. The earlier course graded D or F can only be redeemed by repeating the same course. Course substitutions are not permitted.

Students may not invoke the ARP after they have graduated. After graduation, students may repeat coursework, but both grades will be calculated in the grade-point ratio.

The ARP may not be applied to a course taken on a Pass/Fail basis or to any course in which the student was previously found guilty of academic dishonesty.

CLASSWORK

Academic Advising

Each student is assigned an academic advisor in his/her major area. It is the responsibility of the student to consult with the advisor during registration. The advisor will assist the student in scheduling courses so as to fulfill the requirements of the degree program; nevertheless, it is the responsibility of the student to fulfill the relevant requirements of the degree. Advisors also maintain files on individual advisees to assist in academic planning.

Course Prerequisites

Prerequisites for each course are enumerated in the Courses of Instruction section of this catalog. In addition to these requirements, colleges and departments may also establish other standards as conditions for enrollment. It is the student's responsibility to refer to individual college and curricular information for specific standards.

Class Attendance

College work proceeds at such a pace that regular attendance is necessary for each student to obtain maximum benefits from instruction. Regular and punctual attendance at all class and laboratory sessions is a student obligation, and each student is responsible for all the work, including tests and written work, in all class and laboratory sessions. No right or privilege exists that permits a student to be absent from any given number of class or laboratory sessions except as stated in the syllabus for each course. At the same time, it is obvious that students have valid reasons for missing classes; the instructors are expected to be reasonable in the demands they place on students. In this regard, instructors must inform the students in the syllabus required in every class what constitutes excessive absences and the penalty, if any, for such absences. Faculty who impose penalties for excessive absences must keep accurate attendance records.
Some students are on scholarships and/or grants-in-aid overseen by the University Scholarships and Awards Committee. The acceptance of such scholarships and/or grants-in-aid may require participation in events both on and off campus. Additionally, students occasionally are required to miss class because of participation in co-curricular activities, such as class trips, that the faculty members note on their syllabi. The student must discuss these activities with the faculty members whose classes will be missed well in advance of their occurrences. The documentable absences are necessary, and the instructor will make arrangements for those students to make up graded work that takes place during those necessary absences. The time, location, and nature of the make-up work will be at the discretion of the instructor. If required, documentation will be provided to instructors by students.

Instructors are expected to set reasonable policies in working with those students personal documentable absences that are truly beyond the student’s control. After reviewing the reason for the absence, the instructor at his/her discretion may allow the student to make up the graded work missed.

All other aspects of class attendance are within the discretion of the instructor, department, or college responsible for the course. If a student feels unfairly treated in any attendance-related situation, the student has the right of appeal to the Academic Grievance Committee.

First Day Class Attendance
All students are required to attend the first scheduled day of classes and labs. Students who cannot attend the first class are responsible for contacting the instructor to indicate their intent to remain in that class. If a student does not attend the first class meeting or contact the instructor by the second meeting or the last day to add, whichever comes first, the instructor has the option of dropping that student from the roll.

Dead Days
During Dead Days, all regularly scheduled classes are conducted; however, course testing on these days is limited to scheduled laboratory and one-semester-hour course final exams and make-up tests. Dead Days are observed during fall and spring semesters only. Dead Days do not apply to courses numbered 600 or above.

Auditing Policies
Qualified students may audit courses upon written approval of the instructor. Auditors are under no obligation of regular attendance, preparation, recitation, or examination and receive no credit.

Participation in classroom discussion and laboratory exercises by auditors is at the discretion of the instructor. A student who has previously audited a course is ineligible for credit by examination.

Undergraduate and graduate students enrolled in 12 or more hours may audit courses at no additional charge. Others interested in auditing should verify their eligibility through the Registrar’s Office.

Combined Bachelor’s/Master’s Plan
Under this plan, students may reduce the time necessary to earn both degrees by applying graduate credits to both undergraduate and graduate program requirements.

To be eligible for this plan, students must have completed their bachelor’s curriculum through the junior year (minimum 94 credits) and have a minimum overall grade-point ratio of 3.40. Information and application forms are available from the Graduate School Office. Endorsements by the program coordinator or department chair of both programs are required. If accepted, students will be given conditional admission to the master’s program pending completion of their bachelor’s degrees and submission of satisfactory GRE or GMAT scores, if required. Combined Plan students are not eligible for graduate appointments for financial aid until their Bachelor’s degrees have been awarded.

A maximum of 12 credits of graduate courses in the master’s program may be applied to the bachelor’s program. As determined by the participating bachelor’s program, graduate courses may be applied to the bachelor’s degree as free or technical electives, or by substitution of 800-level courses for required undergraduate courses. Under no circumstances can 600-level counterparts of courses required in the bachelor’s program be counted toward master’s requirements.

Not all programs may choose to participate in the Combined Bachelor’s/Master’s Plan. Those bachelor’s programs that do participate may permit fewer than 12 graduate credits to count toward the bachelor’s degree. Furthermore, the bachelor’s program determines the acceptability of specific graduate courses to meet their curriculum requirements, and the participating master’s programs control admission of students into their programs and their courses. Students should consult individual academic units for specific requirements.

Enrollment in Graduate Courses
Enrollment of Clemson University seniors in any graduate course is subject to approval by the department offering the course and the Graduate School. This approval is required prior to registration. Approval forms are available from the Graduate School Office in E-106 Martin Hall or on the Web at www.grad.clemson.edu/general.html. The total course workload for the semester must not exceed 18 hours, and the cumulative grade points earned by seniors shall not exceed 12 semester hours.

Seniors with a cumulative grade point ratio of 3.0 or higher may enroll in 700- or 800-level courses and may use these courses to meet requirements for the bachelor’s degree; however, courses used for this purpose cannot be counted later toward an advanced degree. Alternatively, such students may take 600-, 700-, or 800-level courses in excess of the requirements for their undergraduate degrees and may request that these courses be included as a part of their graduate program if they are subsequently admitted to the Graduate School. Courses cannot be taken at the 600-level if their 400-level counterparts are required for the undergraduate degree in the same academic major as the proposed graduate degree.

A Clemson senior with a cumulative grade-point ratio less than 3.0 may apply to the Graduate School for conditional acceptance. If accepted, the student may enroll in graduate courses for inclusion in a future graduate program, subject to approval of Form GS6. The form must be turned in and accepted by the Graduate School before a student can register for graduate courses.

In all cases, the credits and quality points associated with senior enrollment in graduate courses will be part of the undergraduate record.

GRADUATION REQUIREMENTS
A candidate for an undergraduate degree is a student who has turned in a completed diploma application by the deadline prescribed in the University calendar for a particular graduation date.

Residence Requirement
To qualify for an undergraduate degree, a student must complete through instruction from Clemson a minimum of 37 of the last 43 credits presented for the degree. (To qualify for the five-year professional undergraduate degree in Landscape Architecture, a student must complete through instruction from Clemson, a minimum of 42 of the last 48 credits presented for the degree.)

Make-up of Incompletes Received in Last Semester
A candidate for a degree who receives one or more grades of I in the semester immediately prior to graduation shall have an opportunity to remove the unsatisfactory grades provided the final grades are received in the Registration Services Office, E-206 Martin Hall, by the time grades for candidates for graduation are due. A student who qualifies for graduation under this regulation will be awarded his/her degree on the regular date for the award of degrees.

Special Requirements
A cumulative grade-point ratio of 2.0 is required for graduation, and candidates for degrees must be officially accepted in the major in which they are applying for a degree in the term prior to application for the degree. Candidates for degrees are required to apply for their diplomas within three weeks following the opening of the final semester or the opening of the first summer session prior to the date the degrees are to be awarded. Application forms are available in the Enrolled Student Services Office, 104 Sikes Hall.

Awarding of Degrees Posthumously
An undergraduate student may be awarded a degree posthumously on the recommendation of the faculty of the college concerned subject to the following conditions:
- the student had at least a 2.0 grade-point ratio at time of death
- including credits scheduled in the term in which death occurred, the student a) had satisfied 75% of the degree requirements and b) met the residency requirement for a degree which requires that 37 of the last 43 credits presented for a degree be earned at Clemson.
Credit Limitation
If all work toward a degree is not completed within six years after entrance, the student may be required to take additional courses.

Academic Honors
Honor Graduates
To be graduated with honors, a student must have a minimum cumulative grade-point ratio as follows: cum laude—3.4, magna cum laude—3.7, and summa cum laude—3.9.

Honor Lists
At the end of the fall and spring semesters, the following lists shall be compiled of undergraduate students who have achieved grade-point ratios of 3.5-4.0 on a minimum of 12 semester hours, exclusive of Pass/Fail coursework.
Dean's List—3.5 to 3.99 grade-point ratio
President's List—4.0 grade-point ratio

Honor and Awards
The University offers a number of awards for outstanding achievement in specific fields and endeavors. Recipients are chosen by selection committees and are announced at the annual Honors and Awards Day program or other appropriate ceremonies. Detailed information relating to such awards is available in the offices of the academic deans and department chairs.

ACADEMIC RECORDS
The student's permanent academic record is maintained in the Registrar's Office and contains personal identifying information, grades, and credits. Where appropriate, statements of a corrective nature, withdrawals, suspension for failure to meet academic standards, suspension for disciplinary reasons, and graduation data are added. The academic record is a historical record of the student's academic progress.

Classification
All new students are classified as freshmen unless they have attended another college prior to entrance. Students who have completed college work elsewhere will be classified on the basis of semester hours accepted at Clemson rather than the amount of work presented. To be classified as a member of any class other than freshman, students must meet the credit-hour requirements below:
Sophomore—minimum 30 credit hours
Junior—minimum 60 credit hours
Senior—minimum 95 credit hours

Withdrawal from the University
A student may withdraw from the University subject to the restrictions in the section on Withdrawal. Students who exceed these restrictions shall have final grades recorded. Any variance from the restrictions must be approved by the provost or the provost's designee and must be requested within 90 calendar days (exclusive of summer vacation) of the date of the last exam for the term. The student must document the circumstances supporting the request. All University withdrawals (including withdrawing from the only course in which a student is enrolled) must be processed by the Associate Dean of Undergraduate Academic Services. Students should report to E-108 Martin Hall. Students receiving financial aid who withdraw from the University may have to repay significant portions of their financial aid. For financial aid purposes, enrollment is defined and satisfactory academic progress levels are established as of the last day to register or add classes. Withdrawing from the University can negatively impact financial aid eligibility if a student has not completed a sufficient number of hours. Details are available in the publication Financing Your Clemson University Education.

Academic Renewal
The student who has not enrolled at Clemson for a period of two or more academic years may apply to the Appeals Committee on Continuing Enrollment for readmission under special conditions known as academic renewal. Under these conditions, the previous credits attempted and quality-point deficit will not constitute a liability in a new grade-point computation; however, no credits passed or their attending quality points will be available to the student for a degree at Clemson. The previous record will appear on the permanent record as well as the notation of readmission under the policy of academic renewal. Students returning under the academic renewal policy who apply for financial aid should submit written notification of their status to the Office of Student Financial Aid in order to update their academic progress record. For financial aid purposes, terms enrolled in prior to academic renewal are counted in the 12 semesters allowed for satisfactory academic progress.

Transcripts
Official transcripts are issued only at the authorized, written request of the student. Requests should be directed to Transcripts, 104 Sikes Hall, Box 345125, Clemson, SC 29634-5125. Payment in advance is required and may be made by Discover, Visa, MasterCard, Tiger Stripe, check (payable to Clemson University), or cash. The following must be included with the transcript request: full name (including any names used while at Clemson), social security number, current address, date of birth, date the student last attended Clemson, where the transcript is to be sent, and payment of $5 per transcript. Telephone requests will not be honored. Transcript requests are normally processed within 48 hours, but additional processing time may be required at the end of a semester. Information is available from the Enrolled Student Services Office at the address above or by telephone at 864-656-2173. Official transcripts are not issued for those who are indebted to the University.

ACADEMIC INTEGRITY
As members of the Clemson University community, we have inherited Thomas Green Clemson's vision of this institution as a "high seminary of learning." Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form.

I. Academic Integrity Policy
A. Any breach of the principles outlined in the Academic Integrity Statement is considered an act of academic dishonesty.
B. Academic dishonesty is further defined as:
1. Giving, receiving, or using unauthorized aid on any academic work;
2. Plagiarism, which includes the copying of language, structure, or ideas of another and attributing the work to one's own efforts;
3. Attempts to copy, edit, or delete the computer files that belong to another person or use of Computer Center account numbers that belong to another person without the permission of the file owner, account owner, or file number owner;
C. All academic work submitted for grading contains an implicit pledge and may contain, at the request of an instructor, an explicit pledge by the student that no unauthorized aid has been received.
D. It is the responsibility of every member of the Clemson University community to enforce the Academic Integrity Policy.

II. Academic Integrity Committee
The power to hear cases of academic dishonesty is vested in an Academic Integrity Committee.
A. Structure—The Academic Integrity Committee is composed of twenty members as follows:
1. Ten tenured members of the faculty; two members from each college elected by their respective collegiate faculties. Faculty members will be elected on a staggered term basis, serving for a period of two years after initiation of staggered terms. Terms commence with fall semester late registration.
2. Ten members of the undergraduate student body; two from each college. Student members are nominated by the Student Body President, through an application and interview process in the spring semester, approved by the Student Senate, and appointed by the provost for terms of two years. Students must have a 3.0 grade-point ratio at the time of appointment and must have completed 30 hours by the end of the spring semester. Nominations will be made in the spring semester with terms of service commencing with fall semester late registration.
3. The committee is divided into four standing boards, hereafter referred to as hearing boards, which will hear the cases of academic dishonesty. Hearing boards convene on a weekly, rotational basis unless there are no cases to be heard. For summer sessions, the Associate Dean of Undergraduate Academic Services must maintain at least one hearing board to hear cases.
4. Hearing boards are comprised of two faculty members, two students, and one chairperson. Quorum, for a hearing board, is one student, one faculty member, and a chairperson. Decisions by the hearing board will be by majority vote.

5. Chairpersons will be elected from within the Committee's membership. Two chairpersons are selected from the faculty membership and two from the student membership.

6. Before hearing any cases, a new member of the committee must undergo a training session(s) with the Associate Dean of Undergraduate Academic Services.

7. The Academic Integrity Committee is the administrative coordinator of the Academic Integrity Committee.

B. Procedures
1. When, in the opinion of a faculty member, there is evidence that a student has committed an act of academic dishonesty, the faculty member shall make a formal written charge of academic dishonesty, including a description of the misconduct, to the Associate Dean of Undergraduate Academic Services. At the same time, the faculty member may, but is not required to, inform each involved student privately of the nature of the alleged charge.

2. When, in the opinion of the student, there is evidence that another student has committed an act of academic dishonesty, he/she should contact the faculty member for the course to discuss the incident. After being contacted, if, in the opinion of the faculty member, there is evidence that a student has committed an act of academic dishonesty, the faculty member shall make a formal written charge of academic dishonesty, including a description of the misconduct, to the Associate Dean of Undergraduate Academic Services. At the same time, the faculty member may, but is not required to, inform each student involved privately of the nature of the alleged charge.

3. When the Associate Dean of Undergraduate Academic Services has received a formal charge of an alleged violation, he/she will contact the student involved privately to notify him/her of the charge and at the same time will provide the student with a copy of the charge and a copy of the procedures that the Academic Integrity Committee has adopted, pursuant to number 6 below. If a student is charged with academic dishonesty, he/she may not withdraw from the course unless he/she is exonerated of the charge. If a student is found guilty of an academic dishonesty violation and receives a D or F grade, he/she will not be allowed to redeem that grade under the Academic Redemption Policy.

4. After informing the student involved, the Associate Dean of Undergraduate Academic Services will convene one of the boards of the Academic Integrity Committee within 14 calendar days (exclusive of University holidays) of his/her being notified of an alleged violation. (Students charged in the spring term, but not enrolled in summer sessions, may be given a continuance to the next fall term.) All students will be presumed innocent of a violation until found guilty by a hearing board. Each party is responsible for having present at the hearing all witnesses that he/she wishes to speak on his/her behalf.

5. A charge of academic dishonesty in a course must be made within thirty days after the beginning of the next term, exclusive of summer vacation. If an I (Incomplete) is given in a course, the grade in the course is considered to be final when the I is made up.

6. The Academic Integrity Committee will adopt its procedures, to be followed by all hearing boards, prior to the first case heard by a hearing board. In addition to providing the student with a copy of the procedures, as stated in number 3 above, the Associate Dean of Undergraduate Academic Services will provide a copy of the procedures to the involved faculty member and also the hearing board members. The Associate Dean of Undergraduate Academic Services will retain copies of these procedures. The procedures must afford both faculty and students the opportunity to present their cases and the opportunity for rebuttal.

7. In cases in which there is a finding of guilt, the faculty member may consult with the Associate Dean of Undergraduate Academic Services to consider any past precedent established regarding academic penalties levied in similar cases. Faculty members must inform the Academic Integrity Committee of all other university personnel of the finding of guilt and the academic penalty. The Academic Integrity Committee retains all records of academic dishonesty cases and their findings in accordance with the University's Records Retention Policy.

C. Penalties
1. Upon a finding of "not guilty" by a hearing board, the student's record will not reflect the incident.

2. Upon a finding of "guilty" by a hearing board, the Associate Dean of Undergraduate Academic Services will notify the student and faculty member of the decision immediately. If the offense is the first for the student, then the faculty member has the ability to determine the academic penalty, which shall not exceed a grade of F for the course.

3. If the finding of guilt is not the student's first offense, the student will receive a grade of F for the course, will be suspended from the University for one or more semesters, and may be permanently dismissed from the University. The hearing board will determine the period for which the student will be suspended or, if applicable, permanently dismissed. Suspension or dismissal requires the approval of the President of the University.

D. Appeals
1. Students do not have the option to appeal a decision of guilt rendered by the hearing board, whether it is the first, second, or any subsequent offense. Students do not have the option to appeal the penalty determined by the faculty member for first offenses or to appeal the grade of F for the course given for second offenses.

2. For offenses resulting in suspension or permanent dismissal, students have the option to present written information to the President of the University to appeal the length of the suspension or to appeal a decision of permanent dismissal. Students must present information in their defense, as allowed in this paragraph, to the President within five working days after receipt of written notification of the suspension or dismissal. However, as stated in number 1 above, students cannot appeal a decision of guilt rendered by the hearing board.

II. Rules and Procedures for Academic Grievances
1. Any student filing a grievance must first attempt to resolve it by consulting with the involved faculty or staff member for resolution. In the event no resolution is reached, the student shall consult serially with the Ombudsman, who shall remain a neutral party, in the Office of Undergraduate Academic Services, the department chair and dean of the faculty member, who shall hear the grievance and act as mediators. Consultation by any party with the Ombudsman shall remain confidential.
Comm ittee. In a case involving a protest of final and faculty or staff member's simultaneous filing a grievance within the 90-day period to file a grievance within the 90-day period to investigate the grievance. A minimum of three supplemental grievances must be filed within 90 calendar days of the date of the last exam for the term (exclusive of summer vacation) in which the student alleges that an inequitable grade was recorded. The Office of Undergraduate Academic Services will retain the original documents and forward a copy of the grievance to the chairperson of the Academic Grievance Committee. In a case involving a protest of final grade, the Office of Undergraduate Academic Services will notify the Office of Records and Registration of the filed grievance. The failure of a student to file a grievance within the 90-day period will cause him/her to forfeit his/her right to file a grievance under this procedure. (d) If a student files a grievance, the professor has 90 days (excluding summer) to respond.

3. The documents referred to in Procedure 2, shall be delivered to the chairperson of the Academic Grievance Committee. The chairperson shall, upon receipt of the documents, appoint a subcommittee consisting of a chairperson who is a faculty or staff member of the committee and at least two other committee members, including at least one student, to investigate the grievance. If possible, the subcommittee shall include members who are not in the same college as the grievant.

4. The committee members appointed by the chairperson will constitute the subcommittee to investigate the grievance. A minimum of three subcommittee members, including at least one student member, must be present for the subcommittee to conduct the hearing described in Procedure 7.

5. The subcommittee to investigate the grievance will attempt to gather all information pertinent to the grievance in separate meetings with the individuals who give information concerning the grievance; however, after the separate meetings have been held, the subcommittee may question the student and faculty or staff member simultaneously in one meeting. Such a joint meeting will be held only if the subcommittee deems it necessary for clarifying the facts.

6. The Academic Grievance Committee will, to the greatest extent possible, handle each case in a confidential manner.

7. The hearing on the grievance will be informal and shall be closed to the public. The chairperson shall take whatever action is necessary to ensure an equitable, orderly and expeditious hearing. Minutes of the meeting shall be taken, and all parties to the grievance shall be given an opportunity to be heard. In addition, the chairperson may request the presence of any other person who can supply information pertinent to the grievance. Witnesses shall not be present during the hearing proceedings except when they are called to speak before the committee. The parties shall be permitted to question all individuals who are heard by the committee. If any witness is unable to be present at the hearing, the chairperson may, at his/her discretion, accept a written statement from the witness to be presented at the hearing. The parties shall be accorded the right to assistance of counsel of their own choice; however, counsel shall not be permitted to participate actively in the proceedings.

8. Upon conclusion of the hearing, the subcommittee shall reach, by majority vote, a posed solution to the grievance. The subcommittee chairperson shall then formulate the findings in writing and send a copy of the resolution to the parties involved in the grievance signed acceptance for a recommended solution to the grievance. If all parties to the grievance accept the solution posed by the subcommittee, the matter of the grievance will be considered closed when the solution has been implemented. Copies of the written findings and recommended solution will be forwarded by the subcommittee chairperson to all parties to the grievance for acceptance via return receipt certified mail. Each party will be asked to indicate acceptance of the posed solution by signing and returning the letter within 14 calendar days of its date. Failure to respond within 14 calendar days will constitute acceptance. Proper notification of the solution reached at the Academic Grievance Committee will then be mailed by the subcommittee chairperson to the involved faculty or staff member, department chair of the faculty member or immediate superior of staff member, the involved collegiate dean, and Associate Dean of Undergraduate Academic Services. In a case involving a protest of a final grade, the subcommittee chairperson will also notify the Office of Records and Registration of the solution arrived at by the Academic Grievance Committee.

9. If, after the conclusion of the hearing on the grievance, the Office of the Provost or other staff member, department chair of the involved faculty member or immediate superior of the staff member, involved collegiate dean, and Associate Dean of Undergraduate Academic Services to the president of the University via the provost with the committee's recommended solution to the grievance along with all supporting evidence previously submitted to the Academic Grievance Committee. When grievances are referred in this manner, the President, on behalf of the University, shall make the final decision on the solution to the grievance and will then notify the student, the involved faculty or staff member, department chair of the involved faculty member or immediate superior of the staff member, involved collegiate dean, and Associate Dean of Undergraduate Academic Services of the University's final decision. In a case involving a protest of a final grade, the President will also notify the Office of Records and Registration of the University's final decision.

10. The chairperson shall keep in confidence all records pertinent to each grievance and pass these records to the Office of the Provost for filing. Records shall be available to succeeding chairpersons of the Academic Grievance Committee.

11. The Academic Grievance Committee shall make every reasonable effort to resolve every grievance presented to it by the end of the semester in which each grievance is received.

12. These procedures can be changed by the Academic Council. Such changes shall not affect any case under consideration at the time of the change. Notification of any changes to the procedure shall be given to the President of the University via the Academic Council.

ACADEMIC MISCONDUCT
FOR FORMER STUDENTS

It is possible that an act of academic misconduct will remain undiscovered until after a degree is awarded. In such a case, Clemson University reserves the right to revoke any degree based on new revelations about scholarly issues including, but not restricted to, admissions credentials, all forms of coursework, research, theses, dissertations, or other final projects.

I. Submission of Fraudulent Admissions Credentials

The submission of fraudulent admissions credentials in the student's application or any other documents submitted for admission to Clemson University may result in initiation of action under the Policy and Procedure on Revocation of Academic Degrees.

II. Academic Dishonesty in Coursework

A. In the event that the act is alleged to have occurred within the context of a course and is consistent with the general definition of academic dishonesty presented in Sections I of the Academic Integrity Policy, the same procedures in that policy will apply except for academic misconduct listed in III below.

B. Graduate Students—If the resulting penalty is either the assignment of a grade of D or F in a required graduate course, or the issuance of any grade that causes the student not to possess a cumulative B average in both graduate courses and in all courses, action under the Policy and Procedure on Revocation of Academic Degrees may be initiated.

C. Undergraduate Students—If the resulting penalty causes the student to no longer have the necessary credit hours, coursework, or grade average for receiving a degree, action under the Policy and Procedure on Revocation of Academic Degrees may be initiated.

III. Falsification of Data and Plagiarism in Theses, Dissertations, or Other Final Projects

Data falsification, plagiarism (as defined in the Academic Integrity Policy) and other acts of academic dishonesty in a thesis, dissertation or other final project are serious acts of misconduct. Allegations of this type of misconduct may result in initiation of action under the Policy and Procedure on Revocation of Academic Degrees.
REVOCA TION OF ACADEMIC DEGREES

Preamble
Academic institutions have a critical responsibility to provide an environment that promotes integrity, while at the same time encouraging openness and creativity among scholars. Care must be taken to ensure that honest error and ambiguities of interpretation of scholarly activities are distinguishable from outright misconduct. This policy is applicable to fraudulent or other misconduct in obtaining an academic degree which is so egregious that a mechanism for revoking an academic degree, either graduate or undergraduate, must be undertaken. The Clemson University Board of Trustees has the sole authority to revoke any degree previously awarded.

Definitions
As used herein, the following terms shall apply:
A. When the degree holder was an undergraduate student:
   1. “Dean” shall mean the dean of the academic college where student was enrolled.
   2. “Committee of Investigation and Recommendation” shall be composed of the members of the standing University undergraduate Continuing Enrollment Appeals Committee. An undergraduate student will be appointed to the Committee of Investigation and Recommendation by the President of the Student Body within ten (10) calendar days of notification by the President of the Faculty Senate. Any member of the Continuing Enrollment Appeals Committee who is a faculty member in the department which awarded the degree involved shall not be a member of the Committee of Investigation and Recommendation for that particular investigation. If there are fewer than three (3) non-disqualified faculty members, the President of the Faculty Senate shall appoint additional faculty members to bring the number of faculty committee members up to three (3). If the President of the Faculty Senate is from the same department that awarded the degree involved, the President-Elect of the Faculty Senate shall appoint the additional member.

B. When the degree holder was a graduate student:
   1. “Dean” shall mean the Dean of the Graduate School.
   2. “Committee of Investigation and Recommendation” shall be composed of the members of the standing University graduate Admissions and Continuing Enrollment Appeals Committee, except for the Associate Dean of the Graduate School who shall not be a member of the Committee of Investigation and Recommendation. A graduate student will be appointed to the Committee of Investigation and Recommendation by the President of Graduate Student Government within ten (10) calendar days of notification by the President of the Faculty Senate. Any member of the Graduate Admissions and Continuing Enrollment Appeals Committee who is a faculty member in the department which awarded the degree involved shall not be a member of the Committee of Investigation and Recommendation for that particular investigation. If there are fewer than three (3) non-disqualified faculty members, the President of the Faculty Senate shall appoint additional faculty members to bring the number of faculty committee members up to three (3). If the President of the Faculty Senate is from the same department that awarded the degree involved, the President-Elect of the Faculty Senate shall appoint the additional member.

Complaint
An allegation or complaint involving the possibility of misconduct can be raised by anyone. The allegation should be made in writing to the dean.

Initial Review
The dean will conduct the initial review to determine whether or not the allegation has merit. The dean may discuss the matter with the former student’s advisor committee (if any) and other faculty as appropriate. The dean may also contact persons outside the University who may be able to provide factual information on the alleged misconduct or who may otherwise have expertise concerning issues involved in the alleged misconduct. If the dean determines that the allegation has no merit, he/she will terminate the investigation. If the dean determines that serious academic misconduct is suspected, the dean will notify the President of the Faculty Senate in writing in a confidential manner. The dean shall also notify the Vice President for Academic Affairs and Provost of the charge but will not discuss any details of the charge.

Committee of Inquiry
The President of the Faculty Senate shall, within (10) calendar days of receipt of the notification from the dean, appoint three (3) faculty members to the Committee of Inquiry and notify the President of Graduate Student Government or the President of the Student Body, as appropriate, who shall appoint a graduate or undergraduate student, as appropriate, to the Committee of Inquiry within ten (10) calendar days of notification. The President of the Faculty Senate shall also notify the degree holder of the formation of a Committee of Inquiry.

If the Faculty Senate President is from the same department that awarded the degree involved, the President-Elect of the Faculty Senate shall appoint the Committee of Inquiry. The faculty members will be appointed from departments which did not award the degree involved. The Committee will elect its chairman from the faculty members on the Committee.

For each allegation, the Committee of Inquiry will review the complaint and any other information provided by the dean and determine whether there is sufficient evidence to warrant a formal charge of academic misconduct and further investigation under this policy. While the Committee of Inquiry shall not make a recommendation as to whether a degree should be revoked, the purpose is to provide a review to separate frivolous, unjustified or mistaken allegations from those requiring a more detailed and formal investigation. The Committee of Inquiry will review the evidence and must determine that the alleged misconduct more probably than not occurred in order for the committee to recommend a formal charge and further investigation.

Within thirty (30) calendar days of the formation of the Committee of Inquiry, the Committee of Inquiry will submit a written report to the President of the Faculty Senate. If the Committee of Inquiry’s report finds that the investigation should not proceed, the President of the Faculty Senate shall terminate the investigation and notify the appropriate persons. If the Committee of Inquiry’s report finds that a formal charge and further investigation are warranted, the President of the Faculty Senate shall, within ten (10) calendar days of receipt of the report of the Committee of Inquiry, send a copy of that report to the dean and to the Committee of Investigation and Recommendation. The President of the Faculty Senate shall also immediately notify the President of Graduate Student Government or President of the Student Body (whichever is appropriate) that a student representative needs to be appointed to the Committee of Investigation and Recommendation. The President of the Faculty Senate shall also notify the Vice President for Academic Affairs and Provost of the Committee of Inquiry’s recommendation. No details of the charge will be discussed. Note: A majority vote of the Committee of Inquiry is necessary to recommend that a formal charge and further investigation are warranted. A tie vote means that the investigation is terminated as stated herein.

Notification to Degree Holder
The dean shall issue a written notice within ten (10) calendar days of receipt of the report of the Committee of Inquiry, a formal charge of academic misconduct to the degree holder. This written notice shall detail the factual allegations for the charge and the evidence supporting the charge. This written notice shall also inform the degree holder that if the charges are substantiated, the degree holder’s degree could be revoked. This written notice shall also inform the degree holder of his/her right to appear at a hearing as stated in this policy. The dean shall also send with this notice a copy of this Policy and Procedure on Revocation of Academic Degrees to the degree holder. This notice shall be delivered to the accused in person or sent by certified mail, return receipt requested.

Committee of Investigation and Recommendation
The Committee of Investigation and Recommendation shall extend to the degree holder due process which shall, at a minimum, include the following:
1. Notice of the nature of the complaint
2. Notice of the evidence supporting the complaint
3. Notice of the hearing
4. The opportunity to present evidence, including testimony
5. The opportunity to hear the testimony against the degree holder
6. The opportunity to ask questions of all witnesses
7. The opportunity to have an attorney or advisor present at the hearing; however, the role of the attorney or advisor shall be solely to assist the party, and the attorney or advisor shall not be permitted to participate actively in the proceedings.

The degree holder shall not be entitled to know the identity of the person(s) who originally made the complaint unless that person agrees that his/her identity can be revealed.
The chair of the Committee of Investigation and Recommendation shall inform the degree holder of the time and date of the hearing.

The dean or her designee shall present the accusation against the degree holder at the hearing and may designate one additional representative present during the hearing. Under this section the term "designee" is understood to include the dean's designee, if such a designation is made.

The degree holder and the dean may submit written materials to the Committee of Investigation and Recommendation prior to the hearing. The chair of the Committee of Investigation and Recommendation shall make available the materials received to the other party and to all committee members.

The hearing before the Committee of Investigation and Recommendation shall be held no sooner than thirty (30) calendar days and no later than ninety (90) calendar days after receipt of the report of the Committee of Inquiry unless the degree holder and the dean agree to a different date. All matters pertaining to the hearing shall be kept confidential as possible and the hearing shall be closed to the public. A verbatim record of the hearing will be taken and a typed transcript thereof transcribed and made a part of the hearing record.

The degree holder and the dean shall be responsible for having any witnesses they wish to testify in attendance at the hearing. Witnesses will be present only while testifying.

The chair of the Committee of Investigation and Recommendation shall take whatever action is necessary during the hearing to ensure a fair, orderly, and expeditious hearing. No formal rules of evidence will be followed. If any objection is made to any evidence being offered, the decision of the majority of the committee shall govern. Irrelevant, immaterial, or unduly repetitious evidence shall be excluded.

The degree holder and the dean shall be permitted to offer evidence and witnesses pertinent to the issues.

The dean shall present the case against the accused first. The accused shall then present his/her response.

The chair will allow each party to question witnesses of the other party and will allow each party to ask questions of the other party's witnesses at the appropriate time during the hearing as determined by the chair. Members of the committee may ask questions of any party or any witness at any time during the hearing.

Within fifteen (15) calendar days of the conclusion of the hearing, the Committee of Investigation and Recommendation shall submit a written report to the Vice President for Academic Affairs and Provost. The report shall contain findings and a recommendation as to whether the degree holder's degree should be revoked, the President for Academic Affairs and Provost decides that the degree holder's degree should not be revoked, the President for Academic Affairs and Provost decides that the degree holder's degree should be revoked, the chair shall send a complete copy of the transcript of the hearing and all documents that were submitted to the committee. The chair of the Committee of Investigation and Recommendation shall label which documents were submitted by each party when forwarding this information to the Vice President for Academic Affairs and Provost.

If the Committee of Investigation and Recommendation recommends that the degree holder's degree be revoked, the chair shall also send a copy of the hearing transcript to the degree holder and the Dean at the same time that it is sent to the Vice President for Academic Affairs and Provost.

Vice President for Academic Affairs and Provost

If the Committee of Investigation and Recommendation recommends that the degree holder's degree be revoked, the Vice President for Academic Affairs and Provost shall review the hearing record and the report of the Committee of Investigation and Recommendation. If the Vice President for Academic Affairs and Provost decides that the degree holder's degree should not be revoked, the President for Academic Affairs and Provost decides that the degree holder's degree should be revoked, the Chair for Academic Affairs and Provost shall send a recommendation in writing to the President of the University within twenty-one (21) calendar days of receipt of the transcript of the hearing, and the matter shall be closed. If the Vice President for Academic Affairs and Provost decides that the degree holder's degree should be revoked, the President for Academic Affairs and Provost shall send a copy of his/her recommendation to the degree holder, the Dean, the Committee of Investigation and Recommendation, and other appropriate persons involved in the process, in writing, within twenty-one (21) calendar days of receipt of the transcript of the hearing. The Vice President for Academic Affairs and Provost shall send to the President, along with his/her recommendation, the Committee of Investigation and Recommendation's report and the hearing record. The Vice President for Academic Affairs and Provost shall send a copy of his/her recommendation to the degree holder, the Dean, the Committee of Investigation and Recommendation, and other appropriate persons involved in the process.

If the Vice President for Academic Affairs and Provost is disqualified from reviewing the case, the Senior Vice Provost and Dean of Undergraduate Studies shall be substituted for the Vice President for Academic Affairs and Provost.

President

If the Vice President for Academic Affairs and Provost recommends to the President that the degree holder's degree should be revoked, the President shall transmit that recommendation along with the report of the Committee of Investigation and Recommendation and the hearing record to the Executive Secretary of the Board of Trustees within thirty (30) calendar days of receipt. If the President wishes to make a recommendation, he/she shall review the recommendation of the Vice President for Academic Affairs and Provost, the report of the Committee of Investigation and Recommendation, and the hearing record and forward his recommendation to the Executive Secretary of the Board of Trustees within thirty (30) calendar days of receiving the recommendation of the Vice President for Academic Affairs and Provost.

Board of Trustees

The Executive Secretary of the Board of Trustees shall send to all trustees the hearing record, the recommendation of the Vice President for Academic Affairs and Provost, the report of the Committee of Investigation and Recommendation, and the recommendation of the President, if any. A majority vote by the Board of Trustees, at a duly constituted Board meeting, is required to revoke an academic degree. The decision of the Board of Trustees shall be final.

Guiding Principles

All actions taken by committees shall be effective by a majority vote.

All investigations, hearings, and actions shall be kept confidential as possible except for notice of any revocation approved by the Board of Trustees. A decision not to proceed at any stage of the proceedings set forth in this policy does not necessarily mean that the original complaint was groundless.

For good cause shown, at the request of either party and the approval of the other, the Vice President for Academic Affairs and Provost shall extend any time limit set forth in this policy. Any such time extension shall be communicated in writing to all appropriate parties.

Administrative Action if Degree is Revoked

If a degree is revoked by the Board of Trustees, the former student's transcript will be modified to reflect that the degree was revoked, and the former student will be informed of the revocation and requested to return the diploma. If the former student was enrolled in a program requiring a thesis or dissertation, all bound copies will be removed from the Clemson University Library. In addition, for doctoral students, University Microfilms, Inc. will be notified and requested to take appropriate action.

Students whose degrees have been revoked may be eligible to reapply for admission according to normal University procedures and policies in effect at the time of reapplication.
GENERAL EDUCATION

An undergraduate student whose enrollment in a curriculum occurs after May 15, 2005, must fulfill the general education requirements in the catalog in effect at the time. A student who withdraws from the University and subsequently returns after May 15, 2005, will be required to satisfy the general education requirements. Any variation in curricular or general education requirements shall be considered under the substitution procedure.

MISSION STATEMENT

Academic institutions exist for the transmission of knowledge, the pursuit of truth, the intellectual and ethical development of students, and the general well-being of society. Undergraduate students must be broadly educated and technically skilled to be informed and productive citizens. As citizens, they need to be able to think critically about significant issues. Students also need to be prepared to complete undergraduate work and a major course of study. The mission requires a high level of knowledge about and competence in the following areas: communication, computer use, mathematics, problem solving, natural sciences, social sciences, humanities, and arts. Thus the mission of general education is to provide Clemson undergraduate students with a structured base through which these needs can be met.

COURSE REQUIREMENTS

General education requirements in some curricula are more restrictive than those shown below.

Science and Technology in Society and Cross-Cultural Awareness Requirements may be satisfied by other General Education courses, as indicated in the footnotes below.

I. Communication

English Composition

3 credits

ENGL 103 (ENGL 102 for transfer students)

Advanced Writing

3 credits

A S 410, ENGL 304, 312, 314, 345, 346, 348, M L 402, THEA (ENGL) 347, or an approved cluster of courses

Oral Communication

3 credits

COMM 150, 250, or an approved cluster of courses such as A S 309, 310, 409, 410; or M L 101, 102

II. Academic and Professional Development

Participation in the Pilot Digital Portfolio Program or departmental courses approved on an interim basis by the Undergraduate Curriculum Committee addressing the general academic and professional development of the student

2 credits

III. Mathematical, Scientific, and Technological Literacy

Mathematics

3 credits

EX ST 227, 301, MTHSC 101, 102, 106, 108, 203, 207, 301, 309. For Elementary and Early Childhood Education majors only: MTHSC 117, 118

Natural Science with Lab

4 credits


Mathematics or Natural Science

3 credits

Any general education mathematics or Natural Science with Lab course listed above or AGRIC (EN SP) 315, BIOSCI 200, EN SP 200, GEOL 300, PHYS 240

IV. Arts and Humanities

Literature

3 credits

Any 200-level ENGL literature course, CHIN 401, FR 300, 304, GER 306, ITAL 301, 302, JAPN 401, 406, REL 302, RUSS 360, 361, SPAN 303, 311

Non-Literature

3 credits


V. Social Sciences

Selected from two different fields

6 credits

A S A 301, ANTH 201, AP EC 202, 257, CH H 202, ECON 200, 211, 212, GEOG 101, 103, 106, HIST 101, 102, 122, 172, 173, 193, 196, PO SC 101, 102, 104, PSYCH 201, R S 301, SOC 201, 202

VI. Cross-Cultural Awareness


VII. Science and Technology in Society

AGRIC (EN SP) 315, AP EC 205, AVS 315, BIOL 203, 210, BIOSCI 200, CH 105, 106, COMM 307, EN SP 200, ENGL 349, EX ST 222, FD SC 214, GEOL 112, 300, HIST 122, 323, 491, LARCH 116, PHIL 324, 326, 345, PKGS C 368, R S (SOC) 401, THRD 115, 221

VIII. Distributed Competencies

Each degree program will integrate into the program of study competencies in the following area and provide an integration plan which addresses competencies and implementation: Ethical Judgement, Information Technology, Reasoning, Critical Thinking, and Problem Solving

*This course also satisfies the Science and Technology in Society Requirement.

*This course also satisfies the Cross-Cultural Awareness Requirement.

GENERAL EDUCATION COMPETENCIES

Through the General Education experience at Clemson University, undergraduate students will accomplish the following:

Written and Oral Communication Skills

1. Demonstrate effective communication skills appropriate for topic, audience, and occasion.

2. Write coherent, well-supported, and carefully edited essays and reports suitable for a range of different audiences and purposes.

3. Employ the full range of the writing process, from rough draft to edited product.

4. Incorporate both print and electronic resources into speeches, presentations, and written documents.

Reasoning, Critical Thinking, and Problem Solving

1. Summarize, analyze, and evaluate fictional and non-fictional texts.

2. Differentiate deductive and inductive reasoning processes.

3. Acquire and analyze information to determine its quality and utility.

4. Recognize parallels between and among disciplines and apply knowledge, skills, or abilities learned in one discipline to another.

Mathematical, Scientific, and Technological Literacy

1. Demonstrate mathematical literacy through solving problems, communicating concepts, reasoning mathematically, and applying mathematical or statistical methods using multiple representations.

2. Develop an understanding of the principles and theories of a natural science and its applications.

3. Explain and apply the methods of a natural science in laboratory or experimental settings.

4. Apply information technologies to intellectual and professional development.

5. Understand the role of science and technology in society.
Social and Cross-Cultural Awareness
1. Develop an understanding of social science methodologies.
2. Explore the causes and consequences of human actions.
3. Develop an understanding of world cultures in historical and contemporary perspectives.
4. Recognize the importance of language in cultural contexts.

Arts and Humanities
1. Develop an understanding of the history and cultural contexts of the arts and humanities.
2. Examine the arts and humanities as expressions of the human experience.
3. Experience and evaluate productions of the performing and visual arts.

Ethical Judgment
1. Demonstrate knowledge of what ethics is and is not, its relation to academic integrity, and its importance as a field of study.
2. Demonstrate understanding of common ethical issues, and construct a personal framework in which ethical decisions can be made in a systematic, reflective, and responsible way.

The General Education competencies may be met in a variety of ways. In some areas specific courses will be selected from a list of approved courses. In other areas, more flexibility is afforded to each degree program. In all cases, the Undergraduate Curriculum Committee will be the faculty body to define approval criteria, to approve courses as meeting these criteria, and to approve curricula as meeting these general education requirements.
MINORS, PROGRAMS, AND DEGREES

Clemson University offers 73 Bachelor of Arts and Bachelor of Science degree programs in the Colleges of Agriculture, Forestry, and Life Sciences; Architecture, Arts, and Humanities; Business and Behavioral Science; Engineering and Science; and Health, Education, and Human Development. Bachelor of Arts degree programs require completion of two semesters of a modern foreign language.

MINORS

A minor consists of at least 15 semester credits, with no fewer than nine credits at the 300 level or higher. A student cannot major and minor in the same field or acquire a minor that is not allowed by the degree program. In programs that require a minor, courses may not be used to fulfill both the major and minor requirements. Courses used to fulfill general education requirements, however, may be counted toward the minor. Students are encouraged to contact the department offering the minor for advising. A student may specify one completed minor on the graduation application to be recorded in his/her academic record. Specific requirements are detailed below.

Accounting

A minor in Accounting requires ACCT 201, 204, 311, 312, and nine hours selected from 300- or 400-level accounting courses. Students planning to pursue the Master of Professional Accountancy degree program should select courses in consultation with the school’s graduate coordinator.

Adult/Extension Education

A minor in Adult/Extension Education requires AG ED 403, 440, 445, and six additional credits selected from the following: AG ED 407, 428, (ED E, THRD) 482, PRTM 308.

Aerospace Studies

A minor in Aerospace Studies requires A S 109, 110, 209, 310, 309, 409, and 410. Completion of A S Leadership Laboratory and participation in cadet activities are mandatory. Students must compete for an allocation and be accepted into the Professional Officer Course before enrolling in A S 309.

African American Studies

A minor in African American Studies requires 15 credits at the 300 and 400 levels as follows:

Group I—Three credits from A A S 301, 498
Group II—Three credits from GEOG 330, HIST 338, 339, 438
Group III—Three credits from ENGL 482, 483, HIST 311, 312, PO SC 381, SOC 460, THEA 317
Group IV—Three credits in any approved course in social sciences
Group V—Three credits in any approved course in the humanities

Courses are to be scheduled in consultation with the appropriate advisors. African American Studies advisors will provide all affected advisors with a list of approved courses prior to registration.

Agricultural Business Management

A minor in Agricultural Business Management requires AP EC 302, 309, 319, and at least two courses selected from AP EC 308, 351, 402, 409, 433, 452, 456, 460.

Agricultural Mechanization and Business

A minor in Agricultural Mechanization and Business requires six credit hours selected from AG M 205, 206, 301, 303; and nine credit hours from AG M 402, 405, 406, 452, 460.

American Sign Language Studies

A minor in American Sign Language Studies requires 15 credit hours in a S L above the 200 level.

Animal and Veterinary Sciences

A minor in Animal and Veterinary Sciences requires AVS 150 and 151; one course selected from AVS 200, 203, 204, 206; and nine hours selected from AVS 301, 310, 370, 375, 410, 415, 453.

Anthropology

A minor in Anthropology requires ANTH 201 and 15 hours from the following courses: ANTH 301, 320, 331, 351, 403, 495, 498, CHIN (ANTH) 418, JAFN (ANTH) 417, LANG 371, SOC 433.

Athletic Leadership

A minor in Athletic Leadership requires 17 credit hours arranged as follows: A L 349, 350, 351, 361, 362, 376, and one of the following: A L 371, 372, 373, 374, 375, 377. Students must complete a coaching internship or administrative internship under the direction of the Athletic Leadership Minor Coordinator.

Biochemistry

A minor in Biochemistry requires BIOCH 301, 423 or 431, 432, 433, 434 (13 credits), plus at least two credits from any other biochemistry courses at the 300 level or above, BIOSC 416, or a section of BIOSC 493 designated as oriented towards biochemistry or molecular biology.

Bioengineering

A minor in Bioengineering requires at least 15 credits and must include BIO E 302, 320, 401. The remaining six credits may be chosen from B E 312, BIO E 201, 420, 450, BIOSC 222, 223, 458, 459, C M E 210, M E 301, 302, or 308.

Biological Sciences

A minor in Biological Sciences requires 15 credits and must include both a lecture and corresponding laboratory in animal diversity (B IOSC 302/306 or 303/307) and a lecture and corresponding laboratory in plant diversity (B IOSC 304/308 or 305/309); remaining credits (minimum of seven) must be selected from BIOCH, BIOSC, or GEN courses numbered 300 or higher.

Business Administration

A minor in Business Administration requires ACCT 201, EC ON 211, 212, FIN 306, LAW 322, MGT 301, MKT 301.

Chemistry

A minor in Chemistry requires CH 101, 102, and 15 additional credits in Chemistry, at least nine of which must be at the 300 or 400 level, with the courses selected in consultation with the Department of Chemistry.

Cluster

The Cluster minor allows students a somewhat wider choice of course materials than is possible with the conventional subject-matter minor. The general requirement for the Cluster minor is 15 credits in courses numbered higher than 300, except where noted differently, chosen according to one of the plans listed below. Courses within the student’s major area may not be included in the Cluster minor.

Group I—Social Sciences: anthropology, economics, geography, history, political science, psychology, sociology
Group II—Life Sciences: biochemistry, biological sciences, genetics, microbiology
Group III—Physical Sciences: chemistry, geology, physics
Group IV—Engineering: courses in all engineering majors plus engineering mechanics and engineering graphics

No course in the 100 series is acceptable toward the minor and not more than six hours in the 200 series are acceptable.

Communication Studies

A minor in Communication Studies requires COMM 150 and 12 additional credits in communication studies, nine of which must be at the 300-400 level. Three hours at the 400 level must be included.

Communications

A minor in Communications requires 18 credits distributed as follows:

General Communications Option—ENGL 231, 312, and either COMM 305 or 361, PHIL 102, and six elective credits
Advertising Option—AP EC 351, ENGL 231 or 304, G C 104, PSYCH 330, and five elective credits

Commerce Option—AP EC 351 or THRD 468, COMM 305 or 361, ENGL 231 or 304, MGT 301, and six elective credits
Politics Option—ENGL 312 and either COMM 305 or 361, POL SC 341, 343, and six elective credits

Elective credits are approved by the Chair of the Department of English or her/his representative.

Community Recreation Management

A minor in Community Recreation Management requires PRTM 301 (preferred) or 101; PRTM 205, 241, 321, and six additional credits from PRTM 304, 307, 308, 317, 352, 391, 403, 421, 441, 452, 455.

Computer Science

A minor in Computer Science requires CP SC 212 and 12 additional credits in computer science of which at least nine credits must be at the 300 level or higher.

Crop and Soil Environmental Science

A minor in Crop and Soil Environmental Science requires AGRIC 104, CSENV 202, and nine or more credits at the 300 level or higher.
East Asian Studies
A minor in East Asian Studies requires 15 credits of which at least six credits must be at the 400 level, distributed as follows: three credits from Group I, six additional credits selected from Group I or from Group II, and six credits from Group III:

Group I—CHIN (ANTH) 418, HIST 334, JAPN (ANTH) 417, PO SC 372
Group II—HIST 330, 333, PHIL (CHIN) 312, 313, PO SC 472, 477, REL 314, or any other approved courses selected from department list
Group III—E AS 123, JAPN 401, 409, LANG 401, any Chinese or Japanese language course, or any other approved courses selected from department list

Courses in Groups II and III must represent a combination of Chinese and Japanese courses.

Economics
A minor in Economics requires ECON 314, 315, and nine additional credits from economics courses numbered 300 or higher.

Education
A minor in Education requires ED 405, ED F 301, 302, 334 or 335, ED SP 370. This minor does not meet the requirements for teacher certification and is not intended for persons who plan to teach in grades K-12.

English
A minor in English requires 15 credits in English above the sophomore level, arranged as follows:

Group I—ENGL 411
Group II—Three credits from ENGL 396, 397, 407, 408, 410, 414, 415, 416, 417, 444
Group III—Three credits from ENGL 422, 423, 424, 425
Group IV—Six additional credits above the sophomore level, including at least three credits from the 400 level

Department certification of proficiency in composition is required. (See discussion under English major.)

Entomology
A minor in Entomology requires ENT (BIOSC) 301 and 12 credits in entomology courses at the 300 level or higher.

Entrepreneurship
A minor in Entrepreneurship consists of 15 credits including the following: ACCT 201, ECON (MGT) 306 or 314, and FIN 306. Six credit hours from one of the following tracks are also required: Planning—MKT (E LE) 314, MGT (E LE) 315 Experimental—E LE 301, 401 Foundations—ECON (E LE) 321, SOC (E LE, PO SC, PSYCH) 356

Note: Not open to business majors except BA in Economics.

Environmental Engineering
A minor in Environmental Engineering requires at least 15 credits as follows: EES&S 401 or EN SP 200, at least six credits selected from Group I, and at least three credits from Group II. The remaining three credits may be selected from either group. All courses are to be chosen in consultation with the Department of Environmental Engineering and Science.

Environmental Science and Policy
A minor in Environmental Science and Policy requires at least 18 credits including EN SP 200, 400, and at least 12 credits from the following:

Group I—Science and Engineering: at least six credits: BIOSC 410, 441, 442, 443, 446, CH 413, CSENV 202, (E E&S) 401, 402, 430, 485, ENT 400, ENTOX 400, (BIOC, ENT) 430, GEO 408, MICRO 305, 410

Environmental Science and Policy
A minor in Environmental Science and Policy requires at least six credits including EN SP 200, 400, and at least 12 credits from the following:

Group I—Science and Engineering: at least six credits: BIOSC 410, 441, 442, 443, 446, CH 413, CSENV 202, (E E&S) 401, 402, 430, 485, ENT 400, ENTOX 400, (BIOC, ENT) 430, FOR 206, W FB 414


Group III—Environmental Policy and Social Impacts: at least two credits: AP EC 433, EN SP 471, 472, HIST (F&G R) 392, HLTH 431, PHIL 345, PSYCH 355, R S (SOC) 401, W FB 430

Equine Business
A minor in Equine Business requires AVS 150, 151, 340, 342, 400, 404, 413, CHE 401, 450, EN SP 400, ENTOX 400, (BIOSC, ENT) 430, FOR 206, W FB 414

Group I—Comparative Politics: at least two credits: AGRIC (EN SP) 315, B E 464, CM E 433, CR D 357, CSENV 404, EES&S (B E, IE) 484, ECON 319, FOR 315, 406, GEO 300, W FB 306, (BIOSC) 313, 350, 412, 462


Group III—Environmental Policy and Social Impacts: at least two credits: AP EC 433, EN SP 471, 472, HIST (F&G R) 392, HLTH 431, PHIL 345, PSYCH 355, R S (SOC) 401, W FB 430

Financial Management
A minor in Financial Management requires FIN 306 or 311, 305, 308, 312, and one of the following: FIN 307, 399, or any 400-level FIN course

Fine Arts
A minor in Fine Arts requires HUM 301, 302, and 15 credits from the following courses, of which at least nine credits must be earned in courses numbered 300 or higher, and no more than nine credits in any discipline selected from the following: A A H (all courses), ART (all courses), COMM 369, ENGL 345, 346, 357, 445, 446, HUM 306, 309, L S 214, MUSIC (all courses), THEA (all courses).

Food Science
A minor in Food Science requires FD SC 214, 401, and eight additional credits in FD SC or NUTR courses numbered 300 or higher.

Forest Products
A minor in Forest Products requires 15 credits which must include at least four courses selected from the following: FOR 341, 400, 441, 442, 444, 447. PKGOSC 471. Other courses at the 300 level or above may be selected with a Forest Products advisor's approval.

Forest Resource Management
A minor in Forest Resource Management requires either of the following:
1. FOR 305, 315, 460, and a minimum of six credits, selected with a forestry faculty advisor's approval, from any forestry course (for a total of 16 credits)
2. A formal program of study developed by the student and forestry advisor, containing a minimum of 15 credits of forestry courses. Nine credits must be at the 300 level or higher

Geography
The Geography minor consists of three credits of geography at the 100 level plus 15 credits of geography at the 300 or 400 level. At least one 400-level geography course must be taken. One of the following courses may be taken as part of the 15-credit, upper-level requirements but may not be substituted for the required 400-level geography course: BIOSC 442, R S (SOC) 471.

Geology
A minor in Geology requires GEO 101, 102, 103, and 12 additional credits drawn from 300- and 400-level geology courses. At least one 400-level course must be included.

Global Politics
A minor in Global Politics requires PO SC 102 or 104; 361; and 12 additional credits chosen from the list below. At least three of these credits must be from Group I and at least three credits from Group II:

Group II—International Politics: PO SC 362, 363, 367, 428, 457, 459

With the approval of the Political Science department chair, PO SC 310, 311, 389, 410, and 489 may be applied to the requirements for the Global Politics minor. Students majoring in Political Science may not minor in Global Politics.

Great Works
The Great Works minor requires GW (ENGL) 301 plus one course from each of the following groups. A minimum of nine credits must be at the 400 level.

Group I—Classical Civilization: Three credits from ENGL 403, 429, (COMM) 491, HIST 354, 355, 450, PHIL 315, PO SC 450
Group II—Post-classical Literature: Three credits from ENGL 408, 411, 414, 416, FR 400, G W 403, SPAN 303, 401
Group III—Philosophy, Religion, and Social Thought: Three credits from ENGL 350, HIST 471, PHIL 316, 317, PO SC 450, REL 301, 302, 401
Group IV—The Arts: Three credits from A A H 423, 424, HUM 301, 302, MUSIC 415, 416, THEA 315, 316
Group V—The Sciences: ENGL 434

Health Science
A minor in Health Science requires HLTH 298 plus 12 additional credits drawn from health courses or approved health-related courses (at least six of these hours must be taken in HLTH courses at the 300 level or higher).
History
A minor in History requires 15 credits in history at the 300 and 400 level. Three credits at the 400 level must be included.

Horticulture
A minor in Horticulture requires HORT 101 and 12 additional credits of horticulture courses (excluding HORT 271, 408, 471), nine credits of which must be at the 300 level or higher.

Human Resource Management
A minor in Human Resource Management requires 18 credits as follows: MGT 301, 307, 310, 400; plus two of the following: MGT 416, 425, 431, 435.

International Engineering and Science
The minor in International Engineering and Science, open to students in any major in the College of Engineering and Science, requires:
1. Completion of a foreign language through at least 202 and
2. Either (a) nine credits of engineering or science courses at the 300 level or higher transferred from a foreign institution, or (b) an approved international internship or research program in engineering or science of at least three months duration, plus nine credits chosen from at least 300 level advanced foreign language courses; and (c) one of the following: ECON 310, 412, 413; and PSYCH 361, 362, 371, 375, 472, 477, 478.

The international study, internship, or research program must be approved in advance by the Associate Dean for Undergraduate Studies of the College of Engineering and Science.

Legal Studies
A minor in Legal Studies requires 15 credits at the 300-400 level, with at least six credits selected from Group I, at least six credits selected from Group II, and the remaining three credits selected from either group at the student’s option:

Group I—HIST 328, 329, 496, PHIL 343, PSYCH 340, SOC 390, MGT 432, 433, SOC 390
Group II—ECON 402, LAW 312, 313, 322, 333, 340, 405, 420, 499

Music
A minor in Music requires MUSIC 151, 152, 205, 206, 207, 208, 251, 252, 415 or 416; four semesters of ensemble, totaling four credits, selected from MUSIC 233, 361, 362, 363, 369, 370, 371, 372; and one three-hour 300-400 level music course.

Natural Resource Economics
A minor in Natural Resource Economics requires AP EC 457, C R D 337, and three courses selected from AP EC 352, 403, 409, 421, 433, 452, 475, C R D (AP EC) 412, ECON 319.

Nonprofit Leadership
A minor in Nonprofit Leadership requires NPL 300, 390, 490, and one course selected from each of the following areas:
Group I—COMM 348, 480, PRTM 308
Group II—ED F 334, 335, PSYCH 340, SOC 350
Group III—MGT 307, PO SC 427, PSYCH 368
Group IV—MGT 402, PHIL 344, PO SC 321

Operations Management
A minor in Operations Management requires 18 credits as follows: MGT 301, 310, 390, 400, 404; plus one of MGT 402 or 408.

Packaging Science
A minor in Packaging Science requires 18 credits and must include PKGSC 102, 202, 204, and 206. Nine credits are selected from the following courses, totaling at least 9 credits: FD SC 401, 402, FOR 441, 442, G C 405, 406, PKGSC 368, 401, 404, 454, 464.

Park and Protected Area Management
A minor in Park and Protected Area Management requires PRTM 270, 330, 474, and nine credits selected from PRTM 320, 403, (GEOG) 430, 431.

Philosophy
A minor in Philosophy requires 15 credits in philosophy, nine of which must be at the 300-level or above.

Physics
A minor in Physics includes PHYS 122, 221, 222, and nine additional credits in physics courses at the 300 level or higher.

Military Leadership
A minor in Military Leadership requires at least 15 credits including M L 301, 302, 401, 402, and one of the following: HIST 390, NURS 305, or PO SC 428. Completion of Leadership Laboratory and participation in cadet activities are mandatory. (M L 100 and 200 levels may be taken concurrently in the sophomore year.)

Modern Languages
A minor in Modern Languages requires 15 credits in one modern language from courses at the 300 and 400 levels, including at least one literature course at the 400 level. In French, one of the 300-level courses must be FR 305, FR H438 and H439 and SPAN H438 and H439 may not be selected to satisfy requirements for the French or Spanish minor.

Music
A minor in Music requires MUSIC 151, 152, 205, 206, 207, 208, 251, 252, 415 or 416; four semesters of ensemble, totaling four credits, selected from MUSIC 233, 361, 362, 363, 369, 370, 371, 372; and one three-hour 300-400 level music course.

Natural Resource Economics
A minor in Natural Resource Economics requires AP EC 457, C R D 337, and three courses selected from AP EC 352, 403, 409, 421, 433, 452, 475, C R D (AP EC) 412, ECON 319.

Nonprofit Leadership
A minor in Nonprofit Leadership requires NPL 300, 390, 490, and one course selected from each of the following areas:
Group I—COMM 348, 480, PRTM 308
Group II—ED F 334, 335, PSYCH 340, SOC 350
Group III—MGT 307, PO SC 427, PSYCH 368
Group IV—MGT 402, PHIL 344, PO SC 321

Operations Management
A minor in Operations Management requires 18 credits as follows: MGT 301, 310, 390, 400, 404; plus either MGT 402 or 408.

Packaging Science
A minor in Packaging Science requires 18 credits and must include PKGSC 102, 202, 204, and 206. Nine credits are selected from the following courses, totaling at least 9 credits: FD SC 401, 402, FOR 441, 442, G C 405, 406, PKGSC 368, 401, 404, 454, 464.

Park and Protected Area Management
A minor in Park and Protected Area Management requires PRTM 270, 330, 474, and nine credits selected from PRTM 320, 403, (GEOG) 430, 431.

Philosophy
A minor in Philosophy requires 15 credits in philosophy, nine of which must be at the 300-level or above.

Physics
A minor in Physics includes PHYS 122, 221, 222, and nine additional credits in physics courses at the 300 level or higher.

Plant Pathology
A minor in Plant Pathology requires PL PA 310 and 12 credits from the following: any 300-400 level PL PA courses, BIOSC 425, 426, GEN (BIOSC, MICRO) 418, 1 PM 401, MICRO 305.

Political Science
A minor in Political Science requires PO SC 101, 102, or 104 plus 15 additional credits at the 300-400 level, nine of which must be selected from three different fields of political science as follows:
American Government—PO SC 403, 405, 416, 432, 442
Comparative Politics—PO SC 371, 372, 466, 471, 472, 473, 476, 477, 478
International Politics—PO SC 361, 362, 363, 428
Political Theory—PO SC 450, 453
Public Policy and Public Administration—PO SC 302, 321, 421, 423, 424, 430

Public Policy
A minor in Public Policy requires PO SC 421, 423, and 430, plus nine credit hours in courses dealing with specific policy domains and approved by the Department of Political Science.

Religion
A minor in Religion requires 15 credits, nine of which must be at the 300-level or above. PHIL 303 and PO SC 407 may be included.

Russian Area Studies
A minor in Russian Area Studies requires 15 credit hours of which three credits must be in Russian language courses at the 200 level or above. The remaining twelve credits are distributed as follows:
Group I—three credits from RUSS 307, 340, 360, 361, 398, 460
Group II—three credits from HIST 385, 386, 387, 494
Group III—three credits from PO SC 471, 473
Group IV—three additional credits from any of the course listed above.

Science and Technology in Society
A minor in Science and Technology in Society requires 15 credits, at least six of which must be at the 400 level. See History Department advisor for list of approved courses.
Screenwriting
A minor in Screenwriting requires 15 credits in ENGL above the sophomore level as follows: ENGL 345, 357, 448 (six credits); and one of the following: ENGL 450, 451, 452, 453; THEA (ENGL) 347, or other course as approved by the departmental Director of Undergraduate Studies.

Sociology
A minor in Sociology requires SOC 201 and 15 credits from sociology and rural sociology courses numbered 300 or higher. At least one 400-level course must be included.

Spanish-American Area Studies
A minor in Spanish-American Area Studies requires the equivalent of SPAN 202, plus 15 credits distributed as follows: six credits from HIST 340, 341, 342, 440, GEOG 340; six credits from SPAN 308, 311, (PO SCI) 382, 403, 422, 435; and ECON 410.

Sport Management
A minor in Sport Management requires PRTM 254, 453, 454, and nine additional credits in PRTM, six of which must be selected from PRTM 205, 305, 307, 421, 441, 452, 455.

Textiles
A minor in Textiles requires 15 credits from the following: TEXT 201, 202, 460, and any other approved textile course such as TEXT 308, 314, 416, 426, 428, 440, 470, 471, 472, 475, 476.

Theatre
A minor in Theatre requires 20 credits arranged as follows: three credits of dramatic literature and history (ENGL 410, 411, 429, (THEA) 430, THEA (ENGL) 347); three credits of theatre history (THEA 315, 316, 317); six credits in a sequence (THEA 278/479, 315/316, (ENGL) 347/447, 372/472, 376/476, 377/477 or 487 or 497); six credits in THEA at the 300-400 level; and two credits of THEA 279.

Therapeutic Recreation
A minor in Therapeutic Recreation requires PRTM 301 (preferred) or 101, 311; and 12 additional credits in PRTM, nine of which must be selected from PRTM 412, 417, 418, 420.

Travel and Tourism
A minor in Travel and Tourism requires PRTM 301 (preferred) or 101; PRTM 342; and 12 additional credits selected from PRTM 343, 344, 349, 441, 443, 444, 445, 446, either (EGEO) 430 or 447.

Turfgrass
A minor in Turfgrass requires CSENV 202, HORT 212, 412, and two of the following: AG M 402, HORT (CSENV) 433, PL PA (ENT) 406.

Urban Forestry
A minor in Urban Forestry requires a minimum of 16 credits, distributed as follows: Group I—FOR (HORT) 427, 450, 480, HORT 208. Group II—A minimum of three credits selected from C R P 401, HORT 308. Group III—A minimum of three credits selected from ENT 401 or HORT 303.

Wildlife and Fisheries Biology
A minor in Wildlife and Fisheries Biology requires W FB 300; 350; six additional hours selected from 300-level or higher W FB courses, except 463 and 490; and three credits from AP EC 475, BIOSC 464, 468, 470, 472, 477, ENTOX 400, FOR 415.

Women’s Studies
A minor in Women’s Studies requires 15 credits at the 300 and 400 level, distributed as follows: Group I—Six credits: W S 301 or 498 Group II—Six credits from core courses: ENGL 380, 436, HIST 318, PSYCH 308, SOC 461, and any additional courses approved for Group II Group III—The final three credits may be earned by taking any approved Women’s Studies minor course. Courses selected in Groups II and III must represent at least two disciplines. Courses are to be scheduled in consultation with the appropriate advisors. The Women’s Studies advisor will provide all affected advisors with a list of approved courses prior to registration.

Writing
A minor in writing requires 15 credits as follows: Business and Technical Option—AP EC 351 or G C 104, CP SC 120, ENGL 304, 314, 490, 495 Journalism Option—ENGL 231, 333, 334, 335; one of the following: AP EC 351, COMM 250, CP SC 120, G C 104, ENGL 217, 304, 312, 314, PHIL 102, THR 468; and any course approved by the Chair of the English Department Writing Pedagogy Option—ENGL 312, 400, 401, 485, and any 300-400-level writing course offered by the Department of English Creative Writing Options Drama—THEA (ENGL) 347, 447 (six credits), ENGL (THEA) 430, and one of the following: ENGL 312, 410, 411 Fiction—ENGL 345, 432, 445 (six credits), and one of the following: ENGL 312, 414, 425, 426 Poetry—ENGL 346, 446 (six credits), 431, and one of the following: ENGL 312, 416, 417, 444

PREPROFESSIONAL STUDIES
Clemson University will award the degree of Bachelor of Arts or Bachelor of Science in Preprofessional Studies to a student who is pursuing a degree in a professional school. The student must have also satisfactorily completed three years of undergraduate work in an appropriate curriculum and the first year of work in an accredited medical, dental, veterinary, or other accredited professional school, provided the student fulfills the requirements for the three-year program as follows and the other specified conditions are met.
1. At least two of the three years of professional work, including the third year, must be taken in residence at this University.
2. A minimum of three years of undergraduate work (i.e. preprofessional school credit) must be presented.
3. Normal progress must have been made toward fulfilling the degree requirement of the curriculum in which the student is enrolled at Clemson.
4. The student applying for the Bachelor of Arts or Bachelor of Science in Preprofessional Studies must be recommended by the college at Clemson in which the curriculum that he/she is majoring as a Clemson student is located or by the college in which three years of normal progress toward a degree can be identified.
5. If the combination of preprofessional work taken and the work in the first year of professional school is equivalent to that which is required in some other bachelor's degree program at Clemson, the college concerned may recommend the other bachelor's degree.

The above requirements and conditions became effective July 1, 1974, and will apply to all students who satisfy these requirements and conditions after that date.

A Clemson student having left the University before receiving the bachelor's degree (prior to July 1, 1974) and having enrolled immediately in an accredited professional postgraduate school may apply for a bachelor's degree from Clemson and have his/her application considered on an individual basis. The college(s) at Clemson considering the application is authorized to examine the student's entire record in both preprofessional and professional studies and exercise its own judgment concerning the three-year requirement for Preprofessional Studies.

SECOND BACCALAUREATE DEGREE
To complete a second baccalaureate degree, a student must complete a minimum of 30 semester hours at Clemson in addition to the greater number of hours required for either degree and satisfy all course and grade requirements for the second degree.

DOUBLE MAJOR
A student in a Bachelor of Arts degree program may be awarded a single baccalaureate degree with a double major. The two majors may be within a single college or may involve two colleges but are limited to Bachelor of Arts degree programs.

GRADUATE DEGREES
Graduate degrees are available from all five colleges in addition to the interdisciplinary programs offering degrees in Digital Production Arts and Policy Studies. Clemson University offers more than 100 graduate degree programs. The degrees of Doctor of Philosophy, Doctor of Education, Education Specialist, Master of Arts, Master of Science, Master of Agricultural Education, Master of Architecture, Master of Arts in Teaching, Master of Business Administration, Master of Career and Technology Education, Master of City and Regional Planning, Master of Construction Science and Management, Master of Education, Master of Electronic Commerce, Master of Engineering, Master of Fine Arts, Master of Forest Resources, Master of Health Administration, Master of Human Resource Development, Master of Parks, Recreation, and Tourism Management, Master of Professional Accountancy, Master of Public Administration, and Master of Real Estate Development are awarded to students who satisfactorily complete prescribed graduate programs.

Additional information is available in the Graduate Announcements.
AGRICULTURAL AND APPLIED ECONOMICS
Bachelor of Science
The Agricultural and Applied Economics curriculum emphasizes a strong background in economics with applications to production agriculture, agricultural business, natural resources, and the environment. Courses are also included in basic agricultural and biological sciences, liberal arts, and business.

Employment opportunities for graduates in Agricultural and Applied Economics are many and diverse. Private sector opportunities include agricultural production, banking, finance, marketing, and public relations. Public sector opportunities include national/local organizations, government agencies, educational institutions, and cooperative extension services. Graduates have also begun businesses or returned to family-owned businesses. This major also provides an excellent background for professional or graduate study in several disciplines.

Students in the Agricultural and Applied Economics curriculum take a basic set of courses during the freshman and sophomore years. During the junior and senior years, students concentrate in one of five emphasis areas: Agricultural Business, Economics, International Trade and Development, Production, and Real Estate. Students should select an emphasis area by the end of the sophomore year.

Freshman Year
First Semester
3 - AP EC 205 Agriculture and Society
3 - C U 101 University Success Skills
3 - COMM 150 Intro. to Human Communication
3 - MTHSC 102 Intro. to Mathematical Analysis
4 - Natural Science Requirement
15

Second Semester
3 - AP EC 202 Agricultural Economics
3 - CP SC 120 Intro. to Information Technology
3 - ENGL 103 Accelerated Composition
3 - EX ST 462 Statistics Applied to Economics
3 - PHIL 103 Introduction to Ethics
15

Sophomore Year
First Semester
3 - ACCT 201 Financial Accounting Concepts
3 - AP EC 308 Quantitative Applied Economics
3 - COMM 250 Public Speaking
3 - ECON 212 Principles of Macroeconomics
3 - Arts and Humanities (Literature) Requirement
15

Second Semester
3 - ACCT 202 Managerial Accounting Concepts
3 - AP EC 302 Economics of Farm Management
3 - EX ST 301 Introductory Statistics
3 - SOC 201 Introduction to Sociology
3 - Agriculture or Business Requirement
15

Junior Year
First Semester
3 - AP EC 309 Econ. of Agricultural Marketing
3 - ECON (MGT) 306 Managerial Economics or
3 - ECON 314 Intermediate Microeconomics
3 - ENGL 304 Business Writing or
3 - ENGL 314 Technical Writing
3 - MGT 301 Principles of Management
3 - MKT 301 Principles of Marketing
15

Second Semester
3 - AP EC 319 Agribusiness Management
3 - AP EC 421 Globalization or
3 - AP EC 460 Agricultural Finance
3 - C R D 335 Leadership in Org. and Comm.
3 - COMM 366 Small Group and Team Comm. or
3 - COMM 364 Organizational Comm. or
3 - COMM 367 Negotiations Communication
3 - ECON 302 Money and Banking or
3 - ECON 315 Interm. Microeconomics
15

Senior Year
First Semester
3 - AP EC 402 Production Economics
3 - AP EC 452 Agricultural Policy
3 - CSENV (AP EC) 426 Cropping Syst. Analysis
3 - EX ST 462 Statistics Applied to Economics
3 - MGT 307 Personnel Management
15

Second Semester
3 - AP EC 456 Prices
3 - LAW 312 Commercial Law or
3 - LAW 322 Legal Environment of Business
8 - Agriculture or Business Requirement
1 - Elective
15

120 Total Semester Hours
1See General Education Requirement.
2See advisor.

COMMUNITY AND ECONOMIC DEVELOPMENT CONCENTRATION
The program in Community and Economic Development provides career opportunities for social science administration, management, outreach, and research. A Bachelor of Science degree in Agricultural and Applied Economics with a concentration in Community and Economic Development facilitates employment with local, state, regional, federal, and international agencies; research and consulting firms; financial institutions; foundations and councils; public and private utilities; and organizations requiring entrepreneurial skills. This major provides an excellent background for professional and graduate study in several disciplines.

Associations between natural resources and social, economic, and political institutions are investigated. The Community and Economic Development program provides the conceptual, analytical, and pragmatic qualifications to succeed as economic development specialists. Students receive practical training, and internships are available to complement coursework.
Freshman Year
First Semester
3 - CP SC 120 Intro. to Information Technology
3 - MTHSC 102 Intro. to Mathematical Analysis
3 - Arts and Humanities (Non-Lit.) Requirement
3 - Science and Tech. in Society Requirement
3 - Social Science Requirement
15
Second Semester
3 - ACCT 201 Financial Accounting Concepts
3 - ENGL 103 Accelerated Composition
4 - Natural Science Requirement
5 - Elective
15
Sophomore Year
First Semester
3 - EX ST 301 Introductory Statistics
3 - Arts and Humanities (Literature) Requirement
3 - Microeconomics Requirement
3 - Oral Communication Requirement
3 - Elective
15
Second Semester
3 - C R D 335 Natural Resources Economics
3 - ECON 212 Principles of Macroeconomics
3 - PO SC 302 State and Local Government
3 - Advanced Writing Requirement
3 - Behavioral Science Requirement
15
Junior Year
First Semester
3 - C R D 335 Leadership in Org. and Commun.
3 - ECON (MG T) 306 Managerial Economics or
3 - ECON 314 Intermediate Microeconomics
3 - Behavioral Science Requirement
3 - Emphasis Area
3 - Marketing Requirement
15
Second Semester
3 - AP EC 352 Public Finance
3 - C R D 336 Community Development Methods
3 - Behavioral Science Requirement
3 - Emphasis Area
3 - Planning Requirement
15
Senior Year
First Semester
3 - C R D (AP EC) 411 Regional Impact Analysis
3 - EX ST 462 Statistics Applied to Economics
3 - R S (SOC) 459 The Community
6 - Emphasis Area
15
Second Semester
3 - C R D (AP EC) 412 Regional Economic Development Theory and Policy
3 - Behavioral Science Requirement
3 - Comm. and Econ. Dev. Practice/Applications
6 - Emphasis Area
15
120 Total Semester Hours

Agricultural Education
Bachelor of Science
Agricultural Education provides broad preparation in agricultural sciences and professional education, including communications and human relations skills. In addition to required courses, students may select a minor. (See page 55.)

The Bachelor's degree prepares students for professional education positions in the mainstream of agriculture including teaching, cooperative extension service, and government agricultural agencies. This degree also prepares students for other educational work such as agricultural missionary, public relations, and training officers in agricultural industry.

Freshman Year
First Semester
1 - AG ED 102 Agric. Ed. Freshman Seminar
3 - AG ED 200 Agricultural Applications of Educational Technology
4 - BIOL 103 General Biology I
3 - PHIL 102 Introduction to Logic
2 - Emphasis Area
3-4 - Mathematics Requirement
16-17
Second Semester
1 - AG ED 100 Orientation and Field Experience
3 - AG ED 103 Multiculturalism in Agric. Ed.
3 - AVS 150 Introduction to Animal Science
2 - Emphasis Area
BIOL 104 General Biology II
3 - ENGL 103 Accelerated Composition
15
Sophomore Year
First Semester
3 - AG ED 201 Intro. to Agricultural Education
3 - AG ED 204 Applied Agriculture Calculations
3 - AG ED 355 Team and Organizational Leadership in Food and Fiber Systems
3 - AP EC 202 Agricultural Economics
4 - CH 105 Beginning Gen. and Organic Chem.
16
Second Semester
3 - AG ED 203 Teaching Agriscience
3 - AG M 205 Principles of Fabrication
4 - CH 106 Begin. General and Organic Chem.
3 - HORT 212 Introduction to Turfgrass Culture
3 - HORT 213 Turfgrass Culture Lab.
3 - Arts and Humanities (Literature) Requirement
17

Junior Year
First Semester
3 - AG ED 303 Mech. Technology for Agric. Ed.
2 - AG M 221 Surveying
3 - ANTH 201 Introduction to Anthropology
4 - CSENV 202 Soils
3 - ED F 302 Educational Psychology
3 - HORT 303 Plant Materials
18
Second Semester
1 - AG ED 302 Agric. Education Junior Seminar
3 - COMM 150 Intro. to Human Comm. or
3 - COMM 250 Public Speaking
3 - HORT 305 Plant Propagation
3 - Advanced Writing Requirement
6 - Emphasis Area
16
Senior Year
First Semester
12 - AG ED 406 Directed Teaching
2 - Emphasis Area
14
124-125 Total Semester Hours

AGRICULTURAL MECHANIZATION AND BUSINESS
Bachelor of Science
The Agricultural Mechanization and Business major provides a program for students who desire training in areas relevant to dynamic agricultural enterprises. The program is organized with strength in both business management and technical support of agriculture and agribusiness. To produce well-rounded individuals with good communication skills, the curriculum includes courses in the humanities, social sciences, English composition, and public speaking.

Graduates in Agricultural Mechanization and Business find meaningful and remunerative employment in a variety of situations directly and indirectly related to agricultural production, processing, marketing, and the many services connected therewith. Farming and technical sales in the agricultural, industrial, and heavy equipment industries are frequently chosen careers.

By completing this curriculum, graduates will have fulfilled the requirements for an Agricultural Business Management minor or other selected minor. Contact the Enrolled Student Services Office to have the minor recorded.

41
Freshman Year
First Semester
3 - AG ED 200 Agricultural Applications of Educational Technology
1 - AG M 101 Introduction to Agricultural Mechanization and Business
4 - BIOL 103 General Biology I
4 - CH 105 Beginning Gen. and Organic Chem.
3 - MTHSC 102 Intro. to Mathematical Analysis
15

Second Semester
4 - BIOL 104 General Biology II
4 - CH 106 Beginning Gen. and Organic Chem.
3 - ENGL 103 Accelerated Composition
3 - EX ST 301 Introductory Statistics
1 - Elective
15

Sophomore Year
First Semester
3 - AG M 205 Principles of Fabrication
3 - AP EC 202 Agricultural Economics
4 - PHYS 200 Introductory Physics or
3 - PHYS 207 General Physics I and
3 - PHYS 209 General Physics I Lab.
3 - Arts and Humanities (Literature) Requirement
2 - Elective
15

Second Semester
3 - ACCT 201 Financial Accounting Concepts
3 - AG M 206 Machinary Management
3 - AG M 303 Calculations for Mechanized Agric.
3 - COMM 250 Public Speaking
2 - EG 209 Intro. to Engr./Comp. Graphics
14

Junior Year
First Semester
2 - AG M 221 Surveying
2 - AG M 301 Soil and Water Conservation
3 - AG M 460 Electrical Systems
3 - AP EC 302 Economics of Farm Management
3 - ENGL 304 Business Writing or
3 - ENGL 314 Technical Writing
3 - Minor Requirement
16

Second Semester
3 - AG M 406 Mechanical and Hydraulic Systems
3 - AP EC 309 Econ. of Agricultural Marketing
4 - CS ENV 202 Soils
3 - Arts and Humanities (Non-Lit.) Requirement
3 - Minor Requirement
16

Senior Year
First Semester
3 - AG M 402 Drainage, Irrig. and Waste Mgt.
3 - AP EC 319 Agribusiness Management
3 - Agriculture Requirement
3 - Minor Requirement
3 - Social Science Requirement
15

ANIMAL AGRIBUSINESS CONCENTRATION

Second Semester
3 - AG M 405 Agricultural Structures and Environmental Control
3 - AG M 410 Precision Agriculture Technology
3 - AG M 452 Mobile Power
3 - AG M 472 Capstone
3 - Minor Requirement
15

121 Total Semester Hours

ANIMAL AND VETERINARY SCIENCES
Bachelor of Science
The curriculum in Animal and Veterinary Sciences provides students with a broad base of understanding of scientific principles and the application of these principles to scientific, technical, and business phases of livestock and poultry production, processing, and marketing. Special emphasis is placed on hands-on instruction, and students are given many opportunities to work with animals at the Morgan Poultry Farm, LaMaster Dairy Center, Starkey Swine Center, Equine Center, and Simpson Beef Unit. Students may choose from three concentrations: Animal Agribusiness, Equine Business, or Preveterinary and Science.

Students choosing the Animal Agribusiness Concentration will be prepared for careers in the animal industries including production, sales and marketing, business management, advertising, and extension. Students in the Equine Business Concentration will be prepared for careers as trainers, managers, riding instructors, sales representatives, etc. Students selecting the Preveterinary and Science Concentration will meet the requirements for most veterinary schools, graduate schools, and medical and dental schools. Students with South Carolina residency may compete for slots at the Mississippi State, Tuskegee, and University of Georgia Colleges of Veterinary Medicine.

ANIMAL AGRIBUSINESS CONCENTRATION

Freshman Year
First Semester
3 - AVS 100 Orientation to AVS
3 - AVS 150 Introduction to Animal Science
1 - AVS 151 Intro. to Animal Science Lab.
4 - BIOL 103 General Biology I or
5 - BIOL 110 Principles of Biology I
4 - CH 101 General Chemistry
3 - Arts and Humanities (Non-Lit.) Requirement
16-17

Second Semester
4 - BIOL 104 General Biology II or
5 - BIOL 111 Principles of Biology II
4 - CH 102 General Chemistry
4 - ENGL 103 Accelerated Composition
3 - MTHSC 101 Gen. Math. for Inf. Sci. or
3 - MTHSC 102 Intro. to Math. Analysis or
4 - MTHSC 106 Calculus of One Variable I
2 - AVS Techniques Requirement

Sophomore Year
First Semester
3 - AVS 200, 201, 203, 204, or 206
3 - AVS 302, 309, 311, or 323
3 - AG M 402, 403, 410, AP EC 302, 309, 319, 351, 409, 420, 421, 433, 452, 456, 460, AVS 444, 455, CSENV 202, BCON 211, 212, LAW 312, 313, MGT 301, 307, MKT 301, SPAN 101, or 102

Junior Year
First Semester
4 - AVS 375 Animal Nutrition
3 - AVS 413 Animal Products
3 - AVS 433 Animal Reproduction
2 - AVS Techniques Requirement
3 - Departmental Requirement
3 - Science and Tech. in Society Requirement
17

Second Semester
3 - AVS 370 Principles of Animal Nutrition
3 - AVS 470 Animal Genetics
3 - Advanced Writing Requirement
3 - Departmental Requirement
16

Senior Year
First Semester
12 - AVS 360 Advanced Internship

Second Semester
3 - AVS 406 Seminars and Related Topics
3 - AVS 410 Domestic Animal Behavior
3 - AVS 415 Contemporary Issues in Animal Sci.
4 - AVS 417 Animal Agribusiness Development
4 - AVS 450 Animal Production Systems
16

123-125 Total Semester Hours

Additional information is available from the departmental offices or can be found on the Web at www.clemson.edu/agbioeng/agnecch/index.htm.
### EQUINE BUSINESS

**CONCENTRATION**

**Freshman Year**

<table>
<thead>
<tr>
<th>First Semester</th>
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</thead>
<tbody>
<tr>
<td>1. AVS 100 Orientation to AVS</td>
</tr>
<tr>
<td>2. BIOL 103 General Biology I or ( \text{or} ) 3. AVS 151 Intro. to Animal Science Lab.</td>
</tr>
<tr>
<td>4. CH 101 General Chemistry</td>
</tr>
<tr>
<td>5. Arts and Humanities (Non-Lit.) Requirement</td>
</tr>
<tr>
<td>17</td>
</tr>
</tbody>
</table>

122–125 Total Semester Hours

*See General Education Requirements. Three of these credit hours must also satisfy the Cross-Cultural Awareness Requirement.*

AVS 200, 201, 203, or 206

AG M 401, 402, 405, 410, AP EC 302, 309, 319, 351, 409, 420, 421, 433, 452, 456, 460. AVS 444, CSENV 202, ECON 211, 212, LAW 312, 313, MGT 301, 307, MKT 301, SPAN 101, or 102

AVS 441, 442, 443, or 491

**Second Semester**

| 2. AVS 204 Horse Care Techniques |
| 3. BIOL 104 General Biology II or \( \text{or} \) 4. AVS 111 Principles of Biology II |
| 4. CH 102 General Chemistry |
| 3. MTHSC 103 Calculus of One Variable |
| 16-18 |

**Sophomore Year**

<table>
<thead>
<tr>
<th>First Semester</th>
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</thead>
<tbody>
<tr>
<td>1. AVS 150 Introduction to Animal Science</td>
</tr>
<tr>
<td>2. BIOL 103 General Biology I or ( \text{or} ) 3. AVS 111 Principles of Biology II</td>
</tr>
<tr>
<td>4. CH 101 General Chemistry</td>
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<tr>
<td>5. Arts and Humanities (Non-Lit.) Requirement</td>
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</tbody>
</table>

122–125 Total Semester Hours

*See General Education Requirements. Three of these credit hours must also satisfy the Cross-Cultural Awareness Requirement.*

AVS 200, 201, 203, or 206

AG M 401, 402, 405, 410, AP EC 302, 309, 319, 351, 409, 420, 421, 433, 452, 456, 460. AVS 444, CSENV 202, ECON 211, 212, LAW 312, 313, MGT 301, 307, MKT 301, SPAN 101, or 102

AVS 441, 442, 443, or 491

**Second Semester**

| 2. AVS 309 Principles of Equine Evaluation |
| 3. BIOL 104 Animal Health |
| 2. AVS Techniques Requirement |
| 3. Departmental Requirement |
| 3. Social Science Requirement |
| 13 |

**Junior Year**

<table>
<thead>
<tr>
<th>First Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. AVS 205 Horsemanship I</td>
</tr>
<tr>
<td>2. AVS 301 Anat. and Phys. of Domestic Animals</td>
</tr>
<tr>
<td>3. AVS 370 Principles of Animal Nutrition</td>
</tr>
<tr>
<td>4. AVS 470 Animal Genetics</td>
</tr>
<tr>
<td>3. Advanced Writing Requirement</td>
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<tr>
<td>15</td>
</tr>
</tbody>
</table>

**Second Semester**

| 3. AVS 375 Applied Animal Nutrition |
| 3. AVS 410 Domestic Animal Behavior |
| 3. AVS 453 Animal Reproduction |
| 2. AVS Techniques Requirement |
| 3. Departmental Requirement |
| 14 |

**Senior Year**

<table>
<thead>
<tr>
<th>First Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. AVS 385 Equine Behavior and Training</td>
</tr>
<tr>
<td>2. AVS 406 Seminars and Related Topics</td>
</tr>
<tr>
<td>3. AVS 416 Equine Exercise Physiology</td>
</tr>
<tr>
<td>3. AVS Experience-Based Activity</td>
</tr>
<tr>
<td>3. Departmental Requirement</td>
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<tr>
<td>3. Elective</td>
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<td>17</td>
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</tbody>
</table>

122–125 Total Semester Hours

*See General Education Requirements. Three of these credit hours must also satisfy the Cross-Cultural Awareness Requirement.*

AVS 200, 201, 203, or 206

AG M 401, 402, 405, 410, AP EC 302, 309, 319, 351, 409, 420, 421, 433, 452, 456, 460. AVS 444, CSENV 202, ECON 211, 212, LAW 312, 313, MGT 301, 307, MKT 301, SPAN 101, or 102

AVS 441, 442, 443, or 491

**PREVETERINARY AND SCIENCE CONCENTRATION**

**Freshman Year**

<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>1. AVS 100 Orientation to AVS</td>
</tr>
<tr>
<td>2. BIOL 103 General Biology I or ( \text{or} ) 3. AVS 151 Intro. to Animal Science Lab.</td>
</tr>
<tr>
<td>4. CH 101 General Chemistry</td>
</tr>
<tr>
<td>5. Arts and Humanities (Non-Lit.) Requirement</td>
</tr>
<tr>
<td>17</td>
</tr>
</tbody>
</table>

122–125 Total Semester Hours

*See General Education Requirements. Three of these credit hours must also satisfy the Cross-Cultural Awareness Requirement.*

AVS 200, 201, 203, or 206

AG M 401, 402, 405, 410, AP EC 302, 309, 319, 351, 409, 420, 421, 433, 452, 456, 460. AVS 444, CSENV 202, ECON 211, 212, LAW 312, 313, MGT 301, 307, MKT 301, SPAN 101, or 102

AVS 441, 442, 443, or 491

**Second Semester**

| 2. AVS 204 Horse Care Techniques |
| 3. BIOL 104 General Biology II or \( \text{or} \) 4. AVS 111 Principles of Biology II |
| 4. CH 102 General Chemistry |
| 3. MTHSC 103 Calculus of One Variable |
| 16-18 |

**Sophomore Year**

<table>
<thead>
<tr>
<th>First Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. AVS 150 Introduction to Animal Science</td>
</tr>
<tr>
<td>2. BIOL 103 General Biology I or ( \text{or} ) 3. AVS 111 Principles of Biology II</td>
</tr>
<tr>
<td>4. CH 102 General Chemistry</td>
</tr>
<tr>
<td>3. MTHSC 103 Calculus of One Variable</td>
</tr>
<tr>
<td>16-18</td>
</tr>
</tbody>
</table>

**Junior Year**

<table>
<thead>
<tr>
<th>First Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CH 223 Organic Chemistry</td>
</tr>
<tr>
<td>1. CH 227 Organic Chemistry Lab.</td>
</tr>
<tr>
<td>1. PHYS 207 General Physics I</td>
</tr>
<tr>
<td>1. PHYS 209 General Physics I Lab.</td>
</tr>
<tr>
<td>2. AVS Techniques Requirement</td>
</tr>
<tr>
<td>2. Social Science Requirement</td>
</tr>
<tr>
<td>16</td>
</tr>
</tbody>
</table>

**Second Semester**

| 3. CH 224 Organic Chemistry |
| 3. CH 228 Organic Chemistry Lab. |
| 3. EX ST 301 Introductory Statistics |
| 3. PHYS 208 General Physics II |
| 1. PHYS 210 General Physics II Lab. |
| 2. AVS Techniques Requirement or \( \text{or} \) 3. COMM 250 Public Speaking |
| 2. AVS Techniques Requirement |
| 15-16 |

**Senior Year**

<table>
<thead>
<tr>
<th>First Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. AVS 385 Equine Behavior and Training</td>
</tr>
<tr>
<td>2. AVS 406 Seminars and Related Topics</td>
</tr>
<tr>
<td>3. AVS 416 Equine Exercise Physiology</td>
</tr>
<tr>
<td>3. AVS Experience-Based Activity</td>
</tr>
<tr>
<td>3. Departmental Requirement</td>
</tr>
<tr>
<td>3. Elective</td>
</tr>
<tr>
<td>17</td>
</tr>
</tbody>
</table>

122–125 Total Semester Hours

*See General Education Requirements. Three of these credit hours must also satisfy the Cross-Cultural Awareness Requirement.*

AVS 200, 201, 203, or 206

Select AVS 302, 304, 309, 311, or 323. One of these courses in combination with AVS 406 will satisfy the General Education Oral Communication Requirement.


AVS 441, 442, 443, or 491

**BIOCHEMISTRY**

**Bachelor of Science**

Biochemistry is the study of the molecular basis of life. To comprehend current biochemical information and make future contributions to our molecular understanding of life processes, students must obtain a broad background in biology and a firm foundation in chemistry, mathematics, and physics. This is the basis of the biochemistry curriculum.

The program provides an excellent educational background for professional school (medicine, dentistry, or veterinary medicine) and graduate school in biochemistry, molecular biology, or another biological science discipline. Graduates will find employment opportunities in the research and service programs of universities, medical schools, hospitals, research institutes, and industrial and government laboratories.
### Freshman Year

**First Semester**
1. BIOC 103 Careers in Biochem. and Genetics
2. BIOL 110 Principles of Biology I
3. CH 101 General Chemistry
4. MTHSC 106 Calculus of One Variable I

**Second Semester**
5. BIOL 111 Principles of Biology II
4. CH 102 General Chemistry
3. ENGL 103 Accelerated Composition
4. MTHSC 108 Calculus of One Variable II

### Sophomore Year

**First Semester**
3. CH 223 Organic Chemistry
1. CH 227 Organic Chemistry Lab. ¹
3. GEN 302 Molecular and General Genetics
1. GEN 303 Molecular and Gen. Genetics Lab.
3. PHYS 122 Physics with Calculus I
1. PHYS 124 Physics Lab. I
3-4. Advanced Mathematics Requirement ²

**Second Semester**
3. BIOC 301 Molecular Biochemistry
1. CH 224 Organic Chemistry
1. CH 228 Organic Chemistry Lab. ¹
3. COMM 150 Intro. to Human Comm. or 4. COMM 250 Public Speaking
3. PHYS 221 Physics with Calculus II
1. PHYS 223 Physics Lab. II
3. Arts and Humanities (Literature) Requirement ³

### Junior Year

**First Semester**
3. BIOC 431 Physical Approach to Biochem.
2. BIOC 433 General Biochemistry Lab. I
3. CH 330 Introduction to Physical Chemistry ⁴
3. ENGL 314 Technical Writing
3. Science Requirement ³

**Second Semester**
3. BIOC 432 Biochemistry of Metabolism
2. BIOC 434 General Biochemistry Lab. II
3. BIOC 436 Nucleic Acid and Protein Biosyn.
3. PHIL 326 Science and Values
3. Science Requirement ³

### Senior Year

**First Semester**
3. BIOC 491 Special Problems in Biochemistry ⁶
3. BIOC 461 Cell Biology
3. GEN 440 Bioinformatics
3. Social Science Requirement ³
4. Elective ⁷

**Second Semester**
3. BIOC 491 Special Problems in Biochemistry ⁶
2. BIOC (GEN) 493 Senior Seminar
3. Social Science Requirement ³
6. Elective ⁷

---

# Biological Sciences

## Bachelor of Science

Biology encompasses the broad spectrum of the modern life sciences, including the study of all aspects of life from the structure and function of the whole organism down to the subcellular levels and up through the interactions of organisms to the integrated existence of life on the entire planet. Descriptive, structural, functional, and evolutionary questions are explored through the hierarchy of the organization of life. Applications of current advances to the health and well-being of man and society, to nature and the continuation of earth as a balanced ecosystem, and to an appreciation of the place of natural science in our cultural heritage receive emphasis.

Majors in Biological Sciences receive classroom, laboratory, and field training in biology with an emphasis on chemistry, mathematics, and physics as necessary tools. The Bachelor of Science in Biological Sciences curriculum prepares students for graduate study in any of the life science areas (such as agricultural sciences, biochemistry, botany, cell and molecular biology, conservation, ecology and environmental science, entomology, forestry, genetics, industrial and regulatory biology, microbiology, morphology, physiology, wildlife biology, and zoology; for the health professions (medicine, dentistry, etc.); veterinary medicine; and for science teaching.

## Combined Bachelor of Science in Biological Sciences/Master of Science in Bioengineering

Under this plan, students may reduce the time necessary to earn both degrees by applying graduate credits to both undergraduate and graduate program requirements. See Academic Regulations in this catalog for enrollment guidelines and procedures.

Students are encouraged to obtain the specific requirements for the dual degree from the Department of Biological Sciences or Bioengineering as early as possible in their undergraduate program as a number of required courses have prerequisites not normally taken by Biological Sciences majors.

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### Freshman Year

**First Semester**
5. BIOL 110 Principles of Biology I
1. BIOC 103 Careers in Biochem. and Genetics
4. CH 101 General Chemistry
3. COMM 150 Intro. to Human Communication
4. MTHSC 106 Calculus of One Variable I

**Second Semester**
5. BIOL 111 Principles of Biology II
4. CH 102 General Chemistry
3. ENGL 103 Accelerated Composition
4. MTHSC 108 Calculus of One Variable II

### Sophomore Year

**First Semester**
3. CH 223 Organic Chemistry
1. CH 227 Organic Chemistry Lab. ¹
1. CH 229 General Chemistry II
3. ENGL 103 Accelerated Composition
3. PHYS 122 Physics with Calculus I
1. PHYS 124 Physics Lab. I
3-4. Advanced Mathematics Requirement ²

**Second Semester**
3. CH 224 Organic Chemistry
1. CH 228 Organic Chemistry Lab. ¹
3. ENGL 314 Technical Writing
3. PHYS 221 Physics with Calculus II
1. PHYS 223 Physics Lab. II
3. Arts and Humanities (Literature) Requirement ³

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# Major Requirements

**Bachelor of Science**

1. **Electives**
2. **Social Science Requirement**
3. **Advanced Mathematics Requirement**
4. **Advanced Science Requirement**

**Bachelor of Science in Biological Sciences**

1. **Advanced Mathematics Requirement**
2. **Advanced Science Requirement**
3. **Social Science Requirement**

**Master of Science in Bioengineering**

1. **Electives**
2. **Social Science Requirement**
3. **Advanced Mathematics Requirement**
4. **Advanced Science Requirement**

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1. **Advanced Mathematics Requirement**
2. **Advanced Science Requirement**
3. **Social Science Requirement**
4. **Electives**

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Footnotes:
- ¹: Substituted, required for CH 227, and CH 226 may substitute for CH 228. In both cases, the additional hour of credit counts toward a science requirement.
- ²: Select from CH 411, ENT (GEN) 495, GEN (BIOSC) 405, 410, (BIOSC) 416, (BIOSC, MICRO) 418, 420, 450, HORT (BIOSC, GEN) 465, MICRO 415. Other courses must be approved by advisor.
- ³: To be taken over two semesters with the same faculty member.
- ⁴: A two-semester sequence of a foreign language is strongly recommended.
- ⁵: See General Education Requirements. This course must also satisfy the Cross-Cultural Awareness Requirement.
Second Semester
12 - Major Requirement
3 - Social Science Requirement
15

124 Total Semester Hours

At least one lecture and associated laboratory must be completed for both Animal Diversity (BIOCS 302/306 or BIOCS 303/307) and for Plant Diversity (BIOCS 304/306 or BIOCS 305/309).

Second Semester
3 - CH 223 Organic Chemistry and Lab. or
4 - ENT (BIOCS) 301 Insect Biology and Diversity
3 - GEN 302 Molecular and General Genetics
1 - GEN 303 Molecular and Gen. Genetics Lab.
3 - Animal or Plant Diversity Requirement
2
15

Second Semester
3 - CH 223 Organic Chemistry and Lab. or
4 - CH 201 Survey of Organic Chemistry
3 - BIOSC 302 Molecular and Biochemistry Lab.
3 - BIOSC 304 Biology of Plants and
1 - BIOSC 308 Molecular and General Genetics
3 - BIOSC 309 Organic Chemistry
3 - Major Requirement
4 - Major Requirement
15

Junior Year
First Semester
3 - BIOSC 335 Evolutionary Biology
3 - ENGL 314 Technical Writing
3 - PHYS 207 General Physics I and Lab.
1 - PHYS 209 General Physics II Lab.
3 - PHYS 122 Physical Science I and Lab.
1 - BIOSC 302 Molecular Biochemistry and Lab.
3 - Major Requirement
4 - Animal or Plant Diversity Requirement
15

Second Semester
3 - CH 224 Organic Chemistry and Lab.
4 - PHYS 208 General Physics II and Lab.
1 - PHYS 210 General Physics II Lab.
3 - PHYS 211 Physical Science I and Lab.
1 - PHYS 221 Physics with Calculus II and Lab.
3 - Entomology Requirement
3 - Major Requirement
15

Senior Year
First Semester
3 - BIOSC 461 Cell Biology
2 - BIOSC 462 Cell Biology Lab.
2 - BIOSC (MICRO) 493 Senior Seminar
4 - Entomology Requirement
15

Senior Year
First Semester
3 - PHYS 208 General Physics II and Lab.
1 - PHYS 210 General Physics II Lab.
3 - PHYS 221 Physics with Calculus II and Lab.
1 - PHYS 223 Physics Lab.
3 - Arts and Humanities (Literature) Requirement
4 - Major Requirement
3 - Social Science Requirement
14

TOXICOLOGY EMPHASIS AREA
See Bachelor of Science curriculum for freshman year requirements.

Sophomore Year
First Semester
3 - BIOSC 210 Introduction to Toxicology
3 - CH 223 Organic Chemistry and Lab. or
1 - CH 227 Organic Chemistry Lab.
4 - CH 201 Survey of Organic Chemistry
3 - GEN 302 Molecular and General Genetics
1 - GEN 303 Molecular and Gen. Genetics Lab.
4 - Animal or Plant Diversity Requirement
15

Second Semester
3 - CH 224 Organic Chemistry and Lab.
3 - Major Requirement
4 - Major Requirement
15

Junior Year
First Semester
3 - BIOSC 335 Evolutionary Biology
3 - ENGL 314 Technical Writing
3 - PHYS 207 General Physics I and Lab.
1 - PHYS 209 General Physics II Lab.
3 - PHYS 122 Physical Science I and Lab.
1 - PHYS 124 Physics Lab.
4 - Entomology Requirement
14

Second Semester
3 - PHIL 324 Philosophy of Technology or
3 - PHIL 326 Science and Values
3 - PHYS 208 General Physics II and Lab.
1 - PHYS 210 General Physics II Lab.
3 - PHYS 221 Physics with Calculus II and Lab.
1 - PHYS 223 Physics Lab.
3 - Entomology Requirement
3 - Major Requirement
15
### BIOLOGICAL SCIENCES

#### Bachelor of Arts

The Bachelor of Arts in Biological Sciences provides a strong foundation in biology and is ideal for students desiring a liberal education emphasizing an interdisciplinary approach to a thorough understanding of the life sciences.

#### Freshman Year

**First Semester**
- 5 - BIOL 110 Principles of Biology I
- 1 - BIOSC 101 Frontiers in Biology I
- 4 - CH 101 General Chemistry
- 3 - COMM 150 Intro. to Human Communication
- 4 - MTHSC 106 Calculus of One Variable I

**Second Semester**
- 5 - BIOL 111 Principles of Biology II
- 1 - BIOSC 102 Frontiers in Biology II
- 4 - CH 102 General Chemistry
- 3 - ENGL 103 Accelerated Composition
- 4 - MTHSC 108 Calculus of One Variable I or MTHSC 301 Statistical Methods

#### Sophomore Year

**First Semester**
- 4 - CH 201 Survey of Organic Chemistry
- 3 - GEN 302 Molecular and General Genetics
- 1 - GEN 303 Molecular and Gen. Genetics Lab.
- 4 - Animal or Plant Diversity Requirement
- 4 - Foreign Language Requirement

**Second Semester**
- 3 - BIOSC 305 Essential Elements of Biochemistry
- 1 - BIOSC 306 Essential Elements of Biochem. Lab.
- 4 - Animal or Plant Diversity Requirement
- 4 - Foreign Language Requirement
- 3 - Minor Requirement

#### Junior Year

**First Semester**
- 3 - BIOSC 335 Evolutionary Biology
- 3 - BIOSC 461 Cell Biology
- 3 - ENGL 314 Technical Writing
- 3 - Foreign Language Requirement
- 3 - Major Requirement

**Second Semester**
- 3 - PHIL 324 Philosophy of Technology or PHI 326 Science and Values
- 3 - Foreign Language Requirement
- 3 - Major Requirement
- 6 - Minor Requirement

#### Senior Year

**First Semester**
- 2 - BIOSC (MICRO) 493 Senior Seminar
- 3 - PHYS 207 General Physics I
- 1 - PHYS 209 General Physics I Lab.
- 3 - Social Science Requirement
- 3 - Major Requirement
- 3 - Minor Requirement

125–126 Total Semester Hours

*BIOL 110 and 111 are strongly recommended; however, BIOL 103 may substitute for BIOL 110, and BIOL 104 may substitute for BIOL 111. The remaining 1–2 credits required must be satisfied by completing 1–2 extra credits from departmental course offerings at the 300 level or above. See advisor.

*At least one lecture and associated laboratory must be completed for both Animal Diversity (BIOSC 302/306 or BIOSC 303/307) and for Plant Diversity (BIOSC 304/306 or BIOSC 305/309).

*Four semesters (through 202) in the same modern foreign language are required.

*See page 55 for approved minors.

*See advisor. Select one lecture course from each of the following fields: Ecology—BIOSC 441, 443, 446, 470. Physiology—BIOSC 401, 459, 475. The remaining courses must be selected from MICRO 305 or other BIOSC, BOT, or ZOOL courses at the 300-level or higher.

*See General Education Requirements. Three of these credit hours must also satisfy the Cross-Cultural Awareness Requirement.

*See General Education Requirements.

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### CONSERVATION BIOLOGY

#### Bachelor of Science

The Biosystems Engineering program is administered jointly with the College of Engineering and Science. See page 80 for the curriculum.

#### ENVIRONMENTAL AND NATURAL RESOURCES

#### Bachelor of Science

The Environmental and Natural Resources curriculum produces professionals who have a broad-based knowledge in natural resources and an ability to interact with other resource professionals to provide thoughtful solutions to environmental and natural resource problems. The world is blessed with an abundance of natural resources, but the problems associated with their conservation are immense. Protection of rare and endangered species, preventing and controlling invasions of exotic, protecting old growth forests, restoring degraded ecosystems, and balancing the resource demands of industry and the public are some of the environmental issues which are enmeshed in politicized environments.

Three concentrations are offered within the Environmental and Natural Resources major:

- **Conservation Biology Concentration**
- **Environmental Science and Policy Concentration**
- **Natural Resource Management Concentration**

Graduates in Environmental and Natural Resources are well-prepared for further graduate studies in natural resources and related fields. Potential public sector employers of graduates include federal, state, and municipal resource management agencies, private industries impacting land and water resources, environmental management consulting firms, and various environmental advocacy groups.

#### Freshman Year

**First Semester**
- 4 - BIOL 103 General Biology I
- 4 - CH 105 Beginning Gen. and Organic Chem.
- 1 - E N R 101 Intro. to Env. and Natural Res. I
- 3 - MTHSC 102 Intro. to Mathematical Analysis
- 3 - Elective

**Second Semester**
- 4 - BIOL 104 General Biology II
- 4 - CH 106 Beginning Gen. and Organic Chem.
- 3 - ENGL 103 Accelerated Composition
- 1 - F N R 102 FNR Freshman Portfolio
- 3 - Computer Science Requirement

**Sophomore Year**

**First Semester**
- 3 - AP EC 257 Nat. Res., Environment, and Econ.
- 4 - BIOSC 320 Field Botany or BIOSC 335 Evolutionary Biology
- 2 - FOR 205 Dendrology and Carbon Sequestration
- 3 - FOR 221 Forest Biology
- 3 - EX ST 301 Introductory Statistics

**Second Semester**
- 4 - CSENV 202 Soils
- 3 - GEN 300 Fundamental Genetics
- 3 - W F B (BIOSC 313 Conservation Biology)
- 3 - Physical Environment Requirement
- 3 - Oral Communication Requirement

**Junior Year**

**First Semester**
- 3 - ENGL 314 Technical Writing
- 3 - Arts and Humanities (Non-Lit.) Requirement
- 3 - Ecology Requirement
- 3 - Physiology Requirement
- 3 - Taxonomy/Habitat Requirement

**Second Semester**
- 3 - BIOSC 335 Evolutionary Biology
- 3 - E N R 302 Natural Resources Measurements
- 3 - Ecology Requirement
- 3 - Natural Resource Economics Requirement
- 3 - Taxonomy/Habitat Requirement
Second Semester
3 - ENR 450 Conservation Issues
1 - FOR 498 Senior Portfolio or
1 - WFB 498 Senior Portfolio
3 - Social Science Requirement or
6 - Taxonomy/Habitat Requirement
1

120-121 Total Semester Hours

Second Semester
3 - ENR 450 Conservation Issues
6 - Applied Economics Requirement
3 - Community Development Requirement
9 - Elective
3 - Minor Requirement and
1 - Elective

121 Total Semester Hours

Second Semester
3 - ECON 212 Principles of Microeconomics
3 - ENGL 314 Technical Writing
3 - EX ST 462 Statistics Applied to Economics
9 - Applied Economics Requirement or
6 - Applied Economics Requirement and
3 - Minor Requirement

15

Second Semester
3 - C R D 357 Natural Resources Economics
3 - ECON 212 Principles of Macroeconomics
3 - EX ST 301 Introductory Statistics
3 - Arts and Humanities (Literature) Requirement or
3 - Arts and Humanities (Non-Lit.) Requirement

15

Junior Year
First Semester
3 - E N R 429 Environmental Law and Policy
3 - ECON 314 Intermediate Microeconomics
3 - WFB (BIOSC) 313 Conservation Biology or
3 - Minor Requirement
3 - Advanced Writing Requirement
3 - Applied Economics Requirement

15

Second Semester
3 - FOR 206 Forest Ecology
3 - WFB (BIOSC) 313 Conservation Biology
3 - Arts and Humanities (Non-Lit.) Requirement
3 - Oral Communication Requirement
4 - Social Science Requirement

16

Junior Year
First Semester
4 - BIOSC 320 Field Botany or
3 - BIOSC 406 Intro. Plant Taxonomy and
1 - BIOSC 407 Plant Taxonomy Lab.
3 - E N R 429 Environmental Law and Policy or
3 - FOR 400 Public Relations in Natural Res.
3 - FOR (ENR) 434 GIS for Landscape Planning
5 - Minor Requirement

15

Second Semester
3 - C R D 357 Natural Resources Economics
3 - E N R 302 Natural Resources Measurements
3 - GEOL 101 Physical Geology
1 - GEOL 103 Physical Geology Lab.
3 - WFB 350 Principles of Fish and Wildlife Biol.
3 - Minor Requirement

16

Senior Year
First Semester
2 - FOR (ENR) 416 Forest Policy and Admin.
1 - WFB 418 Fishery Conservation
3 - WFB 462 Wetland Wildlife Biology
3 - Conservation Colloquium or Internship
4 - Minor Requirement

15

Second Semester
3 - E N R 450 Conservation Issues
6 - Applied Economics Requirement
3 - Community Development Requirement
9 - Elective
3 - Minor Requirement and
1 - Elective

122 Total Semester Hours

Second Semester
3 - ECON 212 Principles of Microeconomics
3 - ENGL 314 Technical Writing
3 - EX ST 301 Introductory Statistics
2 - FOR 406 Forested Watershed Management
1 - FOR 498 Senior Portfolio or
1 - WFB 498 Senior Portfolio
3 - Minor Requirement

15

Second Semester
3 - ECON 212 Principles of Microeconomics
3 - ENGL 314 Technical Writing
3 - EX ST 301 Introductory Statistics
2 - FOR 406 Forested Watershed Management
1 - FOR 498 Senior Portfolio or
1 - WFB 498 Senior Portfolio
3 - Minor Requirement

15

NATURAL RESOURCES MANAGEMENT
CONCENTRATION
Sophomore Year
First Semester
3 - AP EC 257 Nat. Res., Environment, and Econ.
3 - PO SC 101 American National Government or
3 - PO SC 102 Intro. to International Rel.
3 - Ecology Requirement or
3 - Minor Requirement
3 - Geography Requirement or
3 - Oral Communication Requirement

15

Second Semester
3 - C R D 357 Natural Resources Economics
3 - ECON 212 Principles of Macroeconomics
3 - EX ST 301 Introductory Statistics
3 - Arts and Humanities (Literature) Requirement or
3 - Arts and Humanities (Non-Lit.) Requirement

15

Junior Year
First Semester
3 - E N R 429 Environmental Law and Policy
3 - ECON 314 Intermediate Microeconomics
3 - WFB (BIOSC) 313 Conservation Biology or
3 - Minor Requirement
3 - Advanced Writing Requirement or
3 - Applied Economics Requirement

15

Second Semester
3 - FOR 206 Forest Ecology
3 - WFB (BIOSC) 313 Conservation Biology
3 - Arts and Humanities (Non-Lit.) Requirement or
3 - Oral Communication Requirement or
4 - Social Science Requirement

16

FOOD SCIENCE
Bachelor of Science

Food Science majors apply principles of basic and applied sciences to the design, creation, manufacturing, packaging, distribution, and utilization of safe, nutritious, and enjoyable foods and food products. The curriculum allows flexibility for concentrating in one of two areas.

In the Food Science and Technology Concentration, students may emphasize business, culinary science, (one of three national programs that have been approved by the Research Chef's Association as Culinology™), engineering, food packaging, and additional sciences that complement requirements of the Institute of Food Technologists.
The Nutrition and Dietetics Concentration emphasizes nutrition and related areas. It is currently granted approval status by the Commission on Accreditation for Dietetics Education of the American Dietetic Association.

Food processing industries, ingredient manufacturers, and packaging suppliers employ graduates in new food product development, quality assurance, production management, and technical sales. State and federal agencies also need graduates for food safety and regulatory positions. With the Nutrition and Dietetics Concentration, employment opportunities include dietitians, nutritionists, consultants, and food specialists. Placement rates are high for these fields, and graduates are also well prepared to pursue graduate study in many areas.

The Department of Food Science and Human Nutrition also offers an accelerated five-year combined bachelor's/master's program that allows students to count up to twelve hours of graduate credit toward both the BS degree in Food Science and MS degree in Food, Nutrition, and Culinary Sciences. Details are available from the Department of Food Science and Human Nutrition or on the Web at www.clemson.edu/foodscience.

Freshman Year

First Semester
- 4 - BIOL 103 General Biology I or
- 5 - BIOL 110 Principles of Biology I
- 4 - CH 101 General Chemistry
- 3 - COMM 150 Intro. to Human Communication
- 1 - FD SC 101 Epochs in Man's Struggle for Food
- 3 - MTHSC 102 Intro. to Math. Analysis or
- 4 - MTHSC 106 Calculus of One Variable I

Second Semester
- 4 - BIOL 104 General Biology II or
- 5 - BIOL 111 Principles of Biology II
- 4 - CH 102 General Chemistry
- 3 - ENGL 103 Accelerated Composition
- 2 - FD SC 102 Perspectives in Food and Nutrition Sciences
- 3 - PSYCH 201 Introduction to Psychology

Sophomore Year

First Semester
- 3 - AP EC 202 Agricultural Economics or
- 3 - ECON 211 Principles of Microeconomics or
- 3 - ECON 212 Principles of Macroeconomics
- 4 - CH 201 Survey of Organic Chemistry or
- 3 - CH 223 Organic Chemistry and
- 1 - CH 227 Organic Chemistry Lab.
- 3 - PHYS 122 Physics with Calculus I and
- 1 - PHYS 124 Physics Lab. I or
- 4 - PHYS 200 Introductory Physics or
- 3 - PHYS 207 General Physics I and
- 1 - PHYS 209 General Physics I Lab.
- 3 - Arts and Humanities (Literature) Requirement
- 3 - Arts and Humanities (Non-Lit.) Requirement

Second Semester
- 3 - BIOC 305 Essential Elements of Biochem.
- 1 - BIOC 306 Essential Elements of Bioch. Lab.
- 3 - EX ST 301 Introductory Statistics
- 3 - FD SC 214 Food Resources and Society
- 3 - Arts and Humanities Requirement

Second Semester
- 3 - ENGL 304 Business Writing or
- 3 - ENGL 314 Technical Writing
- 1 - FD SC 417 Seminar
- 1 - FD SC 421 Special Problems in Food Science
- 4 - MICRO 407 Food and Dairy Microbiology
- 6 - Emphasis Area
- 3 - Elective

Second Semester
- 3 - ENGL 304 Business Writing or
- 3 - ENGL 314 Technical Writing
- 1 - FD SC 417 Seminar
- 1 - FD SC 421 Special Problems in Food Science
- 4 - MICRO 407 Food and Dairy Microbiology
- 6 - Emphasis Area

Senior Year

First Semester
- 1 - FD SC 421 Special Problems in Food Science
- 4 - MICRO 305 General Microbiology
- 3 - NUTR 451 Human Nutrition
- 3 - Departmental Requirement
- 3 - Emphasis Area
- 1 - Elective

Second Semester
- 4 - FD SC 402 Food Chemistry II
- 3 - FD SC (PKGSC) 407 Total Quality Mgt. for the Food and Packaging Industries
- 2 - FD SC 404 Food Preservation and Processing
- 1 - FD SC 418 Seminar
- 4 - NUTR 425 Medical Nutrition Therapy I
- 3 - NUTR 426 Community Nutrition

123–126 Total Semester Hours

See General Education Requirements. Three of these credit hours must also satisfy the Cross-Cultural Awareness Requirement.

NUTRITION AND DIETETICS CONCENTRATION

Junior Year

First Semester
- 4 - BIOSC 222 Human Anatomy and Phys. I
- 4 - MICRO 305 General Microbiology
- 3 - NUTR 451 Human Nutrition
- 3 - Elective

Second Semester
- 4 - BIOSC 223 Human Anatomy and Phys. II
- 3 - ENGL 304 Business Writing or
- 3 - ENGL 314 Technical Writing
- 1 - FD SC 417 Seminar
- 4 - MICRO 407 Food and Dairy Microbiology
- 3 - NUTR 455 Nutrition and Metabolism

Senior Year

First Semester
- 3 - FD SC 306 Food Service Operations
- 4 - FD SC 401 Food Chemistry I
- 3 - FD SC 404 Food Preservation and Processing
- 2 - FD SC 407 Quantity Food Production
- 1 - FD SC 418 Seminar
- 4 - NUTR 424 Medical Nutrition Therapy I

Second Semester
- 4 - FD SC 402 Food Chemistry II
- 3 - FD SC (PKGSC) 407 Total Quality Mgt. for the Food and Packaging Industries
- 1 - FD SC 418 Seminar
- 4 - NUTR 425 Medical Nutrition Therapy II
- 3 - NUTR 426 Community Nutrition

FOREST RESOURCE MANAGEMENT

Bachelor of Science

The Forest Resource Management curriculum combines a broad education in the arts and sciences with applied forest sciences. This combination provides the necessary foundation for the scientific management of forest resources, products, and services.

Foresters are qualified for a broad spectrum of employment opportunities in the public and private sectors. They may be engaged as managers, administrators, or owners of forest lands or forest-based businesses; as technical specialists in the production of timber, usable water, wildlife, and aesthetic values, and in the recreational use of the forest; or as professionals in other areas where the conservation of natural resources is a concern. Foresters earning advanced degrees find employment in academic work and in research conducted by public and private agencies.

The curriculum, accredited by the Society of American Foresters, provides a strong program in the basic knowledge and skills required of a professional forester. Forest Resource Management majors will select a minor. (See page 55.) The curriculum also provides the necessary prerequisites for graduate study.
Freshman Year
First Semester
1 - B IOL 103 General Biology I
2 - CH 105 Beginning Gen. and Organic Chem. or
3 - E N R 101 Intro. to Environ. and Natural Res.
4 - MTHSC 102 Intro. to Mathematical Analysis
5 - Elective
15
Second Semester
1 - B IOL 104 General Biology II
2 - C H 106 Begin. Gen. and Organic Chem. or
3 - PHY S 200 Introductory Physics
4 - C P SC 120 Intro. to Information Technology
5 - ENGL 103 Accelerated Composition
6 - F N R 102 FNR Freshmen Portfolio
14
Sophomore Year
First Semester
1 - C SENV 202 Soils
2 - EX ST 301 Introductory Statistics
3 - FOR 205 Dendrology
4 - FOR 221 Forestry Biology
5 - Arts and Humanities (Literature) Requirement
15
Second Semester
1 - COMM 250 Public Speaking
2 - FOR 206 Forestry Ecology
3 - Economics Requirement
4 - Social Science Requirement
5 - Minor Requirement
15
Forestry Summer Camp
1 - FOR 251 Forest Communities
2 - FOR 253 Forest Mensuration
3 - FOR 254 Forest Products
7
Junior Year
First Semester
1 - FOR 302 Forest Biometrics
2 - FOR 304 Forest Resource Economics
3 - FOR 308 Remote Sensing and GIS in Forestry
4 - FOR 413 Integrated Forest Pest Management
5 - Arts and Humanities (Non-Lit.) Requirement
14
Second Semester
1 - ENGL 314 Technical Writing
2 - FOR 418 Forest Resource Valuation
3 - FOR (E N R) 434 GIS for Landscape Planning
4 - FOR 465 Silviculture
5 - Minor Requirement
16
Senior Year
First Semester
1 - E N R 499 Natural Resources Seminar
2 - FOR 314 Harvesting and Forest Products
3 - FOR (E N R) 416 Forest Policy and Admin.
4 - FOR 417 Forest Resource Mgt. and Regulation
5 - FOR 431 Recourse Plan. in Forest Mgt.
6 - Minor Requirement
15
Second Semester
1 - B IOL 110 Principles of Biology I
2 - CH 101 General Chemistry
3 - GEN 105 Careers in Biochem. and Genetics
4 - MTHSC 106 Calculus of One Variable I
14
Third Semester
1 - B IOL 111 Principles of Biology II
2 - CH 102 General Chemistry
3 - ENGL 103 Accelerated Composition
4 - MTHSC 108 Calculus of One Variable II
16
Freshman Year
First Semester
1 - E N R 101 Intro. to Environ. and Natural Res.
2 - MTHSC 102 Intro. to Mathematical Analysis
3 - Elective
15
Second Semester
1 - B IOL 103 General Biology I
2 - CH 105 Beginning Gen. and Organic Chem.
3 - FOR 221 Forestry Biology
4 - GAS 416 Forest Policy and Admin.
5 - FOR 431 Recourse Plan. in Forest Mgt.
6 - Minor Requirement
14
126 Total Semester Hours

GENETICS
Bachelor of Science
Genetics is the study of heredity. Genetics research takes many forms, from the study of heredity at the level of individual molecules to study at the level of cells and chromosomes, individuals, or populations. To comprehend current genetic information and to make future contributions to our molecular understanding of life processes, students must obtain a broad background in biology and a firm foundation in chemistry and mathematics. This is the basis of the genetics curriculum.

A degree in Genetics is a strong preparation for many careers. The degree provides an excellent foundation for medical, veterinary, or pharmacy school as well as graduate research in any discipline related to biology, including bioinformatics, forensic technology, and genetic counseling. Because of the increasing emphasis on genetics in everyday life, a Bachelor of Science in Genetics can also be a direct path to a career in the emerging biotechnology industries (pharmaceuticals, agricultural technologies, biomimetic minerals) either in research, sales, or business operations. Combined with a law degree, a genetics bachelor of science is a good background for a career as a patent attorney.
HORTICULTURE
Bachelor of Science

Horticulture is the art, science, and business of food crops, ornamental plants, and turfgrasses and their production, utilization, and maintenance. A strong foundation in the basic sciences and humanities is built on courses in mathematics, chemistry, botany, physics, computer science, communications, economics, and humanities. Horticulture as a science depends on disciplines such as plant pathology, plant physiology, entomology, forestry, agronomy, soils, agricultural engineering, and agricultural economics. Business courses contribute to a well-rounded curriculum. A growing aspect of horticulture involves the management of enterprises, from production to distribution and marketing. Horticulture as an art involves the arrangement of plants in an aesthetically pleasing fashion.

Students begin professional development as undergraduates. An internship in a horticultural enterprise is required. Students considering graduate school are advised to take optional courses in the basic sciences as well as conduct an undergraduate research project. Those with strong interests in specific disciplines may complete special problems under the supervision of a faculty member.

Freshman Year
First Semester
4 - BIOL 103 General Biology
3 - HORT 101 Horticulture
3 - MTHSC 102 Intro. to Mathematical Analysis
6 - Social Science Requirement

Second Semester
3 - BIOSC 205 Plant Form and Function
1 - BIOSC 206 Plant Form and Function Lab. or
4 - BIOL 104 General Biology II
3 - ENGL 103 Accelerated Composition
1 - HORT 102 Experience Horticulture
3 - MTHSC 101 Essential Math for Informed Soc.
3 - Arts and Humanities (Non-Lit.) Requirement

Sophomore Year
First Semester
4 - CH 101 General Chemistry
3 - HORT 301 Plant Materials
3 - Applied Science Requirement
3 - Business Requirement
3 - Oral Communication Requirement

Second Semester
4 - CH 102 General Chemistry or
3 - HORT 304 Annuals and Perennials
3 - HORT 305 Plant Propagation
1 - HORT 306 Plant Propagation Techniques Lab.
3 - Arts and Humanities (Literature) Requirement

Summer
3 - HORT 271 Internship or
3 - HORT 471 Advanced Internship

Junior Year
First Semester
4 - CSENV 202 Soils
3 - Advanced Writing Requirement
3 - Horticulture Specialization Requirement
3 - Spanish Language Requirement

Second Semester
3 - BIOSC 401 Plant Physiology
1 - BIOSC 402 Plant Physiology Lab.
1 - HORT 409 Seminar
4 - Business Requirement
3 - Horticulture Specialization Requirement
3 - Laboratory Science Requirement

Senior Year
First Semester
6 - Applied Science Requirement
3 - Business Requirement
6 - Horticulture Specialization Requirement

Second Semester
6 - Applied Science Requirement
6 - Horticulture Specialization Requirement
4 - Laboratory Science Requirement
1 - Elective

120 Total Semester Hours

Microbiology majors must make a C or better in all HORT-designated courses. Courses may be repeated as often as necessary to achieve the minimum grade.

Microbiology
Bachelor of Science

Microbiology deals with the study of bacteria, viruses, yeasts, filamentous fungi, protozoa, and unicellular algae. Microbiologists seek to describe these organisms in terms of their structures, functions, and processes of reproduction, growth, and death at both the cellular and molecular levels. They are also concerned with their ecology, particularly in regard to their pathological effects on man, and with their economic importance.

The Microbiology major provides a thorough training in the basic microbiological skills. Further, students receive instruction in mathematics, physics, chemistry, and biology, all essential to the training of a modern microbiologist. Students can prepare for a variety of careers through a wide choice of electives. The Microbiology curriculum with a Biomedicine Concentration is recommended for students planning postgraduate programs. Microbiology graduates may enter graduate school in microbiology, biochemistry, bioengineering, or related disciplines; they may enter medical or dental schools or pursue careers in some of the many industries or public service departments dependent upon microbiology. Some of these are the fermentation and drug industries, medical and public health microbiology, various food industries, and agriculture.

Microbiology majors planning to apply for admission to a medical or dental school should inform their advisors immediately upon entering the program.

Freshman Year
First Semester
5 - BIOL 110 Principles of Biology II
4 - CH 101 General Chemistry
3 - COMP 150 Intro. to Human Communication
1 - MICRO 101 Microbes and Human Affairs
4 - MTHSC 106 Calculus of One Variable

Second Semester
5 - BIOL 111 Principles of Biology II
4 - CH 102 General Chemistry
3 - ENGL 103 Accelerated Composition
3 - Mathematics Requirement

Sophomore Year
First Semester
3 - CH 223 Organic Chemistry
1 - CH 227 Organic Chemistry Lab.
4 - MICRO 305 General Microbiology
3 - Arts and Humanities (Literature) Requirement
3 - Elective

Second Semester
3 - BIOCH 301 Molecular Biochemistry
3 - CH 224 Organic Chemistry
1 - CH 228 Organic Chemistry Lab.
3 - PHIL 324 Philosophy of Technology or
3 - PHIL 326 Science and Values
3 - Microbiology Requirement
3 - Social Science Requirement

Junior Year
First Semester
3 - BIOSC 461 Cell Biology
4 - MICRO 401 Microbial Diversity and Ecology
3 - PHYS 207 General Physics I and
1 - PHYS 209 General Physics I Lab. or
3 - PHYS 122 Physics with Calculus I and
1 - PHYS 124 Physics Lab. I
4 - Microbiology Requirement

Second Semester
3 - ENGL 314 Technical Writing
4 - MICRO 412 Bacterial Physiology
4 - MICRO 415 Microbial Genetics
3 - PHYS 208 General Physics II and
1 - PHYS 210 General Physics II Lab. or
3 - PHYS 221 Physics with Calculus II and
1 - PHYS 223 Physics Lab. II

50
Senior Year
First Semester
3 - Social Science Requirement
8 - Microbiology Requirement
4 - Elective
15

Second Semester
2 - BIOSC (MICRO) 493 Senior Seminar
4 - MICRO 411 Pathogenic Bacteriology
3 - Microbiology Requirement
6 - Elective
15

122–123 Total Semester Hours

Junior Year
First Semester
3 - GEN 302 Molecular and General Genetics
1 - GEN 303 Molecular and Gen. Genetics Lab.
4 - MICRO 401 Microbial Diversity and Ecology
4 - MICRO (AVS, BIOSC) 414 Basic Immunology
3 - PHYS 207 General Physics I and
1 - PHYS 209 General Physics I Lab. or
3 - PHYS 122 Physics with Calculus I and
1 - PHYS 124 Physics Lab. I
16

Second Semester
3 - ENGL 314 Technical Writing
4 - MICRO 412 Bacterial Physiology
4 - MICRO 415 Microbial Genetics
3 - PHYS 208 General Physics II and
1 - PHYS 210 General Physics II Lab. or
3 - PHYS 221 Physics with Calculus II and
1 - PHYS 223 Physics Lab. II
15

Senior Year
First Semester
3 - BIOCH 301 Molecular Biochemistry
3 - CH 224 Organic Chemistry
1 - CH 228 Organic Chemistry Lab.
3 - PHIL 324 Philosophy of Technology or
3 - PHIL 326 Science and Values
3 - Biomedicine Requirement
3 - Social Science Requirement
15

Second Semester
3 - BIOCH 302 Molecular Biochemistry
3 - CH 224 Organic Chemistry
1 - CH 228 Organic Chemistry Lab.
1 - PHYS 207 General Physics I and
3 - PHYS 208 General Physics II and
3 - PHYS 210 General Physics II Lab. or
3 - PHYS 221 Physics with Calculus I and
1 - PHYS 223 Physics Lab. II
15

16

Student changing majors to Packaging Science must have at least a 2.0 cumulative grade-point ratio.

Freshman Year
First Semester
4 - BIO 103 General Biology I
4 - CH 101 General Chemistry
4 - MTHSC 106 Calculus of One Variable I
1 - PKGSC 101 Packaging Orientation
3 - Social Science Requirement
1
16

Second Semester
4 - BIO 104 General Biology II
4 - CH 102 General Chemistry
3 - ENGL 103 Accelerated Composition
2 - PKGSC 102 Intro. to Packaging Science
3 - Departmental Requirement
1 - Elective
17

Sophomore Year
First Semester
4 - CH 201 Survey of Organic Chemistry or
3 - CH 223 Organic Chemistry and
1 - CH 227 Organic Chemistry Lab.
1 - COMM 200 Public Speaking
3 - PHYS 207 General Physics I and
1 - PHYS 209 General Physics I Lab. or
3 - PHYS 122 Physics with Calculus I and
1 - PHYS 124 Physics Lab. II
4 - PKGSC 202 Packaging Materials and Manuf.
1
15

BIOMEDICINE
CONCENTRATION
Freshman Year
First Semester
5 - BIO 110 Principles of Biology I
4 - CH 101 General Chemistry
3 - COMM 150 Intro. to Human Communication
1 - MICRO 101 Microbes and Human Affairs
4 - MTHSC 106 Calculus of One Variable I
17

Second Semester
5 - BIO 111 Principles of Biology II or
4 - BIO 104 General Biology II
4 - CH 102 General Chemistry
3 - ENGL 103 Accelerated Composition
3.4 - Mathematics Requirement
14-16

Sophomore Year
First Semester
3 - CH 223 Organic Chemistry
1 - CH 227 Organic Chemistry Lab.
4 - MICRO 305 General Microbiology
3 - Arts and Humanities (Literature) Requirement
3 - Elective
14

Second Semester
3 - BIOCH 301 Molecular Biochemistry
3 - CH 224 Organic Chemistry
1 - CH 228 Organic Chemistry Lab.
3 - PHIL 324 Philosophy of Technology or
3 - PHIL 326 Science and Values
3 - Biomedicine Requirement
3 - Social Science Requirement
15

Second Semester
3 - BIOCH 302 Molecular Biochemistry
3 - CH 224 Organic Chemistry
1 - CH 228 Organic Chemistry Lab.
1 - PHYS 207 General Physics I and
3 - PHYS 208 General Physics II and
3 - PHYS 210 General Physics II Lab. or
3 - PHYS 221 Physics with Calculus I and
1 - PHYS 223 Physics Lab. II
15

Senior Year
First Semester
3 - BIOCH 301 Molecular Biochemistry
3 - CH 224 Organic Chemistry
1 - CH 228 Organic Chemistry Lab.
3 - PHIL 324 Philosophy of Technology or
3 - PHIL 326 Science and Values
3 - Biomedicine Requirement
3 - Social Science Requirement
15

Second Semester
3 - BIOCH 302 Molecular Biochemistry
3 - CH 224 Organic Chemistry
1 - CH 228 Organic Chemistry Lab.
1 - PHYS 207 General Physics I and
3 - PHYS 208 General Physics II and
3 - PHYS 210 General Physics II Lab. or
3 - PHYS 221 Physics with Calculus I and
1 - PHYS 223 Physics Lab. II
15

16

PACKAGING SCIENCE
Bachelor of Science
The Bachelor of Science degree in Packaging Science prepares students for careers in industries producing and utilizing packages for all types of products. Packaging is an essential part of industrialized economies, protecting, preserving, and helping to market products. The field of packaging is highly competitive and highly innovative, requiring an ever-increasing number of professional positions.

Opportunities for employment include a wide variety of career paths such as manufacturing, marketing, sales, design, purchasing, quality assurance, and customer services. Most career opportunities are in positions requiring technical knowledge combined with marketing and management skills.

The core curriculum assures graduates of having the skills and knowledge required by most entry-level packaging positions. Emphasis area choices or approved minors allow students to select courses to improve career preparation for specific industry segments, including distribution and transportation, engineering technology, food and health care packaging, graphic communications, materials, business administration, entrepreneurship, environmental engineering, environmental science and policy, and management.

Senior Year
First Semester
3 - BIOCH 301 Molecular Biochemistry
3 - CH 224 Organic Chemistry
1 - CH 228 Organic Chemistry Lab.
3 - PHIL 324 Philosophy of Technology or
3 - PHIL 326 Science and Values
3 - Biomedicine Requirement
3 - Social Science Requirement
15

Second Semester
3 - ENGL 314 Technical Writing
4 - MICRO 412 Bacterial Physiology
4 - MICRO 415 Microbial Genetics
3 - PHYS 208 General Physics II and
1 - PHYS 210 General Physics II Lab. or
3 - PHYS 221 Physics with Calculus II and
1 - PHYS 223 Physics Lab. II
15

Senior Year
First Semester
3 - BIOCH 301 Molecular Biochemistry
3 - CH 224 Organic Chemistry
1 - CH 228 Organic Chemistry Lab.
3 - PHIL 324 Philosophy of Technology or
3 - PHIL 326 Science and Values
3 - Biomedicine Requirement
3 - Social Science Requirement
15

Second Semester
3 - ENGL 314 Technical Writing
4 - MICRO 412 Bacterial Physiology
4 - MICRO 415 Microbial Genetics
3 - PHYS 208 General Physics II and
1 - PHYS 210 General Physics II Lab. or
3 - PHYS 221 Physics with Calculus II and
1 - PHYS 223 Physics Lab. II
15

16

Freshman Year
First Semester
4 - BIO 103 General Biology I
4 - CH 101 General Chemistry
4 - MTHSC 106 Calculus of One Variable I
1 - PKGSC 101 Packaging Orientation
3 - Social Science Requirement
1
16

Second Semester
4 - BIO 104 General Biology II
4 - CH 102 General Chemistry
3 - ENGL 103 Accelerated Composition
2 - PKGSC 102 Intro. to Packaging Science
3 - Departmental Requirement
1 - Elective
17

Sophomore Year
First Semester
4 - CH 201 Survey of Organic Chemistry or
3 - CH 223 Organic Chemistry and
1 - CH 227 Organic Chemistry Lab.
1 - COMM 200 Public Speaking
3 - PHYS 207 General Physics I and
1 - PHYS 209 General Physics I Lab. or
3 - PHYS 122 Physics with Calculus I and
1 - PHYS 124 Physics Lab. II
4 - PKGSC 202 Packaging Materials and Manuf.
1
15

College of Agriculture, Forestry, and Life Sciences
Second Semester
3 - PHYS 208 General Physics II and Lab. 1
1 - PHYS 210 General Physics II Lab. or PHYS 221 Physics with Calculus II and Lab. 1
1 - PHYS 223 Physics Lab. II
3 - PKGSC 201 Packaging Perishable Products
1 - PKGSC 204 Container Systems
1 - PKGSC 206 Container Systems Lab.
3 - THRHD 180 Intro. to Technical Drawing and Computer-Aided Drafting

Summer
0 - CO-OP 101 Cooperative Education

Junior Year
First Semester
3 - PKGSC 320 Package Design Fundamentals
3 - PKGSC 368 Packaging and Society
3 - PKGSC 430 Converting for Flexible Packaging
3 - PKGSC 440 Packaging for Distribution
3 - Emphasis Area 6

Second Semester
3 - ENGL 314 Technical Writing
3 - PKGSC 401 Packaging Machinery
3 - PKGSC 404 Mechanical Properties of Packages and Principles of Package Evaluation
2 - PKGSC 454 Package Evaluation Lab.
3 - Arts and Humanities (Literature) Requirement
3 - Emphasis Area 6

Senior Year
First Semester
3 - EX ST 301 Introductory Statistics
4 - PKGSC 416 Appl. of Polymers in Packaging
4 - PKGSC 464 Food and Health Care Pkg. Syst.
3 - Emphasis Area 6

Second Semester
3 - AP EC 202 Agricultural Economics or ECON 211 Principles of Microeconomics
3 - PKGSC 420 Package Design and Development
3 - Arts and Humanities (Non-Lit.) Requirement
6 - Emphasis Area 6
1 - Elective

124 Total Semester Hours

1 A C or better is required in this course for graduation.
2 See General Education Requirements. Three of these credit hours must also satisfy the Cross-Cultural Awareness Requirement. Note: Social Science Requirement must be in an area other than economics. A 200-level or higher foreign language course is recommended to satisfy the Arts and Humanities (Non-Literature) Requirement.
3 See advisor.
4 Students interested in minors or emphasis areas should take any prerequisites in the sophomore year.
5 At least one 15-week period (six months preferred) of Cooperative Education is required.
6 Completion of an approved minor or emphasis area is required. Approved minors are Business Administration, Entrepreneurship, Environmental Engineering, Environmental Science and Policy, Management.

Emphasis Areas consist of 15 credit hours selected from one of the following areas:

Distribution and Transportation — C E 255, 311, 410, 411, (CR P) 412, MGT 305, 317, 423, 424, 426
Engineering Technology — AG M 205, 406, 460, CHE 253, ENG 209, ENGR 120, 130, THRHD 181, 220, 224, 250, 420
Food and Health Care Packaging — BIO E 302, 310, 401, FD SC 214, 401, 402, 404, MICRO 305, 407
Graphic Communications — G C 207, 215, 245, 310, 405, 406, 407, 440, 466
Materials — BIO E 302, C M E 210, 222, 225, 241, 242, 319, PSY 441, 442, PKGSC 471, TEXT 475

PKGSC 404 and 454 must be taken concurrently.

PREPROFESSIONAL HEALTH STUDIES

Non-degree
The health professions need individuals with a diversity of educational backgrounds and a wide variety of talents and interests. The philosophies of education, the specific preprofessional course requirements, the noncognitive qualifications for enrollment, and the systems of training vary among the professional health schools; but all recognize the desirability of a broad education—a good foundation in the natural sciences, highly developed communication skills, and a solid background in the humanities and social sciences. The absolute requirements for admission to professional health schools are limited to allow latitude for developing individualized undergraduate programs of study; however, most schools of medicine and dentistry require 16 semester hours of chemistry, including organic chemistry, eight hours of biological sciences, eight hours of physics, and at least one course in calculus. These requirements should be balanced with courses in vocabulary building, the humanities, and social sciences. The basic requirements in the natural sciences and as many of the courses in the humanities and social sciences as possible should be completed by the third year so that students will be prepared to take the Dental Admission Test or the Medical College Admission Test prior to applying to a professional school.

Undergraduates may also prepare to study optometry, podiatry, and other health professions. While the basic requirements for these professional schools are essentially the same as those for schools of medicine and dentistry, specific requirements for individual schools in these professions vary somewhat; consequently, interested students are advised to consult with the chief health professionals advisor.

At Clemson, rather than having a separate, organized preprofessional health study program, students are allowed to major in any curriculum, as long as the basic entrance requirements of the professional health school are fulfilled. These schools are not as concerned about a student's major as they are about academic performance whichever curriculum the student chooses. Professional health schools have neither preferences nor prejudices concerning any curriculum, which is evidenced by the fact that their entering students represent a broad spectrum of curricula. The emphasis is placed on the student's doing well in the curriculum chosen, and this becomes critical as competition increases for the limited number of places available in professional health schools.

PREPHARMACY

Prepharmacy is a two-year program requiring a minimum of 72 semester hours. Upon completion of the curriculum, students will be eligible to apply to a college of pharmacy; usually the Medical University of South Carolina or the University of South Carolina, and may be eligible to apply for the Bachelor of Science in Preprofessional Studies. The degree in Pharmacy is awarded by the institution attended. It is important for students to work closely with their advisor as there are variations in courses required by the pharmacy schools.

For financial aid purposes, students in the Prepharmacy program are considered to be enrolled in a degree-seeking program.

First Year
First Semester
4 - BIOL 103 General Biology I
4 - CH 101 General Chemistry
4 - MTHSC 106 Calculus of One Variable I
3 - PSYCH 201 Introduction to Psychology
3 - Arts and Humanities (Non-Lit.) Requirement

Second Semester
4 - BIOL 104 General Biology II
4 - CH 102 General Chemistry
4 - ECON 200 Economic Concepts
3 - ENGL 103 Accelerated Composition
3 - EX ST 301 Introductory Statistics
1 - Elective

Second Year
First Semester
4 - BIOSC 222 Human Anatomy and Phys. I or AN 255, 256
4 - MICRO 305 General Microbiology
3 - CH 223 Organic Chemistry I
1 - CH 227 Organic Chemistry Lab.
3 - PHYS 207 General Physics I
1 - PHYS 209 General Physics II Lab.
3 - Arts and Humanities (Literature) Requirement
3 - History Requirement

Second Semester
3 - AG ED 200 Agricultural Applications of Educational Technology or ECON 200 Economic Concepts
3 - CP SC 120 Intro. to Information Tech.
3 - CH 224 Organic Chemistry
1 - CH 228 Organic Chemistry Lab.
3 - COMM 150 Intro. to Human Comm. or COMM 150 Intro. to Human Comm.
3 - COMM 250 Public Speaking
3 - PHYS 208 General Physics II
1 - PHYS 210 General Physics II Lab.
3 - Science and Tech. in Society Requirement
1 - Elective

Third Year
72-90 Total Semester Hours

52
BIOL 103 General Biology I

The Medical University of South Carolina requires MICRO 305. The University of South Carolina requires a BIOSC 222 and 223. To be eligible for both professional schools, the course(s) not taken this semester must be taken during a summer term or third year of study.

1 Select any ENGL course from General Education Arts and Humanities (Literature) Requirement.
2 See advisor.
3 See General Education Requirements.
4 Students planning to receive the Bachelor of Science degree upon completion of the program are required to complete an additional 18 credit hours. See advisor for requirements.

Note: The University of South Carolina requires credit for two semesters of a foreign language or exemption by examination. Students are expected to complete this requirement in high school.

**PREREHABILITATION SCIENCES**

Prehabilitation Sciences includes concentrations in physical therapy, occupational therapy, physician assistant, and allied health areas. This curriculum is designed to meet the requirements of the rehabilitation medicine programs at the Medical University of South Carolina and other professional schools. This program requires a minimum of 90 semester hours of undergraduate coursework. In addition, students must apply to a professional school for acceptance into its program.

Because preparation of some of the concentrations requires three years or a BS degree in any area, students are advised to select a major with similar requirements after consultation with the Prehabilitation Sciences advisor. The following curriculum fulfills the general requirements for those fields, requiring only two years of prerequisites. The Prephysical Therapy and Preoccupational Therapy concentrations require an additional year of elective and/or a BS degree. Electives should be chosen after consultation with the advisor. Professional schools may change their requirements at any time, so it is imperative that students in this major stay in close contact with their advisor.

For financial aid purposes, students in the Prehabilitation Sciences program are considered to be enrolled in a degree-seeking program.

**First Year**

First Semester

4 - BIOL 103 General Biology I
4 - CH 101 General Chemistry  
3 - EX ST 301 Introductory Statistics  
3 - PSYCH 201 Introduction to Psychology  
3 - Arts and Humanities (Non-Lit.) Requirement
17

Second Semester

4 - BIOL 104 General Biology II  
4 - CH 102 General Chemistry  
3 - ENGL 103 Accelerated Composition  
3 - SOC 201 Introduction to Sociology  
3 - Mathematics Requirement
5 - Elective
18

**Second Year**

First Semester

4 - BIOSC 222 Human Anatomy and Phys. I  
3 - PHYS 207 General Physics I  
1 - PHYS 209 General Physics I Lab.  
3 - PSYCH 340 Lifespan Developmental Psych.  
3 - Arts and Humanities (Literature) Requirement
3 - Arts and Humanities Requirement
17

Second Semester

4 - BIOSC 223 Human Anatomy and Phys. II  
3 - COMM 150 Intro. to Human Comm. or  
3 - COMM 250 Public Speaking  
3 - CP SC 120 Intro. to Information Technology  
3 - PHYS 208 General Physics II  
1 - PHYS 210 General Physics II Lab.  
3 - Science and Tech. in Society Requirement
17

Third Year

90 Total Semester Hours

1 See General Education Requirements. Three of these credit hours must also satisfy the Cross-Cultural Awareness Requirement.
2 See advisor.
3 Select any ENGL course from General Education Arts and Humanities (Literature) Requirement.
4 Students planning to receive the Bachelor of Science degree upon completion of the program are required to complete an additional 24 credit hours. See advisor for requirements.

**PREVETERINARY MEDICINE**

Under a regional plan, the South Carolina Prevet erinary Advisory Committee coordinates a program for South Carolina residents who are interested in pursuing careers in veterinary medicine. South Carolina residents attending any college or university may apply through the Veterinary Medical College Application Service (VMCAS) to the University of Georgia College of Veterinary Medicine. Currently the University of Georgia admits up to 17 students each year through arrangements with the Southern Regional Education Board. The State of South Carolina also has a contract with Tuskegee University to admit up to four South Carolina residents. Application must be made directly to Tuskegee University.

Minimum requirements for admission to a college of veterinary medicine generally include the satisfactory completion of prescribed courses in a well-rounded undergraduate degree program. Specific requirements for admission to the University of Georgia College of Veterinary Medicine include the following undergraduate courses: six credits of English, 14 credits of humanities and social studies, eight of physics, eight of general biology, eight credits of advanced biology, three credits of biochemistry, and 16 credits of organic and inorganic chemistry. (Chemistry and physics courses must be at the pre-medical level; they may not be survey courses.)

To be the best competitive position, applicants should complete courses in animal agriculture, genetics, nutrition, biochemistry, and advanced biology. Considerations for selection are character, scholastic achievement, personality, experience with large and small animals, general knowledge, and motivation. In the past, competition has been keen, and only those applicants who have shown exceptional ability have been admitted. Specific considerations may include a minimum grade-point average and completion of standardized tests such as the Graduate Record Examination and the Veterinary College Admission Test.

Since out-of-state students attending Clemson are ineligible to apply to the University of Georgia or Tuskegee University under the South Carolina quota, they should contact the college(s) of veterinary medicine to which they plan to apply. They may apply at the University of Georgia for at-large admission. Veterinary schools accept students with a broad range of academic backgrounds; therefore, it is recommended that the beginning university student select any undergraduate major and simultaneously complete the courses required for veterinary school entrance and those required for completion of a BS or BA degree. For students selecting Animal and Veterinary Sciences or Biological Sciences at Clemson University, the basic curricula have been designed to accommodate Georgia’s entrance requirements. Further information is available from the Department of Animal and Veterinary Sciences at 864-656-3427.

**TURFGRASS**

**Bachelor of Science**

The Turfgrass program is designed for students interested in careers in the rapidly growing turfgrass industry, with courses in turfgrass management, pathology, agricultural mechanization, personnel management, soil fertility, soil microbiology, weed control, and park and recreation management. Graduates pursue careers in professional lawn care; maintenance of parks, athletic fields, and golf courses; production and sale of seed, sod, supplies, and equipment; or as technicians for businesses or government agencies.

**Freshman Year**

First Semester

4 - BIOL 103 General Biology I  
3 - HORT 101 Horticulture  
3 - MTHSC 102 Intro. to Mathematical Analysis  
6 - Social Science Requirement
16

Second Semester

3 - BIOSC 205 Plant Form and Function and  
1 - BIOSC 206 Plant Form and Function Lab. or  
4 - BIOL 104 General Biology II  
3 - ENGL 103 Accelerated Composition  
1 - HORT 102 Experience Horticulture  
3 - MTHSC 101 Essential Math for Informed Soc.  
3 - Arts and Humanities (Non-Lit.) Requirement
14

**Sophomore Year**

First Semester

4 - CH 101 General Chemistry or  
4 - CH 105 Gen. and Organic Chem.  
3 - HORT 212 Introduction to Turfgrass Culture  
1 - HORT 213 Turfgrass Culture Lab.  
3 - HORT 303 Plant Materials  
3 - Oral Communication Requirement
14

53
WILDLIFE AND FISHERIES BIOLOGY

Bachelor of Science
Increased interest in conservation of natural resources and the environment and demand for seafood products have resulted in these areas becoming increasingly technical and requiring highly qualified wildlife and fisheries biologists. Greatest demands for graduates are in the areas of management, research, survey, and regulatory positions with state and federal agencies; industrial research and quality control laboratories; conservation, recreational, and other public service agencies; and private enterprises.

The Bachelor of Science degree program in Wildlife and Fisheries Biology provides a solid foundation for many careers in the sciences. The curriculum is strong in basic and applied sciences, communication skills, and the social sciences. In addition, three credit hours are available for field training with appropriate natural resource agencies. Students may satisfy coursework requirements for professional certification by the Wildlife Society and/or the American Fisheries Society.

Combined Bachelor of Science/Master of Science Degree Program
Under this plan, students may reduce the time necessary to earn both degrees by applying graduate credits to both undergraduate and graduate program requirements.

Students are encouraged to obtain the specific requirements for the dual degree from the Department of Forestry and Natural Resources as early as possible in their undergraduate program as a number of required courses have prerequisites not normally taken by Wildlife and Fisheries Biology majors. Enrollment guidelines and procedures can be found under Academic Regulations in this catalog.

Freshman Year
First Semester
4 - BIOL 103 General Biology I
4 - CH 105 Beginning Gen. and Organic Chem.
1 - E N R 101 Intro. to ENR I
3 - MTHSC 102 Intro. to Mathematical Analysis
3 - Elective
15
Second Semester
4 - BIOL 104 General Biology II
4 - CH 106 Begin. Gen. and Organic Chem. or PHYS 200 Introductory Physics
3 - CP SC 120 Intro. to Information Technology
3 - ENGL 103 Accelerated Composition
1 - F N R 102 FNR Freshman Portfolio
15

Sophomore Year
First Semester
4 - CSENV 202 Soils
2 - FOR 205 Dendrology
3 - FOR 221 Forest Biology
4 - W F B 300 Wildlife Biology
1 - W F B 301 Wildlife Biology Lab.
3 - Arts and Humanities (Literature) Requirement
16
Second Semester
3 - BIOSC 303 Vertebrate Biology
3 - COMM 250 Public Speaking
3 - W F B 350 Principles of Fish and Wildlife Biol.
3 - Arts and Humanities (Non-Lit.) Requirement
3 - Social Science Requirement
15

Junior Year
First Semester
3 - AP EC 257 Nat. Res., Environment, and Econ.
4 - BIOSC 320 Field Botany
3 - ENGL 314 Technical Writing
3 - GEN 300 Fundamental Genetics
3 - W F B 462 Wetland Wildlife Biology
16
Second Semester
3 - E N R 302 Natural Resources Measurements
3 - EX ST 301 Introductory Statistics
3 - W F B (BIOSC) 313 Conservation Biology
3 - W F B 410 Wildlife Management Techniques
3 - Approved Requirement
15

Senior Year
First Semester
4 - AVS 301 Anat. and Phys. of Domestic Animals
3 - W F B 412 Wildlife Management
3 - Approved Requirement
3 - Ecology Requirement
3 - Policy and Law Requirement
16
Second Semester
1 - F N R 499 Natural Resources Seminar
3 - W F B 416 Fishery Biology
3 - W F B 440 Non-game Wildlife Management
1 - W F B 498 Senior Portfolio
6 - Approved Requirement
14

122 Total Semester Hours

1See General Education Requirements. Three of these credit hours must also satisfy the Cross-Cultural Awareness Requirement.
2Students not taking the CH 105/106 sequence must satisfy the General Education Science and Technology in Society Requirement by selecting a qualifying course from the Applied Science or Laboratory Science Requirement.
3See advisor. Select from department-approved list.
4Internship must be completed in one or two semesters. Internship may be done fall, spring, or summer after completing HORT 212/213. Prior approval is required for internships, and a 2.0 grade-point ratio is required for registration.
5Turflgrass majors must make a C or better in all HORT-designated courses. Courses may be repeated as often as necessary to achieve the minimum grade.
MINORS

Following are minors acceptable for students in the College of Agriculture, Forestry, and Life Sciences. Students cannot major and minor in the same field or acquire a minor that is not allowed by the degree program.

- Accounting
- Adult/Extension Education
- Aerospace Studies
- African American Studies
- Agricultural Business Management
- Agricultural Mechanization and Business
- American Sign Language Studies
- Animal and Veterinary Sciences
- Anthropology
- Athletic Leadership
- Biochemistry
- Bioengineering
- Biological Sciences
- Business Administration
- Chemistry
- Cluster
- Communication Studies
- Communications
- Community Recreation Management
- Computer Science
- Crop and Soil Environmental Science
- East Asian Studies
- Economics
- Education
- Entomology
- Entrepreneurship
- Environmental Engineering
- Environmental Science and Policy
- Equine Business—not open to Animal and Veterinary Sciences majors
- Film Studies
- Financial Management
- Fine Arts
- Food Science
- Forest Products
- Forest Resource Management
- Geography
- Geology
- Global Politics
- Great Works
- Health Science
- History
- Horticulture—not open to Turfgrass majors
- Human Resource Management
- Legal Studies
- Management
- Mathematical Sciences
- Microbiology
- Military Leadership
- Modern Languages
- Music
- Natural Resource Economics
- Nonprofit Leadership
- Operations Management
- Packaging Science
- Park and Protected Area Management
- Philosophy
- Physics
- Plant Pathology
- Political Science
- Poultry Science—not open to Animal and Veterinary Sciences majors
- Psychology
- Public Policy
- Religion
- Russian Area Studies
- Science and Technology in Society
- Screenwriting
- Sociology
- Spanish-American Area Studies
- Sport Management
- Textiles
- Theatre
- Therapeutic Recreation
- Travel and Tourism
- Turfgrass—not open to Horticulture majors
- Urban Forestry
- Wildlife and Fisheries Biology
- Women's Studies
- Writing

See pages 36-39 for details.
COLLEGE OF ARCHITECTURE, ARTS, AND HUMANITIES

The collaboration of Architecture (Landscape Architecture, Construction Science and Management, City and Regional Planning, and Architecture) with Arts (Visual Arts and Performing Arts) and the Humanities (Communication Studies, English, History, Languages, Philosophy, and Religion) produces a remarkably rich environment for study. The mixture of core disciplines with applied professions/disciplines in the College provides both depth and breadth in learning. This structure affords students and faculty with skills that address the complex and interconnected challenges of the future, where it is no longer possible for these problems to be solved in a single discipline or profession. It is through the connections and communication between specialized knowledge areas that significant cultural progress will be made. These kinds of thoughts and actions form a fundamental part of the College of Architecture, Arts, and Humanities.

To illustrate these ideas, consider the diversity of communication skills practiced and taught in the College. Students learn graphic and artistic communication, technical communication with computers, spoken communication, and communication through the written word. Each skill is vital to a successful student, and it is the collaboration between these forms of communication that prepares students for the complex challenges of the future.

SCHOOL OF DESIGN AND BUILDING AND SCHOOL OF THE ARTS

The Bachelor of Arts in Architecture degree is the preprofessional preparation for graduate study leading to the Master of Architecture degree, which is the fully accredited professional degree in the field. The accredited Bachelor of Science in Construction Science and Management program prepares students for careers as professional managers in the construction industry. A graduate program is also offered leading to the Master of Construction Science and Management. The Visual Arts program offers professional study in the studio visual arts leading to the Bachelor of Fine Arts degree. A graduate program leading to the Master of Fine Arts is also offered. The accredited five-year Bachelor of Landscape Architecture degree program prepares students for careers as professional landscape architects. The Bachelor of Arts in Production Studies in Performing Arts is a distinctive degree program that combines practical hands-on experiences in performing arts production technologies with courses in music and theatre performance, history, and theory. A graduate program in City and Regional Planning is housed within the school and accepts graduates from a variety of baccalaureate programs and prepares them for careers in both public and private sector planning through its Master of City and Regional Planning degree. The Master of Science in Historic Preservation degree is a professional degree program designed for students who will specialize in working with historic buildings, landscapes, and the decorative arts. The Master of Real Estate Development is a full-time, two-year professional degree jointly offered by the Department of Planning and Landscape Architecture and the Department of Finance in the College of Business and Behavioral Science. In addition to the facilities housed on the Clemson campus, the College offers third- and fourth-year Architecture and fourth-year Landscape Architecture students the opportunity to earn credit toward their degrees at three off-campus sites. Students may spend a semester at the Charleston Architecture Center earning credit from both Clemson University and the College of Charleston. Additionally, the Charles E. Daniel Center for Building Research and Urban Studies in Genoa, Italy, and the Barcelona Program in Barcelona, Spain, provide students with an intensive program of study and travel in Europe.

Architecture Charleston Program

Located in Charleston, South Carolina, this program is available to qualified undergraduates in Architecture, Construction Science and Management, Landscape Architecture, and Visual Arts. Studio work is oriented toward design within the historic seaport setting. Students also enroll in classes at the College of Charleston campus. The program is enriched by visiting scholars and professionals from the area.

Architecture Overseas Program

The Daniel Center for Building Research and Urban Studies in Genoa, Italy, is available to qualified Bachelor and Master of Architecture, Construction Science and Management, Fine Arts, City and Regional Planning, and professional year Landscape Architecture students. Studio and classroom work is enriched by visiting scholars and complemented by scheduled field trips, both in Italy and continental Europe. Undergraduate Architecture students in their third year or first semester of their fourth year may also participate in the Italian program.

Entrance Requirements

Admission to degree programs in the School of Design and Building and the School of the Arts is based on academic performance and is limited based on space availability in the various programs. Students seeking admission are advised to apply to the Admissions Office early in the fall of their senior year in high school. They are also encouraged to visit the school during their senior year. Faculty are available to meet with them and their parents informally and answer questions and discuss individual programs in more detail. Prospective students may schedule appointments by calling the individual department.

Advancement in Architecture

Students enrolled in second, third, or fourth-year design studios and theory courses must attain at least a 2.0 grade-point ratio in each year level (by repeating one or both semesters, if necessary) to qualify for advancement to the next year level or, in the case of fourth-year Architecture studios, to qualify for the Architecture degree, or in Landscape Architecture at the fifth year, to qualify for the Bachelor of Landscape Architecture degree.

SCHOOL OF HUMANITIES

The Bachelor of Arts degree is offered in Communication Studies, English, History, Language and International Trade, Modern Languages, and Philosophy. The Bachelor of Science degree is offered in Language and International Health.

To achieve depth as well as breadth in their education experiences, students majoring in Communication Studies, English, History, Modern Languages, or Philosophy complete at least 24 semester hours from courses above the sophomore level. As soon as feasible and not later than the end of the sophomore year, students in these fields also select a minor, consisting of at least 15 additional semester hours. Courses satisfying the major may not also be included in the minor. A second major (a double major) may substitute for the minor, provided all requirements are fulfilled for each major.

The foreign language requirement in humanities is a proficiency requirement. Students must complete through 202 in Chinese, French, German, Italian, Japanese, Latin, Portuguese, Russian, or Spanish.

Students enrolled in degree programs offered in the humanities who expect to teach in the public schools may elect education courses required for teaching certificates by the South Carolina Department of Education. Such courses are to be approved by their own department advisors. Students may transfer into the Undeclared category in the humanities only if they have completed 45 or fewer credit hours. For more information, contact the College of Architecture, Arts, and Humanities Advisement Center in 101 Strode Tower.

ARCHITECTURE

Bachelor of Arts

The Bachelor of Arts in Architecture prepares students for subsequent professional education by providing a sound general education, focused design studies, complementary support courses, and the opportunity to study abroad. The School of Architecture emphasizes the relationship of buildings to the rest of the environment: built, natural, and cultural. The curriculum includes seven semesters of studio in addition to complementary courses in architectural history and theory and building technology. Four of the studios are collaborative, taught by faculty in Architecture as well as Communication Studies and English. The Bachelor of Arts also includes requirements for a minor and foreign language.

In the first two years of the program, students learn to apply the thinking and communications skills needed to pursue higher-level work in the discipline. The curriculum in the first two years also allows students to complete most of the University's general education requirements. In the last two years, students must select at least one of the location-specific studies and corequired coursework and may elect to take these studies for up to three semesters. The final studio focuses on reflection and synthesis by incorporating the general education advanced writing requirement.

Architectural Registration/Licensure

The Bachelor of Arts in Architecture prepares students to continue on to a professionally-accredited degree program at the graduate level, such as the
Master of Architecture offered by Clemson. Most states require that an individual intending to become a licensed architect hold an accredited degree. There are two types of degrees that are accredited by the National Architectural Accrediting Board; the Bachelor of Architecture (not offered at Clemson) which requires a minimum of five years of study, and the Master of Architecture, which requires a minimum of three years of study following an unrelated bachelor's degree or two years following a related preprofessional bachelor's degree. The Bachelor of Arts in Architecture provides a foundation in the field of architecture as preparation for either continued education in a professional degree program or for employment options in related fields.

**Freshman Year**

**First Semester**
- ARCH 101 Survey of Art and Architectural History
- ENGL 101 Introduction to Architecture
- PHYS 210 General Physics
- Foreign Language Requirement
- MTHSC 106 Calculus of One Variable I
- Social Science Requirement
- Elective

**Second Semester**
- ARCH 151 Architecture Communication
- PHYS 207 General Physics I Lab.
- PHYS 209 General Physics II
- Foreign Language Requirement
- Elective

**Sophomore Year**

**First Semester**
- ARCH 251 Architecture Foundations I
- CSM 201 Structures I
- ENGL 212 World Literature
- Foreign Language Requirement

**Second Semester**
- ARCH 252 Architecture Foundations II
- Foreign Language Requirement
- Social Science Requirement

**Junior Year**

**First Semester**
- Architecture History/Theory Requirement
- Building Technology Requirement
- Studio Requirement
- Elective

**Second Semester**
- Minor Requirement
- Studio Requirement
- Elective

**Senior Year**

**First Semester**
- Architecture History/Theory Requirement
- Building Technology Requirement
- Studio Requirement
- Elective

**Second Semester**
- Minor Requirement
- Studio Requirement
- Elective

**Second Semester**
- ENGL 103 Accelerated Composition
- Foreign Language Requirement
- Mathematics Requirement
- Social Science Requirement
- Elective

**Third Semester**
- ARCH 401 Architectural Portfolio II
- ARCH 452 Synthesis Studio
- ARCH 453 Writing Architecture
- Minor Requirement
- Elective

**Fourth Semester**
- Foreign Language Requirement
- Mathematics or Natural Science Requirement
- Social Science Requirement
- Elective

**Sophomore Year**

**First Semester**
- COMM 201 Intro. to Communication Studies
- Foreign Language Requirement
- Natural Science Requirement
- Social Science Requirement
- Elective

**Second Semester**
- COMM 301 Communication Theories
- COMM 310 Communication Research Methodology
- Arts and Humanities (Non-Lit.) Requirement
- Foreign Language Requirement
- Elective

**Junior Year**

**First Semester**
- COMM 305 Persuasion
- Media Context Requirement
- Organizational Context Requirement
- Relational Context Requirement
- Minor Requirement

**Second Semester**
- Communication Methods Requirement
- Emphasis Area
- Public Context Requirement
- Minor Requirement

**Senior Year**

**First Semester**
- Emphasis Area
- Minor Requirement
- Elective

**Second Semester**
- COMM 495 Senior Communication Seminar
- Emphasis Area
- Minor Requirement
- Elective

120 Total Semester Hours

*Four semesters (through 202) in the same foreign language are required.

*See General Education Requirements. Six of these credit hours must also satisfy the Cross-Cultural Awareness Requirement and, if ENGL 212 is not selected, the Science and Technology in Society Requirement.

*COMM 302, 303, or 402

*COMM 350, 364, or 368

*COMM 330, 348, or 460

*COMM 311, 312, or 313

*See advisor.

*COMM 306, 369, or 405

COMMUNICATION STUDIES

**Bachelor of Arts**

The Bachelor of Arts in Communication Studies is designed to provide a thoroughly integrated yet individual degree program that will prepare students for careers in business, government, and public sectors. In addition, the program provides a foundation for graduates who wish to pursue advanced degrees in the humanities, social sciences, business, and law. Through their coursework and extracurricular experiences, Communication Studies majors develop a set of skills in oral, written, and visual communication that enables them to research, design, present, and evaluate messages across diverse contexts and from a variety of platforms, including digital communication technology.

Students may change majors into the Communication Studies program based on approval of a committee of faculty from the Department of Communication Studies. The deadline for applying for a change of major during the fall semester is September 15, with decisions made by October 1. For spring semester changes of major, the deadline is February 15, with decisions made by March 1. The Department of Communication Studies accepts a maximum of 30 changes of major per year. To qualify for acceptance, applicants should have completed 15 credit hours including ENGL 103 and COMM 201 (with a C or better). All students requesting a transfer into the Communication Studies program must have a grade-point ratio of 2.5 or higher. An application form and a 3-5-page writing sample are also required. Detailed information is available from the Communication Studies Department, 408 Strode Tower.

**Freshman Year**

**First Semester**
- ENGL 101 Introduction to Architecture
- Foreign Language Requirement
- Mathematics Requirement
- Social Science Requirement
- Elective

**Second Semester**
- ENGL 103 Accelerated Composition
- Foreign Language Requirement
- Mathematics Requirement
- Social Science Requirement
- Elective

**Third Semester**
- ARCH 401 Architectural Portfolio II
- ARCH 452 Synthesis Studio
- ARCH 453 Writing Architecture
- Minor Requirement
- Elective

**Fourth Semester**
- Elective

122 Total Semester Hours

*Three semesters (through 202) in the same foreign language are required.

*See General Education Requirements. These courses must also satisfy the Cross-Cultural Awareness and Science and Technology in Society Requirements.

*ARCH 403, 404, 405, or 412

*ARCH 414, 416, 421, CSM 202, 203, 205, 304, or 305

*ARCH 351, 352, 353, 354, or 355

*See advisor.

5 COMM 350, 364, or 368

*COMM 330, 348, or 460

*COMM 311, 312, or 313

*See advisor.

*COMM 306, 369, or 405
CONSTRUCTION SCIENCE AND MANAGEMENT
Bachelor of Science
As the largest single industry in the United States and one of the most important, construction offers
unlimited opportunities to highly motivated and professionally educated men and women. Future professionals
must be skilled in managing people, equipment, and capital, coupled with a grasp of construction
materials and methods and the complex technologies of modern construction. The Bachelor of Science in Construction Science and Management curriculum is the basis for a career in construction or
as a developer or building management specialist.

Freshman Year
First Semester
1. A AH 210 Intro to Art and Architecture
2. CSM 150 Intro. to Research Methodology
3. ENGL 103 Accelerated Composition
4. PHYS 207 General Physics I
5. PHYS 209 General Physics I Lab.

Second Semester
1. CSM 100 Introduction to CSM
2. COMM 150 Intro. to Human Comm. or
3. COMM 250 Public Speaking
4. CP SC 120 Intro. to Information Technology
5. CSM 204 Contract Documents

Sophomore Year
First Semester
1. AG M 221 Surveying
2. CSM 201 Structures I
3. CSM 203 Materials and Methods of Const. I
5. ECOM 200 Economics Concepts
6. Arts and Humanities (Literature) Requirement

Second Semester
1. ACCT 201 Financial Accounting Concepts
2. CSM 202 Structures II
3. CSM 204 Contract Documents
4. CSM 205 Materials and Methods of Const. II
5. Science and Tech. in Society Requirement

Junior Year
First Semester
1. CSM 303 Soils and Foundations
2. CSM 304 Environmental Systems I
3. CSM 351 Construction Estimating
4. ENGL 304 Business Writing or
5. ENGL 314 Technical Writing
6. Social Science Requirement

Second Semester
1. CSM 305 Environmental Systems II
2. CSM 352 Construction Scheduling
3. CSM 353 Construction Estimating II
4. LAW 322 Legal Environment of Business
5. MGT 307 Personnel Management

Senior Year
First Semester
1. CSM 411 Safety in Building Construction
2. CSM 450 Construction Internship
3. CSM 473 Construction Project Management
4. CSM 461 Construction Economics Seminar
5. Major Requirement

Second Semester
1. CSM 454 Construction Capstone
2. Major Requirement
3. Spanish Requirement
4. 123 Total Semester Hours

ENGLISH
Bachelor of Arts
The purposes of a major in English are to help students acquire an understanding of our literary heritage;
develop an appreciation and practical knowledge of the modes of literary expression, research, and criticism;
improve the ability to write effectively and intelligently; gain insights into literature as a human study; and
prepare for advanced work in English language, literature, and related disciplines.

By the end of the sophomore year, students should choose between two emphasis areas: Literature or Writing
and Publication Studies.

The standard program of study consists of courses stipulated in the map below, which includes 24
credit hours of core courses and 15 hours chosen from one of the two emphasis areas.

Core Courses
ENGL 190, 310, and 390 and 18 additional credits

American Literature (Group IV)—Three credits
from ENGL 426, 427, 455, 463

Diversity (Group VI)—Three credits from ENGL
353, 419, (HUM) 456, 482, 483

Major Electives (Group VIII)—Three additional
credits from 400-level ENGL courses

Writing and Publication Studies
Emphasis Area
ENGL 499 plus 12 additional credits selected from
the following:

Language, Criticism, and Theory (Group V)—
Three additional credits from ENGL (COMM)
491 or (COMM) 492

Advanced Writing (Group VII)—Three additional
credits from ENGL 312, 345, 346, 348

WPS Courses (Group IX)—Six credits from
ENGL 332, 387, 441, 460, 475, 478

Freshman Year
First Semester
1. ENGL 103 Accelerated Composition
2. HIST 172 Western Civilization
3. Foreign Language Requirement
4. Mathematics Requirement
5. Mathematics or Natural Science Requirement

Second Semester
1. ENGL 190 Introduction to the English Major
2. ENGL 212 World Literature
3. HIST 173 Western Civilization
4. Foreign Language Requirement
5. Natural Science Requirement

Sophomore Year
First Semester
1. ENGL 310 Critical Writing About Literature
2. Arts and Humanities (Non-Lit.) Requirement
3. English Literature Survey Requirement
4. Foreign Language Requirement
5. Social Science Requirement

Second Semester
1. COMM 150 Intro. to Human Communication
2. ENGL 460 Advanced Composition
3. Fine Arts Requirement
4. Foreign Language Requirement
5. History Requirement

Junior Year
First Semester
1. English Literature Survey Requirement
2. Major Requirement
3. Minor Requirement
4. Science and Tech. in Society Requirement

Second Semester
1. ENGL 390 Electronic Portfolio Studio
2. Major Requirement
3. Minor Requirement
4. Elective

58
Senior Year
First Semester
4 - Major Requirement 6
3 - Minor Requirement 6
6 - Elective 15
Second Semester
3 - ENGL 496 Senior Seminar 3
3 - Major Requirement 6
3 - Minor Requirement 6
6 - Elective 15
121 Total Semester Hours

See General Education Requirements.
See General Education Requirements. Select from courses in philosophy.
ENGL 396, 397, 398, or 399
A A H 101, 210, ENGL 357, HUM 301, 302, 306, MUSIC 210, 311, 415, 416, or THEA 210
See advisor.
See major requirements in program description above.

HISTORY
Bachelor of Arts
The History major provides students with flexibility to pursue their particular interests in history. The major includes 34 credit hours in history, in addition to HIST 172 and 173, as outlined below.

Pre-law students majoring in History should consult their advisor for a recommended program.

Freshman Year
First Semester
3 - ENGL 103 Accelerated Composition 3
3 - HIST 172 Western Civilization 3
4 - Foreign Language Requirement 4
4 - Natural Science Requirement 6
2 - Elective 16
Second Semester
3 - HIST 173 Western Civilization 3
3 - GEOG 103 World Regional Geography 3
3 - GEOG 106 Historical Geography 3
4 - Foreign Language Requirement 4
3 - Mathematics Requirement 3
3 - Mathematics or Natural Science Requirement 3
16

Sophomore Year
First Semester
3 - Arts and Humanities (Literature) Requirement 3
3 - Arts and Humanities (Non-Lit.) Requirement 3
3 - Foreign Language Requirement 3
3 - Major Requirement 3
3 - Elective 15
Second Semester
4 - HIST 299 Seminar: The Historian's Craft 4
3 - Advanced Humanities Requirement 3
3 - Foreign Language Requirement 3
3 - Major Requirement 4
3 - Minor Requirement 3
16

Junior Year
First Semester
3 - Advanced Humanities Requirement 3
6 - Major Requirement 6
3 - Minor Requirement 3
3 - Elective 15
Second Semester
3 - Literature Requirement 6
6 - Major Requirement 6
3 - Minor Requirement 3
3 - Elective 15

Senior Year
First Semester
3 - Advanced Humanities Requirement 3
6 - Major Requirement 6
3 - Minor Requirement 3
3 - Elective 15
Second Semester
3 - Literature Requirement 6
6 - Major Requirement 6
3 - Minor Requirement 3
3 - Elective 15

LANDSCAPE ARCHITECTURE
Bachelor of Landscape Architecture
The profession of landscape architecture is broad and interdisciplinary. Practicing landscape architects work on a wide range of project types including, but not limited to, urban design, community design, historic preservation, ecological restoration, parks and park systems, institutional landscapes, memorials, cemeteries, industrial site reclamations, golf courses, wilderness areas and trails, residential landscapes, and gardens.

The profession is both an art and a science. Successful landscape architects are creative professionals who hold an environmental imperative and a social conscience. They are also excellent facilitators able to bring numerous disciplines and professions together to work on complex projects in the landscape.

Clemson's program is noted for a special emphasis on the art of design. Consequently, the landscape architecture design studio experience is at the center of the student's education—forty-two hours of studio are required. The five-year program leads to an accredited Bachelor of Landscape Architecture degree. The program is generalist—covering the major areas of practice—and builds from design basics to sophisticated studio experiences such as regional design, urban design, and community design. The studio experience is supported by other courses inside and outside the Landscape Architecture curriculum that provide the necessary grounding in landscape history and social, cultural, environmental, and aesthetic theories. Students may also choose to focus elective credits on one of three areas: cultural issues, environmental issues, or professional development. Outstanding fifth-year students may apply for admission into a shortened Master of City and Regional Planning, Master of Landscape Architecture, or Master of Real Estate Development program.

Freshman Year
First Semester
3 - A A H 210 Intro. to Art and Architecture 3
4 - BIOL 103 General Biology I 4
3 - ENGL 103 Accelerated Composition 3
3 - LARCH 128 Technical Graphics 3
3 - LARCH 151 Basic Design I 3
1 - LARCH 153 Landscape Arch. Design Theory I 17

Second Semester
4 - BIOL 104 General Biology II 4
3 - HORT 101 Horticulture 3
1 - LARCH 103 Landscape Architecture Portfolio I 1
3 - LARCH 116 History of Landscape Arch. 3
3 - LARCH 152 Basic Design II 3
1 - LARCH 154 Land. Arch. Design Theory II 1
3 - MTHSC 102 Intro. to Mathematical Analysis 18

Sophomore Year
First Semester
2 - B E 222 Geom measurements 2
3 - COMM 150 Intro. to Human Comm. or 3
3 - COMM 250 Public Speaking 3
3 - HORT 303 Plant Materials 3
6 - LARCH 251 Landscape Arch. Design Fund. 6
3 - LARCH 428 Landscape Architecture Computer-Aided Design 17

Second Semester
4 - HORT 461 Problems in Landscape Design 4
6 - LARCH 252 Site Design in Landscape Arch. 6
4 - LARCH 262 Design Implementation I 4
3 - W F B (BIOSC) 313 Conservation Biology 3
17

Maymester
3 - LARCH 405 Urban Genesis and Form 3

Junior Year
First Semester
3 - GEOG 101 Introduction to Geography 3
3 - GEOL 101 Physical Geology 3
1 - GEOL 103 Physical Geology Lab. 1
6 - LARCH 351 Regional Design and Ecology 6
4 - LARCH 362 Design Implementation II 4
17
Second Semester
3 - FOR (HORT) 427 Urban Tree Care
6 - LARCH 352 Urban Design Studio
3 - LARCH 581 Land. Arch. Professional Practice
3 - Foreign Language Requirement\(^*\)

Summer
2 - LARCH 293 Field Studies Internship or
2 - LARCH 493 Prof. Office Internship

Senior Year
First Semester
1 - LARCH 418 Off-Campus Study Seminar
6 - LARCH 451 Community Design Studio
3 - Arts and Humanities (Literature) Requirement\(^*\)
3 - Foreign Language Requirement\(^*\)
13
Second Semester
3 - A A H 395 Spec. Top. in Visual Stu. Abroad
3 - A A H 396 Spec. Top. in Vis. Amer. Stu. I
3 - LARCH 419 Off-Campus Field Study
6 - LARCH 452 Off-Campus Studio

Professional Year
First Semester
3 - LARCH 453 Key Issues in Landscape Arch.
1 - LARCH 503 Landscape Arch. Portfolio II
3 - LARCH 550 Professional Project Studio\(^*\)
3 - Social Science Requirement\(^*\)
3 - Elective
13
Second Semester
6 - LARCH 552 Landscape Arch. Exit Project
6 - Elective
12

156 Total Semester Hours

\(^*\)Other ecology courses from a department-approved list may be substituted.
\(^*\)C R P 402 may be substituted.
\(^*\)Two semesters (through 202) in the same foreign language are required.
\(^*\)Two hours of internship credit are required. A maximum of six hours credit of internship may be scheduled.

SECOND SEMESTER
3 - LARCH 581 Land. Arch. Professional Practice
3 - Foreign Language Requirement\(^*\)

15

Summer
2 - LARCH 293 Field Studies Internship or
2 - LARCH 493 Prof. Office Internship

Senior Year
First Semester
3 - HLT 440 Managing Health Service Org.
3 - SPAN 418 Tech. Span. for Health Mgt. Prof.
3 - Advanced Spanish Requirement\(^*\)
3 - Advanced Writing Requirement\(^*\)
3 - Emphasis Area Requirement\(^*\)

Second Semester
3 - Advanced Health Requirement\(^*\)
3 - Advanced Spanish Requirement\(^*\)
3 - Emphasis Area Requirement\(^*\)
3 - Social Science Requirement\(^*\)

12

123 Total Semester Hours

\(^*\)Six credit hours selected from two different areas: ANTH 201, GEOG 103, HIST 172, 173, 193, PO SC 102, 104

\(^*\)See General Education Requirements.

\(^*\)Health Administration Emphasis—nine credit hours selected from ACCT 201, C R D (AP EC, HLT H), 361, ECON 211, 212, 314, 315, 410, 412, FIN 306, HLT H 475, LAW 322, MGT 218, 301, 318, 424, MKT 301, 427

Community Development Emphasis—nine credit hours from AP E 202, 352, C R D 357, (AP EC, HLT H), 361, (AP EC) 411, (AP EC) 412, ECON 211, 212, 314, 315, R S (SOC) 401, (SOC) 459, (SOC) 471, SOC (R S) 371, 433

\(^*\)Internship/practicum must be taken at a Spanish-speaking country during the spring or fall semester of the junior year or during the summer following the junior year.

Select from 300-400 level courses in Spanish.

Select from 300-400 level courses in Health.

LANGUAGE AND INTERNATIONAL TRADE

Bachelor of Arts

Students in the Bachelor of Arts program in Language and International Trade acquire communicative competence in the target language; a familiarity with specific peoples, cultures, literatures, and business environments; and the knowledge and skills to pursue graduate studies or careers in business within their language of specialization.

The Language and International Trade program combines foreign languages and international trade. Students choose one language concentration (Chinese, French, German, Japanese, or Spanish) and one professional concentration (Applied International Economics, International Trade, Textiles, or Tourism).

The language component emphasizes speaking and writing skills, culture, civilization, and business/technical languages. The professional component emphasizes international marketing in areas important to the economy of the State of North Carolina and the nation.

Study abroad of at least one semester in the target language setting is mandatory. In addition, internship experiences with international companies in the United States or summer internships with companies abroad gives students the opportunity to apply classroom learning to the business/industrial work environment. Internships are subject to approval by...
the Language and International Trade Director. Students are strongly encouraged to participate in the Clemson Language Immersion Program (CLIP) prior to enrolling in study abroad programs.

In addition to the curriculum requirements below, students are required, as a condition of graduation, to pass a noncredit examination and submit a non-credit senior dossier to assess their language competence in various areas. Both assessments take place in the student's last full semester at the University.

**Freshman Year**

**First Semester**
- 4 - CHIN 101 Elementary Chinese
- 4 - FR 101 Elementary French
- 4 - GER 101 Elementary German
- 4 - JAPN 101 Elementary Japanese
- 4 - SPAN 104 Basic Spanish
- 3 - ENGL 103 Accelerated Composition
- 1 - L&IT 127 Introduction to L&IT
- 1 - MTHSC 102 Intro. to Mathematical Analysis
- 1 - Social Science Requirement 2

**Second Semester**
- 3 - ACC 201 Financial Accounting Concepts
- 3 - CHIN 102 Elementary Chinese
- 3 - FR 102 Elementary French
- 3 - GER 102 Elementary German
- 3 - JAPN 102 Elementary Japanese
- 3 - SPAN 201 Intermediate Spanish
- 3 - MTHSC 207 Multivariable Calculus
- 3 - Oral Communication Requirement 1
- 2 - Elective

**Sophomore Year**

**First Semester**
- 3 - AP EC 202 Agricultural Economics
- 3 - CHIN 201 Intermediate Chinese
- 3 - FR 201 Intermediate French
- 3 - GER 201 Intermediate German
- 3 - JAPN 201 Intermediate Japanese
- 3 - SPAN 202 Intermediate Spanish
- 3 - ECON 211 Principles of Microeconomics
- 3 - Arts and Humanities (Non-Lit.) Requirement 1
- 3 - Social Science Requirement 2

**Second Semester**
- 3 - AP EC 309 Econ. of Agricultural Marketing
- 3 - CHIN 202 Intermediate Chinese
- 3 - FR 202 Intermediate French
- 3 - GER 202 Intermediate German
- 3 - JAPN 202 Intermediate Japanese
- 3 - SPAN 300 Span. Composition for Bus. or
- 3 - SPAN 302 Intermediate Spanish
- 3 - MKT 301 Principles of Marketing
- 3 - Arts and Humanities (Literature) Requirement 1
- 3 - Social Science Requirement 2

**Junior Year**

**First Semester**
- 3 - AP EC 319 Agribusiness Management
- 3 - CHIN 305 Chinese Conv. and Comp. I or
- 3 - FR 304 French Short Story or
- 3 - FR 305 Inter. Fr. Conv. and Comp. I or
- 3 - GER 305 German Conv. and Comp. or
- 3 - GER 306 German Short Story or
- 3 - JAPN 305 Japanese Conv. and Comp. or
- 3 - SPAN 305 Inter. Span. Conv. and Comp. I
- 3 - ENGL 316 Writing and International Trade
- 3 - MKT 302 Consumer Behavior
- 3 - Advanced Social Science Requirement 1

**Second Semester**
- 3 - CHIN 316 Chinese for International Trade I or
- 3 - FR 316 French for International Trade I or
- 3 - GER 316 German for Inter. Trade I or
- 3 - JAPN 316 Japanese for Inter. Trade I or
- 3 - SPAN 316 Spanish for Inter. Trade I
- 3 - MGT 301 Principles of Management
- 3 - Advanced Ag. Economics Requirement 1
- 3 - Foreign Language Civilization Requirement 1

**Summer**
- 3 - L&IT 400 L&IT Internship or
- 3 - L&IT 401 L&IT Practicum

**Senior Year**

**First Semester**
- 3 - CHIN 416 Chinese for Inter. Trade II or
- 3 - FR 416 French for International Trade II or
- 3 - GER 416 German for Inter. Trade II or
- 3 - JAPN 416 Japanese for Inter. Trade II or
- 3 - SPAN 416 Spanish for Inter. Trade II
- 3 - ECON 310 International Economy or
- 3 - ECON 412 International Microeconomics
- 3 - MKT 427 International Marketing
- 3 - Foreign Language Civilization Requirement 1

**Second Semester**
- 3 - CHIN 416 Chinese for Inter. Trade II or
- 3 - FR 416 French for International Trade II or
- 3 - GER 416 German for Inter. Trade II or
- 3 - JAPN 416 Japanese for Inter. Trade II or
- 3 - SPAN 416 Spanish for Inter. Trade II
- 3 - ECON 314 International Microeconomics
- 3 - ENGL 316 Writing and International Trade
- 3 - MKT 302 Consumer Behavior

**Junior Year**

**First Semester**
- 3 - CHIN 201 Intermediate Chinese or
- 3 - FR 201 Intermediate French or
- 3 - GER 201 Intermediate German or
- 3 - JAPN 201 Intermediate Japanese or
- 3 - SPAN 201 Intermediate Spanish
- 3 - ECON 211 Principles of Microeconomics
- 3 - MGT 301 Principles of Management
- 3 - Social Science Requirement 1

**Second Semester**
- 3 - CHIN 202 Intermediate Chinese or
- 3 - FR 202 Intermediate French or
- 3 - GER 202 Intermediate German or
- 3 - JAPN 202 Intermediate Japanese or
- 3 - SPAN 300 Span. Composition for Bus. or
- 3 - SPAN 302 Intermediate Spanish
- 3 - Arts and Humanities (Literature) Requirement 1
- 3 - Social Science Requirement 2

**Summer**
- 3 - L&IT 400 L&IT Internship or
- 3 - L&IT 401 L&IT Practicum
### Senior Year

**First Semester**
- 3 - CHIN 416 Chinese for Inter. Trade II or  
- 3 - FR 416 French for International Trade II or  
- 3 - GER 416 German for Inter. Trade II or  
- 3 - JAPN 416 Japanese for Inter. Trade II or  
- 3 - SPAN 416 Spanish for Inter. Trade II  
- 3 - MKT 427 Introduction to Tourism  
- 3 - Advanced Economics Requirement  
- 3 - Foreign Language Civilization Requirement  
- 3 - Elective  

**Second Semester**
- 3 - MKT 431 Marketing Research  
- 6 - Advanced Foreign Language Requirement  
- 3 - Advanced Social Science Requirement  

120 Total Semester Hours

### Second Year

**Sophomore Year**

**First Semester**
- 3 - CHIN 201 Intermediate Chinese or  
- 3 - FR 201 Intermediate French or  
- 3 - GER 201 Intermediate German or  
- 3 - JAPN 201 Intermediate Japanese or  
- 3 - SPAN 202 Intermediate Spanish  
- 3 - ECON 210 Principles of Microeconomics  
- 3 - PRTM 342 Introduction to Tourism  
- 3 - Arts and Humanities (Non-Lit.) Requirement  
- 3 - Social Science Requirement  

**Second Semester**
- 3 - CHIN 316 Chinese for International Trade I or  
- 3 - FR 316 French for International Trade I or  
- 3 - GER 316 German for Inter. Trade I or  
- 3 - JAPN 316 Japanese for Inter. Trade I or  
- 3 - SPAN 316 Spanish for Inter. Trade I  
- 3 - Advanced Social Science Requirement  

### Junior Year

**First Semester**
- 3 - CHIN 305 Chinese Conv. and Comp. I or  
- 3 - FR 304 French Short Story or  
- 3 - FR 305 Inter. Fr. Conv. and Comp. I or  
- 3 - GER 305 German Conv. and Comp. or  
- 3 - GER 306 German Short Story or  
- 3 - JAPN 305 Japanese Conv. and Comp. or  
- 3 - SPAN 305 Inter. Conv. and Comp. I  
- 3 - ENGL 316 Writing and International Trade  
- 3 - MKT 302 Consumer Behavior  
- 3 - TEXT 472 Textile International Trade  

**Second Semester**
- 3 - CHIN 316 Chinese for International Trade I or  
- 3 - FR 316 French for International Trade I or  
- 3 - GER 316 German for Inter. Trade I or  
- 3 - JAPN 316 Japanese for Inter. Trade I or  
- 3 - SPAN 316 Spanish for Inter. Trade I  
- 3 - MGT 301 Principles of Management  
- 3 - Advanced Foreign Language Requirement  
- 3 - Elective  

### Summer

- 3 - L&IT 400 L&IT Internship or  
- 3 - L&IT 401 L&IT Practicum

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### TEXTILES CONCENTRATION

**Sophomore Year**

**First Semester**
- 3 - CHIN 416 Chinese for Inter. Trade II or  
- 3 - FR 416 French for International Trade II or  
- 3 - GER 416 German for Inter. Trade II or  
- 3 - JAPN 416 Japanese for Inter. Trade II or  
- 3 - SPAN 416 Spanish for Inter. Trade II  
- 3 - ECON 310 International Economy or  
- 3 - ECON 412 International Microeconomics  
- 3 - MKT 427 International Marketing  
- 3 - Advanced Textiles Requirement  
- 3 - Foreign Language Civilization Requirement  

**Second Semester**
- 3 - MKT 431 Marketing Research  
- 6 - Advanced Foreign Language Requirement  
- 3 - Advanced Social Science Requirement  

120-121 Total Semester Hours

### Junior Year

**First Semester**
- 3 - CHIN 305 Chinese Conv. and Comp. I or  
- 3 - FR 304 French Short Story or  
- 3 - FR 305 Inter. Fr. Conv. and Comp. I or  
- 3 - GER 305 German Conv. and Comp. or  
- 3 - GER 306 German Short Story or  
- 3 - JAPN 305 Japanese Conv. and Comp. or  
- 3 - SPAN 305 Inter. Conv. and Comp. I  
- 3 - ENGL 316 Writing and International Trade  
- 3 - MKT 302 Consumer Behavior  
- 3 - Advanced PRTM Requirement  
- 3 - Social Science Requirement  

**Second Semester**
- 3 - CHIN 316 Chinese for International Trade I or  
- 3 - FR 316 French for International Trade I or  
- 3 - GER 316 German for Inter. Trade I or  
- 3 - JAPN 316 Japanese for Inter. Trade I or  
- 3 - SPAN 316 Spanish for Inter. Trade I  
- 3 - MGT 301 Principles of Management  
- 3 - Advanced Foreign Language Requirement  
- 3 - Advanced Social Science Requirement  

### Summer

- 3 - L&IT 400 L&IT Internship or  
- 3 - L&IT 401 L&IT Practicum

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### TOURISM CONCENTRATION

**Sophomore Year**

**First Semester**
- 3 - CHIN 201 Intermediate Chinese or  
- 3 - FR 201 Intermediate French or  
- 3 - GER 201 Intermediate German or  
- 3 - JAPN 201 Intermediate Japanese or  
- 3 - SPAN 202 Intermediate Spanish  
- 3 - EXTN 211 Principles of Microeconomics  
- 3 - PRTM 342 Introduction to Tourism  
- 3 - Arts and Humanities (Non-Lit.) Requirement  
- 3 - Social Science Requirement  

**Second Semester**
- 3 - CHIN 305 Chinese Conv. and Comp. I or  
- 3 - FR 304 French Short Story or  
- 3 - GER 305 German Conv. and Comp. or  
- 3 - GER 306 German Short Story or  
- 3 - JAPN 305 Japanese Conv. and Comp. or  
- 3 - SPAN 305 Inter. Conv. and Comp. I  
- 3 - ENGL 316 Writing and International Trade  
- 3 - MKT 302 Consumer Behavior  
- 3 - Advanced Social Science Requirement  
- 3 - Elective  

15

### Summer

- 3 - L&IT 400 L&IT Internship or  
- 3 - L&IT 401 L&IT Practicum
MODERN LANGUAGES
Bachelor of Arts
The Bachelor of Arts degree in Modern Languages provides a broadly humanistic course of study in four areas of concentration: French, German, Japanese, and Spanish. This course of study seeks to provide students with basic competence in both the relevant language and the literary and cultural heritage pertaining to that language. Moreover, students will be required to take at least two courses in cultural inquiry which are designed to sharpen their sense of cultural difference, to enhance their critical thinking skills, and to prepare them for citizenship in a global community of diverse cultural precepts and practices. In this respect, the Bachelor of Arts in Modern Languages is intended to prepare students for a wide range of careers in the international arena as well as for the kinds of graduate programs that are an appropriate starting point for such careers.

All students in Modern Languages will be required to study abroad with a Clemson-approved program for at least one semester (or equivalent summer course of study) in the case of Japanese and Spanish or for at least two semesters in the case of French and German.

As a condition of graduation, students in the Modern Languages program will be required to pass a noncredit examination and to submit a senior dossier in the relevant language to assess their competence in that language. Both assessments take place in the student's last full semester of study.

FRENCH CONCENTRATION
Freshman Year
First Semester
3 - CHIN 416 Chinese for Inter. Trade I or 3 - FR 416 French for International Trade I or 3 - GER 416 German for Inter. Trade I or 3 - JAPN 416 Japanese for Inter. Trade I or 3 - SPAN 416 Spanish for Inter. Trade II 3 - ECON 310 International Economy or 3 - ECON 412 International Microeconomics 3 - MKT 427 International Marketing 3 - Foreign Language Civilization Requirement 3 - Major Requirement

Second Semester
4 - FR 102 Elementary French 3 - Mathematics or Natural Science Requirement 3 - Social Science Requirement 1 - Elective

Sophomore Year
First Semester
3 - FR 201 Intermediate French 3 - Arts and Humanities (Non-Lit.) Requirement 6 - Minor Requirement 4 - Elective

Second Semester
3 - FR 202 Intermediate French 3 - Arts and Humanities (Literature) Requirement 3 - History Requirement 3 - Minor Requirement 3 - Philosophy Requirement

Junior Year
First Semester
3 - FR 304 French Short Story or 3 - FR 305 Intermediate French Conversation and Composition I 3 - LANG 303 Study Abroad Transfer 3 - Advanced Writing Requirement 3 - Major Requirement 3 - Minor Requirement

Second Semester
3 - ENGL 435 Literary Criticism or 3 - ENGL 436 Feminist Literary Criticism or 3 - ENGL 440 Literary Theory 3 - Cultural Inquiry Seminar 6 - Major Requirement 3 - Minor Requirement 1 - Elective

Senior Year
First Semester
3 - PHIL 401 Studies in the History of Phil. or 3 - PHIL 402 Topics in Philosophy or 3 - PHIL (A A H) 433 Issues in Contemporary Art and Philosophy 3 - Cultural Inquiry Seminar 6 - Major Requirement 3 - Minor Requirement

Second Semester

GERMAN CONCENTRATION
Freshman Year
First Semester
4 - GER 101 Elementary German 3 - ENGL 103 Accelerated Composition 3 - Mathematics Requirement 3 - Social Science Requirement 1 - Elective

Second Semester
4 - GER 102 Elementary German 3 - Mathematics or Natural Science Requirement 3 - Social Science Requirement 1 - Elective

Sophomore Year
First Semester
3 - GER 201 Intermediate German 3 - Advanced Science Requirement 3 - Arts and Humanities (Non-Lit.) Requirement 3 - Minor Requirement 4 - Elective

Second Semester
3 - GER 202 Intermediate German 3 - Mathematics or Natural Science Requirement 3 - Social Science Requirement 3 - Elective

Junior Year
First Semester
3 - GER 305 Ger. Conversation and Comp. I or 3 - GER 306 German Short Story 3 - LANG 303 Study Abroad Transfer 3 - Advanced Writing Requirement 3 - Major Requirement 3 - Philosophy Requirement

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### Second Semester
- ENGL 435 Literary Criticism
- ENGL 436 Feminist Literary Criticism
- ENGL 440 Literary Theory
- Cultural Inquiry Seminar
- History Requirement
- Major Requirement
- Minor Requirement
- Elective

### Senior Year
#### First Semester
- PHIL 401 Studies in the History of Phil.
- PHIL 402 Topics in Philosophy
- PHIL (A A H) 433 Issues in Contemporary Art and Philosophy
- Cultural Inquiry Seminar
- Major Requirement
- Minor Requirement

### Second Semester
- GER 475 Advanced German Seminar
- GER 476 Adv. Sem. in German Thought
- Major Requirement
- Minor Requirement

#### Total Semester Hours: 120

*See General Education Requirements. Three of these credit hours must also satisfy the Science and Technology in Society Requirement.

*Select from department-approved list or as approved by advisor.

*Select from 300-400-level courses in German. At least one 300-level course and one 400-level course must be in literature.

*PHIL 304, 315, 316, 317, 318, 320, or 323

*See advisor.

*HIST 377, 378, 380, or 381

### JAPANESE CONCENTRATION
#### Freshman Year
#### First Semester
- JAPN 101 Elementary Japanese
- ENGL 103 Accelerated Composition
- Mathematics Requirement
- Oral Communication Requirement
- Social Science Requirement

#### Second Semester
- JAPN 102 Elementary Japanese
- Mathematics or Natural Science Requirement
- Natural Science Requirement
- Social Science Requirement
- Elective

#### Sophomore Year
#### First Semester
- JAPN 201 Intermediate Japanese
- Arts and Humanities (Non-Lit.) Requirement
- Minor Requirement
- Elective

#### Second Semester
- JAPN 305 Japanese Conversation and Comp.
- Advanced Writing Requirement
- Major Requirement
- Study Abroad Requirement

### Junior Year
#### First Semester
- JAPN 306 Japanese Conversation and Comp.
- Civilization Requirement
- Cultural Inquiry Seminar
- Major Requirement
- Minor Requirement
- Elective

#### Second Semester
- JAPN 307 Japanese Conversation and Comp.
- Civilization Requirement
- Cultural Inquiry Seminar
- Major Requirement
- Minor Requirement

#### Junior Year
#### First Semester
- LANG 303 Study Abroad Transfer
- SPAN 304 Intro. to Hispanic Literary Forms
- SPAN 307 Hispanic World: Spain
- SPAN 309 Intro. to Spanish Phonetics
- SPAN 314 Hispanic Linguistics
- SPAN 318 Spanish through Culture
- Advanced Writing Requirement

### Sophomore Year
- Study Abroad Requirement
- SPAN 301 Intermediate Spanish
- Arts and Humanities (Non-Lit.) Requirement
- Minor Requirement
- Elective

### Second Semester
- SPAN 302 Intermediate Spanish
- Arts and Humanities (Non-Lit.) Requirement
- Minor Requirement
- Elective

### Junior Year
#### First Semester
- PHIL 303 Grammar and Composition
- PHIL 304 Philosophy
- HIST 333, 334
- PHIL (CHIN) 312, 314, or PO SC 472
- See advisor.

### SPANISH CONCENTRATION
#### Freshman Year
#### First Semester
- SPAN 104 Basic Spanish
- ENGL 103 Accelerated Composition
- Mathematics Requirement
- Oral Communication Requirement
- Social Science Requirement

#### Second Semester
- SPAN 201 Intermediate Spanish
- Mathematics or Natural Science Requirement
- Natural Science Requirement
- Social Science Requirement
- Elective

#### Sophomore Year
- Study Abroad Requirement
- SPAN 302 Intermediate Spanish
- Arts and Humanities (Non-Lit.) Requirement
- Minor Requirement
- Elective

### Sophomore Year
#### First Semester
- SPAN 301 Intermediate Spanish
- Mathematics or Natural Science Requirement
- Natural Science Requirement
- Social Science Requirement
- Elective

#### Second Semester
- SPAN 302 Intermediate Spanish
- Arts and Humanities (Non-Lit.) Requirement
- Minor Requirement
- Elective

### Senior Year
#### First Semester
- Study Abroad Requirement
- SPAN 301 Intermediate Spanish
- Arts and Humanities (Non-Lit.) Requirement
- Minor Requirement
- Elective

#### Second Semester
- SPAN 302 Intermediate Spanish
- Arts and Humanities (Non-Lit.) Requirement
- Minor Requirement
- Elective

#### Junior Year
#### First Semester
- Study Abroad Requirement
- SPAN 301 Intermediate Spanish
- Arts and Humanities (Non-Lit.) Requirement
- Minor Requirement
- Elective
PHILOSOPHY
Bachelor of Arts
The required course of study consists of the basic curriculum and either the standard Philosophy major, the Philosophy major with a Religious Studies Emphasis Area, or the Philosophy major with a Law, Liberty, and Justice Emphasis Area. Specific requirements include the following:

Standard Philosophy Major—PHIL 315, 316, 401 or 402, and 24 additional credit hours in PHIL selected with the advice and consent of advisor. Three of these credits may be at the 100 level.

Law, Liberty, and Justice Emphasis Area—PHIL 102, 315, 316, 304 or 320 or 321, 343, 401 or 402, HIST 328, 329, and nine additional credits in philosophy selected with the advice and consent of pre-law advisor. Students with this emphasis area are strongly advised to include PO SC 432 and/or 433 as an elective, minor, or advanced area requirement.

Religious Studies Emphasis Area—REL 101 or 102, 301, 302, 401 or 402, PHIL 303, 315, 316, 401 or 402, and nine additional credits selected with the advice and consent of advisor. Of these nine credits, three must be in philosophy and three must be in religion courses at the 300 level or above. (PO SC 407 may count as a religion course). The remaining three credits may be in philosophy or religion but must be at the 300 level or above.

Pre-law and Pre-med students majoring in Philosophy should consult the departmental advisor for help in tailoring the program to their needs.

Freshman Year
First Semester
3 - ENGL 103 Accelerated Composition
3 - HIST 172 Western Civilization
3 - Foreign Language Requirement1
3 - Mathematics Requirement1
4 - Natural Science Requirement1
16

Second Semester
3 - HIST 173 Western Civilization
3 - Arts and Humanities (Literature) Requirement3
3 - Foreign Language Requirement1
3 - Mathematics or Natural Science Requirement1
3 - Oral Communication Requirement3
15

Sophomore Year
First Semester
3 - Cross-Cultural Awareness Requirement2
3 - Science and Tech. in Society Requirement2
3 - Major Requirement3
3 - Minor Requirement4
3 - Elective
15

Second Semester
3 - Social Science Requirement2
6 - Major Requirement3
3 - Minor Requirement4
3 - Elective
15

JUNIOR YEAR
First Semester
6 - Advanced Area Requirement2
3 - Major Requirement3
3 - Minor Requirement3
15

Second Semester
2 - PHIL 399 Philosophy Portfolio
3 - Advanced Writing Requirement2
9 - Major Requirement3
8 - Minor Requirement3
17

Senior Year
First Semester
6 - Advanced Area Requirement2
3 - Major Requirement3
3 - Minor Requirement4
12

Second Semester
6 - Major Requirement3
9 - Elective
15

120 Total Semester Hours

1Two semesters (through 202) in French, German, or Spanish are required.

2See General Education Requirements.

3See major requirements in program description above.

4See page 67 for approved minors. Students with a Religious Studies Emphasis Area may not minor in Religion.

5Select from 300-400 level courses in the humanities (must be from an area other than philosophy), mathematical sciences, science, or the social sciences.

As a requirement for graduation, all Music Concentration students will be required to demonstrate piano competence equivalent to the 102 level.

MUSIC CONCENTRATION
Freshman Year
First Semester
3 - ENGL 103 Accelerated Composition
1 - MUSIC 152 Applied Music for Majors
3 - MUSIC 205 Music Theory I
1 - MUSIC 207 Aural Skills I
3 - P A 101 Introduction to Performing Arts
1 - P A 103 Portfolio I
1 - P A 279 Performing Arts Practicum
3 - Foreign Language Requirement1
1 - Large Ensemble Requirement2
3 - Mathematics Requirement1
16

Second Semester
1 - MUSIC 154 Applied Music for Majors
3 - MUSIC 206 Music Theory II
1 - MUSIC 208 Aural Skills II
1 - P A 279 Performing Arts Practicum
3 - THEA 210 Theatre Appreciation
3 - Foreign Language Requirement1
1 - Large Ensemble Requirement2
3 - Mathematics or Natural Science Requirement1
14

Sophomore Year
First Semester
3 - MUSIC 180 Introduction to Music Technology
3 - MUSIC 253 Applied Music for Majors
1 - MUSIC 306 Music History Requirement3
3 - P A 201 Performing Arts Seminar I
3 - Arts and Humanities (Literature) Requirement3
1 - Large Ensemble Requirement2
3 - Mathematics or Natural Science Requirement1
15

Second Semester
1 - MUSIC 254 Applied Music for Majors
3 - MUSIC 310 Survey of Music History
1 - Large Ensemble Requirement2
4 - Natural Science Requirement1
3 - Social Science Requirement1
3 - Elective
15

Junior Year
First Semester
1 - MUSIC 353 Applied Music for Majors
3 - P A 301 Performing Arts Seminar II
3 - Minor Requirement
3 - Music History Requirement4
3 - Social Science Requirement1
2 - Elective
15

Second Semester
1 - MUSIC 354 Applied Music for Majors
3 - MUSIC 380 Audio Engineering I
1 - MUSIC 430 Conducting or
3 - Music History Requirement4
3 - Advanced Writing Requirement2
3 - Minor Requirement
2 - Elective
15
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Senior Year
First Semester
3 - COMM 250 Public Speaking
1 - P A 401 Senior Project Research
1 - P A 403 Portfolio II
6 - Minor Requirement
4 - Elective
15

Second Semester
3 - P A 402 Senior Project
3 - Minor Requirement
7 - Elective
13

120 Total Semester Hours

Junior Year
First Semester
3 - ENGL 429 Dramatic Literature I
3 - P A 301 Performing Arts Seminar II
3 - THEA 376 Stage Directing I
3 - Social Science Requirement
3 - Minor Requirement
15

Second Semester
3 - ENGL (THEA) 430 Dramatic Literature II
3 - Advanced Theatre Requirement
3 - Minor Requirement
6 - Elective
15

Senior Year
First Semester
3 - COMM 250 Public Speaking
1 - P A 401 Senior Project Research
1 - P A 403 Portfolio II
1 - THEA 279 Theatre Practicum
1 - THEA 315 Theatre History I
6 - Minor Requirement
1 - Elective
16

Second Semester
3 - P A 402 Senior Project
1 - THEA 279 Theatre Practicum
1 - THEA 316 Theatre History II
3 - Advanced Theatre Requirement
3 - Minor Requirement
2 - Elective
15

120 Total Semester Hours

Theatre Concentration
Freshman Year
First Semester
3 - ENGL 103 Accelerated Composition
3 - P A 101 Introduction to Performing Arts
1 - P A 103 Portfolio I
1 - P A 279 Performing Arts Practicum
3 - Foreign Language Requirement
3 - Elective
14

Second Semester
3 - MUSC 210 Music Appreciation
1 - P A 279 Performing Arts Practicum
3 - THEA 277 Production Studies in Theatre
3 - Foreign Language Requirement
3 - Mathematics Requirement
3 - Elective
16

Sophomore Year
First Semester
3 - P A 201 Performing Arts Seminar I
3 - THEA (ENGL) 347 The Structure of Drama
3 - Arts and Humanities (Literature) Requirement
3 - Mathematics or Natural Science Requirement
3 - Elective
15

Second Semester
3 - THEA 278 Acting I
1 - THEA 279 Theatre Practicum
3 - Advanced Writing Requirement
4 - Natural Science Requirement
3 - Social Science Requirement
3 - Elective
14

Sophomore Year
First Semester
3 - P A 101 Introduction to Performing Arts
1 - P A 103 Portfolio I
1 - P A 279 Performing Arts Practicum
3 - Foreign Language Requirement
3 - Elective
14

Second Semester
3 - THEA 278 Acting I
1 - THEA 279 Theatre Practicum
3 - Advanced Writing Requirement
4 - Natural Science Requirement
3 - Social Science Requirement
3 - Elective
14

120 Total Semester Hours

Freshman Year
First Semester
3 - A A H 101 Survey of Art and Arch. History I
3 - ART 151 Foundations in 2-D Art
1 - ART 153 Orientation to Visual Arts I
3 - ART 205 Beginning Drawing
3 - ENGL 103 Accelerated Composition
3 - Mathematics Requirement

Second Semester
3 - A A H 102 Survey of Art and Arch. History II
3 - ART 152 Foundations in 3-D Art
3 - ART 207 Beginning Painting
3 - Arts and Humanities (Literature) Requirement
4 - Natural Science Requirement

Sophomore Year
First Semester
3 - A A H 205 History and Theory of Art I
3 - ART 209 Beginning Sculpture
3 - ART 211 Beginning Printmaking
3 - Mathematics or Natural Science Requirement
3 - Oral Communication Requirement

Second Semester
6 - Studio Requirement
3 - Social Science Requirement
3 - Elective
15

Junior Year
First Semester
3 - A A H 305 Contemporary Art History
6 - Studio Requirement
3 - Elective
15

Second Semester
6 - Studio Requirement
3 - Social Science Requirement
3 - Elective
15

Senior Year
First Semester
3 - ART 471 BFA Senior Studio I
2 - ART 473 Senior Sem. in Prof. Career Prep.
3 - Studio Requirement
3 - Elective
14

Second Semester
5 - ART 472 BFA Senior Studio II
3 - Studio Requirement
3 - Elective
14

120 Total Semester Hours

VISUAL ARTS
Bachelor of Fine Arts
The Bachelor of Fine Arts degree is the recognized professional undergraduate degree in the visual arts.

The program in Visual Arts offers students a balanced curriculum of academic coursework and studio art and art history courses for careers in studio-related areas of the visual arts. The department offers coursework in six disciplines: drawing, painting, sculpture, printmaking, photography, and ceramics.

The freshman and sophomore years are a balance of general University studies, foundation studios, and art history courses. In the junior year, students begin to concentrate their studio coursework in a specific area of the visual arts in preparation for the Senior Studio experience. The senior studio is a time in which concepts and skills are focused and developed to produce a cohesive body of artwork and a portfolio for graduate study and professional application.

Freshman Year
First Semester
3 - A A H 101 Survey of Art and Arch. History I
3 - ART 151 Foundations in 2-D Art
1 - ART 153 Orientation to Visual Arts I
3 - ART 205 Beginning Drawing
3 - ENGL 103 Accelerated Composition
3 - Mathematics Requirement

Second Semester
3 - A A H 102 Survey of Art and Arch. History II
3 - ART 152 Foundations in 3-D Art
3 - ART 207 Beginning Painting
3 - Arts and Humanities (Literature) Requirement
4 - Natural Science Requirement

Sophomore Year
First Semester
3 - A A H 205 History and Theory of Art I
3 - ART 209 Beginning Sculpture
3 - ART 211 Beginning Printmaking
3 - Mathematics or Natural Science Requirement
3 - Oral Communication Requirement

Second Semester
6 - Studio Requirement
3 - Social Science Requirement
3 - Elective
15

Junior Year
First Semester
3 - A A H 305 Contemporary Art History
6 - Studio Requirement
3 - Elective
15

Second Semester
6 - Studio Requirement
3 - Social Science Requirement
3 - Elective
15

Senior Year
First Semester
3 - ART 471 BFA Senior Studio I
2 - ART 473 Senior Sem. in Prof. Career Prep.
3 - Studio Requirement
3 - Elective
14

Second Semester
5 - ART 472 BFA Senior Studio II
3 - Studio Requirement
3 - Elective
14

120 Total Semester Hours

See General Education Requirements. Six of these credit hours must also satisfy the Cross-Cultural Awareness and Science and Technology in Society Requirements.

Select any 300- or 400-level ART course.

Any ART course or other course approved by advisor.
MINORS

Following are minors acceptable for students in the College of Architecture, Arts, and Humanities. Students cannot major and minor in the same field or acquire a minor that is not allowed by the degree program.

Students in Landscape Architecture are not eligible to claim a minor.

Accounting
Adult/Extension Education
Aerospace Studies
African American Studies
Agricultural Business Management
Agricultural Mechanization and Business
American Sign Language Studies
Animal and Veterinary Sciences
Anthropology
Athletic Leadership
Biochemistry
Bioengineering
Biological Sciences
Business Administration
Chemistry
Cluster
Communication Studies
Communications
Community Recreation Management
Computer Science
Crop and Soil Environmental Science
East Asian Studies
Economics
Education
English
Entomology
Entrepreneurship
Environmental Engineering
Environmental Science and Policy
Equine Business
Film Studies
Financial Management
Fine Arts
Food Science
Forest Products
Forest Resource Management
Geography
Geology
Global Politics
Great Works
Health Science

History
Horticulture
Human Resource Management
Legal Studies
Management
Mathematical Sciences
Microbiology
Military Leadership
Modern Languages—not open to Language and International Trade majors
Music
Natural Resource Economics
Non-Profit Leadership
Operations Management
Packaging Science
Park and Protected Area Management
Philosophy
Physics
Plant Pathology
Political Science
Poultry Science
Psychology
Public Policy
Religion—not open to Philosophy—Religious Studies majors
Russian Area Studies
Science and Technology in Society
Screenwriting
Sociology
Spanish-American Area Studies
Sport Management
Textiles
Theatre
Therapeutic Recreation
Travel and Tourism
Turfgrass
Urban Forestry
Wildlife and Fisheries Biology
Women's Studies
Writing

See pages 36-39 for details.
COLLEGE OF BUSINESS AND BEHAVIORAL SCIENCE

The College of Business and Behavioral Science includes the School of Accountancy and Legal Studies and the Departments of Aerospace Studies, Economics, Finance, Graphic Communications, Management, Marketing, Military Leadership, Political Science, Psychology, Sociology, and the MBA Program.

The mission of the College is
• to develop leaders who are exceptionally qualified, globally competitive, entrepreneurially spirited, and committed to the betterment of society;
• to produce scholarly research that is relevant to our stakeholders; and
• to support professional and public service activities that contribute to economic, social, and intellectual development.

ROTC PROGRAMS

Aerospace Studies (AFROTC)

Air Force Reserve Officer Training Corps provides students the opportunity to earn a commission as second lieutenants while pursuing a bachelor's degree. The program includes courses in air power history, written and oral communications, leadership and management, and political science. Air Force ROTC is designed to meet the need for dedicated and professional leaders in the active duty Air Force. Additional information is available from the Department of Aerospace Studies.

Military Leadership (Army ROTC)

Army Reserve Officer Training Corps is all about leadership. It allows students the opportunity to become Army officers in the Reserves, National Guard, or active Army. The first two years of the program are open to all students. During the freshman year, the focus is on learning individual leadership skills such as time management, leadership character, values, setting goals, and conducting meetings. The sophomore year emphasizes teamwork, team leading, communication/briefings, decision making, and organizational culture, vision, and team values. Juniors primarily learn planning and conducting training for large groups and are evaluated in leadership exercises. Seniors focus on organizational leadership. They plan and run the 170-person organization, conduct individual counseling, and evaluate the juniors' leadership exercises. A minor in Military Leadership can be earned by completing the program. Enrollment requires no military obligation until the sophomore year for those on an Army scholarship or the junior year for those without a scholarship. Additional information is available from the Military Leadership Department.

SOCIAL AND BEHAVIORAL SCIENCE PROGRAMS

Bachelor of Arts degrees are offered in Economics, Political Science, Psychology, and Sociology; Bachelor of Science degrees are also offered in Political Science, Psychology, and Sociology. These programs are designed to meet the needs of students seeking a broad general education as preparation for intelligent citizenship, commercial and industrial life, government service, research, and teaching. These curricula also provide an excellent background for the study of law, journalism, and medicine.

To achieve depth as well as breadth in the educational experience, students select a major consisting of at least 24 credit hours from courses above the sophomore level. Students also choose a minor consisting of at least 15 additional credit hours. Courses satisfying a student's major may not also be included in the minor. See page 78 for acceptable minors.

Students in bachelor of arts programs who plan to teach in public schools may elect education courses required for certification by the South Carolina State Department of Education. Such courses are to be approved by their own department advisors.

BUSINESS PROGRAMS

Bachelor of science programs are offered in Accounting, Economics, Financial Management, Graphic Communications, Industrial Management, Management, and Marketing. With the exception of Graphic Communications, these programs share a common curriculum the first year, allowing the student maximum flexibility in choosing an appropriate major. These degrees, with the exception of Economics, are accredited by the AACSB International (Association to Advance Collegiate Schools of Business). The curricula prepare students for a variety of careers and furnish an education that recognizes the need for an understanding of the basic principles of science, appreciation for the nature of human interaction, and the comprehension of the economic, political, and social environment.

Pre-Business Program

The Pre-Business Program provides students planning to earn Bachelor of Science degrees in Accounting, Economics, Financial Management, Industrial Management, Management, and Marketing with a sound academic preparation for a variety of careers in business. All business students must complete a common curriculum for the freshman year and have a cumulative grade-point ratio of 2.0 or higher before being admitted into Accounting, Economics, Financial Management, Industrial Management or Management; students must have a cumulative grade-point ratio of 3.0 or higher before being admitted into Marketing. All new business students (including transfer students) are admitted into the Pre-Business Program until all classes in the freshman curriculum are satisfactorily completed and the grade-point ratio requirement is met.

Freshman Curriculum

First Semester
3 - ECON 211 Principles of Microeconomics
3 - MTHSC 102 Intro. to Math. Analysis or
4 - MTHSC 106 Calculus of One Variable I
3 - PSYCH 201 Introduction to Psychology or
3 - SOC 201 Introduction to Sociology
4 - Natural Science Requirement 1
3 - Option List 1
17-17

Second Semester
3 - ECON 212 Principles of Macroeconomics
3 - ENGL 103 Accelerated Composition
3 - MTHSC 207 Multivariable Calculus or
4 - MTHSC 108 Calculus of One Variable II
4 - Natural Science Requirement 2
2 - Elective
15-16

OPTION LIST
3 - COMM 150 Intro. to Human Comm. or
3 - COMM 250 Public Speaking
3 - Arts and Humanities (Literature) Requirement 1
3 - Arts and Humanities (Non-Lit.) Requirement 1
6 - International Studies Requirement 1
15

1See advisor. The following sequences are also acceptable: MTHSC 102/207, 106/108, 106/207.

2See General Education Requirements. Eight credit hours of natural science, with laboratory, are required; however, the courses do not need to be in a sequence.

3See advisor.

Note: Students must complete the General Education Science and Technology in Society and Cross-Cultural Awareness Requirements. Those may be fulfilled by courses meeting other curriculum requirements.

Admission to Business Degree Programs

To be eligible for admission into the business degree program in Accounting, BS in Economics, Financial Management, Industrial Management, or Management, students must have completed the courses outlined in the freshman curriculum with a cumulative grade-point ratio of 2.0 or higher. Students wishing to enter the Marketing Program must have completed the Pre-Business program with a cumulative grade-point ratio of 3.0 or higher and must obtain permission of the department chair. Students should initiate a change-of-major request after completion of the Freshman Curriculum. Students who fail to meet the requirements for admission to a degree-granting business program may remain in Pre-Business until those requirements are met, but only until 64 semester hours of coursework have been completed. Students who exceed 64 credit hours and still do not meet the requirements for admission into a degree program must declare another major. Students petitioning for admission into a business degree program will follow the curriculum in effect at the time of the change.
ACCOUNTING

Bachelor of Science

The program leading to the Bachelor of Science degree in Accounting prepares students for careers as professional accountants. Students completing this program are well prepared to enter many accounting career fields as well as to continue study at the graduate level.

Students planning to become Certified Public Accountants should note that the requirements to sit for the CPA examination in South Carolina include 150 hours of collegiate education and completion of a bachelor's degree. Other states have, or will soon have, similar requirements. The faculty of the School of Accountancy and Legal Studies believes these requirements are best met with a bachelor's degree in Accounting and completion of the Master of Professional Accountancy (MPAcc) degree program. The MPAcc program also enhances the preparation of students pursuing accounting careers in areas of specialization such as assurance and management services and taxation.

Admission to the MPAcc program is separate from admission to the undergraduate program. It is based on the student's undergraduate record and score on the Graduate Management Admissions Test (GMAT). For information, contact the School of Accountancy and Legal Studies, 301 Sirrine Hall.

In addition to accounting and business courses, approximately one-half of the Bachelor of Science curriculum is devoted to English, public speaking, mathematics, natural and social sciences, and the humanities. Thus, students in the accounting program obtain a broad-based education that not only gives them accounting expertise but also contributes to their proficiency in analytical, communication, and interpersonal skills. Along with the general business accreditation held by the College, the degree programs offered by the School of Accountancy and Legal Studies are separately accredited by AACSB International, the only accrediting agency for accounting programs.

Sophomore Year

First Semester
1. ACCT 201 Financial Accounting Concepts
2. ACCT 204 Accounting Procedures
3. MTHSC 301 Statistical Methods I
4. MTHSC 309 Introductory Business Statistics
5. MGT 301 Principles of Management
6. Option List

Second Semester
1. ACCT 210 Introductory Financial Acct. I
2. CP SC 220 Microcomputer Applications
3. MGT 310 Intermediate Business Statistics
4. Option List
5. Elective

Junior Year

First Semester
1. ACCT 311 Intermediate Financial Acct. I
2. ACCT 322 Accounting Information Systems
3. ENGL 304 Business Writing
4. FIN 311 Financial Management I
5. Fine Arts Requirement

Second Semester
1. ACCT 312 Intermediate Financial Acct. II
2. ACCT 340 Internal Auditing Theory
3. ACCT 415 Auditing
4. FIN 312 Financial Management II
5. LAW 322 Legal Environment of Business
6. PHIL 344 Business Ethics
7. Elective

Senior Year

First Semester
1. ACCT 303 Cost Accounting
2. ACCT 313 Intermediate Financial Acct. III
3. ACCT 404 Individual Taxation
4. ACCT 405 Business Taxation
5. MKT 301 Principles of Marketing
6. International Business Requirement

Option A: Internship

1. ACCT 399 Internship in Accounting
2. ACCT 410 Budgeting and Executive Control
3. MGT 415 Business Strategy
4. Business Requirement

Second Semester
1. ACCT 410 Budgeting and Executive Control
2. MGT 415 Business Strategy
3. Business Requirement

122–124 Total Semester Hours

ECONOMICS

A bachelor's degree in Economics provides a thorough understanding of business, society, and public policy and prepares students for a wide range of careers. By combining general education courses and a strong course of study in economics, students can prepare for graduate studies in business, law, or any of the social sciences as well as for careers in business and government.

The Department of Economics offers two undergraduate degree paths. The Bachelor of Arts degree emphasizes foreign language skills and offers students maximum freedom to tailor their course of study to their specific interests and career goals. A broad choice of minors is available for this program. The Bachelor of Arts program requires 30 credit hours in economics, which should be satisfied by completing ECON 211, 212, and 24 credits of coursework above the sophomore level. Bachelor of Arts majors must complete ECON 314 and 315. ECON 405 is strongly recommended but not required.

The Bachelor of Science program emphasizes business applications. It requires 31 credit hours in economics, which should be satisfied by completing ECON 211, 212, and 25 credits of coursework above the sophomore level. Bachelor of Science majors must complete ECON 405 in addition to 314 and 315.

Minors

A minor field is required of students in both the Bachelor of Arts and the Bachelor of Science degree programs. Economics majors may choose, in consultation with their advisors, any University-approved minor. (See page 78.)

Students who wish to combine the curriculum in Economics with secondary-school teaching should take the degree in Education with a teaching area in Economics. The courses taken will be those required for teaching certification as specified by the South Carolina Department of Education as well as those required for an Economics major.

Combined Bachelor's/Master's Plan

The Department of Economics allows students to count up to 12 hours of graduate credit (800-level courses) toward both the bachelor's and master's degrees. Students participating in this program must have a minimum grade-point ratio of 3.4 and be admitted to the Graduate School prior to registering for graduate courses. Details of the suggested curriculum and program information are available from the Department of Economics.

Bachelor of Arts

Freshman Year

First Semester
1. ECON 211 Principles of Microeconomics
2. MTHSC 102 Intro. to Mathematical Analysis
3. Foreign Language Requirement
4. Natural Science Requirement
5. Elective

6. Combined Bachelor's/Master's Plan

69
SECOND SEMESTER
3 - ECON 212 Principles of Macroeconomics
3 - ENGL 103 Accelerated Composition
3 - MTHSC 207 Multivariable Calculus
3 - Foreign Language Requirement
5 - Science and Technology Requirement
1 - Elective
15

Sophomore Year
First Semester
3 - ECON 314 Intermediate Microeconomics
3 - MTHSC 301 Statistical Theory and Methods I
3 - Arts and Humanities (Literature) Requirement
3 - Arts and Humanities (Non-Lit) Requirement
3 - Elective
15

Second Semester
3 - ECON 315 Intermediate Macroeconomics
3 - HISt 173 Western Civilization
3 - Elective
9
15

Junior Year
First Semester
3 - COMM 150 Intro to Human Comm. or
3 - COMM 250 Public Speaking
3 - Advanced Writing Requirement
3 - Major Requirement
6 - Minor Requirement
3 - Elective
15

Second Semester
6 - Major Requirement
6 - Minor Requirement
3 - Elective
15

Senior Year
First Semester
6 - Major Requirement
3 - Minor Requirement
6 - Elective
15

Second Semester
3 - Major Requirement
3 - Minor Requirement
9 - Elective
15

122 Total Semester Hours

1MTHSC 106 and 108 may be substituted for MTHSC 102 and 207, respectively, and one or two elective hours. Students who choose this option are encouraged to take MTHSC 206 as well.
2Two semesters (through 202) in the same modern foreign language are required.
3See General Education Requirements.
4Minor Requirement.
5See General Education Requirements. This requirement may be satisfied by other courses in the curriculum. In this case, elective hours must be substituted.
6ECON 301, 302, (MGT) 306, 309, 310, and 324 may not be used to satisfy the Major Requirement.

ECONOMICS
Bachelor of Science
Sophomore Year
First Semester
3 - ACCT 201 Financial Accounting Concepts
3 - ECON 314 Intermediate Microeconomics
3 - EX ST 301 Introductory Statistics or
3 - MTHSC 301 Statistical Methods I or
3 - MTHSC 309 Introductory Business Statistics
3 - MGT 301 Principles of Management
3 - Option List
15

Second Semester
3 - ACCT 202 Managerial Accounting Concepts
3 - ECON 315 Intermediate Macroeconomics
9 - Option List
15

Junior Year
First Semester
4 - ECON 405 Introduction to Econometrics
3 - FIN 306 Corporation Finance
3 - Advanced Writing Requirement
3 - Major Requirement
3 - Minor Requirement
16

Second Semester
3 - Major Requirement
6 - Minor Requirement
6 - Elective
15

Senior Year
First Semester
3 - Major Requirement
3 - Minor Requirement
9 - Elective
15

Second Semester
6 - Major Requirement
6 - Minor Requirement
6 - Elective
15

122-124 Total Semester Hours

1See advisor. Select courses to meet General Education Arts and Humanities and Departmental International Studies Requirements.
2Students who complete a minor in Financial Management must complete three hours of electives to replace the FIN 306 requirement in the Economics major.
3See General Education Requirements.
4ECON 301, 302, (MGT) 306, 309, 310, and 324 may not be used to satisfy the Major Requirement.
5Note: At least 50 percent of the total credits taken in ACCT, ECON, FIN, LAW, MGT, and MKT must be taken at Clemson University.

FINANCIAL MANAGEMENT
Bachelor of Science
The Bachelor of Science in Financial Management program is designed to develop an understanding of financial markets in the contemporary economy, the operation of financial institutions, and the financial management of business operations. The curriculum prepares students for careers in such areas as banking, corporate financial management, financial planning and services, insurance, and real estate. Governments of all levels also employ finance graduates in many of their divisions. The curriculum also provides excellent preparation for students interested in graduate studies or law school.

The core of the curriculum provides a broad range of subjects with an emphasis on technical and communication skills. Students then have the flexibility to tailor courses to their own needs by choosing emphasis areas that will enhance career preparation in specific areas of finance. Students who complete a specific set of courses are eligible to sit for the certified financial planner (CFP) examination.

Sophomore Year
First Semester
3 - ACCT 201 Financial Accounting Concepts
3 - EX ST 301 Introductory Statistics or
3 - MTHSC 301 Statistical Methods I or
3 - MTHSC 309 Introductory Business Statistics
3 - MGT 301 Principles of Management
6 - Option List
15

Second Semester
1 - ACCT 204 Accounting Procedures
3 - CP SC 220 Microcomputer Applications or
3 - MGT 218 Mgt. Personal Computer Appl.
3 - MGT 310 Intermediate Business Statistics
3 - MKT 301 Principles of Marketing
6 - Option List
16

Junior Year
First Semester
3 - ACCT 311 Intermediate Financial Acct. I
3 - ENGL 304 Business Writing or
3 - ENGL 314 Technical Writing
3 - FIN 311 Financial Management I
3 - LAW 312 Commercial Law or
3 - LAW 322 Legal Environment of Business
3 - Science and Tech. in Society Requirement
15

Second Semester
3 - ACCT 312 Intermediate Financial Acct. II
3 - FIN 305 Investment Analysis
3 - FIN 307 Principles of Real Estate
3 - FIN 312 Financial Management II
3 - Elective
15

122-124 Total Semester Hours

1See advisor. Select courses to meet General Education Arts and Humanities and Departmental International Studies Requirements.
2Students who complete a minor in Financial Management must complete three hours of electives to replace the FIN 306 requirement in the Economics major.
3See General Education Requirements.
4ECON 301, 302, (MGT) 306, 309, 310, and 324 may not be used to satisfy the Major Requirement.
5Note: At least 50 percent of the total credits taken in ACCT, ECON, FIN, LAW, MGT, and MKT must be taken at Clemson University.
Senior Year
First Semester
3 - ACCT 303 Cost Accounting
3 - ACCT 313 Intermediate Financial Acct. III
3 - FIN 308 Financial Institutions and Markets
6 - Emphasis Area
15
Second Semester
3 - MGT 415 Business Strategy
9 - Emphasis Area
3 - Elective
15
122–124 Total Semester Hours
1See advisor. Select courses to meet General Education Arts and Humanities and Departmental Internationa l Studies Requirements.
2See General Education Requirements. This requirement may be satisfied by other courses in the curriculum. In this case, elective hours may be used.
3Fifteen credit hours from one of the following: English, Drama, Psychology, or Curriculum and Instruction.
4This course is a requirement.
5See advisor.

GRAPHIC COMMUNICATIONS
Bachelor of Science
The Bachelor of Science degree in Graphic Communications prepares students for professional careers in printing, publishing, packaging, and related industries. The core curriculum assures graduates of having the skills and knowledge required by most entry-level jobs. The major requirements allow each student to select courses which enhance career preparation in specific segments of graphic communications. Coursework is heavily oriented around individual laboratory performance which stresses the development of problem-solving skills in a broad cross-section of manufacturing areas. Applications include all major processes and a variety of industry segments, including commercial printing, publishing, package production, specialty printing, and industrial applications of printing technology beyond communications. The most common career opportunities are in printing management, production planning and supervision, and commercial and technical sales.

The Graphic Communications program is designed to be completed in four years (eight semesters and one or two summers). While students must take one internship during a fall or spring semester, one or two summers are typically used to make up for that semester. The department schedules courses in summer for that purpose. Taking a reduced load per term or other circumstances could extend the time to meet graduation requirements.

Policy on Advancement in Graphic Communications
Graphic Communications majors must achieve a C or better in prerequisite G C courses before enrolling in the next level G C course. Registration priority is given to those students for whom the course is a requirement.

Change of Major into Graphic Communications
Students who change majors into Graphic Communications after one or more semesters at Clemson must have a 2.0 minimum cumulative grade-point ratio in courses taken at Clemson or must first have earned a B or better in G C 104.

Freshman Year
First Semester
1 - G C 101 Orientation to Graphic Comm.
1 - PSYCH 201 Introduction to Psychology
4 - Approved Laboratory Science Requirement
1 - Mathematics Requirement
4 - Elective
15
Second Semester
3 - ENGL 103 Accelerated Composition
3 - EX ST 301 Introductory Statistics or
3 - MTHSC 203 Elem. Statistical Inference or
3 - MTHSC 301 Statistical Methods I
4 - G C 104 Graphic Communications I
2 - PKGC 102 Intro. to Packaging Science
4 - Approved Laboratory Science Requirement
16
Sophomore Year
First Semester
3 - ACCT 201 Financial Accounting Concepts
3 - G C 207 Graphic Communications II
3 - G C 215 Photo. and Digital Imaging Tech.
3 - MGT 301 Principles of Management
3 - Arts and Humanities (Literature) Requirement
15
Second Semester
3 - ACCT 202 Managerial Accounting Concepts
3 - ECON 200 Economic Concepts or
3 - ECON 211 Principles of Microeconomics
3 - EN SP 200 Intro. to Environmental Science
3 - G C 245 Graphic Comm. Mechanical Systems
4 - G C 310 Applied Principles of Electronic Workflow
16
Summer
0 - CO-OP 101 Cooperative Education or
1 - G C 350 Graphic Comm. Internship
15
Junior Year
First Semester
3 - COMM 250 Public Speaking
5 - G C 440 Commercial Printing
3 - MKT 301 Principles of Marketing
3 - Major Requirement
1 - Elective
15
Second Semester
3 - ENGL 314 Technical Writing
2 - G C 405 Package and Specialty Printing
2 - G C 406 Package and Specialty Printing Lab.
3 - G C 464 Ink and Substrates
3 - Arts and Humanities (Non-Lit.) Requirement
3 - Elective
16
Summer
0 - CO-OP 102 Cooperative Education or
1 - G C 450 Graphic Comm. Internship
15
Senior Year
First Semester
4 - G C 444 Current Developments and Trends in Graphic Communications
3 - MGT 307 Personnel Management or
3 - MKT 301 Principles of Marketing
8 - Major Requirement
15
Second Semester
3 - G C 448 Planning and Controlling Print. Func.
2 - G C 480 Senior Seminar in Graphic Comm.
4 - Major Requirement
3 - Elective
12
120–122 Total Semester Hours
1Must include one course in chemistry (CH 101 or 105) and one course in physics (PHYS 121 or 207/208).
2See General Education Requirements. Three of these credit hours must also satisfy the Cross-Cultural Awareness Requirements.
3Select any ENGL course form General Education Arts and Humanities (Literature) Requirement.
4One internship must in a fall or spring semester (summer – at least 12 weeks; fall/spring—at least 15 weeks). G C 455 will not substitute for 450.
5See advisor.
INDUSTRIAL MANAGEMENT

Bachelor of Science

The Bachelor of Science degree in Industrial Management prepares students for management challenges in manufacturing, production planning, inventory control, quality assurance, and service operations. Students receive a broad-based education in business, but particular emphasis is placed on systems, theories, and issues dealing with the production of goods and services. The program is particularly relevant in today’s economic environment, where improvements in productivity and quality are essential to meet the growing challenges of foreign producers. In addition to jobs in manufacturing management, graduates in Industrial Management are sometimes sought for positions as project directors by government agencies and research centers. Financial institutions have found the Industrial Management graduate well prepared for internal operations management as well as for liaison positions dealing with manufacturing companies as bank customers. The Industrial Management program is accredited by AACSB International and has received special commendation for excellence from the South Carolina Commission on Higher Education.

Sophomore Year

First Semester
3 - ACCT 201 Financial Accounting Concepts
3 - EX ST 301 Introductory Statistics or
3 - MTHSC 301 Statistical Methods I or
3 - MTHSC 309 Introductory Business Statistics
3 - MGT 301 Principles of Management
6 - Option List
15

Second Semester
3 - ACCT 202 Managerial Accounting Concepts
3 - MGT 218 Mgt. Personal Computer Appl.
3 - MGT 310 Intermediate Business Statistics
6 - Option List
15

Junior Year

First Semester
3 - LAW 322 Legal Environment of Business
3 - MGT 312 Decision Models for Management
3 - MGT 318 Management Information Systems
3 - MGT 390 Operations Management
3 - MKT 301 Principles of Marketing
15

Second Semester
3 - ACCT 307 Managerial Accounting
3 - ECON (MGT) 306 Managerial Economics
3 - MGT 305 Economics of Transportation or
3 - MGT 317 Logistics Management
3 - MGT 307 Personnel Management
3 - Advanced Writing Requirement
1 - Elective
16

Senior Year

First Semester
3 - FIN 306 Corporation Finance
3 - MGT 400 Mgt. of Organizational Behavior
3 - MGT 402 Operations Planning and Control
3 - MGT 414 Statistical Analysis
3 - Elective
15

Second Semester
3 - MGT 404 Adv. Statistical Quality Control
3 - MGT 408 Design of Production Systems
3 - MGT 415 Business Strategy
3 - MGT 423 International Business Management
3 - Elective
15

122–124 Total Semester Hours

Bachelor of Science

The Bachelor of Science degree in Management prepares students for careers as professional managers in corporations, governmental organizations, and small businesses. In addition, the program provides a foundation for graduates who wish to pursue advanced degrees in business and public administration, law, and the social sciences.

The curriculum gives students a broad exposure to the functional areas of business and allows each to select an emphasis area in a subject that is germane to individual career interests. The Management curriculum provides an understanding of the social, legal, political, and economic environments in which organizations must operate; an understanding of the functional areas of business and their interrelationships; and a knowledge of behavioral science, applied statistics, and mathematics as they relate to organizational problem solving. The program is accredited by AACSB International.

Sophomore Year

First Semester
3 - ACCT 201 Financial Accounting Concepts
3 - EX ST 301 Introductory Statistics or
3 - MTHSC 301 Statistical Methods I or
3 - MTHSC 309 Introductory Business Statistics
3 - MGT 301 Principles of Management
6 - Option List
15

Second Semester
3 - ACCT 307 Managerial Accounting
3 - ECON (MGT) 306 Managerial Economics
3 - MGT 305 Economics of Transportation or
3 - MGT 317 Logistics Management
3 - MGT 307 Personnel Management
3 - Advanced Writing Requirement
1 - Elective
16

Junior Year

First Semester
3 - LAW 322 Legal Environment of Business
3 - MGT 312 Decision Models for Management
3 - MGT 318 Management Information Systems
3 - MGT 390 Operations Management
3 - MKT 301 Principles of Marketing
15

Second Semester
3 - ACCT 307 Managerial Accounting
3 - MGT 400 Mgt. of Organizational Behavior
3 - MGT 402 Operations Planning and Control
3 - MGT 414 Statistical Analysis
3 - Elective
15

Second Semester
3 - ACCT 307 Managerial Accounting
3 - MGT 400 Mgt. of Organizational Behavior
3 - MGT 402 Operations Planning and Control
3 - MGT 414 Statistical Analysis
3 - Elective
15

122–124 Total Semester Hours

Bachelor of Science

The Bachelor of Science degree in Management prepares students for careers as professional managers in corporations, governmental organizations, and small businesses. In addition, the program provides a foundation for graduates who wish to pursue advanced degrees in business and public administration, law, and the social sciences.

The curriculum gives students a broad exposure to the functional areas of business and allows each to select an emphasis area in a subject that is germane to individual career interests. The Management curriculum provides an understanding of the social, legal, political, and economic environments in which organizations must operate; an understanding of the functional areas of business and their interrelationships; and a knowledge of behavioral science, applied statistics, and mathematics as they relate to organizational problem solving. The program is accredited by AACSB International.
### MARKETING

**Bachelor of Science**

The Bachelor of Science degree program in Marketing develops an understanding of various aspects of marketing. The curriculum prepares students for professional marketing careers in industry, government, or the nonprofit sector. Graduates are also well prepared for entrance into the Master of Business Administration, law, or other graduate programs. For students who want a general perspective of marketing, the curriculum provides a broad range of subjects with the flexibility to tailor courses by choosing areas that will enhance career preparation in various areas of marketing. Subjects include promotion strategy, professional selling, sales management, public and nonprofit marketing, entrepreneurship, marketing research, product management, marketing management, and international marketing.

Emphasis areas in services marketing, sport marketing, and technical marketing are available to students who seek to specialize. The Marketing curriculum, whether approached from a general or specialized perspective, provides the conceptual, quantitative, and analytical skills necessary to function in a dynamic business environment. The Marketing degree is accredited by AACSB International.

Students wishing to change majors into the Marketing program must have a cumulative grade-point ratio of 3.0 or higher or consent of department chair.

### Sophomore Year

**First Semester**
3 - ACCT 201 Financial Accounting Concepts
3 - EX ST 301 Introductory Statistics or
3 - MTHSC 301 Statistical Methods I or
3 - MTHSC 309 Introductory Business Statistics
3 - MGT 301 Principles of Management
6 - Option List ¹
15

**Second Semester**
3 - ACCT 202 Managerial Accounting Concepts
3 - MGT 310 Intermediate Business Statistics
3 - MGT 301 Principles of Marketing
6 - Option List ¹
15

### Junior Year

**First Semester**
3 - LAW 312 Commercial Law or
3 - LAW 322 Legal Environment of Business
3 - MKT 302 Consumer Behavior
3 - MKT 431 Marketing Research
3 - Advanced Writing Requirement ²
3 - Support Course Requirement ³
15

**Second Semester**
3 - FIN 306 Corporation Finance
3 - MKT 427 International Marketing
3 - Emphasis Area ⁴
3 - Support Course Requirement ³
4 - Elective
16

**Senior Year**

**First Semester**
3 - MGT 415 Business Strategy
3 - Emphasis Area ⁴
3 - Support Course Requirement ³
6 - Elective
15

**Second Semester**
3 - MKT 450 Strategic Marketing Management
3 - Emphasis Area ⁴
6 - Support Course Requirement ³
3 - Elective
15

122-124 Total Semester Hours

See advisor. Select courses to satisfy General Education Arts and Humanities and Departmental International Studies Requirements.

See General Education Requirements.

¹Chosen jointly by the student and the advisor. These must support the emphasis area selected by the student. Certain minors may be used to satisfy the Support Courses Requirement. See advisor.

²Select one of the following emphasis areas:
   - General Marketing—MKT 420 or 423, 425, 426, 428, or 429, and any one additional MKT course.
   - Services Marketing—MKT 420 or 423, 425, 426, or 428, 429.
   - Sport Marketing—MKT 321, 420 or 423, 428.
   - Technical Marketing—MKT 420, 423, 424, 428, or 430, 426.

³Note: At least 50 percent of the total credit hours taken in ACCT, ECON, FIN, LAW, MGT, and MKT must be taken at Clemson University.

### POLITICAL SCIENCE

The Department of Political Science offers two degree programs: a bachelor of arts and a bachelor of science, each requiring a total of 120 credit hours. Both prepare students for a wide range of graduate programs and career opportunities. The bachelor of arts program provides broad coverage of the political science discipline and emphasizes communication skills and humanities. The bachelor of science program is recommended for those with an aptitude for mathematics and/or an interest in political economy, public administration, public policy, or other fields requiring advanced quantitative skills.

Both programs are appropriate for pre-law students and for students interested in global politics. Note that the bachelor of arts degree requires a minor, and the bachelor of science degree requires a field of concentration and, depending on the concentration, requires or allows a minor.

**Bachelor of Arts**

The requirements for a Bachelor of Arts in Political Science consist of PO SC 101, 102 or 104, and at least 24 additional credit hours in political science at the 300-400 level, including at least one course from each of the following fields:

- **American Government**—PO SC 403, 405, 416, 432, 442
- **Comparative Politics**—PO SC 371, 372, 466, 471, 472, 473, 476, 477, 478
- **International Relations**—PO SC 361, 362, 363, 428
- **Political Theory**—PO SC 450, 453
- **Public Policy and Public Administration**—PO SC 302, 321, 421, 423, 424, 430

The student's additional coursework in political science is chosen with the consent and advice of the departmental advisor to ensure an appropriate balance of breadth and specialization within the field of political science. In addition to the courses listed above, the department offers a wide range of specialized courses in each of the subfields of the political science discipline.

Note: No more than six hours credit from PO SC 310, 311, and 312 may be counted toward any degree; no more than three hours credit from these courses may be applied to the requirements of a Political Science major.

### Freshman Year

**First Semester**
3 - PO SC 101 American National Government
3 - Foreign Language Requirement ³
3 - History Requirement ³
3 - Mathematics Requirement ³
2 - Elective
14-15

**Second Semester**
3 - ENGL 103 Accelerated Composition
3 - PO SC 102 Intro. to International Relations or
3 - PO SC 104 Intro. to Comparative Politics
3 - Foreign Language Requirement ³
3 - History Requirement ³
4 - Natural Science Requirement ³
16

### Sophomore Year

**First Semester**
3 - Arts and Humanities (Literature) Requirement ³
3 - Major Requirement ³
3 - Math or Natural Science Requirement ³
3 - Oral Communication Requirement ³
3 - Elective
15

**Second Semester**
3 - Arts and Humanities (Literature) Requirement ³
3 - Arts and Humanities (Non-Lit.) Requirement ³
3 - Major Requirement ³
3 - Minor Requirement ³
3 - Science and Tech. in Society Requirement ³
15

### Junior Year

**First Semester**
3 - ECON 211 Principles of Microeconomics
3 - Advanced Writing Requirement ³
3 - Major Requirement ³
3 - Minor Requirement ³
3 - Elective
15

**Second Semester**
3 - ECON 212 Principles of Macroeconomics
3 - Major Requirement ³
3 - Minor Requirement ³
3 - Philosophy/Religion Requirement ³
3 - Elective
15

The student's additional coursework in political science is chosen with the consent and advice of the departmental advisor to ensure an appropriate balance of breadth and specialization within the field of political science. In addition to the courses listed above, the department offers a wide range of specialized courses in each of the subfields of the political science discipline.

Note: No more than six hours credit from PO SC 310, 311, and 312 may be counted toward any degree; no more than three hours credit from these courses may be applied to the requirements of a Political Science major.
### Political Science

#### Bachelor of Science

The requirements for a Bachelor of Science in Political Science consist of PO SC 101, 102 or 104, and at least 24 additional credit hours in political science at the 300-400 level, including at least one upper-level American politics course and one upper-level political science course.

In consultation with the departmental advisor, students choose one of the following concentrations: American Politics, Global Politics, Political Economy, Public Administration, or Public Policy.

#### Freshman Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>1st Semester</th>
<th>2nd Semester</th>
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</thead>
<tbody>
<tr>
<td>First</td>
<td>3 - Fine Arts Requirement$^6$</td>
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120–121 Total Semester Hours

$^1$Six hours (through 202) in the same modern foreign language are required.
$^2$HIST 101, 102, 172, or 173
$^3$EXST 301, MTHSC 101, 102, 106, 108, 203, 207, 301, or 309
$^4$See General Education Requirements.
$^5$ENGL 212, 213, 214, or 215
$^6$See major requirements in program description above.
$^7$See list of approved minors on page 78.
$^8$Any course in philosophy or religion
$^9$Any course in art and architectural history, music, or theatre

#### Junior Year

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<tr>
<th>Semester</th>
<th>1st Semester</th>
<th>2nd Semester</th>
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<tbody>
<tr>
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#### Global Politics Concentration

### Senior Year

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#### Public Administration Concentration

### Senior Year

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122 Total Semester Hours

#### Political Economy Concentration

### Junior Year

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<th>2nd Semester</th>
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<tbody>
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#### Senior Year

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<th>Semester</th>
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<th>2nd Semester</th>
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<tbody>
<tr>
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<td>3 - PO SC 340 Public Policy Evaluation</td>
<td>3 - PO SC 340 Public Policy Evaluation</td>
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<td>6 - Public Administration Requirement$^7$</td>
<td>6 - Public Administration Requirement$^7$</td>
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<tr>
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</table>
Second Semester
3 - Political Science Requirement 6
6 - Public Administration Requirement 6
6 - Elective 15
121 Total Semester Hours

PUBLIC POLICY CONCENTRATION
Junior Year
First Semester
3 - PO SC 341 Quantitative Methods in Pol. Sci.
3 - PO SC 421 Public Policy
3 - Advanced Writing Requirement 3
3 - Oral Communication Requirement 3
3 - Philosophy/Religion Requirement 3
15

Second Semester
3 - Advanced Political Science Requirement 7
6 - Public Policy Requirement 11
3 - Science and Tech. in Society Requirement 4
4 - Elective 16
15

Senior Year
First Semester
3 - PO SC 430 Public Policy Evaluation
6 - Public Policy Requirement 11
6 - Elective 15
121 Total Semester Hours

PSYCHOLOGY
Psychology is the study of human and animal behavior and the biological, psychological, and social processes related to that behavior. The Bachelor's degree in Psychology is designed to prepare students for a variety of professional careers related to human resources, personal, counseling, and other people-oriented positions in human services, business, and industry. Additionally, the Bachelor's degree provides excellent preparation for graduate training in such areas as clinical, counseling, industrial, experimental, cognitive, social, biological, health, developmental, and school psychology. The program also provides excellent preparation for students who intend to pursue professional training in medicine, physical or occupational therapy, dentistry, pharmacy, veterinary science, or law. Further information is available on the Web at www.clemson.edu/psych.

Bachelor of Arts
The Bachelor of Arts program requires PSYCH 201, 202, 309, 310, 492, and 19 additional credits in psychology arranged as follows:

Two courses from the Biological and Cognitive menu: PSYCH 324, 333, 422.
One course from each of the following menus:
Applied—PSYCH 355, 364, 368, 375, 435, 480, 483, 488
Individuals and Groups—PSYCH 340, 352, 370
Laboratory—PSYCH 325, 334, 423, 471, H490, 493, 495, 496, 497

At least six credits must be from 400-level psychology courses, with at least three of those credits from psychology courses numbered between 400 and 499. BIOSC 470 may be taken in lieu of one 300- or 400-level elective psychology course. Students should consult their advisors for other degree requirements and course recommendations.

Freshman Year
First Semester
3 - PSYCH 201 Introduction to Psychology
1 - PSYCH 202 Introductory Psychology Lab.
3 - Foreign Language Requirement 3
3 - Mathematics Requirement 3
2 - Social Science Requirement 2
3 - Elective 16

Second Semester
3 - PSYCH 203 Introduction to Psychology
3 - ENGL 103 Accelerated Composition
3 - Arts and Humanities (Non-Lit.) Requirement 3
3 - Foreign Language Requirement 3
1 - Major Requirement 3
3 - Mathematics Requirement 3
15

Sophomore Year
First Semester
4 - PSYCH 309 Introductory Experimental Psych.
3 - Arts and Humanities (Literature) Requirement 3
3 - Cross-Cultural Awareness Requirement 3
4 - Natural Science Requirement 4
1 - Elective 15

Second Semester
4 - PSYCH 310 Advanced Experimental Psych.
3 - Cross-Cultural Awareness Requirement 3
4 - Natural Science Requirement 4
3 - Elective 14

Junior Year
First Semester
3 - Advanced Writing Requirement 2
4 - Major Requirement 3
3 - Minor Requirement 3
3 - Science and Tech. in Society Requirement 2
3 - Elective 16

Second Semester
3 - Major Requirement 3
3 - Minor Requirement 3
3 - Oral Communication Requirement 2
6 - Elective 15

Senior Year
First Semester
1 - PSYCH 492 Senior Laboratory in Psychology
6 - Major Requirement 3
3 - Minor Requirement 6
3 - Elective 14

Second Semester
3 - Major Requirement 3
6 - Minor Requirement 3
6 - Elective 15
120 Total Semester Hours

Bachelor of Science
The Bachelor of Science program requires PSYCH 201, 202, 309, 310, 492, and 19 additional credits in psychology arranged as follows:

Two courses from the Biological and Cognitive menu: PSYCH 324, 333, 422.
One course from each of the following menus:
Applied—PSYCH 355, 364, 368, 375, 435, 480, 483, 488
Individuals and Groups—PSYCH 340, 352, 370
Laboratory—PSYCH 325, 334, 423, 471, H490, 493, 495, 496, 497

At least six credits must be from 400-level psychology courses, with at least three of those credits from psychology courses numbered between 400 and 499. BIOSC 470 may be taken in lieu of one 300- or
400-level elective psychology course. Students should consult their advisors for other degree requirements and course recommendations.

Freshman Year
First Semester
4 - BIOL 103 General Biology I
3 - PHIL 102 Introduction to Logic
3 - PSYCH 201 Introduction to Psychology
1 - PSYCH 202 Introductory Psychology Lab.
3 - Mathematics Requirement 2
14

Second Semester
4 - BIOL 104 General Biology II
3 - ENGL 103 Accelerated Composition
3 - Major Requirement
3 - Mathematics Requirement 2
3 - Elective
16

Sophomore Year
First Semester
4 - PSYCH 309 Introductory Experimental Psych.
3 - Arts and Humanities (Literature) Requirement 2
3 - Mathematics Requirement 2
3 - Natural Science Requirement 4
1 - Elective
14

Second Semester
4 - PSYCH 310 Advanced Experimental Psych.
3 - Cross-Cultural Awareness Requirement 2
3 - Natural Science Requirement 4
3 - Social Science Requirement 3
3 - Elective
16

Junior Year
First Semester
3 - ENGL 304 Business Writing or
3 - ENGL 312 Advanced Composition or
3 - ENGL 314 Technical Writing
4 - Major Requirement 3
3 - Minor Requirement 6
3 - Science Requirement 7
3 - Elective
16

Second Semester
3 - COMM 150 Intro. to Human Comm. or
3 - COMM 250 Public Speaking
3 - Major Requirement 3
3 - Minor Requirement 6
3 - Social Science Requirement 3
3 - Elective
15

Senior Year
First Semester
1 - PSYCH 492 Senior Laboratory in Psychology
6 - Major Requirement 3
3 - Minor Requirement 6
3 - Science and Tech. in Society Requirement 2
1 - Elective
14

Second Semester
3 - Major Requirement 3
6 - Minor Requirement 6
6 - Elective
15
120 Total Semester Hours

See General Education requirements. Note: Three courses in mathematics are required.

SOCIOLGY
The Sociology major offers two degree programs: a bachelor of arts and a bachelor of science. Both degrees prepare students for a variety of professional careers related to human resources, management, public relations, social services, criminal justice, health services, social research, and other people-oriented positions in the public and private sector. In addition, the Bachelor's degree provides excellent preparation for graduate training in sociology, social services, law, and business. Both degrees require a total of 121 semester hours, including 34 credit hours in sociology and/or anthropology, as identified below. Courses used to fulfill General Education Requirements may be used to fulfill minor requirements.

Emphasis Areas in Sociology
Community Studies—R S (SOC) 459, SOC 331, (R S) 495; and nine credits from all courses offered in anthropology or sociology not already taken to fulfill requirements.
Criminal Justice—SOC 390, 393; nine credits selected from SOC 391, 392, 396, 397, 491, 493, 494, (R S) 495; and three credits from all courses offered in anthropology or sociology not already taken to fulfill requirements.
General Sociology—12 credit hours selected from ANTH 201, SOC 202, 311, 330, 331, 350, 351, 380, 391, 414, 430, 432, 440, (R S) 471, 480, 481, (R S) 495; and six additional credits from all courses offered in anthropology or sociology not already taken to fulfill requirements.
Social Services—SOC 380, 414, (R S) 495; and nine credits from all courses offered in anthropology or sociology not already taken to fulfill requirements.

At least 12 of the total credits must be from 400-level sociology, rural sociology, and/or anthropology courses; no more than nine credit hours may be taken in courses at the 100 or 200 level, except with approval of the department chair. Additional electives are added to meet the minimum of 121 hours required for graduation.

Substance Abuse Certificate Program
The Substance Abuse Certificate Program is an interdisciplinary program, drawn from courses in sociology, education, health, and psychology. Students study the causes, consequences, prevention, and treatment of substance abuse. They also study delivery systems and policy issues associated with legal and illicit substances. Through field placement, students come face-to-face with the problem and gain practical experience to prepare them to enter the field of practicing specialists. The credential requires knowledge in theory and treatment of substance abuse problems.

Completion of the Substance Abuse Certificate Program requires ED C 234, PSYCH 375, SOC 380, 395, 396, (R S) 495, plus a related course approved by certificate program director.

Bachelor of Arts
Freshman Year
First Semester
3 - MTHSC 101 Essential Math for Informed Soc.
3 - SOC 201 Introduction to Sociology
3 - Foreign Language Requirement
4 - Natural Science Requirement
3 - Elective
16

Second Semester
3 - ENGL 103 Accelerated Composition
3 - MTHSC 203 Elementary Statistical Inference
3 - Foreign Language Requirement
3 - Social Science Requirement
3 - Elective
15

Sophomore Year
First Semester
3 - COMM 150 Intro. to Human Comm. or
3 - COMM 250 Public Speaking
3 - Arts and Humanities (Literature) Requirement 3
3 - Cross-Cultural Awareness Requirement 3
6 - Elective
15

Second Semester
3 - Arts and Humanities (Non-Lit.) Requirement 3
3 - Science and Tech. in Society Requirement 3
6 - Minor
3 - Elective
15

Junior Year
First Semester
3 - ANTH 301 Cultural Anthropology or
3 - SOC 433 Globalization and Social Change
3 - ENGL 304 Business Writing or
3 - ENGL 314 Technical Writing or
3 - ENGL 316 Writing and International Trade
4 - SOC (R S) 303 Methods of Social Research 1
3 - Advanced Humanities Requirement 3
3 - Emphasis Area 3
1 - Elective
17
Second Semester  
3 - Advanced Humanities Requirement  
6 - Emphasis Area  
6 - Minor  
\( \text{Total Semester Hours} = 15 \)  

Senior Year  
First Semester  
3 - SOC 460 Race, Ethnicity, and Class or  
3 - SOC 461 Sex Roles  
3 - Advanced Humanities Requirement  
6 - Emphasis Area  
3 - Elective  
\( \text{Total Semester Hours} = 15 \)  

Second Semester  
3 - SOC 404 Sociological Theory  
3 - Advanced Humanities Requirement  
3 - Emphasis Area  
3 - Minor  
1 - Elective  
\( \text{Total Semester Hours} = 15 \)  

121 Total Semester Hours  

Two semesters (through 201) in the same modern foreign language are required.  

*See General Education Requirements. (Note: Social Science Requirement must be in an area other than anthropology or sociology.)  

*See page 78 for approved minors.  

*Humanities courses numbered 300 or higher (A A H 210, MUSIC 210, THEA 210 excepted). The humanities for this purpose include art and architectural history, communication studies (except 364 and 368), English (except 304, 312, 314, 316, 333, 334, 335, 405, 490, 495), languages, music, philosophy, religion, theatre (except 377, 487, 497), and women's studies, as well as courses entitled Humanities.  

*See emphasis area requirements in program description above.  

**SOCIOLGY**  
**Bachelor of Science**  

**Freshman Year**  

First Semester  
3 - MTHSC 101 Essential Math for Informed Soc.  
3 - SOC 201 Introduction to Sociology  
4 - Natural Science Requirement  
3 - Social Science Requirement  
3 - Elective  
\( \text{Total Semester Hours} = 15 \)  

Second Semester  
3 - COMM 150 Intro. to Human Comm. or  
3 - COMM 250 Public Speaking  
3 - ENGL 103 Accelerated Composition  
3 - MTHSC 203 Elementary Statistical Inference  
3 - Departmental Math or Science Requirement  
3 - Elective  
\( \text{Total Semester Hours} = 15 \)  

**Sophomore Year**  

First Semester  
3 - Arts and Humanities (Literature) Requirement  
3 - Cross-Cultural Awareness Requirement  
3 - Departmental Math or Science Requirement  
3 - Minor  
3 - Elective  
\( \text{Total Semester Hours} = 15 \)  

**Second Semester**  
3 - Arts and Humanities (Non-Lit.) Requirement  
3 - Departmental Math or Science Requirement  
3 - Science and Tech. in Society Requirement  
6 - Minor  
\( \text{Total Semester Hours} = 15 \)  

**Junior Year**  

First Semester  
3 - ANTH 301 Cultural Anthropology or  
3 - SOC 433 Globalization and Social Change  
3 - ENGL 314 Technical Writing  
4 - SOC (R S) 303 Methods of Social Research I  
3 - Emphasis Area  
3 - Philosophy Requirement  
1 - Elective  
\( \text{Total Semester Hours} = 17 \)  

Second Semester  
3 - Advanced Humanities Requirement  
6 - Emphasis Area  
3 - Minor  
3 - Elective  
\( \text{Total Semester Hours} = 15 \)  

**Senior Year**  

First Semester  
3 - ANTH 351 Physical Anthropology  
3 - SOC 460 Race, Ethnicity, and Class or  
3 - SOC 461 Sex Roles  
6 - Departmental Math or Science Requirement  
3 - Emphasis Area  
\( \text{Total Semester Hours} = 15 \)  

Second Semester  
3 - SOC 404 Sociological Theory  
6 - Emphasis Area  
3 - Minor  
1 - Elective  
\( \text{Total Semester Hours} = 13 \)  

121 Total Semester Hours  

*See General Education Requirements. (Note: Social Science Requirement must be in an area other than anthropology or sociology.)  

*See advisor. At least six of the 15 hours must be at the 300 level or above.  

*See page 78 for approved minors.  

*See emphasis area requirements in program description above.  

*PHIL 323, 325, 326, 327, 355, or 360  

*Humanities courses numbered 300 or higher (A A H 210, MUSIC 210, THEA 210 excepted). The humanities for this purpose include art and architectural history, communication studies (except 364 and 368), English (except 304, 312, 314, 316, 333, 334, 335, 405, 490, 495), languages, music, philosophy, religion, theatre (except 377, 487, 497), and women's studies, as well as courses entitled Humanities.  

*May not be used to fill the 34 credits for the major.
MINORS

Following are minors acceptable for students in the College of Business and Behavioral Science. Students cannot major and minor in the same field or acquire a minor that is not allowed by the degree program.

Accounting
Adult/Extension Education
Aerospace Studies
African American Studies
Agricultural Business Management
Agricultural Mechanization and Business
American Sign Language Studies
Animal and Veterinary Sciences
Anthropology
Athletic Leadership
Biochemistry
Bioengineering
Biological Sciences
Business Administration—not open to Accounting, BS Economics, Financial Management, Industrial Management, Management, or Marketing majors
Chemistry
Cluster
Communication Studies
Communications
Community Recreation Management
Computer Science
Crop and Soil Environmental Science
East Asian Studies
Economics
Education—not open to Graphic Communications majors
English
Entomology
Entrepreneurship—not open to Accounting, BS Economics, Financial Management, Industrial Management, Management, or Marketing majors
Environmental Engineering
Environmental Science and Policy
Equine Business
Film Studies
Financial Management
Fine Arts
Food Science
Forest Products
Forest Resource Management
Geography
Geology
Global Politics

Great Works
Health Science
History
Horticulture
Human Resource Management—not open to Industrial Management or Management majors
Legal Studies
Management—not open to Industrial Management majors
Mathematical Sciences
Microbiology
Military Leadership
Modern Languages
Music
Natural Resource Economics
Non-Profit Leadership
Operations Management—not open to Industrial Management or Management majors
Packaging Science
Park and Protected Area Management
Philosophy
Physics
Plant Pathology
Political Science
Poultry Science
Psychology
Public Policy—not open to Political Science majors
Religion
Russian Area Studies
Science and Technology in Society
Screenwriting
Sociology
Spanish-American Area Studies
Sport Management
Textiles
Theatre
Therapeutic Recreation
Travel and Tourism
Turfgrass
Urban Forestry
Wildlife and Fisheries Biology
Women's Studies
Writing

See pages 36–39 for details.
COLLEGE OF ENGINEERING AND SCIENCE

The College of Engineering and Science offers a broad range of rigorous and stimulating baccalaureate programs which provide unexcelled educational opportunities. The innovative combination of engineering and science disciplines which comprises the College facilitates study and research in fields transcending the traditional disciplines. Students enjoy close interaction with a distinguished faculty committed to excellence in undergraduate education as well as in research. The College Website at www.ces.clemson.edu has additional information on the College and its programs.

Minors

Engineering and science students can complement their majors by selecting minor concentrations of study. Available minors include Bioengineering, Environmental Engineering, International Engineering and Science, one in each of the science majors, and in Textiles. (See page 96.)

International Programs

The world economy has become very tightly integrated, making it highly important that engineering and science students prepare themselves for this global environment. The College offers a minor in International Engineering and Science coupled with several programs that provide opportunities for students to gain international experience. These include study abroad at many locations around the world and EPIC (an international co-op program).

In addition, engineering and science students are encouraged to pursue study of a foreign language. Information on international programs is available in the Undergraduate Studies Office (107 Riggs Hall) and at www.ces.clemson.edu/global.

ENGINEERING PROGRAMS

The professional Bachelor of Science engineering degrees in Biosystems Engineering, Ceramic and Materials Engineering, Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Industrial Engineering, and Mechanical Engineering are each accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. The Biosystems Engineering program is administered jointly with the College of Agriculture, Forestry, and Life Sciences.

All engineering programs have the common goal of preparing engineering graduates who are able to:
- apply knowledge of math, science, and engineering
- formulate and solve engineering problems
- design and conduct experiments and analyze data
- design systems or components to meet needs
- function on multidisciplinary teams
- communicate effectively
- conduct themselves professionally and ethically
- appreciate engineering's global/societal context
- understand contemporary engineering issues
- apply modern engineering methods and tools
- appreciate the need for lifelong learning

Each engineering program has additional objectives specific to the discipline. All prepare students for a wide range of career opportunities and provide sound preparation for graduate study. Each curriculum provides opportunities for students to pursue individual areas of interest.

Admission Requirements

The University admission requirements are given under the section entitled Admission. Engineering applicants are strongly advised to include the following in their high school program:

Mathematics—Four units, including geometry, trigonometry, and introductory calculus

Laboratory Science—At least three units, including both chemistry and physics.

Computing—At least one unit, including introduction to a programming language. Applicants should have good keyboarding skills.

General Engineering Program

All new engineering students (including transfer students who have not completed all courses in the freshman engineering curriculum) are admitted into General Engineering. The General Engineering Program provides students with an opportunity to explore various engineering fields while getting a sound academic preparation for engineering study. To prepare students for entry into a specific engineering degree program, the second semester of the General Engineering curriculum includes a Major Requirement of 6-7 credits. Additional information about General Engineering can be found at www.ces.clemson.edu/ge.

Freshman Curriculum

First Semester
2 - CES 102 Engineering Disciplines and Skills
4 - CH 101 General Chemistry
3 - ENGL 103 Accelerated Composition
4 - MTHSC 106 Calculus of One Variable I
3 - Arts and Humanities Requirement1 or
3 - Social Science Requirement1

Second Semester
4 - MTHSC 108 Calculus of One Variable II
3 - PHYS 122 Physics with Calculus I
3 - Arts and Humanities Requirement1 or
3 - Social Science Requirement1
6-7 - Major Requirement2
16-17

1See Policy on Humanities and Social Sciences for Engineering Curricula below.

2See advisor.

Admission into Engineering Degree Programs

To transfer into an engineering degree program, a student must have a 2.0 minimum cumulative grade-point ratio on courses taken at Clemson and must have completed the freshman engineering curriculum (including the Major Requirement for the intended major) with a C or better in each course except the Arts and Humanities/Social Science Requirements.

Students should initiate a change-of-major request prior to the registration period during the semester when they expect to complete the freshman curriculum. Students who fail to meet the requirements for admission into a degree program may remain in General Engineering until those requirements are met; however, General Engineering majors are not permitted to take 300- or 400-level engineering courses. Engineering departments may allow General Engineering majors to enroll in selected 200-level engineering courses (policy varies by department). Students transferring into an engineering degree program will follow the curriculum in effect at the time of transfer.

Humanities and Social Sciences for Engineering Curricula

Engineers have an obligation to practice their profession in a socially responsible manner. The education of engineers must prepare them for this responsibility and make them aware of the constraints imposed by societal and cultural factors. Thus, humanities and social sciences are an important component of the engineering curriculum. Further, the program of study must include educational experiences addressing the intersection of science and technology with society and cross-cultural awareness.

Engineering curricula include a minimum of 15 credits of humanities/social science courses selected so as to satisfy the University's General Education Arts and Humanities and Social Science Requirements, as well as specific program objectives. Individual engineering curricula may have more specific requirements or may require more than 15 hours of humanities/social science courses. Students should consult their academic advisors for further information.

Electives for Engineering Curricula

Advisors must approve any course taken for elective credit in the Engineering curriculum. Courses excluded for elective credit include PHYS 200, 207/209, 208/210.

Registration Requirements

A cumulative grade-point ratio of 2.0 or higher is required for registration in engineering courses numbered 300 or higher. Priority for registration in engineering courses is given to those majors for whom the course is a degree requirement. Exceptions to this requirement may be granted by the department offering the course.

Graduation Requirements

In addition to other institutional requirements, candidates for a baccalaureate degree in Engineering are required to have a 2.0 or higher cumulative grade-point ratio in all engineering courses taken at Clemson. All courses with "Engineering" in the course designator (e.g., ENGR 130, M E 453, etc.) are used in this calculation.

The baccalaureate programs in Engineering are designed to be completed in four years (eight regular semesters). Taking a reduced load or participating in cooperative education will extend this time. On average, Clemson engineering students take about four and one-half years to complete the requirements for graduation.
BIOSYSTEMS ENGINEERING

Bachelor of Science

The principal objective of the Biosystems Engineering program is to educate and prepare students for a wide range of engineering endeavors involving biological entities. Two main areas are supported: engineering for management of natural resources and the environment and engineering for production of value-added products from bioprocessing technologies.

Biosystems engineers work at the interface between engineering and life sciences and must be knowledgeable in both disciplines. In addition to the common objectives of all engineering programs listed on page 79, Biosystems Engineering students should achieve familiarity with both biosystems concentrations, experience an interdisciplinary education, and develop a career goal of professional recognition and licensure. Students develop specialization in one of two concentrations.

The Applied Biotechnology Concentration equips students to apply engineering and biological sciences to problem solving for biological systems and production of value-added bioproducts in a wide range of industries.

The Natural Resources and Environment Concentration equips students to apply engineering, agricultural, and environmental sciences to assess and control the impact of human activities on the biosphere.

Students are urged to complete a minor and participate in the Cooperative Education, Biosystems Engineering Intern, and/or Study Abroad Programs. Those with interests in medical careers should consider graduate study and/or medical school.

Additional information is available from the departmental offices and can be found on the Web at www.clemson.edu/agbioeng/biohome.htm.

APPLIED BIOTECHNOLOGY CONCENTRATION

Freshman Year

First Semester
2 - CES 102 Engineering Disciplines and Skills
4 - CH 101 General Chemistry
3 - ENGL 103 Accelerated Composition
4 - MTHSC 106 Calculus of One Variable I
3 - Arts and Humanities Requirement \( or \) 3 - Social Science Requirement

Second Semester
4 - CH 102 General Chemistry
2 - ENGR 130 Engineering Fundamentals
4 - MTHSC 108 Calculus of One Variable II
3 - PHYS 122 Physics with Calculus I
3 - Arts and Humanities Requirement \( or \) 3 - Social Science Requirement

Sophomore Year

First Semester
2 - B E 210 Intro to Biosystems Engineering
2 - E G 209 Intro to Engr./Comp. Graphics
4 - MTHSC 206 Calculus of Several Variables
3 - PHYS 221 Physics with Calculus II
4 - Biology Requirement

Second Semester
2 - B E 212 Fundamentals of Biosystems Engr.
3 - M E 310 Thermodynamics and Heat Transfer or
3 - CH E 220 Chem. Engr. Thermodynamics I
4 - MICRO 305 General Microbiology
4 - MTHSC 208 Intro. to Ordinary Diff. Equations
4 - Statics/Dynamics Requirement

Junior Year

First Semester
3 - B E 312 Biol. Kinetics and Reactor Modeling
4 - C E 341 Introduction to Fluid Mechanics or
4 - CH E 230 Fluids/Heat Transfer
2 - E C E 307 Basic Electrical Engineering
3 - Mechanics of Materials Requirement
4 - Organic Chemistry Requirement

Second Semester
3 - B E 314 Biosystems Engr. Mechanical Design or
3 - M E 306 Fundamentals of Machine Design
3 - B E 412 Heat and Mass Transport in BE
4 - B E 415 Instrumentation and Control for Biosystems Engineers
3 - B E (CH E) 428 Biochemical Engineering
4 - Biochemistry Requirement

Senior Year

First Semester
3 - B E 414 Biosystems Engr. Unit Operations
3 - B E 438 Bioprocess Engineering Design
2 - B E 474 Engineering Project Mgmt./Portfolio
6 - Arts and Humanities Requirement \( or \) 3 - Social Science Requirement
3 - Life Science Requirement

Second Semester
3 - B E 435 Appl. in Biotechnology Engineering
2 - B E 475 Biosystems Capstone Design
3 - Arts and Humanities Requirement \( or \) 3 - Social Science Requirement
3 - Communication Requirement \( or \)
3 - Minor Requirement
3 - Engineering Requirement

128 Total Semester Hours

Notes:
1. All Biosystems Engineering students must have a cumulative engineering grade-point of 2.0 to enroll in any 300- or 400-level B E courses.
2. Students accepted to a BS/MS program must take 600-level instead of 400-level courses for Life Science and Engineering Requirements.
3. To complete Pre-medicine requirements, students must take BIOL 104 or 111, CH 224, 228, and PHYS 124, 223 as additional courses.

NATURAL RESOURCES AND ENVIRONMENT CONCENTRATION

Freshman Year

First Semester
2 - CES 102 Engineering Disciplines and Skills
4 - CH 101 General Chemistry
3 - ENGL 103 Accelerated Composition
4 - MTHSC 106 Calculus of One Variable I
3 - Arts and Humanities Requirement \( or \) 3 - Social Science Requirement

Second Semester
4 - CH 102 General Chemistry
2 - ENGR 130 Engineering Fundamentals
4 - MTHSC 108 Calculus of One Variable II
3 - PHYS 122 Physics with Calculus I
3 - Arts and Humanities Requirement \( or \) 3 - Social Science Requirement

Sophomore Year

First Semester
2 - B E 210 Intro to Biosystems Engineering
2 - B E 222 Geomeasurements
2 - E G 209 Intro to Engr./Comp. Graphics
4 - MTHSC 206 Calculus of Several Variables
3 - PHYS 221 Physics with Calculus II
4 - Biology Requirement

Second Semester
2 - B E 212 Fundamentals of Biosystems Engr.
3 - M E 310 Thermodynamics and Heat Transfer
4 - MICRO 305 General Microbiology
4 - MTHSC 208 Intro. to Ordinary Diff. Equations
4 - Statics/Dynamics Requirement

Junior Year

First Semester
3 - B E 312 Biol. Kinetics and Reactor Modeling
4 - C E 321 Geotechnical Engineering or
4 - CSENV 202 Soils
4 - C E 341 Introduction to Fluid Mechanics
2 - E C E 307 Basic Electrical Engineering
3 - Mechanics of Materials Requirement

Notes:
1. CH 223 and 227 (preferred) or CH 201
2. BIOCH 301/302 or 305/306
3. MICRO 413 or any approved 300-400-level course in BIOCH, BIOSC, GEN, or MICRO
### Bachelor of Science in Ceramic and Materials Engineering

The Bachelor of Science in Ceramic and Materials Engineering offers undergraduate degrees in Ceramic and Materials Engineering, Polymer and Textile Chemistry, and Textile Management.

Ceramic and materials engineers design, develop, and participate in the manufacture of both standard and new materials intended for use in a wide variety of industries with diverse applications. These range from the semiconductor industry to the aerospace and finally to the traditional ceramics industry. The broad scope of industrial responsibilities handled by ceramic and materials engineers requires knowledge in mathematics, science, engineering, and the social sciences, skills in problem solving, engineering analysis, design, and written and oral communication.

The baccalaureate program integrates laboratory with classroom experiences to prepare students for life-long learning. Courses covering thermodynamics, kinetics, mechanical behavior, processing, and characterization of materials prepare students for careers in industry and/or for graduate school.

In addition to the common educational objectives of all engineering programs listed on page 79, baccalaureate degree graduates in Ceramic and Materials Engineering will be able to:
- demonstrate learning consistent with Accreditation Board for Engineering and Technology Engineering Criteria 2000 for ceramic and materials engineering programs
- function easily and well in the laboratory and plant environments and
- serve the local, national, and international ceramic and materials communities

Specifically, the Accreditation Board for Engineering and Technology Engineering Criteria 2000 requires that baccalaureate degree graduates in Ceramic and Materials Engineering be able to:
- apply advanced scientific and engineering principles to ceramic and materials engineering systems
- demonstrate an integrated understanding of the scientific and engineering principles underlying structure, properties, processing, and performance relationships
- apply this understanding to the solution of ceramic and materials engineering selection and design problems and
- apply appropriate experimental, statistical, and computational methods to advantage in the solution of ceramic and materials problems

### Freshman Year

**First Semester**
- CES 101 Engineering Disciplines and Skills
- CH 101 General Chemistry
- ENGL 103 Accelerated Composition
- MTHSC 106 Calculus of One Variable I
- Arts and Humanities Requirement
- Social Science Requirement

**Second Semester**
- CH 102 General Chemistry
- ENGR 130 Engineering Fundamentals
- MTHSC 108 Calculus of One Variable II
- PHYS 122 Physics with Calculus I
- Arts and Humanities Requirement
- Social Science Requirement

### Sophomore Year

**First Semester**
- CME 210 Intro to Materials Science
- MTHSC 206 Calculus of Several Variables
- PHYS 221 Physics with Calculus II
- Arts and Humanities Requirement
- Social Science Requirement

**Second Semester**
- CME 241 Metrics Lab.
- EGR 209 Intro. to Engr./Comp. Graphics
- E M 201 Engineering Mechanics: Statics
- MTHSC 208 Intro. to Ord. Diff. Equations
- TEXT 324 Textile Statistics
- Arts and Humanities Requirement
- Social Science Requirement

### Junior Year

**First Semester**
- CME 319 Materials Processing I
- CME 326 Thermodynamics of Materials
- CME 327 Transport Phenomena
- ENG 250 Public Speaking
- ENGL 314 Technical Writing

**Second Semester**
- CME 328 Phase Diagrams for Materials Processing and Applications
- CME 361 Process. of Metals and Composites
- CME 422 Mechanical Behavior of Materials
- ECE 384 Engineering Economic Analysis
- PTC 303 Textile Chemistry

### Senior Year

**First Semester**
- CME 432 Structure/Property Lab.
- CME 402 Solid State Materials
- CME 413 Noncrystalline Materials
- CME 432 Manufacturing Processes and Syst.
- CME 441 Manufacturing Lab.
- PTC 415 Intro. to Polymer Science and Engr.

**Second Semester**
- CME 407 Senior Capstone Design
- CME 415 Intro. to Polymer Science and Engr.
- CME 445 Practice of Materials Engineering
- Departmental Requirement

125 Total Semester Hours

See Policy on Social Sciences and Humanities for Engineering Curricula. Six of these credit hours must also satisfy General Education Cross-Cultural Awareness and Science and Technology in Society Requirements.
CHEMICAL ENGINEERING

Bachelor of Science

Chemical engineering is based on chemistry, physics, mathematics, and biology. The curriculum at Clemson includes a blend of classroom and laboratory instruction and emphasizes broadly applicable fundamental principles and current technology to prepare graduates for immediate, productive employment as well as lifelong learning and professional growth. Communication skills and group projects are emphasized because chemical engineers frequently work in multidisciplinary teams. Graduates are prepared to engage successfully in chemical engineering practice or postgraduate education; apply their knowledge and use modern chemical engineering tools to design chemical processes and identify, formulate, and solve chemical engineering problems; educate themselves as knowledge and tools advance; and function effectively on teams, communicate effectively, and serve society through their professional contributions. Chemical engineers are involved in the research, manufacture, sales, and use of commodity and specialty chemicals, petroleum products, synthetic fibers and textiles, pharmaceuticals, pulp and paper, electronic components, food and consumer goods, and many other products. They work at the forefront of environmental pollution prevention and remediation and apply engineering science and technology to solve a variety of medical and health-related problems.

In addition to the Bachelor of Science degree, the Department of Chemical and Biomolecular Engineering offers advanced study leading to the Master of Science and Doctor of Philosophy degrees. Additional information can be found on the Web at www.ces.clemson.edu/chemeng.

Freshman Year

First Semester
2 - CES 102 Engineering Disciplines and Skills
4 - CH 101 General Chemistry
3 - ENGL 103 Accelerated Composition
4 - MTHSC 106 Calculus of One Variable I
3 - Arts and Humanities Requirement or
3 - Social Science Requirement
16

Second Semester
4 - CH 102 General Chemistry
3 - CH 130 Chemical Engineering Tools
4 - MTHSC 108 Calculus of One Variable II
3 - PHYS 122 Physics with Calculus I
3 - Arts and Humanities Requirement or
3 - Social Science Requirement
17

Sophomore Year

First Semester
3 - CH 223 Organic Chemistry
4 - CH 211 Intro. to Chemical Engineering
4 - MTHSC 206 Calculus of Several Variables
3 - PHYS 221 Physics with Calculus II
3 - Arts and Humanities Requirement
17

Second Semester
3 - CH 224 Organic Chemistry
1 - CH 229 Organic Chemistry Lab.
3 - CH E 220 Chemical Engr. Thermodynamics I
4 - CH E 230 Fluids/Heat Transfer
4 - MTHSC 208 Intro. to Ord. Diff. Equations
15

Junior Year

First Semester
3 - BIOC H 301 Molecular Biochemistry
1 - CH 339 Physical Chemistry Lab.
3 - CH E 307 Unit Operations Lab. I
3 - CH E 319 Engineering Materials
2 - ECE 307 Basic Electrical Engineering
1 - ECE 309 Electrical Engineering Lab. I
3 - Arts and Humanities Requirement or
3 - Social Science Requirement
16

Second Semester
3 - CH 332 Physical Chemistry
1 - CH 340 Physical Chemistry Lab.
3 - CH E 321 Chemical Engr. Thermodynamics II
4 - CH E 330 Mass Transfer and Separation Proc.
3 - Emphasis Area
3 - Arts and Humanities Requirement or
3 - Social Science Requirement
17

Senior Year

First Semester
3 - CH E 407 Unit Operations Lab. II
1 - CH E 443 Chemical Engr. Senior Seminar I
3 - CH E 450 Chemical Reaction Engineering
3 - Emphasis Area
3 - Arts and Humanities Requirement or
3 - Social Science Requirement
16

Second Semester
3 - CH E 353 Process Dynamics and Control
3 - CH E 433 Process Design II
1 - CH E 444 Chemical Engr. Senior Seminar II
3 - MICRO 413 Industrial Microbiology
3 - Emphasis Area
13

127 Total Semester Hours

1See Policy on Social Sciences and Humanities for Engineering Curricula. Six of these credit hours must also satisfy the Cross-Cultural Awareness and Science and Technology in Society Requirements.

2See advisor for details. Nine credit hours devoted to completing an emphasis area or approved minor are required.

Note: No student may exceed a maximum of two attempts, including a W, to complete successfully any CH E course.

CIVIL ENGINEERING

Bachelor of Science

Civil Engineering involves the planning, design, construction management, operation, and maintenance of facilities and systems in the built environment including bridges, buildings, airports, water supply systems, ports, dams, and highways.

The Civil Engineering program leads to the Bachelor of Science degree in Civil Engineering and includes the common educational objectives listed on page 79 for the College of Engineering and Science. The first two years provide students with building blocks necessary to be successful civil engineers. This includes proficiency in calculus, engineering mechanics, physics, and chemistry. During the junior year, students receive a broad introduction to the fundamental areas of civil engineering (structures, hydraulics, geotechnical, transportation, environmental, construction materials, and project management). Design experiences are integrated throughout the curriculum, culminating in the senior year with a major capstone design project. In addition, during the senior year, students can select from available emphasis areas which serve to strengthen their undergraduate background.

The Civil Engineering program prepares students to work immediately upon graduation in most areas of civil engineering or to pursue graduate degrees. Students are also exposed to issues related to professional practice, including professional registration, life-long learning, and communication and team skills. Because a concerned society demands a realistic consideration of the impacts of engineering projects, civil engineering students are also educated in the broad areas of the humanities and social sciences.

The Department of Civil Engineering allows students to count up to six hours of graduate credit (600- and 800-level courses) toward both the bachelor's and master's degrees. Students participating in this program must have completed the junior year, must have earned a minimum 3.4 grade-point ratio, and must be admitted to the Graduate School prior to registering for graduate courses. Details of the suggested curriculum and program information are available from the department.

The complete objectives of the program can be found on the Web at www.ces.clemson.edu.

Freshman Year

First Semester
2 - CES 102 Engineering Disciplines and Skills
4 - CH 101 General Chemistry
3 - ENGL 103 Accelerated Composition
4 - MTHSC 106 Calculus of One Variable I
3 - Arts and Humanities Requirement
3 - Social Science Requirement
16
### Sophomore Year

#### First Semester
- MTHSC 206 Calculus of Several Variables
- PHYS 221 Physics with Calculus II
- PHYS 223 Physics Lab. II
- Arts and Humanities Requirement
- Social Science Requirement

#### Second Semester
- MTHSC 208 Calculus of Several Variables
- PHYS 221 Physics with Calculus II
- Arts and Humanities Requirement
- Social Science Requirement

### Junior Year

#### First Semester
- MTHSC 206 Calculus of Several Variables
- PHYS 221 Physics with Calculus II
- Arts and Humanities Requirement
- Social Science Requirement

#### Second Semester
- MTHSC 208 Calculus of Several Variables
- PHYS 221 Physics with Calculus II
- Arts and Humanities Requirement
- Social Science Requirement

### Senior Year

#### First Semester
- ENGL 314 Technical Writing
- Technical Requirement
- Social Science Requirement

#### Second Semester
- ENGL 314 Technical Writing
- Technical Requirement
- Social Science Requirement

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### Sophomore Year

#### First Semester
- ECE 201 Logic and Computing Devices
- ECE 202 Electric Circuits I
- ECE 211 Electrical Engineering Lab. I
- ECE 222 Systems Programming Concepts for Computer Engineering
- MTHSC 206 Calculus of Several Variables
- PHYS 221 Physics with Calculus II

#### Second Semester
- ECE 212 Electrical Engineering Lab. II
- ECE 223 Computer Systems Engineering
- ECE 262 Electric Circuits II
- ECE 272 Computer Organization
- MTHSC 208 Intro. to Ordinary Diff. Equations

### Junior Year

#### First Semester
- ECE 311 Electrical Engineering Lab. III
- ECE 320 Electronics I
- ECE 329 Computer Systems Structures
- ECE 330 Signals, Systems, and Transforms
- ECE 371 Microcomputer Interfacing
- MTHSC 311 Linear Algebra

#### Second Semester
- ECE 317 Random Signal Analysis
- ECE 327 Digital Computer Design
- ECE 352 Programming Systems
- ENGL 314 Technical Writing
- MTHSC 419 Discrete Math. Structures I

### Senior Year

#### First Semester
- Arts and Humanities Requirement
- Social Science Requirement
- Computer Engineering Technical Requirement
- Oral Communication Requirement

#### Second Semester
- ECE 453 Software Practicum
- Arts and Humanities Requirement
- Social Science Requirement
- Comp. Engr. Depth Technical Requirement

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### Freshman Year

#### First Semester
- ECE 102 Engineering Disciplines and Skills
- CH 101 General Chemistry
- ENGL 103 Accelerated Composition
- MTHSC 106 Calculus of One Variable I
- Arts and Humanities Requirement
- Social Science Requirement

#### Second Semester
- CH 102 General Chemistry
- CPSB 111 Elem. Computer Prog. in C/C++
- MTHSC 108 Calculus of One Variable II
- PHYS 122 Physics with Calculus I
- Arts and Humanities Requirement
- Social Science Requirement

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1. See Policy on Humanities and Social Sciences for Engineering Curricula. Six of these credit hours must also satisfy General Education Cross-Cultural Awareness and Science and Technology in Society Requirements.

2. Select from department-approved list.

3. See General Education Requirements. Notes:
   - A student is allowed to enroll in ECE courses (excluding ECE 307, 308, 359, 310) only when all prerequisites have been passed with a grade of C or better.
   - All Computer Engineering students must have a cumulative engineering grade-point ratio of 2.0 to enroll in any 300- or 400-level ECE courses.
   - No student may exceed a maximum of two attempts, excluding a W, to complete successfully any ECE course.
ELECTRICAL ENGINEERING
Bachelor of Science

Electrical engineers are in high demand for a wide range of influential positions. Professional duties range from analytical problem solving to the design of components and systems. The scope of employment requires a unique breadth and depth of knowledge and technical skills, which are reflected in the Electrical Engineering program. This program also offers an excellent preparation for graduate study. Detailed information can be found on the Web at www.cec.clemson.edu/ee/index.shtml.

Building on a foundation of mathematical and physical sciences, students progress into the application of these in the engineering science areas of circuits, electronics, communications, controls, power, and electromagnetics. In these subjects, students also begin to apply the concepts and techniques learned to the design of circuits and systems. Senior technical design courses offer the opportunity to further develop expertise in a selected area.

In addition to these technical skills, students learn to communicate effectively, both orally and with the written word. Because engineers work for the benefit of society, the curriculum includes a strong component of humanities and social science courses. Also, many project design assignments enable the development of interpersonal, teamwork, and management skills which are necessary for success in a professional engineering career.

Freshman Year
First Semester
1 - ECE 212 Electrical Engineering Lab. I
2 - ECE 202 Logic and Computing Devices
3 - ECE 202 Electric Circuits I
4 - MTHSC 206 Calculus of Several Variables
5 - PHYS 221 Physics with Calculus II
6 - Technical Requirement (ECE) or
7 - Arts and Humanities Requirement or
8 - Social Science Requirement
16

Sophomore Year
First Semester
1 - ECE 211 Logic and Computing Devices
2 - ECE 202 Electric Circuits I
3 - ECE 211 Electrical Engineering Lab. I
4 - MTHSC 206 Calculus of Several Variables
5 - PHYS 221 Physics with Calculus II
6 - Technical Requirement (ECE) or
7 - Arts and Humanities Requirement or
8 - Social Science Requirement
17

Second Semester
1 - ECE 212 Electrical Engineering Lab. II
2 - ECE 262 Electric Circuits II
3 - ECE 272 Computer Organization
4 - ECE 301 Engineering Mechanics: Statics
5 - MTHSC 208 Intro. to Ordinary Diff. Equations
15

Junior Year
First Semester
1 - ECE 311 Electrical Engineering Lab. III
2 - ECE 320 Electronics I
3 - ECE 330 Signals, Systems, and Transforms
4 - ECE 371 Microcomputer Interfacing
5 - ECE 380 Electromagnetics
6 - Technical Requirement (Adv. Mathematics) or
17

Second Semester
1 - ECE 321 Electrical Engineering Lab. IV
2 - ECE 317 Random Signal Analysis
3 - ECE 321 Electronics II
4 - ECE 360 Electrical Power Engineering
5 - ECE 381 Fields, Waves, and Circuits
6 - ENGL 314 Technical Writing
16

Senior Year
First Semester
1 - ECE 490 Continuous and Discrete Syst. Des.
2 - ECE 427 Communications Systems
3 - ECE 495 Integrated Systems Design I
4 - Oral Communication Requirement
5 - Technical Requirement (ECE) or
14

Second Semester
1 - ECE 496 Integrated System Design II
2 - ECE 497 Electromagnetics
3 - Technical Requirement (ECE)
4 - Technical Requirement Depth (ECE) or
14

126 Total Semester Hours

Note: See Policy on Humanities and Social Sciences for Engineering Curricula. Six of these credit hours must also satisfy General Education Cross-Cultural Awareness and Science and Technology in Society Requirements.

INDUSTRIAL ENGINEERING
Bachelor of Science

Industrial engineers design, install, and improve the complex systems that provide goods and services vital to our society and economy. These systems place unique demands for breadth of preparation on industrial engineers. Baccalaureate degree graduates demonstrate the ability to design, develop, implement, and improve integrated systems that include people, materials, information, equipment, and energy. Graduates will demonstrate the ability to apply the principles and techniques of industrial engineering analysis and design supported by a foundation in mathematical, physical and social sciences, and economic, operational, and engineering analyses. Graduates will possess a breadth of knowledge that allows them to practice industrial engineering with an appropriate awareness of information issues in systems improvement. In addition, graduates are able to work and communicate effectively with colleagues at every level in the organization.

The traditional arenas for the practice of industrial engineering are the manufacturing facilities of industry; however, many practicing industrial engineers are employed in non-manufacturing institutions such as hospitals, banks, and government agencies. In addition to numerous employment opportunities in professional practice, industrial engineering graduates may further their formal education. The Department of Industrial Engineering offers programs leading to the Master of Science and Doctor of Philosophy degrees.

The Department of Industrial Engineering allows students to count up to 12 hours of graduate credit (approved 600- and 800-level courses) toward both the bachelor's and master's degrees. Students participating in this program must have a minimum grade-point ratio of 3.4 and be admitted to the Graduate School prior to registering for graduate courses. Details of the suggested curriculum and program information are available from the Industrial Engineering Department.

Detailed curriculum and department information is available on the Web at www.ces.clemson.edu.

Freshman Year
First Semester
1 - CES 102 Engineering Disciplines and Skills
2 - CH 101 General Chemistry
3 - ENGL 103 Accelerated Composition
4 - MTHSC 106 Calculus of One Variable I
5 - PHYS 122 Physics with Calculus I
6 - Arts and Humanities Requirement or
7 - Social Science Requirement
17

Second Semester
1 - CH 102 General Chemistry
2 - CP SC 111 Elem. Computer Prog. in C/C++
3 - MTHSC 108 Calculus of One Variable II
4 - PHYS 122 Physics with Calculus II
5 - Arts and Humanities Requirement or
6 - Social Science Requirement
17

3. No student may exceed a maximum of two attempts, excluding a W, to complete successfully any ECE course.
### Sophomore Year

**First Semester**
- 2: ECE 209 Intro. to Engr/Computer Graphics
- 4: E E 201 System Design I
- 3: E E 220 Design of Information Systems in IE or CP SC 161 Intro. to Visual Basic Program.
- 4: MTHSC 206 Calculus of Several Variables
- 3: PHYS 221 Physics with Calculus II

**Second Semester**
- 3: C M E 210 Introduction to Materials Science
- 3: E M 201 Engineering Mechanics: Statics
- 4: E E 210 Design and Analysis of Work Systems
- 3: E E 280 Methods of Operational Research I
- 3: E E 384 Engineering Economic Analysis

### Junior Year

**First Semester**
- 2: E C E 307 Basic Electrical Engineering
- 1: E C E 309 Electrical Engineering Lab. I
- 3: HIST 122 History, Technology, and Society
- 3: I E 360 Ind. Appl. of Probability and Statistics
- 4: I E 440 Decision Support Systems in I E
- 3: I E 465 Facilities Planning and Design

**Second Semester**
- 3: COMM 150 Intro. to Human Comm. or COMM 250 Public Speaking
- 3: I E 361 Industrial Quality Control
- 1: I E 368 Professional Practice in I E
- 3: I E 381 Methods of Operational Research II
- 3: I E 386 Production Planning and Control
- 3: Engineering Science Requirement

### Senior Year

**First Semester**
- 3: ENGL 314 Technical Writing
- 3: I E 461 Quality Engineering
- 4: I E 482 Systems Modeling
- 3: Engineering Science Requirement
- 3: Technical Requirement

**Second Semester**
- 3: I E 467 Systems Design II
- 3: MGT 301 Principles of Management
- 3: PO SC 102 Intro. to International Relations
- 3: Arts and Humanities Requirement or Social Science Requirement
- 3: Technical Requirement

128 Total Semester Hours

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### MECHANICAL ENGINEERING

**Bachelor of Science**

Breadth, individuality, and flexibility are inherent characteristics of the mechanical engineering profession. Mechanical engineers, in a broad sense, make major contributions to the creation of products and systems that benefit mankind. They work in a variety of areas including bioengineering, energy systems, environmental and life-support systems, propulsion and transportation systems, food production, materials processing, automated manufacturing, and construction. A wide spectrum of career opportunities is open to them. The practice of mechanical engineering includes one or more of the following activities: manufacturing, testing, research, development, design, technical management, technical sales and marketing, construction, and teaching.

Preparation for a 40-45 year professional career requires development of the whole person through a balanced program encompassing the humanities, social sciences, communication and computer skills, physical and engineering sciences, design, and laboratory experience. Students start with the physical sciences and communication skills and progress through the engineering sciences, ultimately applying the principles learned in such areas as energy conversion and transfer, mechanical design, and systems analysis. Throughout the curriculum, the fundamental nature of engineering as a problem-solving discipline is emphasized.

Most graduates take positions in industry, government, or business. Many, however, continue their formal education in a graduate program. The Department of Mechanical Engineering offers study leading to the Master of Engineering, Master of Science, and Doctor of Philosophy degrees.

Mechanical Engineering students who have a cumulative grade-point ratio or cumulative engineering grade-point ratio (EGPR) below 2.0 are on probation and will have restricted enrollment in classes. Students whose cumulative GPR is below 2.0 are subject to the regulations stipulated under Continuing Enrollment Policy. Students on probation for EGPR below 2.0 who fail to recover in the first regular semester (fall or spring) will not be allowed to register for mechanical engineering classes. After one year, such students may petition the Mechanical Engineering Department for continued enrollment. An advising policy for students on probation is available from the Mechanical Engineering Department.

Additional information can be found on the Web at www.ces.clemson.edu/me.

### Freshman Year

**First Semester**
- 2: CES 102 Engineering Disciplines and Skills
- 4: CH 101 General Chemistry
- 3: ENGL 103 Accelerated Composition
- 4: MTHSC 106 Calculus of One Variable I
- 3: Arts and Humanities Requirement or Social Science Requirement

16

**Second Semester**
- 3: ENGR 141 Programming and Problem Solving in Mechanical Engineering
- 4: MTHSC 108 Calculus of One Variable II
- 3: PHYS 122 Physics with Calculus I
- 1: PHYS 124 Physics Lab. I
- 3: Arts and Humanities Requirement or Social Science Requirement

### Sophomore Year

**First Semester**
- 2: M E 222 Mechanical Engineering Lab. I
- 4: MTHSC 206 Calculus of Several Variables
- 3: PHYS 221 Physics with Calculus II
- 3.5: Science Requirement

17-19

**Second Semester**
- 2: E C E 307 Basic Electrical Engineering
- 1: E C E 309 Electrical Engineering Lab. I
- 3: M E 202 Foundations of Mechanical Systems
- 3: M E 203 Fund. of Thermal and Fluid Syst.
- 4: MTHSC 208 Intro. to Ord. Diff. Equations
- 3: Numerical Analysis Requirement

16

### Junior Year

**First Semester**
- 3: M E 302 Mechanics of Materials
- 3: M E 303 Thermodynamics
- 3: M E 305 Model. and Analysis of Dynamic Syst.
- 3: M E 308 Fluid Mechanics
- 2: M E 333 Mechanical Engineering Lab. II
- 3: Arts and Humanities Requirement or Social Science Requirement

17

**Second Semester**
- 3: M E 304 Heat Transfer
- 3: M E 306 Fundamentals of Machine Design
- 3: M E 312 Manufacturing Proc. and Their Appl.
- 3: Advanced Writing Requirement
- 3: Statistics Requirement

15

### Senior Year

**First Semester**
- 3: M E 401 Mechanical Engineering Design
- 3: M E 403 Control and Integration of Multi-Domain Dynamic Systems
- 2: M E 444 Mechanical Engineering Lab. III
- 6: Technical Requirement

14

**Second Semester**
- 1: M E 400 Senior Seminar
- 3: M E 402 Internship in Engineering Design
- 6: Arts and Humanities Requirement or Social Science Requirement
- 3: Technical Requirement

13

124-126 Total Semester Hours
The College offers curricula leading to the Bachelor of Science in Chemistry, Computer Information Systems, Computer Science, Geology, Mathematical Sciences, and Physics. The Bachelor of Arts is offered with a major in Chemistry, Computer Science, Geology, Mathematical Sciences, and Physics.

The science departments in the College work closely with the other academic departments in the University, including such disciplines as economics and management as well as engineering. This allows students in the sciences great flexibility and responsibility in designing their own programs.

Bachelor of Science Curricula

The Bachelor of Science degree prepares graduates for professional employment or graduate study in the chosen science discipline. BS curricula are thus more highly structured than BA curricula, but nonetheless offer opportunity for students to pursue a minor or secondary area of interest.

Bachelor of Arts Curricula

The curricula leading to the Bachelor of Arts degree are designed to meet the needs of students who desire a broad general education. They require a minor (or a second major) as well as the major concentration. A major requires a minimum of 24 credits from courses above the sophomore level including or in addition to courses specified by the major department. In some major disciplines, certain prescribed courses at the sophomore level are counted toward the 24 credit requirement.

Students have a large degree of flexibility and responsibility in selecting the minor area from those listed on page 96. The courses for these minors are to be selected in consultation with the appropriate department.

CHEMISTRY

Bachelor of Science

Chemistry, an experimental discipline based on observation guided by molecular theory, is of fundamental importance in much of modern science and technology. Its molecular concepts form the basis for ideas about complex material behavior. Due to the fundamental nature and extensive application of chemistry, an unusually large variety of challenging opportunities to contribute in the science-oriented community are open to students whose education is built around the principles of this discipline.

The curriculum, through the career requirement options and the large number of electives, provides students the opportunity to select a coherent program of study beyond the basic courses. Career requirement options are provided for students anticipating graduate study in chemistry or related fields; employment following the BS degree in laboratory, technical sales, or management positions; professional studies (e.g., medicine); chemical physics, geochemistry; and employment in fields requiring extensive preparation in courses other than sciences (e.g., patent law and technical writing). Significant features of the curriculum are the student's extensive participation in experimental work and the opportunity to take part in a research investigation during the junior and senior years.

Freshman Year

First Semester
4 - CH 101 General Chemistry
1 - CH 141 Chemistry Orientation
3 - ENGL 103 Accelerated Composition
4 - MTHSC 106 Calculus of One Variable I
3 - Arts and Humanities Requirement or
3 - Social Science Requirement
15

Second Semester
4 - CH 102 General Chemistry
2 - CH 152 Chemistry Communication I
4 - MTHSC 108 Calculus of One Variable II
3 - PHYS 122 Physics with Calculus I
3 - Arts and Humanities Requirement or
3 - Social Science Requirement
16

Sophomore Year

First Semester
3 - CH 223 Organic Chemistry
1 - CH 227 Organic Chemistry Lab.
4 - MTHSC 206 Calculus of Several Variables
3 - PHYS 221 Physics with Calculus II
1 - PHYS 223 Physics Lab. II
4 - Foreign Language Requirement
16

Second Semester
3 - CH 205 Introduction to Inorganic Chemistry
3 - CH 224 Organic Chemistry
1 - CH 228 Organic Chemistry Lab.
4 - MTHSC 208 Intro. to Ordinary Diff. Equations
3 - PHYS 222 Physics with Calculus III
1 - PHYS 224 Physics Lab. III
15

Junior Year

First Semester
3 - BIOCH 301 Molecular Biochemistry
3 - CH 313 Quantitative Analysis
3 - CH 315 Quantitative Analysis Lab.
3 - CH 331 Physical Chemistry
3 - CH 339 Physical Chemistry Lab.
3 - ENGL 314 Technical Writing
15

Second Semester
3 - CH 332 Physical Chemistry
1 - CH 340 Physical Chemistry Lab.
3 - CH 411 Instrumental Analysis
2 - CH 412 Instrumental Analysis Lab.
3 - Arts and Humanities (Literature) Requirement or
3 - Elective
15

Senior Year

First Semester
3 - CH 402 Inorganic Chemistry
2 - CH 403 Advanced Synthetic Techniques
3 - CH 443 Research Problems
3 - Arts and Humanities Requirement or
3 - Social Science Requirement
3 - Chemistry Requirement
14

Second Semester
3 - CH 444 Research Problems
3 - CH 450 Chemistry Capstone
1 - CH 452 Chemistry Communication II
3 - Arts and Humanities Requirement or
3 - Social Science Requirement
3 - Chemistry Requirement
16

122 Total Semester Hours

1See General Education Requirements. Six of these credit hours must also satisfy the Cross-Cultural Awareness and Science and Technology in Society Requirements.

1One semester in any modern foreign language is required.

CHEMISTRY

Bachelor of Arts

Freshman Year

First Semester
4 - CH 101 General Chemistry
1 - CH 141 Chemistry Orientation
3 - ENGL 103 Accelerated Composition
4 - MTHSC 106 Calculus of One Variable I
3 - Arts and Humanities Requirement or
3 - Social Science Requirement
15

Second Semester
4 - CH 102 General Chemistry
2 - CH 152 Chemistry Communication I
4 - MTHSC 108 Calculus of One Variable II
3 - PHYS 122 Physics with Calculus I
3 - Arts and Humanities Requirement or
3 - Social Science Requirement
16

Second Semester
4 - CH 102 General Chemistry
2 - CH 152 Chemistry Communication I
4 - MTHSC 108 Calculus of One Variable II
3 - PHYS 122 Physics with Calculus I
3 - Arts and Humanities Requirement or
3 - Social Science Requirement
15

Second Semester
4 - CH 205 Introduction to Inorganic Chemistry
3 - CH 224 Organic Chemistry
1 - CH 228 Organic Chemistry Lab.
4 - MTHSC 208 Intro. to Ordinary Diff. Equations
3 - PHYS 222 Physics with Calculus III
1 - PHYS 224 Physics Lab. III
15

Senior Year

First Semester
3 - BIOCH 301 Molecular Biochemistry
3 - CH 313 Quantitative Analysis
3 - CH 315 Quantitative Analysis Lab.
3 - CH 331 Physical Chemistry
3 - CH 339 Physical Chemistry Lab.
3 - ENGL 314 Technical Writing
15

Second Semester
3 - CH 332 Physical Chemistry
1 - CH 340 Physical Chemistry Lab.
3 - CH 411 Instrumental Analysis
2 - CH 412 Instrumental Analysis Lab.
3 - Arts and Humanities (Literature) Requirement or
3 - Elective
15

2See Policy on Social Sciences and Humanities for Engineering Curricula. Six of these credit hours must also satisfy General Education Cross-Cultural Awareness and Science and Technology in Society Requirements.

3See advisor. Select from department-approved list.

Note: A student is allowed to enroll in any M E course only when all prerequisites, as defined by current official listings for that course, have been passed with a grade of C or higher.
Junior Year
First Semester
- CH 313 Quantitative Analysis
- CH 317 Quantitative Analysis Lab.
- Arts and Humanities Requirement1, or
- Social Science Requirement1
- Arts and Humanities (Literature) Requirement1
- Foreign Language Requirement2
- Minor

Second Semester
- CH 331 Physical Chemistry
- ENGL 314 Technical Writing
- Arts and Humanities Requirement1, or
- Social Science Requirement1
- Foreign Language Requirement2
- Minor

Senior Year
First Semester
- CH 332 Physical Chemistry
- Arts and Humanities Requirement1, or
- Social Science Requirement1
- Chemistry Requirement1
- Minor
- Elective

Second Semester
- CH 450 Chemistry Capstone
- CH 452 Chemistry Communication II
- Chemistry Requirement1
- Minor
- Elective

122 Total Semester Hours

First Semester
- CP SC 101 Computer Science I
- ENGL 103 Accelerated Composition
- MTHSC 106 Calculus of One Variable I
- Social Science Requirement1,2

Second Semester
- CP SC 102 Computer Science II
- MTHSC 108 Calculus of One Variable II
- MTHSC 119 Intro. to Discrete Methods
- Arts and Humanities (Non-Lit.) Requirement1,2
- Social Science Requirement1,2

Sophomore Year
First Semester
- CP SC 212 Algorithms and Data Structures
- Arts and Humanities (Literature) Requirement1
- Humanities or Social Science Requirement2,3
- Natural Science Requirement4
- Oral Communication Requirement1

Second Semester
- CP SC 215 Tools and Tech. for Software Dev.
- CP SC 231 Intro. to Computer Organization
- CP SC 291 Seminar in Professional Issues I
- MTHSC 210 Applied Matrix Algebra or
- MTHSC 311 Linear Algebra
- Natural Science Requirement4

Junior Year
First Semester
- ACCT 201 Financial Accounting Concepts
- CP SC 322 Introduction to Operating Systems
- CP SC 372 Intro. to Software Development
- MTHSC 211 Principles of Microeconomics
- MTHSC 301 Statistical Methods I

Second Semester
- ACCT 202 Managerial Accounting Concepts
- CP SC 360 Networks and Network Program.
- CP SC 371 Systems Analysis or
- MGT 452 Systems Analysis and Design
- MGT 301 Principles of Management
- Elective

Senior Year
First Semester
- CP SC 462 Database Management Systems
- CP SC 491 Seminar in Professional Issues II
- Advanced Writing Requirement1
- Business Requirement6
- Computer Science Requirement7
- Information Systems Requirement3

Second Semester
- MGT 312 Decision Models for Management
- MKT 301 Principles of Marketing
- Business Requirement6
- Computer Science Requirement7

122 Total Semester Hours

COMPUTER INFORMATION SYSTEMS
Bachelor of Science
The Computer Information Systems degree program is oriented toward computer applications in management-related problems. The program emphasizes functional areas of management including accounting, production, marketing, and finance and the applications of computers in these areas. The curriculum is designed to prepare students for careers in areas such as systems design and analysis, applications programming, database administration, and information retrieval as well as for continued study toward an advanced degree.

Students who change majors into Computer Information Systems must have a cumulative grade-point ratio of 2.0 or higher.

Additional information can be found on the Web at www.cs.clemson.edu.

Freshman Year
First Semester
- CP SC 101 Computer Science I
- ENGL 103 Accelerated Composition
- MTHSC 106 Calculus of One Variable I
- Social Science Requirement1

Second Semester
- CP SC 102 Computer Science II
- MTHSC 108 Calculus of One Variable II
- MTHSC 119 Intro. to Discrete Methods
- Arts and Humanities (Non-Lit.) Requirement1,2
- Social Science Requirement1,2

Sophomore Year
First Semester
- CP SC 212 Algorithms and Data Structures
- Arts and Humanities (Literature) Requirement1
- Humanities or Social Science Requirement2,3
- Natural Science Requirement4
- Oral Communication Requirement1

Second Semester
- CP SC 215 Tools and Tech. for Software Dev.
- CP SC 231 Intro. to Computer Organization
- CP SC 291 Seminar in Professional Issues I
- MTHSC 210 Applied Matrix Algebra or
- MTHSC 311 Linear Algebra
- Natural Science Requirement4

Junior Year
First Semester
- ACCT 201 Financial Accounting Concepts
- CP SC 322 Introduction to Operating Systems
- CP SC 372 Intro. to Software Development
- MTHSC 211 Principles of Microeconomics
- MTHSC 301 Statistical Methods I

Second Semester
- ACCT 202 Managerial Accounting Concepts
- CP SC 360 Networks and Network Program.
- CP SC 371 Systems Analysis or
- MGT 452 Systems Analysis and Design
- MGT 301 Principles of Management
- Elective

Senior Year
First Semester
- CP SC 462 Database Management Systems
- CP SC 491 Seminar in Professional Issues II
- Advanced Writing Requirement1
- Business Requirement6
- Computer Science Requirement7
- Information Systems Requirement3

Second Semester
- MGT 312 Decision Models for Management
- MKT 301 Principles of Marketing
- Business Requirement6
- Computer Science Requirement7

122 Total Semester Hours
Second Semester
4 - CP SC 102 Computer Science II
4 - MTHSC 108 Calculus of One Variable II
3 - MTHSC 119 Introduction to Discrete Methods
3 - Arts and Humanities (Non-Lit.) Requirement¹
3 - Social Science Requirement¹

Sophomore Year
First Semester
4 - CP SC 212 Algorithms and Data Structures
3 - PHYS 122 Physics with Calculus I
3 - Arts and Humanities Requirement² or
3 - Social Science Requirement¹
3 - Arts and Humanities (Literature) Requirement¹
3 - Oral Communication Requirement¹
1

Second Semester
3 - CP SC 215 Tools and Tech. for Software Dev.
4 - CP SC 231 Intro. to Computer Organization
1 - CP SC 291 Seminar in Professional Issues I
3 - MTHSC 301 Statistical Methods I or
3 - MTHSC 302 Stats. for Science and Engr.
3 - PHYS 221 Physics with Calculus II
14

Junior Year
First Semester
3 - CP SC 330 Computer Systems Organization
3 - CP SC 360 Networks and Network Program.
3 - CP SC 372 Intro. to Software Development
3 - MTHSC 311 Linear Algebra
4 - Natural Science Requirement¹
16

Second Semester
3 - CP SC 322 Introduction to Operating Systems
3 - CP SC 350 Foundations of Computer Science
3 - CP SC 362 Distributed and Cluster Computing
3 - Emphasis Area°
4 - Natural Science Requirement¹
16

Senior Year
First Semester
3 - CP SC 428 Design and Implementation of Programming Languages
3 - Advanced Writing Requirement¹
3 - Computer Science Requirement¹
3 - Elective
15

Second Semester
1 - CP SC 491 Seminar in Professional Issues II°
3 - Arts and Humanities Requirement¹ or
3 - Social Science Requirement¹
3 - Computer Science Requirement¹
3 - Emphasis Area¹
4 - Elective
14

122 Total Semester Hours

¹See General Education Requirements. Three credit hours satisfying the Arts and Humanities Requirement must also satisfy the Cross-Cultural Awareness Requirement. Three hours satisfying the Arts and Humanities or Social Science Requirement must also satisfy the Science and Technology Society Requirement.
²Select from courses in A A H, ANTH, ART, CHIN, COMM, DANCE, E A S, ECON, ENGL, FR, GEOG, GER, HIST, HUM, ITAL, JAPN, MUSI C, P A, PHIL, POL SC, PSYCH, REL, RUSS, SOC, SPAN, THEA, W S
³Two-semester sequence in the same physical or biological science, each including laboratory is required. Select from BIOL 103, 104, 110, 111; CH 101, 102; GEOL 101/103 and 102; 112, 114. Alternately, if PHYS 124 and 223 are completed, six hours may be selected from courses in BIOL, BIOCH, BIOC, CH, GEO, MICRO, PHYS, or EN SP 200.
⁴Select from four hours from any single University approved minor.
⁵Select from 400-level CP SC courses. At least three hours must be selected from CP SC 405, 411, 429, 462, 472.
⁶CP SC H95 may be substituted.

Notes:
1. For graduation, a candidate for the BS degree in Computer Science must have earned a grade of C or better in each CP SC course applied to the degree.
2. A grade of C or better must be earned in all prerequisite courses (including CP SC and MTHSC courses) before enrolling in the next CP SC course.

COMPUTER SCIENCE
Bachelor of Arts
The Bachelor of Arts in Computer Science is ideal for students interested in acquiring a broad-based liberal arts education that includes a strong and solid understanding of computer science. The curriculum is oriented toward design, implementation, and application of computer software systems to solve information processing problems. The program prepares students for employment in the computer software field or for continued study toward an advanced degree in computer science.

Students who change majors into Computer Science must have a cumulative grade point ratio of 2.0 or higher.

Additional information can be found on the Web at www.cs.clemson.edu.

Freshman Year
First Semester
4 - CP SC 101 Computer Science I
3 - ENGL 103 Accelerated Composition
4 - MTHSC 106 Calculus of One Variable I
4 - Foreign Language Requirement¹
15

Second Semester
4 - CP SC 102 Computer Science II
4 - MTHSC 108 Calculus of One Variable II
3 - MTHSC 119 Introduction to Discrete Methods
4 - Foreign Language Requirement¹
15

Sophomore Year
First Semester
4 - CP SC 212 Algorithms and Data Structures
3 - Arts and Humanities (Literature) Requirement¹
3 - Foreign Language Requirement¹
4 - Natural Science Requirement¹
3 - Oral Communication Requirement¹
1

Second Semester
3 - CP SC 215 Tools and Tech. for Software Dev.
4 - CP SC 231 Intro. to Computer Organization
1 - CP SC 291 Seminar in Professional Issues I
3 - Foreign Language Requirement¹
4 - Natural Science Requirement¹
15

Junior Year
First Semester
6 - Computer Science Requirement¹
3 - Mathematical Sciences Requirement³
3 - Social Science Requirement¹
3 - Minor Requirement
15

Second Semester
3 - Advanced Writing Requirement²
3 - Arts and Humanities (Non-Lit.) Requirement²
3 - Computer Science Requirement¹
6 - Minor Requirement
15

Senior Year
First Semester
6 - Computer Science Requirement¹
3 - Departmental Humanities Requirement⁶
3 - Social Science Requirement²
3 - Minor Requirement
15

Second Semester
1 - CP SC 491 Seminar in Professional Issues II°
3 - Computer Science Requirement¹
3 - Fine Arts Requirement¹
3 - Minor Requirement
5 - Elective
15

122 Total Semester Hours

¹Four semesters (through 202) in the same modern foreign language are required.
²See General Education Requirements.
³Eight credit hours, including labs, in the same science selected from BIOL 103, 104, 110, 111; CH 101, 102, 105; 106; GEOL 101, 103; 102 or 112, 114; PHYS 122/124, 221/223, 207/209, 206/210
⁴Select from CP SC courses numbered 300 or higher.
⁵MTHSC 301, 302, or 311
⁶Six of these credit hours must also satisfy General Education Cross-Cultural Awareness and Science and Technology in Society Requirements.
⁷Select from courses in A A H, ANTH, ART, CHIN, DANCE, ENGL, FR, GER, HUM, ITAL, JAPN, MUSI C, P A, PHIL, REL, RUSS, SPAN, THEA.
⁸CP SC H95 may be substituted.
⁹MUSIC 210 or any course in THEA

Notes:
1. A candidate for the BA degree in Computer Science must have earned a grade of C or better in each CP SC course applied to the degree.
2. A grade of C or better must be earned in all prerequisite courses (including CP SC and MTHSC courses) before enrolling in the next CP SC course.
GEOL 408 Geohydrology

Students pursuing a Bachelor of Science degree in Geology have three concentrations from which to choose. The "traditional" curriculum provides the fundamentals of geology and excellent support in the other basic sciences. Graduates are prepared for employment or for graduate study in any field of geology. The Environmental Science Concentration prepares students for careers in the environmental consulting industry or graduate school in environmental fields. Students in this concentration take 15 credits of Environmental Science Requirement, including at least nine credits from one of three subdisciplines: geology/soil science, biology/ecology, or chemistry/physics. The Hydrogeology Concentration may be taken by students interested in applying engineering principles to geologic problems. Engineering geologists are increasingly called upon to perform geologic site evaluations for construction projects and to minimize the threat of geologic hazards. The curriculum involves courses in engineering and soil mechanics plus 15 credits of Engineering Geology Requirement selected from courses in civil, environmental, and biosystems engineering or advanced mathematics.

Freshman Year
First Semester
1. CH 101 General Chemistry
2. ENGL 103 Accelerated Composition
3. GEOL 101 Physical Geology
4. MTHSC 106 Calculus of One Variable
15

Second Semester
1. CH 102 General Chemistry
2. GEOL 102 Earth History
3. MTHSC 108 Calculus of One Variable II
4. Arts and Humanities (Non-Lit.) Requirement
15

Second Semester
1. GEOL 212 Geoanalysis
2. GEOL 300 Environmental Geology
3. GEOL 316 Igneous and Metamorphic Petrology
4. GEOL 391 Research Methods II
3. Geology Requirement
14

Summer
6. Summer Geology Field Course

Sophomore Year
First Semester
1. BIOL 103 General Biology
2. GEOL 206 Mineralogy and Intro. Petrology
3. GEOL 211 Geology II
1. GEOL 291 Introduction to Research I
2. Social Science Requirement
16

Second Semester
1. GEOL 300 Environmental Geology
2. GEOL 313 Sedimentology and Stratigraphy
3. GEOL 392 Research Methods II
3. Geology Requirement
14

Senior Year
First Semester
1. GEOL 305 Geomorphology
2. GEOL 409 Subsurface Methods
3. Geology Requirement
12

Second Semester
1. GEOL 491 Research Synthesis I
2. Elective

Summer
6. Summer Geology Field Course

Senior Year
First Semester
1. GEOL 408 Geohydrology
2. GEOL 409 Subsurface Methods
3. Geology Requirement
12

Second Semester
1. GEOL 400 Studies in Environmental Sciences
2. GEOL 428 Geohydrology
3. GEOL 491 Research Synthesis II
1. Elective

Summer
6. Summer Geology Field Course

Senior Year
First Semester
1. EN SP 400 Studies in Environmental Sciences
2. GEOL 408 Geohydrology
3. GEOL 491 Research Synthesis I
3. Environmental Science Requirement
13
Second Semester
3 - CH 233 Organic Chemistry or
3 - CH 413 Chemistry of Aqueous Systems
4 - GEOL 492 Research Synthesis II
6 - Environmental Science Requirement 1
13

122 Total Semester Hours

*See General Education Requirements. Three of these credit hours must also satisfy the Cross-Cultural Awareness Requirement.

**MTHSC 206 and 208 or 301 or EX ST 301 may be substituted.

*Select from department-approved list. At least three credit hours must be from field courses.

*Field course in geology, ecology, or related area. Must be at least three credits. Students desiring to become professional geologists should take a six credit summer geology field course.

**HYDROGEOLOGY CONCENTRATION

**Freshman Year**

**First Semester**
4 - CH 101 General Chemistry
3 - ENGL 103 Accelerated Composition
3 - GEOL 101 Physical Geology
1 - GEOL 103 Physical Geology Lab.
4 - MTHSC 106 Calculus of One Variable I
15

Second Semester
4 - CH 102 General Chemistry
4 - GEOL 102 Earth History
4 - MTHSC 108 Calculus of One Variable II
3 - Arts and Humanities (Non-Lit.) Requirement 1
15

Second Semester
4 - GEOL 206 Mineralogy and Intro. Petrology
4 - GEOL 211 Geoanalysis II
1 - GEOL 291 Introduction to Research I
3 - Arts and Humanities (Literature) Requirement 1
3 - Technical Requirement 1
15

Sophomore Year

First Semester
4 - GEOL 206 Mineralogy and Intro. Petrology
4 - GEOL 211 Geoanalysis II
1 - GEOL 291 Introduction to Research I
3 - Arts and Humanities (Literature) Requirement 1
3 - Technical Requirement 1
15

Second Semester
4 - GEOL 212 Geoanalysis II
1 - GEOL 292 Introduction to Research II
3 - GEOL 300 Environmental Geology
3 - PHYS 122 Physics with Calculus I
1 - PHYS 124 Physics Lab. I
3 - Social Science Requirement 1
15

Junior Year

First Semester
4 - GEOL 302 Structural Geology
1 - GEOL 304 Research Methods I
3 - GEOL 408 Geochemistry
3 - PHYS 221 Physics with Calculus II
3 - Geology Requirement 1
14

Second Semester
4 - GEOL 313 Sedimentology and Stratigraphy
3 - GEOL 318 Introduction to Geochemistry
1 - GEOL 392 Research Methods II
3 - Social Science Requirement 1
3 - Technical Requirement 1
14

Summer
6 - GEOL 475 Summer Geology Field Camp

Senior Year

First Semester
3 - GEOL 421 GIS Applications in Geology
4 - GEOL 491 Research Synthesis I
3 - Geology Requirement 1
3 - Technical Requirement 1
13

Second Semester
3 - EE&CS 401 Environmental Engineering
4 - GEOL 409 Subsurface Methods
4 - GEOL 492 Research Synthesis II
3 - Technical Requirement 1
15

121 Total Semester Hours

*See General Education Requirements. Three of these credit hours must also satisfy the Cross-Cultural Awareness Requirement.

**MTHSC 206 and 208 or 301 or EX ST 301 may be substituted.

*Select from department-approved list.

Any 300- or 400-level geology course.

**GEOLOGY**

**Bachelor of Arts**

**Freshman Year**

First Semester
4 - CH 101 General Chemistry
3 - ENGL 103 Accelerated Composition
3 - GEOL 101 Physical Geology
1 - GEOL 103 Physical Geology Lab.
4 - MTHSC 106 Calculus of One Variable I
15

Second Semester
4 - GEOL 206 Mineralogy and Intro. Petrology
4 - GEOL 211 Geoanalysis II
1 - GEOL 291 Introduction to Research I
3 - Arts and Humanities (Literature) Requirement 1
3 - Technical Requirement 1
15

Second Semester
4 - CH 102 General Chemistry
3 - GEOL 103 Physical Geology
1 - GEOL 103 Physical Geology Lab.
3 - Mathematics Requirement 1
14

Second Semester
4 - CH 102 General Chemistry
3 - GEOL 103 Physical Geology
1 - GEOL 103 Physical Geology Lab.
3 - Mathematics Requirement 1
2 - Elective
16

Junior Year

First Semester
4 - BIOL 103 General Biology
4 - GEOL 206 Mineralogy and Intro. Petrology
1 - GEOL 291 Introduction to Research I
3 - Arts and Humanities (Non-Lit.) Requirement 1
4 - Foreign Language Requirement 1
16

Second Semester
4 - BIOL 104 General Biology II
1 - GEOL 292 Introduction to Research II
3 - GEOL 300 Environmental Geology
4 - Foreign Language Requirement 1
3 - Minor Requirement 1
15

**Junior Year**

First Semester
1 - GEOL 391 Research Methods I
3 - Foreign Language Requirement 2
3 - Geology Requirement 1
3 - Minor Requirement 1
3 - Social Science Requirement 2
3 - Technical Requirement 1
16

Second Semester
1 - GEOL 392 Research Methods II
3 - Foreign Language Requirement 3
3 - Geology Requirement 1
3 - Minor Requirement 1
6 - Elective
16

**Senior Year**

First Semester
4 - GEOL 491 Research Synthesis I
3 - Arts and Humanities (Literature) Requirement 1
3 - Geology Requirement 1
3 - Elective
13

Second Semester
4 - GEOL 492 Research Synthesis II
3 - Minor Requirement 1
3 - Technical Requirement 1
6 - Elective
16

122 Total Semester Hours

*MTHSC 106 and 108 are recommended; however, MTHSC 101 and 102 or MTHSC 102 and 203 may be substituted.

*See General Education Requirements.

*Spanish is recommended. Two years (through 202) in the same foreign language are required.

*See advisor.

*Any 300- or 400-level geology course.

*Select from department-approved list.
MATHMATICAl SCIENCES

Bachelor of Science

The Mathematical Sciences curriculum is designed to be versatile. Students gain a broad knowledge of mathematical concepts and methods that are applicable in sciences, engineering, business, industry, and other professions desiring a strong mathematical background. In addition to the basic courses which provide necessary mathematical skills, the curriculum allows students to select an emphasis area or concentration, providing an introduction to a specific area where mathematics is applied. These are Applied and Computational Mathematics, Biology, Computer Science, Operations Research/Management Science, and Statistics.

In addition to the overall goal of preparing students to cope with a variety of mathematical problems, the curriculum seeks to provide an adequate background for students who plan to pursue graduate study or positions in business, industry, or government. Students electing the Biology Concentration will have the necessary preparation for entering medical school. More information about the degree program can be found on the Web at www.math.clemson.edu.

All mathematical sciences majors are required to complete a capstone experience which provides an opportunity to pursue research, independent study, or an approved internship under the direction of a faculty member or the opportunity to study mathematical models in some area of the mathematical sciences. The capstone experience requires a written report (thesis, computer code, project description, intern experience, etc.) and an oral or poster presentation by each student.

Combined Bachelor's/Master's Plan

Under this plan, students may reduce the time necessary to earn both degrees by applying graduate credits to both undergraduate and graduate program requirements. Students are encouraged to obtain the specific requirements for the dual degree from the Department of Mathematical Sciences (on the Web at www.math.clemson.edu) as early as possible in their undergraduate program.

Enrollment guidelines and procedures can be found under Academic Regulations in this catalog.

Freshman Year

First Semester
1. ECON 105 Introduction to Economics
2. ENGL 105 Composition
3. MTHSC 110 Calculus of One Variable I
4. Elective
6

Second Semester
1. MTHSC 111 Introduction to Calculus
2. ENGL 106 Technical Writing
3. MTHSC 129 Problem Solving in Mathematical Sciences
4. Elective
6

Sophomore Year

First Semester
1. MTHSC 206 Calculus of Several Variables
2. ENGL 211 Writing Skills
3. MTHSC 302 Theory of Probability
4. MTHSC 311 Linear Algebra
5. MTHSC 329 Introduction to Discrete Mathematics
6. Elective
6

Second Semester
1. MTHSC 332 Advanced Calculus
2. ENGL 212 Technical Writing
3. MTHSC 401 Linear Programming
4. Elective
6

Junior Year

First Semester
1. MTHSC 400 Theory of Probability
2. MTHSC 440 Linear Programming
3. MTHSC 444 Technical Writing
4. Elective
6

Second Semester
1. MTHSC 450 Linear Algebra
2. MTHSC 451 Introduction to Modern Algebra
3. Elective
6

Senior Year

First Semester
1. MTHSC 453 Advanced Calculus I
2. MTHSC 454 Advanced Calculus II
3. Capstone
6

Second Semester
1. MTHSC 429 Research Methods
2. Elective
6

EMPHASIS AREAS

Applied and Computational Mathematics
1. MTHSC 433 Advanced Engineering Math.
2. MTHSC 460 Intro. to Numerical Analysis I

Computer Science
1. CP SC 215 Tools and Tech. for Software Dev.
2. Computer Science 300-level Requirement

Operations Research/Management Science
1. IE 482 Systems Modeling
2. IE 384 Engineering Economic Analysis
3. MGT 402 Operations Planning and Control
4. MTHSC 407 Regress. and Time-Ser. Analysis

Statistics
1. MTHSC 403 Intro. to Statistical Theory
2. MTHSC 405 Statistical Theory and Meth. II
3. MTHSC 406 Sampling Theory and Methods
4. MTHSC 407 Regress. and Time-Ser. Analysis

BIOLOGY CONCENTRATION

Freshman Year

First Semester
1. BIOL 110 Principles of Biology I
2. ENGL 105 Composition
3. MTHSC 106 Calculus of One Variable I
4. Elective
6

Second Semester
1. BIOL 112 Principles of Biology II
2. MTHSC 108 Calculus of One Variable II
4. Computer Science Requirement

91


Any 400-level MTHSC course approved by advisor

Capstone Experience may be satisfied by (1) completion of six credits of MTHSC 491 or 492; (2) completion of six credits of MTHSC 494 and an approved substitution; or (3) completion of three credits of MTHSC 450 and three credits of an additional course approved by the advisor.

Notes:
1. For graduation, a candidate for the BS degree in Mathematical Sciences will be required to have a 2.0 or higher cumulative grade-point ratio in all required courses taught by the Mathematical Sciences Department including approved mathematical sciences electives and concentration courses.
2. A grade of C or better must be earned in all prerequisite courses before enrolling in the next MTHSC course.

Any 400-level or higher CP SC course.
Sophomore Year
First Semester
4 - CH 101 General Chemistry
3 - ECON 200 Economic Concepts or
3 - ECON 211 Principles of Microeconomics
4 - MTHSC 206 Calculus of Several Variables
1 - MTHSC 250 Intro. to Mathematical Sciences
3 - PHYS 207 General Physics I
1 - PHYS 209 General Physics I Lab.
122 Total Semester Hours

Second Semester
4 - CH 102 General Chemistry
4 - MTHSC 208 Intro. to Ord. Diff. Equations
3 - MTHSC 311 Linear Algebra
3 - PHYS 208 General Physics II
1 - PHYS 210 General Physics II Lab.
15

Junior Year
First Semester
3 - CH 223 Organic Chemistry
1 - CH 227 Organic Chemistry Lab.
3 - ENGL 314 Technical Writing
3 - MTHSC 360 Intermediate Math. Computing
3 - MTHSC 440 Linear Programming
3 - Arts and Humanities (Literature) Requirement1
3 - Math Science Requirement
16

Second Semester
3 - CH 224 Organic Chemistry
3 - CH 228 Organic Chemistry Lab.
3 - COMM 250 Public Speaking
3 - MTHSC 302 Statistics for Science and Engr.
3 - Arts and Humanities (Non-Lit.) Requirement1
3 - Math Science Requirement1
16

Senior Year
First Semester
3 - MTHSC 400 Theory of Probability
3 - MTHSC 453 Advanced Calculus I or
3 - MTHSC 463 Mathematical Analysis I
3 - Animal or Plant Diversity Requirement2
3 - Capstone Experience3
3 - Social Science Requirement3
15

Second Semester
3 - MTHSC 412 Introduction to Modern Algebra
3 - MTHSC 454 Advanced Calculus II
1 - MTHSC 492 Professional Development
3 - Biological Sciences Requirement7
3 - Capstone Experience6
16

Sophomore Year
First Semester
4 - MTHSC 206 Calculus of Several Variables
1 - MTHSC 250 Intro. to Mathematical Sciences
3 - MTHSC 360 Inter. Math. Computing or
3 - EDSEC 437 Technology in Sec. Math.
3 - Arts and Humanities (Literature) Requirement1
3 - Elective
14

Second Semester
4 - MTHSC 208 Intro. to Ord. Diff. Equations
3 - MTHSC 302 Statistics for Science and Engr.
3 - MTHSC 311 Linear Algebra
3 - Arts and Humanities (Non-Lit.) Requirement1
3 - Minor Requirement or
3 - Second Major Requirement
16

Junior Year
First Semester
3 - ENGL 314 Technical Writing
3 - MTHSC 412 Intro. to Modern Algebra
3 - Math Science Requirement6
4 - Natural Science Requirement6
3 - Elective
16

Second Semester
3 - COMM 250 Public Speaking
3 - Math Science Requirement6
3 - Minor Requirement or
3 - Second Major Requirement
4 - Natural Science Requirement6
3 - Elective
16

Senior Year
First Semester
3 - MTHSC 453 Advanced Calculus I
3 - Arts and Humanities Requirement or
3 - Education Requirement
3 - Capstone Experience
3 - Minor Requirement or
3 - Second Major Requirement
3 - Science and Tech. in Society Requirement1
15

Second Semester
1 - MTHSC 492 Professional Development
3 - Capstone Experience
3 - Math Science Requirement6
6 - Minor Requirement or
6 - Second Major Requirement
2 - Elective
15

122 Total Semester Hours

1 Three credit hours (through 201) in any modern foreign language or American Sign Language are required.
2 Southern or American Sign Language are required.
3 See General Education Requirements. Six of these credit hours must also satisfy the Cross-Cultural Awareness and Science and Technology in Society Requirements.
4 Any 400-level MTHSC course approved by advisor
5 May be satisfied by (1) completion of six credits of MTHSC 482 or 482, (2) completion of six credits of MTHSC 491 or an approved substitution; (3) completion of three credits of MTHSC 450 and three credits of an additional course approved by advisor.
6 May be satisfied by (1) completion of six credits of MTHSC 482 or 482, (2) completion of six credits of MTHSC 491 or an approved substitution; (3) completion of three credits of MTHSC 450 and three credits of an additional course approved by advisor; or (4) six credits of EDSEC 446 for students seeking a double major in Secondary Education-Mathematics.
7 For graduation, a candidate for the BS degree in Mathematical Sciences will be required to have a 2.0 or higher cumulative grade-point ratio in all required courses taught by the Mathematical Sciences Department including approved mathematical sciences electives and option courses.
8 A grade of C or better must be earned in all prerequisite courses before enrolling in the next MTHSC course.
PHYSICS

Bachelor of Science

Physics, the most fundamental of the natural sciences, forms the basis of study upon which the other branches of science are founded. Physics is concerned with the fundamental behavior of matter and energy. Classical physics encompasses the fields of mechanics, heat and thermodynamics, electricity and magnetism, acoustics and optics. Modern physics is concerned with the study of atoms and molecules, atomic nuclei, elementary particles and the properties of liquids, crystalline solids, and other materials, as well as the areas of relativity, cosmology, and the large-scale structure of the universe.

The undergraduate Physics curricula are designed to provide students with a strong background in the classical areas of physics as well as an introduction into the more important aspects of modern physics. The BS in Physics curriculum is directed toward preparing students for graduate study ultimately leading to the PhD degree or toward research and development work in industrial or governmental laboratories. It also provides a good background for graduate study or industrial work in many areas or engineering physics and applied science.

Freshman Year

First Semester
3 - ASTR 105 Physics of the Universe
4 - CH 101 General Chemistry
3 - ENGL 103 Accelerated Composition
4 - MTHSC 106 Calculus of One Variable I
1 - PHYS 101 Current Topics in Modern Physics
15

Second Semester
4 - CH 102 General Chemistry
4 - MTHSC 108 Calculus of One Variable II
3 - PHYS 112 Physics with Calculus I
1 - PHYS 124 Physics Lab. I
3 - Arts and Humanities (Non-Lit.) Requirement 1
15

Sophomore Year

First Semester
4 - MTHSC 206 Calculus of Several Variables
3 - PHYS 221 Physics with Calculus II
1 - PHYS 223 Physics Lab. II
4 - Foreign Language Requirement 1
1 - Oral Communication Requirement 1
15

Second Semester
4 - MTHSC 208 Intro. to Ord. Diff. Equations
3 - PHYS 222 Physics with Calculus III
1 - PHYS 224 Physics Lab. III
4 - Foreign Language Requirement 1
3 - Social Science Requirement 1
15

Junior Year

First Semester
3 - PHYS 311 Intro. to Meth. of Theoretical Phys.
1 - PHYS 321 Mechanics I
3 - PHYS 325 Experimental Physics I
3 - Advanced Writing Requirement 1
3 - Emphasis Area 4
15

Second Semester
1 - PHYS 300 Introduction to Research
3 - PHYS 312 Methods of Theoretical Physics II
3 - PHYS 322 Mechanics II
3 - PHYS 326 Experimental Physics II
1 - PHYS 356 Modern Physics Overview
1 - PHYS 441 Electromagnetics I
3 - Emphasis Area 4
17

Senior Year

First Semester
3 - PHYS 401 Senior Thesis
3 - PHYS 442 Electromagnetics II
3 - PHYS 455 Quantum Physics I
3 - Emphasis Area 4
3 - Science Requirement 3
15

Second Semester
3 - PHYS 456 Quantum Physics II
3 - PHYS 465 Thermodynamics and Statistical Mechanics
3 - Arts and Humanities (Literature) Requirement 6
3 - Emphasis Area 4
15

122 Total Semester Hours

1See General Education Requirements.
2Two semesters (through 102) in same modern foreign language are required.
3See General Education Requirements. This course must also satisfy the Science and Technology in Society Requirement.
4Select from department-approved list of courses in astronomy, chemistry, computer science, engineering, environmental engineering, geology, mathematical sciences, and physics. Twelve credit hours in one of these areas, with at least six at the 300-400 level, are required. Note: Requirements for a minor in one of these areas might be satisfied with three additional credits at the 300-400 level.
5Any 200-400-level science course
6Select any ENGL course from General Education Arts and Humanities (Literature) Requirement.

BIOPHYSICS CONCENTRATION

The Biophysics Concentration offers an excellent preparation for medical school or graduate work in biological sciences. It includes the flexibility of selecting courses in chemistry, biological sciences, physics, and mathematics. This concentration also provides the necessary background for employment in industry, manufacturing, and instrumentation for clinical or molecular biology applications.

See Bachelor of Science curriculum for freshman year requirements.
PHYSICS
Bachelor of Arts
The BA in Physics program is ideal for students interested in acquiring a broad-based liberal education that includes a strong and solid understanding of either science or a broad exposure to engineering with a strong physics foundation.

Freshman Year
First Semester
1. ASTR 105 Physics of the Universe
2. CH 101 General Chemistry
3. ENGL 103 Accelerated Composition
4. MTHSC 106 Calculus of One Variable I
5. PHYS 101 Current Topics in Modern Physics

Second Semester
1. CH 102 General Chemistry
2. MTHSC 108 Calculus of One Variable II
3. PHYS 122 Physics with Calculus I
4. PHYS 124 Physics Lab. I
5. Arts and Humanities (Non-Lit.) Requirement

Sophomore Year
First Semester
1. MTHSC 206 Calculus of Several Variables
2. MTHSC 221 Calculus with Physics I
3. PHYS 223 Physics Lab. II
4. Foreign Language Requirement
5. Oral Communication Requirement

Second Semester
1. MTHSC 208 Intro. to Ord. Diff. Equations
2. PHYS 222 Physics with Calculus III
3. PHYS 224 Physics Lab. II
4. Foreign Language Requirement
5. Social Science Requirement

Junior Year
First Semester
1. PHYS 311 Intro. to Meth. of Theoretical Phys.
2. PHYS 321 Mechanics I
3. PHYS 325 Experimental Physics I
4. Foreign Language Requirement
5. Minor Requirement

Second Semester
1. PHYS 300 Introduction to Research
2. PHYS 312 Methods of Theoretical Physics II
3. PHYS 322 Mechanics II
4. PHYS 356 Modern Physics Overview
5. PHYS 441 Electromagnetics I
6. Foreign Language Requirement
7. Minor Requirement

Senior Year
First Semester
1. PHYS 455 Quantum Physics I
2. Advanced Writing Requirement
3. Minor Requirement
4. Arts and Humanities (Literature) Requirement
5. Elective

Second Semester
1. HIST 172 or 173 Western Civilization
2. Arts and Humanities (Literature) Requirement
3. Minor Requirement
4. Physics Requirement
5. Elective

122 Total Semester Hours

POLYMER AND TEXTILE CHEMISTRY
Bachelor of Science
Freshman Year
First Semester
1. CH 101 General Chemistry
2. ENGL 103 Accelerated Composition
3. MTHSC 106 Calculus of One Variable I
4. TEXT 175 Intro. to Textile Manufacturing
5. Elective

Second Semester
1. CH 102 General Chemistry
2. MTHSC 108 Calculus of One Variable II
3. PHYS 122 Physics with Calculus I
4. PHYS 124 Physics Lab. I
5. Arts and Humanities Requirement or Social Science Requirement

Sophomore Year
First Semester
1. CH 223 Organic Chemistry
2. CH 228 Organic Chemistry Lab.
3. MTHSC 206 Calculus of Several Variables
4. PHYS 221 Physics with Calculus II
5. PHYS 223 Physics Lab. II
6. TEXT 201 Yarn Structures and Formation

Second Semester
1. CH 224 Organic Chemistry
2. CH 228 Organic Chemistry Lab.
3. MTHSC 208 Intro. to Ord. Diff. Equations
4. TEXT 202 Fabric Struct., Design, and Analysis
5. TEXT 324 Textile Statistics
6. Elective

Junior Year
First Semester
1. CH 331 Physical Chemistry
2. ENGL 314 Technical Writing
3. PTC 415 Intro. to Polymer Science and Engr.
4. PTC 417 Polymer and Fiber Lab.
5. Arts and Humanities Requirement or Social Science Requirement

Second Semester
1. CH 332 Physical Chemistry
2. COMM 250 Public Speaking
3. ECON 200 Economic Concepts
4. PTC 416 Chemical Preparation of Textiles
5. Departmental Requirement

Senior Year
First Semester
1. PTC 457 Dyeing and Finishing I
2. PTC 459 Dyeing and Finishing I Lab.
3. TEXT 422 Properties of Textile Structures
4. Approved Requirement
5. Departmental Requirement

94
Second Semester
2 - MS&E Materials Science and Eng. Portfolio
3 - PTC 458 Dyeing and Finishing II
1 - PTC 460 Dyeing and Finishing II Lab.
3 - TEXT 421 Fiber Science
3 - TEXT 429 Textile Research
12

Second Semester
3 - ENGL 314 Technical Writing
3 - MGT 307 Personnel Management
7 - Concentration
3 - Emphasis Area
16

Senior Year
First Semester
3 - TEXT 470 Text. Cost. and Inventory Control
6 - Concentration
3 - Emphasis Area
12

Second Semester
3 - MGT 415 Business Strategy
2 - MS&E 450 Materials Sci. and Engr. Portfolio
3 - TEXT 429 Textile Research
3 - Concentration
3 - Emphasis Area
14

123 Total Semester Hours

See General Education Requirements. Three of these credit hours must also satisfy the Cross-Cultural Awareness and Science and Technology in Society Requirements. See advisor.

TEXTILE MANUFACTURING
Bachelor of Science

Freshman Year
First Semester
4 - CH 101 General Chemistry or
3 - ENGL 103 Accelerated Composition
3 - MTHSC 102 Intro. to Mathematical Analysis
3 - TEXT 175 Intro. to Textile Manufacturing
3 - Arts and Humanities Requirement or
3 - Social Science Requirement
16

Second Semester
4 - CH 102 General Chemistry or
3 - CP SC 120 Intro. to Information Technology
3 - ECON 200 Economic Concepts
3 - MTHSC 207 Multivariable Calculus
4 - TEXT 176 Natural and Man-Made Fibers
17

Sophomore Year
First Semester
3 - ACCT 201 Financial Accounting Concepts
3 - COMM 250 Public Speaking
3 - PSYCH 201 Introduction to Psychology
4 - TEXT 201 Yarn Structures and Formation
3 - Arts and Humanities Requirement or
3 - Social Science Requirement
16

Second Semester
3 - ACCT 202 Managerial Accounting Concepts
3 - MGT 301 Principles of Management
4 - TEXT 202 Fabric Struc., Design, and Analysis
3 - TEXT 324 Textile Statistics
3 - Arts and Humanities Requirement or
3 - Social Science Requirement
16

Junior Year
First Semester
3 - FIN 306 Corporation Finance
3 - LAW 322 Legal Environment of Business
3 - MKT 301 Principles of Marketing
4 - Concentration
3 - Emphasis Area
16
MINORS

Following are minors acceptable for students in the College of Engineering and Science. Students cannot major and minor in the same field or acquire a minor that is not allowed by the degree program.

Accounting
Adult/Extension Education
Aerospace Studies
African American Studies
Agricultural Business Management
Agricultural Mechanization and Business
American Sign Language Studies
Animal and Veterinary Sciences
Anthropology
Athletic Leadership
Biochemistry
Bioengineering
Biological Sciences
Business Administration
Chemistry
Cluster
Communication Studies
Communications
Community Recreation Management
Computer Science—not open to Computer Information Systems majors
Crop and Soil Environmental Science
East Asian Studies
Economics
Education
English
Entomology
Entrepreneurship
Environmental Engineering
Environmental Science and Policy
Equine Business
Film Studies
Financial Management
Fine Arts
Food Science
Forest Products
Forest Resource Management
Geography
Geology
Global Politics
Great Works
Health Science
History

Horticulture
Human Resource Management
International Engineering and Science
Legal Studies
Management
Mathematical Sciences
Microbiology
Military Leadership
Modern Languages
Music
Natural Resource Economics
Non-Profit Leadership
Operations Management
Packaging Science
Park and Protected Area Management
Philosophy
Physics
Plant Pathology
Political Science
Poultry Science
Psychology
Public Policy
Religion
Russian Area Studies
Science and Technology in Society
Screenwriting
Sociology
Spanish-American Area Studies
Sport Management
Textiles—not open to Polymer and Textile Chemistry or Textile Management majors
Theatre
Therapeutic Recreation
Travel and Tourism
Turfgrass
Urban Forestry
Wildlife and Fisheries Biology
Women's Studies
Writing

See pages 36–39 for details.
The Teacher Education Programs are accredited by the National Council for the Accreditation of Teacher Education (NCATE) for the preparation of educational personnel in South Carolina in Early Childhood, Elementary, Special Education, and secondary school programs in Agriculture, Biological Sciences, Economics, English, History, Mathematics, Modern Languages, Physical Sciences, Political Science, Psychology, Sociology, and Industrial Technology Education.

Admission
Professional—Application to the professional level of a program will be processed during the term in which a student is to complete 45 semester hours of work. At that time, the student will be notified of his/her status by the College's Academic Advising Center. Prior to admission, the student must have passed all areas of the Praxis I Pre-Professional Skills Test (PPST) and have a minimum cumulative grade-point ratio of 2.5.

Directed Teaching/Teaching Internship (Secondary)—A student shall apply to the field experience director prior to the semester in which directed teaching is to be scheduled. The following conditions must be met prior to registration for directed teaching: (1) admission to the professional level of a program; (2) completion of at least 95 semester hours; (3) a minimum cumulative grade-point ratio of 2.5. Students with a grade-point ratio of 2.25 to 2.5 may appeal to the Director of the School of Education, but exceptions are not common.

Enrollment in Professional Courses
Enrollment in 400-level professional education courses is contingent upon admission to the professional level as described above. Any student who desires to enroll in education courses must meet the cumulative grade-point requirements established for education majors. Appeals to continue taking classes may be made to the Chair of Teacher Education, but exceptions are not common.

Graduation
To graduate, a student must have a score report for all state mandated certification exams on file with the Academic Advising Center in the College of Health, Education, and Human Development. Students must pass all required Praxis II tests, excluding PLT (Principles of Learning and Teaching) before becoming a program completer and receiving recommendation for certification.

Graduate Study

Agricultural Education
Bachelor of Science
The College of Health, Education, and Human Development and the College of Agriculture, Forestry, and Life Sciences conduct a cooperative program to produce agricultural teachers (grades 9–12) for South Carolina. See page 41 for the curriculum.

Early Childhood Education
Bachelor of Arts
The Early Childhood Education curriculum prepares students for teaching positions in the pre-kindergarten and primary levels (Pre-K–3).

Freshman Year
First Semester
1 - ED 105 Orientation to Education
3 - HIST 173 Western Civilization
3 - MTHSC 101 Essential Math for Informed Soc.
3 - Foreign Language Requirement
4 - Natural Science Requirement
1 - Elective
15

Second Semester
3 - A H 210 Intro. to Art and Architecture
3 - COMM 250 Intro. to Human Comm.
3 - ENGL 103 Accelerated Composition
3 - Foreign Language Requirement
3 - Mathematics Requirement
15

Sophomore Year
First Semester
3 - ED EC 220 Family, School, and Community Relationships
3 - GEOG 103 World Regional Geography
3 - Arts and Humanities (Literature) Requirement
3 - Mathematics Requirement
4 - Natural Science Requirement
16

Second Semester
3 - ED F 301 Principles of American Education
1 - ED F (THRD) 315 Tech. Skills for Learning
3 - ED F 334 Child Growth and Development
3 - PSYCH 201 Introduction to Psychology
3 - Music Requirement
3 - Science and Tech. in Society Requirement
16

Junior Year
First Semester
3 - ED EC 300 Found. of Early Childhood Educ.
3 - ED EC 336 Social Development of Infants and Young Children
3 - ED F 302 Educational Psychology
3 - ED SP 370 Introduction to Special Education
3 - THRD 310 Arts and Creativity for the Elementary Child
3 - Advanced Writing Requirement
18

The Teacher Education Programs provide students the means by which to pursue careers in the fields of nursing, education, health, and recreation management. The "Engaged College with a Personal Touch" is home to the academic programs offered by the School of Nursing; the Eugene T. Moore School of Education; the Department of Public Health Sciences; and the Department of Parks, Recreation, and Tourism Management. In addition to the academic areas, the College offers outreach services available through the Joseph E. Sullivan Center, the National Dropout Prevention Center, and the Outdoor Laboratory. Collaboration within the college between academics and community outreach services prepares students to be professional leaders in health, education, and recreation management. As with all programs at the University, students will take course offerings from all colleges on campus to achieve the most complete education possible.

Eugene T. Moore School of Education
The mission of the Eugene T. Moore School of Education is to prepare caring and capable professionals through intellectually engaging experiences in theory, method, and research that connect them to the communities in which they live and serve. The Eugene T. Moore School of Education trains teachers, counselors, and leaders for the K-12 schools and training and development specialists for business and industry.

Teacher Education Programs
The Eugene T. Moore School of Education Conceptual Framework guides the School's work as a unit. It is consensus-based and provides the foundation for all that is done. It addresses the fundamental issues of what students need to know (knowledge), what they need to be able to do (skills), what they value (dispositions), and how they interface with their communities, large and small (connections). The Conceptual Framework, simply stated, is to prepare caring, capable, and connected professionals for the twenty-first century.

The Teacher Education Programs prepare teachers, provide professional services to education in South Carolina, and carry our basic and applied research in education. Curricula are designed to provide a broad general education through liberal arts and science courses, develop depth of knowledge in the teaching area, gain an understanding of the historical, philosophical, and psychological backgrounds of American education, and acquire knowledge of and skill and experience in effective teaching techniques.
College of Health, Education, and Human Development

Second Semester
3 - ED EC 430 Early Childhood Mathematics
3 - ED EL 321 Physical Education Methods for Classroom Teachers
3 - ED EL 458 Health Education Methods for the Classroom Teacher
3 - ED SP 468 Early Intervention for Infants and Children with Special Needs
3 - READ 458 Early Literacy: Birth-Kindergarten

Sophomore Year
First Semester
4 - BIOL 109 Introduction to Life Science
3 - ED F 301 Principles of American Education
3 - Arts and Humanities (Literature) Requirement\(^3\)
3 - Mathematics Requirement\(^2\)

Second Semester
3 - ED F 302 Educational Psychology
1 - ED F (THRD) 315 Tech. Skills for Learning
3 - ED F 334 Child Growth and Development
3 - ED SP 370 Introduction to Special Education
3 - MUSIC 210 Music Appreciation or
3 - MUSIC 400 Music in the Elem. Classroom
3 - Arts and Humanities (Non-Lit.) Requirement\(^6\)

Junior Year
First Semester
3 - ED 322 Responding to Emergencies or
3 - PRTM 317 Group Initiatives
3 - ED EL 458 Health Education Methods for the Classroom Teacher
3 - ENGL 385 Children's Literature
3 - THRD 310 Arts and Creativity for the Elementary Child
3 - Multicultural Requirement\(^3\)

Second Semester
3 - ED EL 304 Instructional Planning, Management, and Communications
3 - ED EL 321 Physical Education Methods for Classroom Teachers
3 - ED F 308 Classroom Assessment
3 - ENGL 304 Business Writing or
3 - ENGL 312 Advanced Composition
3 - READ 460 Teaching Reading in the Elementary Grades: 2-6

Senior Year
First Semester
3 - ED EL 451 Elem. Methods in Science Teaching
3 - ED EL 452 Elem. Methods in Math. Teaching
3 - ED EL 487 Teaching Social Studies in the Elementary School
3 - ED EL 488 Teaching the Language Arts in the Elementary School
3 - READ 461 Content Area Reading: Grades 2-6

Second Semester
12 - ED EL 481 Dir. Teaching in the Elem. Sch.
1 - ED F 425 Instructional Technology Strategies

123 Total Semester Hours

1 Two semesters (through 202) in a modern foreign language are required. Spanish is recommended.
2 One biological science and one physical science course, each with laboratory, must be selected from General Education Requirements. See advisor.
3 See advisor.
4 ENGL 212, 213, 214, or 215
5 MUSIC 210, 311, 313, 314, 317, or 400
6 See General Education Requirements.
7 ENGL 32, 314, 345, 346, or 348

ELEMENTARY EDUCATION

Bachelor of Arts
The Elementary Education curriculum prepares students for teaching on the elementary school level (grades 2-6).

Freshman Year
First Semester
3 - GEOG 101 World Regional Geography
3 - HIST 122 History, Technology, and Society
3 - MTHSC 101 Essential Math for Informed Soc.
4 - PH SC 108 Introduction to Physical Science
3 - Foreign Language Requirement\(^1\)

Second Semester
3 - COMM 150 Intro. to Human Comm. or
3 - COMM 250 Public Speaking
1 - ED 105 Orientation to Education
3 - ENGL 101 Accelerated Composition
4 - PH SC 107 Introduction to Earth Science
3 - Foreign Language Requirement\(^1\)
3 - Mathematics Requirement\(^2\)

Sophomore Year
First Semester
4 - BIOL 109 Introduction to Life Science
3 - ED F 301 Principles of American Education
3 - Arts and Humanities (Literature) Requirement\(^3\)
3 - Mathematics Requirement\(^2\)

Second Semester
3 - ED F 302 Educational Psychology
1 - ED F (THRD) 315 Tech. Skills for Learning
3 - ED F 334 Child Growth and Development
3 - ED SP 370 Introduction to Special Education
3 - MUSIC 210 Music Appreciation or
3 - MUSIC 400 Music in the Elem. Classroom
3 - Arts and Humanities (Non-Lit.) Requirement\(^6\)

Junior Year
First Semester
3 - ED 322 Responding to Emergencies or
3 - PRTM 317 Group Initiatives
3 - ED EL 458 Health Education Methods for the Classroom Teacher
3 - ENGL 385 Children's Literature
3 - THRD 310 Arts and Creativity for the Elementary Child
3 - Multicultural Requirement\(^3\)

Second Semester
3 - ED EL 304 Instructional Planning, Management, and Communications
3 - ED EL 321 Physical Education Methods for Classroom Teachers
3 - ED F 308 Classroom Assessment
3 - ENGL 304 Business Writing or
3 - ENGL 312 Advanced Composition
3 - READ 460 Teaching Reading in the Elementary Grades: 2-6

Senior Year
First Semester
3 - ED EL 451 Elem. Methods in Science Teaching
3 - ED EL 452 Elem. Methods in Math. Teaching
3 - ED EL 487 Teaching Social Studies in the Elementary School
3 - ED EL 488 Teaching the Language Arts in the Elementary School
3 - READ 461 Content Area Reading: Grades 2-6

Second Semester
12 - ED EL 481 Dir. Teaching in the Elem. Sch.
1 - ED F 425 Instructional Technology Strategies

123 Total Semester Hours

1 Two semesters (through 202) in a modern foreign language are required. Spanish is recommended.
2 One biological science and one physical science course, each with laboratory, must be selected from General Education Requirements. See advisor.
3 See advisor.
4 ENGL 212, 213, 214, or 215
5 MUSIC 210, 311, 313, 314, 317, or 400
6 See General Education Requirements.

MATHEMATICS TEACHING

Bachelor of Science
The program leading to a Bachelor of Science degree in Mathematics Teaching is designed for students planning to teach mathematics on the secondary school level (grades 9-12).

Freshman Year
First Semester
4 - CH 105 Beginning Gen. and Organic Chem.
1 - ED 105 Orientation to Education
4 - MTHSC 106 Calculus of One Variable I
3 - PHIL 102 Introduction to Logic
3 - Cross-Cultural Awareness Requirement\(^1\)

Second Semester
4 - CH 106 Beginning Gen. and Organic Chem.
3 - ENGL 103 Accelerated Composition
4 - MTHSC 108 Calculus of One Variable II
1 - Elective

Sophomore Year
First Semester
3 - COMM 150 Intro. to Human Comm. or
3 - COMM 250 Public Speaking
4 - MTHSC 206 Calculus of Several Variables
3 - PHYS 122 Physics with Calculus I
1 - PHYS 124 Physics Lab. I
3 - Arts and Humanities (Literature) Requirement\(^2\)
3 - Science Requirement\(^3\)

Second Semester
3 - ECON 200 Economic Concepts or
3 - ECON 211 Principles of Microeconomics
3 - ED F 302 Educational Psychology
1 - ED F (THRD) 315 Tech. Skills for Learning
3 - MTHSC 208 Intro. to Ordinary Diff. Equations
3 - MTHSC 311 Linear Algebra
3 - PHYS 221 Physics with Calculus II
1 - PHYS 223 Physics Lab. II

Junior Year
First Semester
3 - ED F 301 Principles of American Education
3 - MTHSC 302 Statistics for Science and Engr.
3 - MTHSC 308 College Geometry
3 - SOC 201 Introduction to Sociology or
3 - SOC 202 Social Problems
3 - Science Requirement\(^3\)

Second Semester
3 - ED F 335 Adolescent Growth and Development
3 - ED SP 370 Introduction to Special Education
3 - EDSEC 437 Technology in Secondary Math.
3 - MTHSC 408 Topics in Geometry
3 - MTHSC 412 Introduction to Modern Algebra

15
Senior Year
First Semester
1. ED F 425 Instructional Technology Strategies
2. EDSEC 446 Teaching Internship in Secondary Mathematics
3. EDSEC 456 Sec. Math. Capstone Seminar

12

Second Semester
5. BIOL 103 Principles of Biology I
6. CH 102 General Chemistry
7. ED 105 Orientation to Education
8. ENGL 103 Accelerated Composition
9. PHYS 207 General Physics I
10. PHYS 209 General Physics I Lab.
11. Arts and Humanities (Literature) Requirement

16

Second Semester
3. PHYS 301 Principles of American Education
4. ED F (THRD) 315 Tech. Skills for Learning
5. PHYS 208 General Physics II
6. PHYS 210 General Physics II Lab.

16

Junior Year
First Semester
3. ED F 302 Educational Psychology
4. GEN 302 Molecular and General Genetics
5. GEN 303 Molecular and Gen. Genetics Lab.
6. Ecology Requirement
7. Plant Diversity Requirement

14

Second Semester
3. BIOL 335 Evolutionary Biology
4. ED F 335 Adolescent Growth and Development
5. ENGL 314 Technical Writing
6. HIST 122 History, Technology, and Society
7. Animal Diversity Requirement

16

Senior Year
First Semester
3. ED F 425 Instructional Technology Strategies
4. ED SF 370 Introduction to Special Education
5. EDSEC 427 Teaching Secondary Science
6. PHIL 325 Philosophy of Science
7. READ 498 Secondary Content Area Reading
8. Social Science Requirement

16

Second Semester
9. EDSEC 447 Teaching Internship in Sec. Sci.
10. EDSEC 457 Sec. Science Capstone Seminar

12

121 Total Semester Hours

Science Teaching
Bachelor of Science
The program leading to a Bachelor of Science degree in Science Teaching is designed for students planning to teach biological sciences, chemistry, earth sciences, or physical sciences on the secondary school level (grades 9-12). The required science electives are included to give some degree of competence in a field other than the major area. Students are urged to discuss the Praxis with their advisor upon completion of the sophomore year.

Teaching Area: Biological Sciences
Freshman Year
First Semester
5. BIOL 110 Principles of Biology I
6. CH 101 General Chemistry
7. COMM 150 Intro. to Human Communication
8. MTHSC 106 Calculus of One Variable I

16

Second Semester
5. BIOL 111 Principles of Biology II
6. CH 102 General Chemistry
7. ED 105 Orientation to Education
8. ENGL 103 Accelerated Composition
9. EX ST 301 Introductory Statistics

16

Sophomore Year
First Semester
4. BIOSC 222 Human Anatomy and Phys. I
5. CH 201 Survey of Organic Chemistry
6. PHYS 207 General Physics I
7. PHYS 209 General Physics I Lab.
8. Arts and Humanities (Literature) Requirement

15

Second Semester
3. BIOSC 301 Molecular Biochemistry
4. BIOSC 302 Molecular Biochemistry Lab.
5. BIOSC 223 Human Anatomy and Phys. II
6. ED F 301 Principles of American Education
7. ED F (THRD) 315 Tech. Skills for Learning
8. PHYS 208 General Physics II
9. PHYS 210 General Physics II Lab.

16

Junior Year
First Semester
3. ED F 302 Educational Psychology
4. GEN 302 Molecular and General Genetics
5. GEN 303 Molecular and Gen. Genetics Lab.
6. Ecology Requirement
7. Plant Diversity Requirement

14

Second Semester
3. BIOL 335 Evolutionary Biology
4. ED F 335 Adolescent Growth and Development
5. ENGL 314 Technical Writing
6. HIST 122 History, Technology, and Society
7. Animal Diversity Requirement

16

Senior Year
First Semester
3. ED F 425 Instructional Technology Strategies
4. ED SF 370 Introduction to Special Education
5. EDSEC 427 Teaching Secondary Science
6. PHIL 325 Philosophy of Science
7. READ 498 Secondary Content Area Reading
8. Social Science Requirement

16

Second Semester
9. EDSEC 447 Teaching Internship in Sec. Sci.
10. EDSEC 457 Sec. Science Capstone Seminar

12

121 Total Semester Hours

Science Teaching
Bachelor of Science
The program leading to a Bachelor of Science degree in Science Teaching is designed for students planning to teach biological sciences, chemistry, earth sciences, or physical sciences on the secondary school level (grades 9-12). The required science electives are included to give some degree of competence in a field other than the major area. Students are urged to discuss the Praxis with their advisor upon completion of the sophomore year.

Teaching Area: Physical Sciences
Freshman Year
First Semester
4. CH 101 General Chemistry
5. COMM 150 Intro. to Human Communication
6. ED 105 Orientation to Education
7. HIST 122 History, Technology, and Society
8. MTHSC 106 Calculus of One Variable I

15

Second Semester
3. PHYS 301 Principles of American Education
4. PHYS 302 Physical Science I
5. MTHSC 108 Calculus of One Variable II
6. Social Science Requirement

17

Sophomore Year
First Semester
4. BIOL 103 General Biology I
5. CH 201 Survey of Organic Chemistry
6. EX ST 301 Introductory Statistics
7. PHYS 101 Current Topics in Modern Physics
8. Arts and Humanities (Literature) Requirement

15

Second Semester
4. BIOL 104 General Biology II
5. CH 330 Introduction to Physical Chemistry
6. ED F 301 Principles of American Education
7. ED F (THRD) 315 Tech. Skills for Learning
8. PHYS 122 Physics with Calculus I
9. PHYS 124 Physics Lab. I
10. PHYS 240 Physics of the Weather

18

Junior Year
First Semester
3. ASTR 101 Planetary Astronomy
4. ASTR 103 Solar System Astronomy Lab.
5. CH 313 Quantitative Analysis
6. CH 317 Quantitative Analysis Lab.
7. ED F 302 Educational Psychology
8. PHYS 221 Physics with Calculus II
9. PHYS 223 Physics Lab. II

15

Second Semester
3. ASTR 102 Stellar Astronomy
4. ASTR 104 Stellar Astronomy Lab.
5. ED F 335 Adolescent Growth and Development
6. ENGL 314 Technical Writing
7. PHYS 222 Physics with Calculus III
8. PHYS 224 Physics Lab. III

14

Senior Year
First Semester
1. ED F 425 Instructional Technology Strategies
2. ED SF 370 Introduction to Special Education
3. EDSEC 427 Teaching Secondary Science
4. ED SF 370 Introduction to Special Education
5. PHIL 325 Philosophy of Science
6. PHYS 311 Intro. to Meth. of Theoretical Phys.
7. READ 498 Secondary Content Area Reading

16

Second Semester
9. EDSEC 447 Teaching Internship in Sec. Sci.
10. EDSEC 457 Sec. Science Capstone Seminar

12

122 Total Semester Hours

1. A S 301, ANTH 201, GEOG 103, HIST 172, 173, 193, PO SC 102, or 104
2. EDSEC 447 and 457 must be taken concurrently. Offered spring semester only.
3. To be taken the semester prior to EDSEC 447 and 457. ED F 425, EDSEC 427, and READ 498 must be taken concurrently. Offered fall semester only.
4. A A S 301, ANTH 201, GEOG 103, HIST 172, 173, 193, PO SC 102, or 104
5. EDSEC 447 and 457 must be taken concurrently. Offered spring semester only.
SECONDARY EDUCATION

The Bachelor of Arts degree in Secondary Education is available to students preparing to teach English, mathematics, and modern languages (French, German, Spanish) on the secondary school level (grades 9–12). The Bachelor of Science degree is offered to students planning to teach economics, history, political science, psychology, and sociology. The teaching field should be selected as early as possible so that appropriate freshman and sophomore courses may be taken.

Each curriculum requires a major concentration in the teaching field. Specific courses and sequences have been designated to meet requirements for those planning to teach. Students who have elective courses in the teaching area should consult their advisor prior to scheduling these courses.

The professional education courses should be completed in sequence. Application to Directed Teaching should be made in writing no later than May 1 preceding the school year in which student teaching is to be scheduled.

TEACHING AREA: ECONOMICS

Bachelor of Science

Freshman Year
First Semester
1 - ED 105 Orientation to Education
3 - ENGL 103 Accelerated Composition
3 - GEOG 201 Introduction to Geography
3 - HIST 122 History, Technology, and Society
3 - MTHSC 101 Essential Math for Informed Soc.
4 - Natural Science Requirement
1

Second Semester
3 - ANTH 201 Introduction to Anthropology
3 - BIOSCI 200 Biology in the News
3 - ENGL 214 American Literature
3 - GEOG 203 World Regional Geography
3 - PSYCH 201 Introduction to Psychology
3 - SOC 201 Introduction to Sociology

Sophomore Year
First Semester
3 - ECON 211 Principles of Microeconomics
3 - ED F 302 Educational Psychology
3 - HIST 101 History of the United States
3 - HIST 172 Western Civilization
3 - PO SC 101 American National Government
3 - Non-Western History Requirement
1

Second Semester
3 - ECON 212 Principles of Macroeconomics
1 - ED F (THRD) 315 Tech. Skills for Learning
3 - HIST 102 History of the United States
3 - HIST 173 Western Civilization
3 - PO SC 102 Intro. to International Relations
3 - Non-Western History Requirement
1

Junior Year
First Semester
3 - ED F 301 Principles of American Education
3 - ED F 335 Adolescent Growth and Development
3 - ENGL 312 Advanced Composition
3 - Non-Western History Requirement
1
3 - Teaching Major
1

Second Semester
3 - COMM 150 Intro. to Human Comm. or
3 - COMM 250 Public Speaking
3 - ED SP 370 Introduction to Special Education
3 - Arts and Humanities (Non-Lit.) Requirement
1
6 - Teaching Major
1

Senior Year
First Semester
9 - ED SEC 428 Teaching Secondary Social Studies
3 - ED SEC 429 Teaching Secondary Social Studies
3 - READ 498 Secondary Content Area Reading
3 - Teaching Major
1

Second Semester
9 - ED SEC 448 Teaching Internship in Secondary Social Studies
9 - ED SEC 450 Secondary Social Studies
Capstone Seminar

12

124 Total Semester Hours

TEACHING AREA: ENGLISH

Bachelor of Arts

Freshman Year
First Semester
1 - ED 105 Orientation to Education
3 - ENGL 103 Accelerated Composition
3 - GEOG 201 Introduction to Geography
3 - HIST 122 History, Technology, and Society
3 - MTHSC 101 Essential Math for Informed Soc.
3 - Foreign Language Requirement
1

Second Semester
2 - ENGL 190 Introduction to the English Major
3 - ENGL 212 World Literature
3 - HIST 172 Western Civilization
3 - Foreign Language Requirement
1
4 - Natural Science Requirement
2
15

Sophomore Year
First Semester
3 - ED F 301 Principles of American Education
3 - ENGL 214 American Literature
3 - G W (ENGL) 301 Great Books of West. World
3 - HIST 173 Western Civilization
3 - REL 102 World Religions
15

Second Semester
3 - BIOSCI 200 Biology in the News
3 - ED F 302 Educational Psychology
1 - ED F (THRD) 315 Tech. Skills for Learning
3 - ENGL 214 American Literature
3 - ENGL 310 Critical Writing About Literature
3 - HIST 361 History of England to 1688 or
3 - HIST 363 Hist. of England Since 1688 or
3 - HIST 365 English Cultural History
16

Junior Year
First Semester
3 - ED F 335 Adolescent Growth and Development
3 - ENGL 386 Adolescent Literature
3 - ENGL 400 The English Language
3 - American Literature Requirement
1
3 - Literary Criticism Requirement
1
15

Second Semester
3 - ENGL 304 Business Writing or
3 - ENGL 314 Technical Writing
3 - ENGL 401 Grammar Survey
3 - British Literature Requirement
1
3 - Diversity Requirement
6
3 - Film Requirement
1
1

Senior Year
First Semester
3 - ED F 425 Instructional Technology Strategies
3 - ED F 490 Student Management and Discipline
3 - ED SEC 428 Teaching Secondary Social Studies
3 - READ 498 Secondary Content Area Reading

15

Second Semester
9 - ED SEC 448 Teaching Internship in Secondary Social Studies
9 - ED SEC 450 Secondary Social Studies
Capstone Seminar

12

120 Total Semester Hours

1Two semesters (through 202) in the same modern foreign language are required.
3See General Education Requirements.
4ENGL 398, 399, 425, 426, 427, 455, or 463
### TEACHING AREA: HISTORY

**Bachelor of Science**

#### Freshman Year

**First Semester**
- 1. ED F 105 Orientation to Education
- 2. ENGL 103 Accelerated Composition
- 3. GEOG 101 Introduction to Geography
- 4. HIST 102 History of the United States
- 5. HIST 172 Western Civilization
- 6. PO SC 101 American National Government
- 7. Non-Western History Requirement

**Second Semester**
- 1. ANTH 201 Introduction to Anthropology
- 2. BIOSC 200 Biology in the News
- 3. ENGL 214 American Literature
- 4. GEOG 103 World Regional Geography
- 5. PSYCH 201 Introduction to Psychology
- 6. SOC 201 Introduction to Sociology

#### Sophomore Year

**First Semester**
- 1. ECON 211 Principles of Microeconomics
- 2. ED F 302 Educational Psychology
- 3. HIST 101 History of the United States
- 4. HIST 172 Western Civilization
- 5. PO SC 101 American National Government
- 6. Non-Western History Requirement

**Second Semester**
- 1. ECON 212 Principles of Macroeconomics
- 2. ED F (THRD) 315 Tech. Skills for Learning
- 3. HIST 102 History of the United States
- 4. HIST 173 Western Civilization
- 5. PO SC 102 Intro. to International Relations
- 6. Non-Western History Requirement

#### Junior Year

**First Semester**
- 1. ED F 301 Principles of American Education
- 2. ED F 335 Adolescent Growth and Development
- 3. ENGL 312 Advanced Composition
- 4. Non-Western History Requirement
- 5. Teaching Major

**Second Semester**
- 1. ED F 425 Instructional Technology Strategies
- 2. ED F 490 Student Management and Discipline
- 3. EDSEC 428 Teaching Secondary Social Studies
- 4. READ 498 Secondary Content Area Reading
- 5. Teaching Major

### TEACHING AREA: MATHEMATICS

**Bachelor of Arts**

#### Freshman Year

**First Semester**
- 1. ED F 105 Orientation to Education
- 2. ENGL 103 Accelerated Composition
- 3. MTHSC 106 Calculus of One Variable I
- 4. Foreign Language Requirement
- 5. Natural Science Requirement

**Second Semester**
- 1. MTHSC 108 Calculus of One Variable II
- 2. MTHSC 129 Problem Solving in Discrete Math.
- 3. PHIL 102 Introduction to Logic
- 4. Cross-Cultural Awareness Requirement
- 5. Foreign Language Requirement

#### Sophomore Year

**First Semester**
- 1. ECON 200 Economic Concepts or
- 2. ENGL 211 Principles of Microeconomics
- 3. HIST 102 History of the United States
- 4. MTHSC 206 Calculus of Several Variables
- 5. MTHSC 250 Intro. to Mathematical Sciences
- 6. PHYS 122 Physics with Calculus I
- 7. PHYS 124 Physics Lab. I
- 8. Computer Science Requirement

**Second Semester**
- 1. MTHSC 208 Intro. to Ordinary Diff. Equations
- 2. MTHSC 311 Linear Algebra
- 3. Arts and Humanities (Literature) Requirement
- 4. Science and Tech. in Society Requirement

### TEACHING AREA: MODERN LANGUAGES

(French, German, Spanish)

**Bachelor of Arts**

#### Freshman Year

**First Semester**
- 1. ED F 105 Orientation to Education
- 2. ENGL 103 Accelerated Composition
- 4. Arts and Humanities (Non-Lit.) Requirement
- 5. Foreign Language Requirement
- 6. Natural Science Requirement

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**Note:**
- "Senior Year" is not fully visible in the provided text.
- "Junior Year" is not fully visible in the provided text.
- "Sophomore Year" is not fully visible in the provided text.
- "Freshman Year" is not fully visible in the provided text.

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**Additional Information:**
- All courses are subject to semester availability and specific prerequisites.
- Please consult with an academic advisor for course planning.
- Refer to General Education Requirements for specific course requirements.
- All courses marked with an "ED" prefix are offered through the College of Education.
### Second Semester
- 3 - GEOG 103 World Regional Geography
- 3 - HIST 172 or 173 Western Civilization or
- 3 - HIST 193 Modern World History
- 3 - Arts and Humanities (Literature) Requirement¹
- 3 - Foreign Language Requirement¹
- 3 - Math or Natural Science Requirement³
- 3 - Elective¹

**Total Semester Hours: 12-15**

### Senior Year

#### First Semester
- 3 - ED F 425 Instructional Technology Strategies³
- 3 - ED F 490 Student Management and Discipline
- 3 - EDSEC 428 Teaching Secondary Social Studies³
- 3 - READ 498 Secondary Content Area Reading³
- 3 - Teaching Major³
- 15

#### Second Semester
- 3 - Advanced Social Science Requirement³
- 3 - Arts and Humanities Requirement³
- 6-9 - Teaching Major³

**Total Semester Hours: 12-15**

### Junior Year

#### First Semester
- 3 - ENGL 103 Accelerated Composition
- 3 - GEOG 101 Introduction to Geography
- 3 - MTHSC 101 Essential Math for Informed Soc.
- 15

#### Second Semester
- 3 - ANTH 201 Introduction to Anthropology
- 3 - BIOSC 200 Biology in the News
- 3 - ENGL 214 American Literature
- 3 - GEOG 103 World Regional Geography
- 3 - PSYCH 201 Introduction to Psychology
- 3 - SOC 201 Introduction to Sociology

**Total Semester Hours: 13-16**

### Sophomore Year

#### First Semester
- 3 - ED F 301 Principles of American Education
- 3 - ENGL 103 Accelerated Composition
- 3 - GEOG 101 Introduction to Geography
- 18

#### Second Semester
- 3 - ECON 211 Principles of Microeconomics
- 3 - ED F 302 Educational Psychology
- 3 - HIST 101 History of the United States
- 3 - HIST 172 Western Civilization
- 3 - PO SC 101 American National Government
- 3 - Non-Western History Requirement²

**Total Semester Hours: 12**

### Freshman Year

#### First Semester
- 3 - ED F 105 Orientation to Education
- 3 - ENGL 103 Accelerated Composition
- 3 - GEOG 101 Introduction to Geography
- 3 - HIST 102 History of the United States
- 3 - HIST 173 Western Civilization
- 3 - PO SC 102 Intro to International Relations
- 3 - Non-Western History Requirement²

**Total Semester Hours: 12**

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¹Twelve credit hours of Arts and Humanities are required. At least three credit hours must be from 200-level ENGL literature courses, and at least three hours must be from Humanities (Non-Literature) courses. See General Education Requirements.

²Two semesters (through 202) in the major foreign language are required.

³See General Education Requirements.

⁴Electives required of French or German majors only.
### Second Semester
- ANTH 201 Introduction to Anthropology
- BIO 200 Biology in the News
- ENGL 214 American Literature
- GEOG 103 World Regional Geography
- PSYCH 201 Introduction to Psychology
- SOC 201 Introduction to Sociology

### Sophomore Year
#### First Semester
- ECON 211 Principles of Microeconomics
- ED F 302 Educational Psychology
- HIST 101 History of the United States
- HIST 173 Western Civilization
- PO SC 101 American National Government
- Non-Western History Requirement

#### Second Semester
- ECON 212 Principles of Macroeconomics
- ED F (THRD) 315 Tech. Skills for Learning
- HIST 102 History of the United States
- HIST 173 Western Civilization
- PO SC 102 Intro. to International Relations
- Non-Western History Requirement

#### Junior Year
#### First Semester
- ED F 301 Principles of American Education
- ED F 335 Adolescent Growth and Development
- ENGL 312 Advanced Composition
- Non-Western History Requirement
- Teaching Major

#### Second Semester
- COMM 150 Intro. to Human Communication
- COMM 250 Public Speaking
- ED SP 370 Introduction to Special Education
- Arts and Humanities (Non-Lit.) Requirement
- Teaching Major

#### Senior Year
#### First Semester
- ED F 425 Instructional Technology Strategies
- ED F 490 Student Management and Discipline
- EDSEC 428 Teaching Secondary Social Studies
- READ 498 Secondary Content Area Reading
- Teaching Major

#### Second Semester
- ECON 212 Principles of Macroeconomics
- ED F (THRD) 315 Tech. Skills for Learning
- HIST 102 History of the United States
- HIST 173 Western Civilization
- PO SC 102 Intro. to International Relations
- Non-Western History Requirement

### Special Education Bachelor of Science
#### Freshman Year
#### First Semester
- ED F 425 Instructional Technology Strategies
- ED F 490 Student Management and Discipline
- EDSEC 428 Teaching Secondary Social Studies
- READ 498 Secondary Content Area Reading
- Teaching Major

#### Sophomore Year
#### First Semester
- ECON 211 Principles of Microeconomics
- ED F 302 Educational Psychology
- HIST 101 History of the United States
- HIST 172 Western Civilization
- PO SC 101 American National Government
- Non-Western History Requirement

#### Second Semester
- ECON 212 Principles of Macroeconomics
- ED F (THRD) 315 Tech. Skills for Learning
- HIST 102 History of the United States
- HIST 173 Western Civilization
- PO SC 102 Intro. to International Relations
- Non-Western History Requirement

### SPECIAL EDUCATION Bachelor of Arts
The Bachelor of Arts degree in Special Education prepares students to teach individuals with mild disabilities in grades K-12. The curriculum is designed to meet the competencies outlined by the Council for Exceptional Children for beginning special education teachers. Students completing the program receive instruction and practical experiences that lead to Multi-Categorical Special Education Certification in South Carolina.

#### Freshman Year
#### First Semester
- ED F 425 Instructional Technology Strategies
- ED F 490 Student Management and Discipline
- EDSEC 428 Teaching Secondary Social Studies
- READ 498 Secondary Content Area Reading
- Teaching Major

#### Second Semester
- ECON 211 Principles of Microeconomics
- ED F 302 Educational Psychology
- HIST 101 History of the United States
- HIST 172 Western Civilization
- PO SC 101 American National Government
- Non-Western History Requirement

#### Junior Year
#### First Semester
- ED F 301 Principles of American Education
- ED F 335 Adolescent Growth and Development
- ENGL 312 Advanced Composition
- Non-Western History Requirement
- Teaching Major

#### Second Semester
- ECON 212 Principles of Macroeconomics
- ED F (THRD) 315 Tech. Skills for Learning
- HIST 102 History of the United States
- HIST 173 Western Civilization
- PO SC 102 Intro. to International Relations
- Non-Western History Requirement

#### Sophomore Year
#### First Semester
- COMM 150 Intro. to Human Communication
- COMM 250 Public Speaking
- ED SP 370 Introduction to Special Education
- Arts and Humanities (Non-Lit.) Requirement
- Teaching Major

#### Second Semester
- COMM 150 Intro. to Human Communication
- COMM 250 Public Speaking
- ED SP 370 Introduction to Special Education
- Arts and Humanities (Literature) Requirement
Second Semester
3 - ED F 302 Educational Psychology
1 - ED F (THRD) 315 Tech. Skills for Learning
3 - ED F 335 Adolescent Growth and Development
3 - ED SP 468 Early Intervention for Infants and Children with Special Needs
3 - Arts and Humanities (Non-Lit.) Requirement
3 - History Requirement
16

Junior Year
First Semester
3 - ED EL 452 Elem. Methods in Math. Teaching
3 - ED EL 458 Health Education Methods for the Classroom Teacher
1 - ED F 425 Instructional Technology Strategies
3 - ED SP 372 Char. and Ident. of and Strategies for Individuals with Learning Disabilities
3 - ED SP 374 Char. and Strat. for Individuals with Emotional/Behavioral Disorders
3 - Advanced Writing Requirement
16

Second Semester
3 - ED EL 451 Elem. Methods in Science Teaching
3 - ED EL 487 Teaching Social Studies in the Elementary School
3 - ED SP 373 Char. and Instruction of Individuals with Mental Retardation
3 - ED SP 491 Educational Assessment of Individuals with Disabilities
3 - READ 460 Teaching Reading in the Elementary Grades: 2-6
15

Senior Year
First Semester
3 - ED SP 492 Mathematics Instruction for Individuals with Mild Disabilities
3 - ED SP 493 Classroom and Behavior Management for Special Educators
3 - ED SP 494 Teaching Reading to Students with Mild Disabilities
3 - ED SP 496 Special Educ. Field Experience
3 - ED SP 497 Secondary Methods for Individuals with Disabilities
15

Second Semester
3 - ED SP 495 Written Communication and Collaboration for the Resource Teacher
12 - ED SP 498 Directed Teaching in Special Ed.
15
122 Total Semester Hours

Freshman Year
First Semester
1 - BIOL 120 Biological Inquiry Lab and
3 - BIOL 121 Keys to Human Identity or
3 - BIOL 122 Keys to Biodiversity or
3 - BIOL 123 Keys to Human Biology
1 - ED 105 Orientation to Education
3 - THRD 110 Introduction to CTE
3 - THRD 180 Introduction to Technical Drawing and Computer-Aided Drafting
3 - Mathematics Requirement
1 - Elective
15-16

Second Semester
3 - ENGL 103 Accelerated Composition
3 - PSYCH 201 Introduction to Psychology
3 - THRD 181 Advanced Technical Drawing and Computer-Aided Drafting
3 - THRD 240 Power Technology I: Production
15

Sophomore Year
First Semester
3 - THRD 220 Manufacturing Tech. I: Systems
3 - THRD 230 Construction Tech. I: Materials
3 - Arts and Humanities (Literature) Requirement
3 - Science and Tech. in Society Requirement
3 - Social Science Requirement
15

Second Semester
3 - A H 210 Intro. to Art and Architecture or
3 - MUSIC 210 Music Appreciation
3 - COMM 150 Intro. to Human Communication
3 - EX ST 301 Introductory Statistics
3 - THRD 250 Electricity
3 - Elective
15

Junior Year
First Semester
3 - ED F 302 Educational Psychology
3 - ED F 335 Adolescent Growth and Development
3 - ENGL 314 Technical Writing
3 - THRD 360 Safety
3 - THRD 484 Communications Tech. II: Systems
15

Second Semester
3 - ED SP 370 Introduction to Special Education
3 - THRD 420 Manufacturing: Computer-Integrated Manufacturing
3 - THRD 430 Const. Tech. II: Practices and Syst.
3 - THRD 468 Public Relations
3 - THRD 486 Instructional Media Development
15

Senior Year
First Semester
3 - PSYCH 330 Motivation
3 - THRD 415 History and Philosophy of CTE
3 - THRD 471 Teaching CTE
3 - THRD 473 Assessment in CTE
3 - Elective
15

Second Semester
3 - THRD 371 Management of CTE Laboratories
6 - THRD 478 Internship in CTE I
6 - THRD 479 Internship in CTE II
15
120–121 Total Semester Hours

MTHSC 101, 102, or 106
Select any ENGL course from General Education Arts and Humanities (Literature) Requirement.
See General Education Requirements.

WORKFORCE TRAINING
CONCENTRATION
The Workforce Training concentration prepares students to enter industry or business as training and development specialists. The curriculum provides participants with a broad exposure to industrial processes in manufacturing, construction, power/transportation, and communications. Numerous hands-on experiences related to the application of technology in industry are integrated with valuable skills and knowledge from the training and development profession. Students exit the program with skills related to analyzing needs; conducting job and task analyses; designing, marketing, and evaluating training programs; delivering professional presentations; and developing instructional materials.
Students may transfer a 30-hour block of technical coursework from an approved associate degree program to be used in lieu of certain major requirements. See advisor for details.

**Freshman Year**

**First Semester**
1. BIOL 120 Biological Inquiry Lab. and
2. BIOL 121 Keys to Human Identity or
3. BIOL 122 Keys to Biodiversity or
4. BIOL 123 Keys to Human Biology
5. THRD 110 Introduction to CTE
6. THRD 180 Introduction to Technical Drawing and Computer-Aided Drafting
7. ENGL 103 Accelerated Composition
8. Elective
9. 120-121 Total Semester Hours

**Second Semester**
1. ENGL 103 Accelerated Composition
2. PSYCH 201 Introduction to Psychology
3. THRD 181 Advanced Technical Drawing and Computer-Aided Drafting
4. THRD 240 Power Technology I: Production
6. 15-16

**Sophomore Year**

**First Semester**
1. THRD 220 Manufacturing Tech. I: Systems
2. THRD 230 Construction Tech. I: Materials
3. THRD 360 Safety
4. THRD 415 History and Philosophy of CTE
5. ENGL 250 Public Speaking
6. Elective
7. 14-15

**Second Semester**
1. A H 210 Intro. to Art and Architecture or
2. MUSIC 210 Music Appreciation
3. COMM 150 Intro. to Hum. Comm. or
4. COMM 250 Public Speaking
5. EX ST 301 Introductory Statistics
6. THRD 250 Electricity
7. Social Science Requirement
8. 14-15

**Junior Year**

**First Semester**
1. ENGL 314 Technical Writing
2. PSYCH 330 Motivation
3. THRD 461 Workplace Safety
4. THRD 484 Communications Tech. II: Systems
5. Elective
6. 15

**Second Semester**
1. MGT 301 Principles of Management
2. THRD 420 Manufacturing: Computer-Integrated Manufacturing
4. THRD 468 Public Relations
5. THRD 486 Instructional Media Development
6. 15

**Senior Year**

**First Semester**
1. THRO 461 Workplace Safety
2. Elective
3. 15

**Second Semester**
1. THRO 230 Construction Tech. I: Materials
2. THRD 360 Safety
3. Elective
4. 15

**HEALTH SCIENCE**

**Bachelor of Science**

The Department of Public Health Sciences prepares students for careers in the health field, one of the largest industries in the United States. It includes hospitals and other medical service providers, public health organizations, health insurance companies, health/medical related sales, health/fitness organizations, and community and non-profit health agencies.

Plans of study can be arranged in health promotion and education, health services administration, and preprofessional health studies. Students in the Health Promotion and Education Concentration have the skills to assess, plan, communicate, implement, manage, and evaluate public health promotion programs. Students in the Preprofessional Health Studies Concentration obtain the coursework and experience necessary for acceptance into various graduate programs in clinical health professions. The Health Services Administration Concentration allows students to develop skills and competencies in health administration/management for entry-level careers or graduate study in this area. A minor in Business Administration is integral to the concentration. The department, in cooperation with the College of Architecture, Arts, and Humanities, also offers a joint Bachelor of Science degree in Language and International Health (see page 60).

Students with less than 50 credit hours earned may change majors into Health Science with a minimum cumulative grade-point ratio of 2.25. Students with 50 or more credit hours may apply for a change-of-major into Health Science when space is available based on the following restrictions:

- completion of the Health Science Mathematics and Statistics Requirements and the General Education Natural Science Requirement
- minimum cumulative grade-point ratio of 2.5
- submission of a 1-3-page document detailing why the applicant desires to major in Health Science and how this major would support his/her career goals

Additional information is available from the Department of Public Health Science's Web site at www.hehd.clemson.edu/Health/Website/Home/Main.htm.

**HEALTH PROMOTION AND EDUCATION CONCENTRATION**

**Freshman Year**

**First Semester**
1. BIOL 103 General Biology I or
2. BIOL 110 Principles of Biology
3. HLTH 202 Introduction to Public Health
4. PSYCH 201 Introduction to Psychology
5. SOC 201 Introduction to Sociology
6. Elective
7. 14-15

**Second Semester**
1. ENGL 103 Accelerated Composition
2. Health Requirement
3. Mathematics Requirement
4. Social Science Requirement
5. Elective
6. 16-17

**Sophomore Year**

**First Semester**
1. CH 101 General Chemistry or
3. HLTH 298 Human Health and Disease
4. HLTH 240 Determinants of Health Behavior
5. HLTH 303 Public Health Communication
6. HLTH 419 Health Sci. Internship Prep. Seminar
7. Elective
8. 16

**Second Semester**
1. CH 102 General Chemistry or
2. CH 106 Beginning Gen. and Org. Chem.
3. HLTH 240 Determinants of Health Behavior
4. HLTH 398 Health Appraisal Skills
5. HLTH 490 Research and Evaluation Strategies for Public Health
7. 14

**Junior Year**

**First Semester**
1. BIOC 222 Human Anatomy and Physiology I
2. ENGL 304 Business Writing or
3. ENGL 314 Technical Writing
4. HLTH 303 Public Health Communication
5. HLTH 340 Hlth. Prom. Program Planning
6. HLTH 380 Epidemiology
7. HLTH 419 Hlth. Sci. Internship Prep. Seminar
8. Elective
9. 17

**Second Semester**
1. BIOC 223 Human Anatomy and Phys. II
2. COMM 250 Public Speaking
3. Arts and Humanities (Non-Lit.) Requirement
4. Elective
5. 14

College of Health, Education, and Human Development
HEALTH SERVICES ADMINISTRATION CONCENTRATION

Freshman Year
First Semester
3 - ECON 211 Principles of Microeconomics
3 - HLTH 202 Introduction to Public Health
1 - Elective
14

Second Semester
3 - ECON 212 Principles of Macroeconomics
3 - ENGL 103 Accelerated Composition
3 - HLTH 298 Human Health and Disease
4 - MTHSC 103 Calculus of One Variable I
3 - Guided Requirement
16

Sophomore Year
First Semester
3 - ACCT 201 Financial Accounting Concepts
3 - C.R.D. (AP EC, HLTH 361) Principles of Microeconomics
3 - HLTH 203 Overview of Health Care Systems
3 - MTHSC 301 Statistical Methods I
3 - Health Requirement
15

Second Semester
3 - HLTH 420 Health Science Internship
3 - HLTH 440 Determinants of Health Behavior
3 - HLTH 490 Research and Evaluation Strategies for Public Health
3 - MGT 301 Principles of Management
3 - Guided Requirement
3 - Social Science Requirement
15

Junior Year
First Semester
3 - ENGL 304 Business Writing or
3 - ENGL 314 Technical Writing
3 - HLTH 380 Epidemiology
3 - LAW 321 Legal Environment of Business
3 - MKT 301 Principles of Marketing
3 - Guided Requirement
1 - Elective
16

Second Semester
3 - COMM 250 Public Speaking
1 - HLTH 419 Hlth. Sci. Internship Prep. Seminar
3 - MGT 307 Personnel Management
3 - Arts and Humanities (Literature) Requirement
3 - Guided Requirement
3 - Health Requirement
16

Senior Year
First Semester
3 - FIN 306 Corporation Finance
5 - HLTH 420 Health Science Internship
3 - HLTH 440 Managing Health Service Org.
3 - HLTH 460 Health Information Systems
14

Second Semester
3 - HLTH 475 Principles of Healthcare Operations Management and Research
3 - HLTH 478 Health Policy Ethics and Law
3 - HLTH 479 Financial Management and Budgeting for Health Service Organizations
3 - Arts and Humanities (Non-Lit.) Requirement
3 - Guided Requirement
15

120 Total Semester Hours

1. Any HLTH course
2. See General Education Requirements. This course must also satisfy the Cross-Cultural Awareness Requirement.
3. See advisor. Courses in Spanish are strongly recommended.
4. Any HLTH course
5. See General Education Requirements. This course must also satisfy the Cross-Cultural Awareness Requirement.
6. See advisor. Courses in Spanish are strongly recommended.

Sophomore Year
First Semester
3 - BIOL 103 General Biology I or
5 - BIOL 110 Principles of Biology I
4 - CH 101 General Chemistry I
3 - HLTH 202 Introduction to Public Health
3 - Social Science Requirement
1 - Elective
15-16

Second Semester
4 - BIOL 104 General Biology II or
5 - BIOL 111 Principles of Biology II
4 - CH 102 General Chemistry II
3 - ENGL 103 Accelerated Composition
3 - Guided Requirement
3 - Health Requirement
3 - Statistics Requirement
17-19

Junior Year
First Semester
3 - ENGL 304 Business Writing or
3 - ENGL 314 Technical Writing
3 - HLTH 380 Epidemiology
3 - HLTH 419 Hlth. Sci. Internship Prep. Seminar
1 - HLTH 207 General Physics I
1 - HLTH 209 General Physics I Lab.
4 - Guided Requirement
15

Second Semester
3 - COMM 250 Public Speaking
3 - HLTH 240 Determinants of Health Behavior
3 - HLTH 490 Research and Evaluation Strategies for Public Health
3 - Social Science Requirement
13

Senior Year
First Semester
5 - HLTH 420 Health Science Internship
3 - Arts and Humanities (Literature) Requirement
3 - Health Requirement
6 - Elective
17

PREPROFESSIONAL HEALTH STUDIES CONCENTRATION

Freshman Year
First Semester
4 - BIOL 103 General Biology I or
5 - BIOL 110 Principles of Biology I
4 - CH 101 General Chemistry I
3 - HLTH 202 Introduction to Public Health
3 - Social Science Requirement
1 - Elective
15-16

Second Semester
4 - BIOL 104 General Biology II or
5 - BIOL 111 Principles of Biology II
4 - CH 102 General Chemistry II
3 - ENGL 103 Accelerated Composition
3 - Guided Requirement
3 - Health Requirement
3 - Statistics Requirement
17-19

Sophomore Year
First Semester
4 - BIOL 222 Human Anatomy and Phys. I
3 - HLTH 298 Human Health and Disease
3 - Guided Requirement
3 - Health Requirement
3 - Statistics Requirement
16

Second Semester
4 - BIOL 223 Human Anatomy and Phys. II
3 - HLTH 240 Determinants of Health Behavior
3 - HLTH 490 Research and Evaluation Strategies for Public Health
3 - Social Science Requirement
13

Junior Year
First Semester
3 - ENGL 304 Business Writing or
3 - ENGL 314 Technical Writing
3 - HLTH 380 Epidemiology
3 - HLTH 419 Hlth. Sci. Internship Prep. Seminar
1 - HLTH 207 General Physics I
1 - HLTH 209 General Physics I Lab.
4 - Guided Requirement
15

Second Semester
3 - COMM 250 Public Speaking
3 - HLTH 240 Determinants of Health Behavior
3 - HLTH 490 Research and Evaluation Strategies for Public Health
3 - Social Science Requirement
13

Senior Year
First Semester
5 - HLTH 420 Health Science Internship
3 - Arts and Humanities (Literature) Requirement
3 - Health Requirement
6 - Elective
17
The Bachelor of Science degree program in Nursing prepares students for professional nursing practice in a variety of settings, such as hospitals, industry, clinics, and public health agencies. During the first two years, emphasis is on liberal arts and basic science courses arranged to provide a foundation for the nursing major. Junior and senior courses emphasize the study of nursing. Clinical nursing experiences, guided by the nursing faculty, involve acute and community-based settings. Students are responsible for their own transportation to clinical laboratory experiences, which may extend throughout the Upstate.

Nursing majors are required to carry, throughout the clinical laboratory period, current and valid student nurses’ professional liability insurance with minimum limits of liability of $1,000,000 per occurrence and $3,000,000 in aggregate. Documentation of such coverage must be provided to the Director of the School of Nursing. No student may participate in clinical learning activities without this insurance coverage.

To comply with clinical agency contract requirements and South Carolina law, students enrolled in nursing courses with a clinical laboratory must meet specific requirements listed in the School of Nursing Student Handbook which can be found on the Web at www.hehd.clemson.edu/nursing.

The School of Nursing programs are accredited by the National League for Nursing Accrediting Commission, 350 Hudson St., New York, NY 10014; telephone (212) 989-9393, extension 451/153.

**Entrance Requirements**

To facilitate admission of students who can achieve at an appropriate level in the program, admission is selective. Consideration is given to performance in secondary school and on the College Board Examination (SAT). Those seeking admission are advised to apply to the University early in the fall of the senior year in high school.

Transfer admission is competitive and students are encouraged to apply early to the Office of Admissions. The University admits ten new transfer students to the Nursing major during the fall semester only. Potential students should have a minimum grade point ratio of 3.0 and completion of 30 semester hours of transferable courses. Placement in the nursing curriculum will be determined after credit evaluation is completed.

Students may change majors into Nursing based on approval of a committee of faculty from the School of Nursing. Applications are accepted each year during January with a deadline of January 31. Decisions are made by February 28. The School of Nursing accepts 48 changes of major per year with a start date of the following January into upper division (junior-level) nursing courses. Applicants should meet the following requirements prior to the semester of application: a minimum cumulative grade point ratio of 2.75, completion of a minimum of two required sciences in the Nursing curriculum with a C or better. Selection priority is based on grade-point ratio and number of completed nursing prerequisites. Students are allowed to apply only twice. Detailed information is available from the Academic Advising Center in 309 Edwards Hall or on the Web at www.hehd.clemson.edu/nursing.

**Junior Year**

**First Semester**

1. **ENGL 104 Business Writing** or **ENGL 105 Technical Writing**
2. **NURS 303 Intro. to Community Nursing**
3. **NURS 323 Gerontology Nursing**
4. **NURS 320 Professionalism in Nursing**
5. **NURS 340 Pharmacotherapeutic Nursing Interventions**
6. **NURS 310 Health Assessment**
7. **NURS 330 Research in Nursing**

**Second Semester**

1. **NURS 330 Research in Nursing**
2. **NURS 405 Leadership and Mgt. in Nursing**
3. **NURS 412 Families**
4. **NURS 412 Nursing Care of Women and Their Families**
5. **NURS 411 Nursing Care of Children**

**Senior Year**

**First Semester**

1. **NURS 401 Mental Health Nursing**
2. **NURS 440 Leadership and Mgt. in Nursing**
3. **NURS 408 Senior Nursing Practicum**
4. **NURS 415 Community Health Nursing**

**Second Semester**

1. **NURS 430 Complex Nursing of Adults**
2. **NURS 405 Leadership and Mgt. in Nursing**
3. **NURS 408 Senior Nursing Practicum**
4. **NURS 415 Community Health Nursing**

**Total Semester Hours**

- **120-123 Total Semester Hours**

*Note: 30 hours must be provided to the Director of the School of Nursing.*

**Second Semester**

1. **NURS 412 Families**
2. **NURS 412 Nursing Care of Women and Their Families**
3. **NURS 411 Nursing Care of Children**
4. **NURS 408 Senior Nursing Practicum**
5. **NURS 415 Community Health Nursing**

**123 Total Semester Hours**

*CU 101 is recommended.*

*See General Education Requirements.*

*This requirement is satisfied by another course in the curriculum, elective hours may be substituted.*

*See advisor.*

Notes:

1. A minimum grade-point ratio of 2.5 is required in all courses for progression to junior year nursing courses.
2. A minimum grade-point ratio of 2.5 must be achieved in all required nursing courses for progression to the next level. Students may not exceed a maximum of two attempts, excluding a W, to complete successfully any NURS course.
3. Students must pass didactic and clinical components to pass all clinical courses.
4. A minimum grade-point ratio of 2.5 is required for registration in each nursing course.
Registered Nurse BS Completion Program
The RN/BS curriculum offers an individualized study option for the registered nurse to obtain a baccalaureate degree in Nursing. Credits may be earned through an accelerated program of study, combining transfer credits for selected courses from accredited institutions of higher learning, credit by examination for previously completed nursing courses, and enrollment in courses at Clemson University. Qualified students may take up to six hours of graduate courses towards the master’s degree in nursing. Registered nurses interested in pursuing a baccalaureate degree should contact the School of Nursing for curriculum requirements. This program is offered at the University Center of Greenville.

Freshman Year
First Semester
4 - CH 101 General Chemistry
3 - MTHSC 101 Essential Math for Informed Soc.
3 - NURS 140 Computer Appl. in Health Care
3 - SOC 201 Introduction to Sociology
3 - Arts and Humanities (Non-Lit.) Requirement
16

Second Semester
4 - BIOL 103 General Biology I
3 - ENGL 103 Accelerated Composition
3 - MTHSC 203 Elementary Statistical Inference
3 - PSYCH 201 Introduction to Psychology
3 - Elective
16

Sophomore Year
First Semester
4 - BIOSC 222 Human Anatomy and Phys. I
4 - MICRO 205 Introductory Microbiology
3 - Arts and Humanities (Literature) Requirement
3 - Science and Tech. in Society Requirement
14

Second Semester
4 - BIOSC 223 Human Anatomy and Phys. II
3 - COMM 150 Intro. to Human Comm. or
3 - COMM 250 Public Speaking
3 - Nutrition Requirement
2 - Elective
12

Junior Year
First Semester
3 - NURS 304 Pathophysiology for Health-Care Professionals
5 - NURS 307 Family Nursing in the Community
4 - NURS 312 Therapeutic Nurs. Interventions
5 - NURS 411 Nursing Care of Children
17

Second Semester
7 - NURS 403 Nursing of Adults
4 - NURS 313 Health Assess. Through Lifespan
3 - NURS 330 Research in Nursing
5 - NURS 401 Mental Health Nursing
19

Senior Year
First Semester
3 - ENGL 304 Business Writing or
3 - ENGL 314 Technical Writing
5 - NURS 403 Complex Nursing of Adults
5 - NURS 406 Issues in Professionalism
5 - NURS 412 Nursing Care of Women and Their Families
16

Second Semester
3 - NURS 405 Leadership and Mgt. in Nursing
4 - NURS 415 Community Health Nursing
6 - Departmental Requirement
13

123 Total Semester Hours

Notes.
1 See General Education Requirements. Three of these credit hours must also satisfy the Cross-Cultural Awareness Requirement.
2 See advisor.
3 This course is exempt if the student achieves a B or better in NURS 307.
4 A minimum grade-point ratio of 2.5 is required in all courses for progression to Junior year nursing courses.
5 A minimum grade-point ratio of 2.5 must be achieved in all required nursing courses for progression to the next level. Students may not exceed a maximum of two attempts, excluding a W, to complete successfully any NURS course.
6 Students must pass didactic and clinical components to pass all clinical courses.
7 A minimum grade-point ratio of 2.5 is required for registration in each nursing course.

PARKS, RECREATION, AND TOURISM MANAGEMENT
Bachelor of Science
The Department of Parks, Recreation, and Tourism Management prepares students for a variety of careers in public and private leisure services. The undergraduate curriculum provides a broad exposure to the management of leisure services programs and resources, such as those for municipalities, institutions, voluntary and youth-serving agencies, management positions within the travel and tourism industry and as recreation managers of local, state, and federal parks and related lands and waters.

The flexible curriculum allows students to select from six concentrations. This latitude permits accommodation of each student's career objectives in positions in community recreation, sport management, recreation programming, cultural arts management, commercial recreation, wilderness management, nature interpretation, park management, historic site management, rehabilitation services, leisure counseling, camp administration, recreation therapy, programs for people with disabilities or senior citizens, travel industry, resort management, convention and visitor bureaus, theme parks, community tourism, and special event/festival planning, to name a few.

The Parks, Recreation, and Tourism Management program is accredited by the National Council on Accreditation (National Recreation and Park Association/Council on Postsecondary Accreditation). Graduates are immediately eligible to apply to become “Certified Park and Recreation Professionals,” a valuable credential for professional advancement.

When space is available, a student may change majors to one of the degree concentrations in the Department of Parks, Recreation, and Tourism Management with a 2.0 cumulative grade-point ratio, at least 30 credit hours earned, and approval of the department chair or his/her designee.

The Department of Parks, Recreation, and Tourism Management is a South Carolina Commission on Higher Education “Commendation for Excellence” recipient and a top-ranked program nationally.

Graduate degrees offered are Master of Parks, Recreation, and Tourism Management; Master of Science; and Doctor of Philosophy.

COMMUNITY RECREATION MANAGEMENT CONCENTRATION
The Community Recreation Management (CRM) Concentration prepares students for interesting and challenging careers working with diverse groups of people in a variety of settings, including community parks and recreation agencies as well as non-profit agencies including YMCAs, Boy Scouts, and Boys and Girls Clubs, to name a few. CRM is focused on providing all community members with high quality recreation programming, including youth and adult sports, the arts, and special events, as well as park services through the protection of green spaces within communities. Students with a concentration in Community Recreation Management will be eligible to sit for an examination to become a Certified Parks and Recreation Professional (CPRP).

Freshman Year
First Semester
3 - ACC 201 Financial Accounting Concepts
3 - BIOL 120 Biological Inquiry Lab. and
3 - BIOL 121 Keys to Human Identity or
3 - BIOL 122 Keys to Biodiversity or
3 - BIOL 123 Keys to Human Biology
3 - PTMT 101 Concepts of Leisure
3 - Arts and Humanities (Non-Lit.) Requirement
3 - Elective
16

Second Semester
3 - ENGL 103 Accelerated Composition
3 - PTMT 205 Program and Event Planning
3 - PSYCH 201 Introduction to Psychology or
3 - SOC 201 Introduction to Sociology
3 - Math or Natural Science Requirement
4 - Elective
16

Sophomore Year
First Semester
3 - ECON 211 Principles of Microeconomics or
3 - ECON 212 Principles of Macroeconomics
3 - PTMT 201 Recreation/Leisure Environment
1 - PTMT 206 Practicum I
3 - PTMT 241 Introduction to Community Recreation Management
3 - Elective
13

3
### Second Semester
- EX ST 301 Introductory Statistics
- MKT 301 Principles of Marketing or
- PRTM 344 Tourism Markets and Supply
- PRTM 207 Practicum II
- PRTM 210 Serving Diverse Populations in Parks, Recreation, and Tourism Management
- PRTM 308 Leadership and Group Proc in Rec.
- Arts and Humanities (Literature) Requirement

### Junior Year
#### First Semester
- COMM 250 Public Speaking
- LAW 322 Legal Environment of Business
- PRTM 307 Facility Planning and Operations
- PRTM 321 Recreation Administration
- PRTM 404 Field Training I
- Advanced Writing Requirement

#### Second Semester
- MGT 307 Personnel Management
- PRTM 305 Safety and Risk Mgt. in PRTM
- Approved Requirement

### Summer
- PRTM 405 Field Training II

### Senior Year
#### First Semester
- ANTH 201 Introduction to Anthropology or
- GEOG 101 Introduction to Geography
- BIOL 103 General Biology I
- PRTM 101 Concepts of Leisure
- PSYCH 201 Introduction to Psychology or
- SOC 201 Introduction to Sociology
- Elective

#### Second Semester
- BIOL 104 General Biology II
- ENGL 103 Accelerated Composition
- PRTM 205 Program and Event Planning
- Math or Natural Science Requirement
- Elective

### Sophomore Year
#### First Semester
- ENGL 214 American Literature
- PRTM 201 Recreation/Leisure Environment
- PRTM 206 Practicum I
- PRTM 270 Intro. to Recreation Resources Mgt.
- PRTM 307 Facility Planning and Operations
- Elective

#### Second Semester
- COMM 150 Intro. to Human Comm. or
- EX ST 301 Introductory Statistics
- PRTM 207 Practicum II
- PRTM 210 Serving Diverse Populations in Parks, Recreation, and Tourism Management
- PRTM 308 Leadership and Group Proc in Rec.
- Arts and Humanities (Non-Lit.) Requirement

### Freshman Year
#### First Semester
- PRTM 321 Recreation Administration
- PRTM 330 Visitor Services and Interpretation
- PRTM 404 Field Training I
- Approved Requirement
- Elective

### PROFESSIONAL GOLF MANAGEMENT CONCENTRATION
The Professional Golf Management (PGM) Concentration provides a unique educational background for students who desire to become PGA professionals. Students obtain specialized knowledge and skills which prepare them to become leaders in the golf industry. The PGM Concentration combines academics, career training, and extensive internship experience to develop well-rounded, service-oriented professionals who can meet and respond to the personal as well as business management requirements of golf programs and facilities.

#### Freshman Year
- BIOI 120 Biological Inquiry Lab. and
- BIOI 121 Keys to Human Identity or
- BIOI 122 Keys to Biodiversity or
- BIOI 123 Keys to Human Biology
- PRTM 101 Concepts of Leisure
- PRTM 281 Introduction to Golf Management
- Arts and Humanities (Non-Lit.) Requirement
- Elective

#### Junior Year
- PRTM 309 Behavioral Concepts in PRTM
- PRTM 343, OR (ENR) 434, or WFB (BIOSC) 313

#### Sophomore Year
- PRTM 309 Behavioral Concepts in PRTM
- PRTM 431 Meth. of Environ. Interpretation
- Approved Requirement
- Planning Requirement
- Elective

#### Second Semester
- ENGL 314 Technical Writing
- PRTM 305 Safety and Risk Mgt. in PRTM
- PRTM 309 Behavioral Concepts in PRTM
- PRTM 320 Recreation Policymaking
- Approved Requirement

#### Summer
- PRTM 405 Field Training II
Summer
0 - CO-OP 101 Cooperative Education
1 - PRTM 206 Practicum I
1

Sophomore Year
First Semester
3 - ACCT 201 Financial Accounting Concepts
3 - ECON 212 Principles of Macroeconomics
3 - MGT 301 Principles of Management
3 - PRTM 201 Recreation/Leisure Environment
3 - Arts and Humanities (Literature) Requirement
15
Second Semester
3 - ACCT 202 Managerial Accounting Concepts
3 - ECON 212 Principles of Macroeconomics
3 - PRTM 210 Serving Diverse Populations in Parks, Recreation, and Tourism Management
3 - PRTM 283 Adv. Methods of Teaching Golf
3 - PRTM 308 Leadership and Group Proc. in Rec.
15

Summer
0 - CO-OP 102 Cooperative Education
1 - PRTM 207 Practicum II
1

Junior Year
First Semester
0 - CO-OP 103 Cooperative Education

Second Semester
3 - ENGL 304 Business Writing
3 - PRTM 321 Recreation Administration
3 - PRTM 344 Tourism Markets and Supply
3 - PRTM 383 Golf Shop Operations
3 - PSYCH 201 Introduction to Psychology
3 - Elective
18

Senior Year
First Semester
3 - HORT 212 Introduction to Turfgrass Culture
1 - HORT 213 Turfgrass Culture Lab.
3 - LAW 322 Legal Environment of Business
3 - PRTM 309 Behavioral Concepts in PRTM
1 - PRTM 395 PGM Seminar II
1 - PRTM 404 Field Training I
3 - PRTM 483 Golf Club Mgt. and Operations
3 - Math or Natural Science Requirement
18
Second Semester
0 - CO-OP 104 Cooperative Education
6 - PRTM 405 Field Training II
6

Summer
0 - CO-OP 105 Cooperative Education

Fifth Year
First Semester
3 - FD SC 307 Restaurant Food Service Mgt.
3 - FIN 306 Corporation Finance
3 - MKT 301 Principles of Marketing
3 - PRTM 409 Methods of Recreation Research I
1 - PRTM 495 PGM Seminar III
3 - Elective
16
122 Total Semester Hours

See General Education Requirements. Six of these credit hours must also satisfy the Cross-Cultural Awareness and Science and Technology in Society Requirements.

SPORT MANAGEMENT CONCENTRATION
The Sport Management (SM) Concentration prepares students for careers focusing on amateur sports. This academic program permits students to gain academic and practical exposure to the managerial and operational aspects of sports programs via required coursework and through three different work experience requirements. Students may work in college athletics, sports information operations, health and fitness management organizations, facility and program management, or event management, to name a few. Students with a concentration in Sport Management typically find career opportunities with various community-based parks and recreation departments.

Freshman Year
First Semester
1 - BIOL 120 Biological Inquiry Lab. and
3 - BIOL 121 Keys to Human Identity or
3 - BIOL 122 Keys to Biodiversity or
3 - BIOL 123 Keys to Human Biology
3 - PRTM 101 Concepts of Leisure
3 - PSYCH 201 Introduction to Psychology or
3 - SOC 201 Introduction to Sociology
3 - Arts and Humanities (Non-Lit.) Requirement
3 - Elective
16

Second Semester
3 - COMM 250 Public Speaking
3 - ENGL 103 Accelerated Composition
3 - PRTM 205 Program and Event Planning
3 - PRTM 254 Intro. to Sport Management
3 - Math or Natural Science Requirement
1 - Elective
16

Sophomore Year
First Semester
3 - ECON 211 Principles of Microeconomics
3 - EX ST 301 Introductory Statistics
3 - PRTM 201 Recreation/Leisure Environment
1 - PRTM 206 Practicum I
3 - Arts and Humanities (Literature) Requirement
13

Second Semester
3 - ACCT 201 Financial Accounting Concepts
3 - ECON 212 Principles of Macroeconomics
1 - PRTM 207 Practicum II
3 - PRTM 210 Serving Diverse Populations in Parks, Recreation, and Tourism Management
3 - PRTM 308 Leadership and Group Proc. in Rec.
3 - Elective
16

Junior Year
First Semester
3 - LAW 322 Legal Environment of Business
3 - MGT 301 Principles of Management
3 - PRTM 309 Behavioral Concepts in PRTM
3 - PRTM 321 Recreation Administration
1 - PRTM 404 Field Training I
3 - Approved Requirement
1 - Elective
16

Second Semester
3 - ENGL 304 Business Writing
3 - FIN 306 Corporation Finance
3 - MKT 301 Principles of Marketing
3 - PRTM 305 Safety and Risk Mgt. in PRTM
3 - Approved Requirement
1 - Elective
16

Summer
6 - PRTM 405 Field Training II

Senior Year
First Semester
3 - PRTM 409 Methods of Recreation Research I
3 - PRTM 453 Sports Information and Event Mgt.
3 - Approved Requirement
3 - Elective
12

Second Semester
3 - PRTM 454 Trends in Sport Management
9 - Approved Requirement
12
123 Total Semester Hours

See General Education Requirements. Six of these credit hours must also satisfy the Cross-Cultural Awareness and Science and Technology in Society Requirements.

THERAPEUTIC RECREATION CONCENTRATION
The Therapeutic Recreation (TR) Concentration prepares students for exciting careers working with people with disabilities in a variety of settings, including community-based recreation agencies, camps, children’s hospitals, psychiatric and physical rehabilitation hospitals, and assisted-living facilities, to name a few. Therapeutic Recreation consists of the delivery of leisure services designed to enhance participants’ leisure experiences, quality of life, and functional capabilities. Students who complete these requirements will be eligible to sit for an examination to become a Certified Therapeutic Recreation Specialist (CTRS).
**Freshman Year**

**First Semester**
- BIOL 103 General Biology I or
- BIOL 110 Principles of Biology I
- PRTM 101 Concepts of Leisure
- PSYCH 201 Introduction to Psychology
- Arts and Humanities (Non-Lit.) Requirement
- Elective

**Second Semester**
- ENGL 103 Accelerated Composition
- PRTM 205 Program and Event Planning
- SOC 201 Introduction to Sociology
- Math or Natural Science Requirement
- Elective

**Sophomore Year**

**First Semester**
- PRTM 201 Recreation/Leisure Environment
- PRTM 206 Practicum I
- PRTM 210 Serving Diverse Populations in Parks, Recreation, and Tourism Management
- Arts and Humanities (Literature) Requirement
- Science Requirement

**Second Semester**
- COMM 150 Intro. to Human Comm. or
- COMM 250 Public Speaking
- EX ST 301 Introductory Statistics
- PRTM 207 Practicum II
- PRTM 308 Leadership and Group Proc. in Rec.
- PRTM 311 Therapeutic Recreation

**Junior Year**

**First Semester**
- PRTM 321 Recreation Administration
- PRTM 404 Field Training I
- PRTM 417 Therapeutic Recreation Processes I
- PSYCH 340 Lifespan Developmental Psych.
- Population Specific Course
- Elective

**Second Semester**
- ENGL 103 Accelerated Composition
- EX ST 301 Introductory Statistics
- PRTM 205 Program and Event Planning
- Elective

**Second Semester**
- PRTM 317 Group Initiatives
- PRTM 418 Therapeutic Recreation Processes II
- Approved Requirement
- Population Specific Course

**Summer**
- PRTM 405 Field Training II

**Senior Year**

**First Semester**
- ACCT 201 Financial Accounting Concepts
- ECON 211 Principles of Microeconomics
- PRTM 201 Recreation/Leisure Environment
- PRTM 206 Practicum I
- PRTM 210 Serving Diverse Populations in Parks, Recreation, and Tourism Management

**Second Semester**
- ECON 212 Principles of Macroeconomics
- MKT 301 Principles of Marketing
- PRTM 207 Practicum II
- PRTM 308 Leadership and Group Proc. in Rec.
- Elective
- Arts and Humanities (Literature) Requirement

**Junior Year**

**First Semester**
- LAW 312 Commercial Law or
- LAW 322 Legal Environment of Business
- PRTM 321 Recreation Administration
- PRTM 342 Introduction to Tourism
- PRTM 404 Field Training I
- Advanced Writing Requirement
- Approved Requirement

**Second Semester**
- PRTM 305 Safety and Risk Mgt. in PRTM
- PRTM 309 Behavioral Concepts in PRTM
- PRTM 344 Tourism Markets and Supply
- PRTM 349 Survey of Tourism Sites
- Elective

**Summer**
- PRTM 405 Field Training II

**Senior Year**

**First Semester**
- PHIL 324 Philosophy of Technology or
- PHIL 325 Science and Values or
- PHIL 345 Environmental Ethics
- PRTM 343 Spatial Aspects of Tourist Behavior
- PRTM 409 Methods of Recreation Research I
- PRTM (GEOG) 430 World Geography of Parks and Equivalent Reserves or
- PRTM 447 Perspectives on Int. Travel
- PRTM 446 Community Tourism Development

**Second Semester**
- AP EC 351 Principles of Advertising
- Approved Requirement
- Elective

**Summer**
- PRTM 405 Field Training II

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1. Approved Requirement
2. See advisor.
3. Approved Requirement
4. See General Education Requirements.
5. See advisor.

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TRAVEL AND TOURISM CONCENTRATION

The Travel and Tourism (T&T) Concentration prepares students for interesting and challenging careers working in one of the world's most diverse and dynamic industries. Students in this concentration are introduced to issues pertaining to the management, planning, and promotion of events and places such as tourist attractions. The program is designed to provide an understanding of the linkages that exist between local communities, their populations, and various public, private, and special interest groups. Students in Travel and Tourism can pursue careers in private sector enterprises, government agencies, convention and visitor bureaus, as well as other tourism-affiliated organizations.
MINORS

Following are minors acceptable for students in the College of Health, Education, and Human Development. Students cannot major and minor in the same field or acquire a minor that is not allowed by the degree program.

Accounting
Adult/Extension Education
Aerospace Studies
African American Studies
Agricultural Business Management
Agricultural Mechanization and Business
American Sign Language Studies
Animal and Veterinary Sciences
Anthropology
Athletic Leadership
Biochemistry
Bioengineering
Biological Sciences—not open to Science Teaching—Biological Sciences majors
Business Administration
Chemistry
Cluster
Communication Studies
Communications
Community Recreation Management
Computer Science
Crop and Soil Environmental Science
East Asian Studies
Economics—not open to Secondary Education—Economics majors
Education
English
Entomology
Entrepreneurship
Environmental Engineering
Environmental Science and Policy
Equine Business
Film Studies
Financial Management
Fine Arts
Food Science
Forest Products
Forest Resource Management
Geography
Geology
Global Politics
Great Works
Health Science
History—not open to Secondary Education—History majors
Horticulture
Human Resource Management
Legal Studies
Management
Mathematical Sciences—not open to Mathematics Teaching or Secondary Education—Mathematics majors
Microbiology
Military Leadership
Modern Languages—not open to Secondary Education—Modern Languages majors
Music
Natural Resource Economics
Non-Profit Leadership
Operations Management
Packaging Science
Park and Protected Area Management
Philosophy
Physics—not open to Science Teaching—Physical Sciences majors
Plant Pathology
Political Science—not open to Secondary Education—Political Science majors
Poultry Science
Psychology—not open to Secondary Education—Psychology majors
Public Policy
Religion
Russian Area Studies
Science and Technology in Society
Screenwriting
Sociology—not open to Secondary Education—Sociology majors
Spanish-American Area Studies
Sport Management
Textiles
Theatre
Therapeutic Recreation
Travel and Tourism
Turfgrass
Urban Forestry
Wildlife and Fisheries Biology
Women's Studies
Writing

See pages 36-39 for details.
## COURSES OF INSTRUCTION

This list includes for each course the catalog number, title, credit hours, class and laboratory hours per week, description, and prerequisites. Courses numbered 600 and above are graduate courses.

### Cross-Listed Courses

A cross-listed course is one that can be taken for credit under different departmental titles. For example, students can take Demography as either R S 471 or SOC 471. The student should select the desired departmental title in conference with an advisor. The departmental title may be changed only during the period allowed by the University calendar for adding a course.

### COURSE ABBREVIATIONS

| Accounting                                      | ACCT |
| Aerospace Studies                                | AS   |
| African American Studies                         | AAS  |
| Agricultural and Applied Economics               | AP EC|
| Agricultural Education                           | AG ED|
| Agricultural Mechanization                       | AG M |
| Agriculture, Forestry, and Life Sciences         | AFLS |
| American Sign Language                           | ASL  |
| Animal and Veterinary Sciences                   | AVS  |
| Animal Physiology                                | AN PH|
| Anthropology                                     | ANTH |
| Architecture                                     | ARCH |
| Art                                              | ART  |
| Art and Architectural History                    | AAR  |
| Astronomy                                        | ASTR |
| Athletic Leadership                              | AL   |
| Biochemistry                                     | BIOCH|
| Bioengineering                                   | BIOE |
| Biological Sciences                              | BIOSC|
| Biology                                          | BIOL |
| Biosystems Engineering                           | BES  |
| Botany                                           | BOT  |
| Business                                         | BUS  |
| Business Administration                          | MBA  |
| Calhoun Honors Seminar                           | CHS  |
| Career and Technology Education                  | CTED |
| Ceramic and Materials Engineering                | CME  |
| Chemical Engineering                             | CHE  |
| Chemistry                                        | CHM  |
| Chinese                                          | CHIN |
| City and Regional Planning                       | CRP  |
| Civil Engineering                                | CEE  |
| Clemson University                               | CU   |
| College of Engineering and Science               | CES  |
| Communication Studies                            | COMM |
| Community and Rural Development                  | CRD  |
| Computer Science                                 | CP SC|
| Construction Science and Management              | CSM  |
| Crop and Soil Environmental Science               | CSENV|
| Dance                                            | DANCE|
| Design Studies                                   | DSGN |
| Early Childhood Education                        | ED EC|
| East Asian Studies                               | EAS  |
| Economics                                        | ECON |
| Education                                        | ED   |
| Educational Counseling                           | EDC  |
| Educational Foundations                          | EDF  |
| Educational Leadership                           | EdL  |
| Electrical and Computer Engineering              | ECE  |
| Elementary Education                             | ED EL|
| Engineering                                      | ENGR |
| Engineering Graphics                             | EGR  |
| Engineering Mechanics                            | EM   |
| English                                          | ENGL |
| Entomology                                       | ENT  |
| Environmental and Natural Resources              | ENR  |
| Environmental Design and Planning                 | EPDP |
| Environmental Engineering and Science            | EESS |
| Environmental Science and Policy                  | ENSP |
| Environmental Toxicology                         | ENTOX|
| Executive Leadership and Entrepreneurship        | ELE  |
| Experimental Statistics                          | EX ST|
| Finance                                          | FIN  |
| Food Science                                     | FSC  |
| Food Technology                                  | FTD  |
| Forest and Recreation Resources                   | FRR  |
| Forestry                                         | FOR  |
| Forestry and Natural Resources                   | FNR  |
| French                                           | FR   |
| Geosciences                                      | GEN  |
| Geography                                        | GEOG |
| Geology                                          | GEOL |
| German                                           | GER  |
| Government and International Trade                | GIINT|
| Graduate Studies                                 | GS   |
| Graphic Communications                           | GRC  |
| Great Works                                      | GWR  |
| Health                                           | HLTH |
| Health Administration                            | MHA  |
| Health, Education, and Human Development         | HEHD |
| Historic Preservation                            | HPP  |
| History                                          | HIST |
| Horticulture                                     | HORT |
| Human Resource Development                       | HRD  |
| Humanities                                       | HUM  |
| Industrial Engineering                           | IPE  |
| Integrated Pest Management                       | IPM  |
| Italian                                          | ITAL |
| Japanese                                         | JPN  |
| Landscape Architecture                           | LARCH|
| Language                                         | LANG |
| Language and International Trade                 | LIT  |
| Latin                                            | LATIN|
| Law                                              | LAW  |
| Leisure Skills                                   | LSK  |
| Management                                       | MGT  |
| Marketing                                        | MKT  |
| Materials Science and Engineering                 | MSSE |
| Mathematical Sciences                            | MTHS |
| Mechanical Engineering                           | MME  |
| Microbiology                                     | MICRO|
| Military Leadership                              | MLL  |
| Music                                            | MUSIC|
| Nonprofit Leadership                             | NPL  |
| Nursing                                          | NUR  |
| Nutrition                                       | NUTR |
| Packaging Science                                | PKGS |
| Parks, Recreation, and Tourism Management        | PRTM |
| Performing Arts                                  | PRA  |
| Philosophy                                       | PHIL |
| Physical Science                                 | PHSC |
| Physics                                          | PHYS |
| Plant and Environmental Sciences                  | PES  |
| Plant Pathology                                  | PPLA |
| Plant Physiology                                 | PPPL |
| Policy Studies                                   | PSST |
| Political Science                                | PSCP |
| Polymer and Textile Chemistry                    | PTC  |
| Portuguese                                       | PORT |
| Psychology                                       | PSYCH|
| Reading                                          | READ |
| Real Estate Development                          | RED  |
| Religion                                         | REL  |
| Rural Sociology                                  | RUS  |
| Russian                                          | RUS  |
| Secondary Education                              | ESDEC|
| Sociology                                       | SOC  |
| Spanish                                          | SPAN |
| Special Education                                | ED SP|
| Technology and Human Resource Development        | THRD |
| Textiles                                         | TEXT |
| Theatre                                          | THEA |
| Transition to Teaching                           | TTT  |
| Vocational-Technical Education                   | VTED |
| Wildlife and Fisheries Biology                   | WFB  |
| Women's Studies                                  | WSS  |
| Zoology                                          | ZOOL |

### ACCOUNTING


**ACCT 201, H201 Financial Accounting Concepts (3,0)** Introduction to accounting principles with emphasis on the use of financial data and analysis of financial statements.

**ACCT 202, H202 Managerial Accounting Concepts (3,0)** Introduction to managerial accounting with emphasis on using accounting information to make decisions.

**ACCT 204 Accounting Procedures (1,2)** Lectures, demonstrations, and hands-on experience with accounting systems and analysis required to complete the accounting cycle and prepare financial statements. Intended for students who plan to enroll in ACCT 303 or 311.

**ACCT 303, H303 Cost Accounting (3,0)** Application of cost analysis to manufacturing and distributing problems; analysis of behavior characteristics of business costs and a study of principles involved in standard cost systems; lectures and problems. **Pr: ACCT 201 and 204 with a C or better.**

**ACCT 307, H307 Managerial Accounting (3,0)** Emphasizes internal use of accounting data by the manager in establishing plans and objectives, controlling operations, and making decisions involved with management of an enterprise. May not be taken for credit by Accounting majors. **Pr: ACCT 202.**

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ACCT 311, H311 Intermediate Financial Accounting I 3(3,0) In-depth treatment of traditional financial accounting topics of standards setting, financial statement form and content, and accounting and reporting of current assets. Emphasis is on basic theory, valuation, and measurement, as well as presentation and analysis of accounting information. Prac: ACCT 201 and 204 with a C or better.

ACCT 312, H312 Intermediate Financial Accounting II 3(3,0) Continuation of ACCT 311. In-depth treatment of accounting and reporting for noncurrent assets, current and noncurrent liabilities, and equity. Emphasis is placed on basic theory, valuation, and measurement issues, as well as measurement in analysis of accounting information. Prac: ACCT 311 with a C or better.

ACCT 313, H313 Intermediate Financial Accounting III 3(3,0) Continuation of ACCT 312. In-depth treatment of selected accounting topics, such as investments, cash flows, tax allocation, post-retirement benefits, leases, and error corrections. Emphasis is placed on basic theory, valuation, and measurement, as well as analysis and presentation of accounting information. Prac: ACCT 312 with a C or better.

ACCT 322 Accounting Information Systems 3(3,0) Study of computer-based accounting systems with attention to systems design, application, internal control, auditing the system, and system security. Prac: CP SC 220.

ACCT 340 Internal Auditing Theory 3(3,0) Introduces students to internal auditing and covers internal auditing standards, ethics, concepts, audit techniques, and reporting practices. Enrollment priority will be given to students who have completed 60, but not more than 100, credits. Prac: ACCT 311 with a C or better.

ACCT 399 Internship in Accounting I 3(1-3,0) Faculty-supervised accounting internship designed to give students learning opportunities that support their classroom experiences. Requires a minimum of six full-time weeks. Course enrollment and internship must occur in the same semester. Simultaneous credit cannot be received for another internship offering. May be repeated for a maximum of three credits. To be taken Pass/Fail only. Prac: Junior standing and consent of instructor.

ACCT 404, H404, 604 Individual Taxation 3(3,0) Interpretation of Federal income tax laws, regulations, and court decisions with practice in application of these laws to the returns of individuals, partnerships, and corporations. Prac: ACCT 311 with a C or better.

ACCT 406 Business Taxation 3(3,0) Provides an introduction to the importance of taxation in business decision making; emphasizes the interrelationship of taxes, the choice of business form, and various business transactions; exposes students to the breadth of business decisions which are affected by the Federal Income Tax. Prac: ACCT 311 with a C or better.

ACCT 408 Retirement and Estate Planning 3(3,0) Provides students with an understanding of the tax consequences of personal financial, retirement, and estate planning. Subjects covered include the basic concepts of retirement, gift, income shifting, and estate planning. Prac: ACCT 404 with a C or better.

ACCT 410 Budgeting and Executive Control 3(3,0) Study and application of selected techniques used in the planning and control functions of business organizations. Prac: ACCT 303 with a C or better.

ACCT 415 Auditing 3(3,0) Professional and practical auditing theory. Review of internal controls, audit procedures, and development of audit programs for various types of businesses; consideration of auditors' professional and ethical standards. Prac: ACCT 311 and 322 with a C or better.

ACCT 445 Internal Auditing Practice 3(3,0) Expands students' knowledge of internal auditing practice, including operation audits, organization audits, quality-control audits, and organization theory. Prac: ACCT 340 with a C or better.

AEROSPACE STUDIES
Professor: L. S. Young, Chair; Assistant Professors: R. T. Childress, T. L. Dutcher, M. S. Fisher.

A 109 Air Force Today I 2(1,2) Deals with Air Force in the contemporary world through a study of the total force structure: strategic offensive and defensive, general purpose, and aerospace support. Leadership laboratory activities include drill fundamentals, customs, and courtesies of the service. Prac: ACCT 312 with a C or better.

A 110 Air Force Today II 2(1,2) Continuation of A 109. Leadership laboratory includes drill, ceremonies, and an introduction to Air Force career opportunities.

A 209 Development of Air Power I 2(1,2) Study of the development of air power from balloons and dirigibles through the peaceful employment of U.S. air power in relief missions and civic action programs in the late 1960s and also the air war in Southeast Asia. Leadership laboratory provides experience in guiding, directing, and controlling an Air Force unit.

A 210 Development of Air Power II 2(1,2) Continuation of A 209.

A 308 Air Force Leadership and Management 3(3,0) Motivational and behavioral processes, leadership, communication, and group dynamics are covered to provide a foundation for development of the leader's professional skills using Air Force examples and methods.

A 399 Air Force Leadership and Management I 4(3,2) Emphasizes the individual as a manager. Individual motivational and behavioral processes, leadership, communication, and group dynamics are covered to provide a foundation for the development of the Air Force officer's professional skills. Students prepare in individual and group presentations, write reports, participate in group discussions, seminars, and conferences.

A 310 Air Force Leadership and Management II 4(3,2) Continuation of A 309. Uses the basic managerial processes involving decision making, utilization of analytical aids in planning, organizing, and controlling environment. Actual case studies are used to enhance learning and communication processes.

A S 409 National Security Policy I 4(3,2) Analysis of the role and function of the military officer in a democratic society and the relationships involved in civil-military interactions. Students prepare individual and group presentations, write reports, and participate in group discussions.

A S 410 National Security Policy II 4(3,2) Continuation of A S 409. Examines the environmental context in which U.S. defense policy is formulated and implemented. Emphasis is placed on initial commissioned service and military justice. Students prepare individual and group presentations for the class, write reports, and participate in group discussions, seminars, and conferences.

AFRICAN AMERICAN STUDIES
Associate Professor: A. A. Bartley

A A S 301 Introduction to African American Studies 3(3,0) Study of African American experience from an Afrocentric perspective from colonial America to the present.

A A S 498, 698 Seminar on African American Studies 3(3,0) Research/writing seminar on the African American experience. Selected topics and themes from 1900 to present. Prac: A A S 301, HIST 311, 312, or 339.

AGRICULTURAL AND APPLIED ECONOMICS

AP EC 202 Agricultural Economics 3(3,0) Analysis of the various subdivisions of agricultural economics, including farm organization, enterprise, land economics, marketing, farm prices, governmental farm policies, and the relation of agriculture to the national and international economy.

AP EC 205 Agriculture and Society 3(3,0) Introduction to the development of world society focusing on food production, from early hunting and gathering to modern biotechnology. Covers factors driving societal growth with a global perspective. Systematic impacts of growth in technical capacity to produce agricultural products on farm and community organization, industrialization, and the global economy.

AP EC 257 Natural Resources, Environment, and Economics 3(3,0) Economic principles applied to resource allocation problems related to environmental and natural resource issues.

AP EC 302 Economics of Farm Management 3(3,0) Economic principles underlying the organization and operation of agricultural firms and related business enterprises. Particular emphasis is directed to management aspects of the farm as a production unit. Prac: AP EC 202 or ECON 211.

AP EC 308 Quantitative Applied Economics 3(3,0) Basic quantitative relationships in applied economics are examined and interpreted. Emphasis is placed on the mathematical aspects of applied economics. Microcomputer software is utilized for problem solving.
AP EC 309, H309 Economics of Agricultural Marketing 3(3,0) General course in marketing agricultural commodities with particular emphasis upon food products. Efficiency criteria, consumer behavior, market organizations and institutions, and marketing functions are analyzed. Preq: AP EC 202.

AP EC 313 Principles of Real Estate Appraisal 3(3,0) Introduction to basic principles and procedures of real estate appraisal. Topics include the real estate market, principles of valuation, legal concepts, and the application of the comparable sales approach to real estate valuation. Eminent domain, the appraisal of property in transition, and specialized property are covered. Preq: AP EC 313, FIN 307, or consent of instructor.

AP EC 319 Agribusiness Management 3(3,0) Study of the principles used in making management decisions and the application of these principles in agribusiness. Emphasis is given to the application of economics to the solution of problems facing managers of agricultural supply and marketing firms. Preq: AP EC 302 or 309.

AP EC 351 Principles of Advertising 3(3,0) Introduction to the various functions of advertising: research and audience analysis; various media formats; planning, research, and production necessary to create an advertising campaign; social effects, economic effects, and ethical considerations of advertising.

AP EC 352 Public Finance 3(3,0) Principles of financing government, sources of public revenue, objects of public expenditures, problems of fiscal administration, and the application of fiscal policies in stabilizing the national economy. Preq: Junior standing.

AP EC (C R D) 361 Introduction to Health-Care Economics 3(3,0) See C R D 361.

AP EC 402, 602 Production Economics 3(3,0) Economic analysis of agricultural production involving the concept of the farm as a firm; principles for decision making; the quantitative nature and use of production and cost functions and the interrelations and applications of these principles to resource allocation in farms and among areas. Preq: AP EC 308, ECON 314.

AP EC 403, 603 Land Economics 3(3,0) Study of the characteristics of land and of the physical, legal, social, and economic principles and problems relating to the control and use of land resources. Preq: AP EC 202 or ECON 200.

AP EC 409, 609 Commodity Futures Markets 3(3,0) Introduction to the economic theory, organization, and operating principles of agricultural commodity futures markets in the United States. Emphasis is placed on speculation, hedging, and investing in agricultural commodity futures contracts from the standpoint of the agribusiness entrepreneur. Preq: AP EC 202 or ECON 211.

AP EC (C R D) 411, 611 Regional Impact Analysis 3(3,0) See C R D 411.

AP EC (C R D) 412, 612 Regional Economic Development Theory and Policy 3(3,0) See C R D 412.

AP EC 413, 613 Advanced Real Estate Appraisal 3(3,0) Topics include highest and best use analysis, data collection, and analyses. Advanced appraisal procedures for income, cost, and comparable sales approaches to real estate valuation are stressed. Preq: AP EC 313, FIN 307, or consent of instructor.

AP EC 420, 620 World Agricultural Trade 3(3,0) Study of the principles and technique of financing in the agricultural sector. Topics include the capital situation in agriculture, concepts of farm financial management, use of credit, capital markets, lending agencies, and estate planning. Preq: ACCT 201, AP EC 202.

AP EC 475, 675 Economics of Wildlife Management and Policy 3(3,0) Integrated approach to the study of the economics of wildlife. Topics include determination of market and nonmarket value, single and multiple species management, enterprise cost and returns, marketing wildlife, leasing methods, complementarity and competitiveness with agricultural and forestry enterprises, and timber and crop damage cost estimates and control. Preq: AP EC 202, ECON 200, FOR 304, W FB 306, or consent of instructor.

AP EC 490 Selected Topics 1-15(0,2-30) Study of topics in applied economics. Topics may include classroom observation and/or field experience not normally covered in other. May be repeated for credit, but only if different topics are covered. Preq: Junior standing or consent of instructor.

AP EC (C R D) 491 Internship, Agribusiness, and Community and Rural Development 1-6(0,2-12) See C R D 491.

AGRICULTURAL EDUCATION

Associate Professors: R. T. Dobkins, P. M. Fravel, D. R. King, C. D. White, Sr.

AG ED 100 Orientation and Field Experience 1(0,2) Supervised observations and explanations of vocational agriculture teaching while serving as teacher aides. Onew week of field experience in representative high schools is required.

AG ED 102 Agricultural Education Freshman Seminar 1(2,0) Introduces students to the South Carolina agriculture education structure and provides opportunities to prepare oral presentations on selected agriculture education organizations. Assists students in understanding the value of professional organizations to agriculture education in the state and nation. Preq: Agricultural Education major.

AG ED 103 Multiculturalism in Agricultural Education 3(3,0) Studies the influence of various groups and their contributions to agriculture. Includes the roles of women, African-, Hispanic-, Asian-, Native-, and European-Americans.

AG ED 200 Agricultural Applications of Educational Technology 3(2,2) Overview of microcomputer hardware and software encompassing word processing, spreadsheet, utility, Web development, and graphic communications in an agricultural context.
AG ED 201 Introduction to Agricultural Education 3(2,3) Principles of education, development of educational agriculture, and an introduction to the formulation of instructional programs for the teaching of agricultural courses.

AG ED 202 Agricultural Education Sophomore Seminar 1(2,0) Instruction on how to establish a comprehensive student record-keeping system. Integration of that data into the FFA Awards program is included. Allows students hands-on experience with the total FFA Awards program on the state and national level. Prereq: AG ED 102.

AG ED 203 Teaching Agriscience 3(2,3) Integrates biological and technological concepts appropriate for teaching introductory middle or secondary school level courses in agricultural science. Topics emphasize disciplines, theories, and applications in modern agricultural production. Experiences include teaching techniques, materials, resources, and the design and implementation of new activities to facilitate teaching agriscience. Prereq: BIOL 104.

AG ED 204 Applied Agriculture Calculations 3(3,0) Demonstrates basic mathematical applications in crop and livestock production and agricultural financial management. These applications aid students in understanding the mathematical applications needed in the agriculture field.

AG ED 302 Agricultural Education Junior Seminar 1(2,0) Allows students the opportunity to prepare and deliver information on Career Development Events (CDE) and to understand fully the CDE concepts. Students receive much needed hands-on experience at the state and national levels. Prereq: AG ED 202.

AG ED 303 Mechanical Technology for Agriculture Education 3(2,3) Study of technical content and new technology utilized in agriculture mechanics. Integrates agriculture mechanics topics such as electrical wiring and controls, green industry maintenance, irrigation systems, and agriculture construction. Offers a delivery of mechanical instruction in the classroom and laboratory setting.

AG ED 355 Team and Organizational Leadership in the Food and Fiber System 3(3,0) Principles and practices in planning, developing, conducting, and evaluating leadership programs for agricultural groups. Focuses on helping students better understand themselves and others; improving group communications; becoming effective leaders and members of groups; improving leadership and personal development skills; assessing leadership situations, determining and administering appropriate leadership strategies.

AG ED 400 Supervised Field Experience II 1(0,3) Special emphasis is placed on enhancing existing knowledge and experiences of the students. Primary focus is on becoming acquainted with the student teaching center well in advance of the customary twelve-week directed teaching experience.

AG ED 401, 601 Instructional Methods in Agricultural Education 3(2,3) Appropriate methods of teaching vocational agriculture in high schools. Includes procedures for organizing teaching programs, teaching high school students, and directing FFA activities.

AG ED 402 Agricultural Education Senior Seminar 1(2,0) Provides an opportunity to prepare and deliver information on continuing adult education. Assists students in fully understanding the adult education component of the total Secondary Agriculture Education Program. Prereq: AG ED 302.

AG ED 403, 603 Principles of Adult/Extension Education 3(3,0) Overview of adult/extension education and adult learning. Selection of adult education programs is reviewed with emphasis on extension. Prereq: Junior standing or consent of instructor.

AG ED 404 Biotechnology in Agricultural Education 3(2,3) Multidisciplinary introduction to theories and applications of biotechnology in agriculture and high school agricultural education. Topics include common techniques used in modern biotechnology, examples of their applications, and social considerations that impact the use of biotechnology in agricultural research and development. Laboratories illustrate principles covered in lecture. Prereq: BIOL 104.

AG ED 406 Directed Teaching 12(0,36) Guided participation in the professional responsibilities of a teacher of vocational agriculture including intensive study of the problems encountered and the competencies developed. Twelve weeks of directed teaching in selected schools are required. Prereq: AG ED 400, 401.

AG ED 407 Internship in Extension and Leadership Education 6-12(0,18-36) Internship placements may include county extension offices and other appropriate extension units. Six weeks of supervised experience must be completed for six hours of credit. Twelve weeks of supervised experience must be completed for 12 hours of credit. May be repeated for a maximum of 12 credits. Prereq: AG ED 400, 401, Senior standing, and consent of instructor.

AG ED 409, 609 Agriscience Institute: Applications of Agriscience to the Secondary Curriculum 3(2,2) Designed for pre-service and in-service agricultural educators or secondary-level counselors. Surveys current developments in agriscience with an emphasis on modern practices, current job opportunities, and meeting state and national science and math education standards through agricultural instruction. Students construct lesson plans and career planning modules for high school. Prereq: AG ED 102.

AG ED 412 Senior Agriculture Leadership Seminar 1(1,0) Emphasizes leadership techniques and policies that affect agriculture. Students conduct research and make presentations on issues which influence agriculture policy. Prereq: AP EC 202, 302.

AG ED 415, 515 Leadership of Volunteers 3(3,0) Provides an overview of volunteer management. The knowledge, skills, and abilities required of professional managers to involve volunteers effectively in the work of organizations are examined.

AG ED 416, 616 Ethics and Issues in Agriculture and the Food and Fiber System 3(3,0) Explores ethical theories, concepts of critical thinking, and major ethical issues in American agriculture. The major social, political, economic, and ethical issues that arise in connection to the "food and fiber system" are examined and potential solutions considered.

AG ED 423, 623 Curriculum 2(2,0) Curriculum goals and related planning for career and continuing education programs.

AG ED 425, 625 Teaching Agricultural Mechanics 2(1,3) Organizing course content, conducting and managing an agricultural mechanics laboratory, shop safety, microteaching demonstrations of psychomotor skills, and methods of teaching manipulative abilities.

AG ED 428, 628 Special Studies in Agricultural Education 3-1(3-1,0) Students study, individually or collectively, selected topics and/or problems in agricultural education to meet the particular needs of the clientele enrolled. May be repeated for a maximum of six credits.

AG ED 431, 631 Methods in Environmental Education 3(3,0) Study of various techniques appropriate for teaching environmental education. Instruction is applicable to elementary, high school, and adult-level teachers. Offered summer session only.

AG ED 440, 640 Program Development in Adult/Extension Education 3(3,0) Principles, theory, and practice in planning and conducting educational programs in adult/extension settings. Prereq: Junior standing or consent of instructor.

AG ED 450 Modern Topics and Issues 3(3,0) Major area of concern to teachers of agriculture and county agents is selected for intensive study at least one semester prior to offering the course. Team teaching with faculty from other departments in the College of Agriculture, Forestry, and Life Sciences is utilized when feasible. Prereq: Senior standing or relevant experience.

AG ED (ED F, THRD) 480, 680 Educational Applications of Microcomputers 3(2,2) See ED F 480.

AG ED (ED F, THRD) 482, 682 Advanced Educational Applications of Microcomputers 3(2,2) See ED F 482.

AGRICULTURAL MECHANIZATION

Professors: W. H. Allen, Chair; D. E. Brune, J. A. Collier, B. B. Dodd, Y. J. Han; Assistant Professor: T. O. Owino.

AG M 101 Introduction to Agricultural Mechanization and Business 1(0,3) Introduction to the Agricultural Mechanization and Business program. An overview of the curriculum is given and the opportunities for extracurricular activities explained. Long-term interaction between the department and alumni is covered.

AG M 205 Principles of Fabrication 3(2,3) Principles, techniques, and methods in the selection, proper use, and maintenance of hand and power tools. Principal topics include welding, tool fitting, metalworking, woodworking, finishing, and heat treatment.

AG M 206 Machinery Management 3(2,3) Agriculture students are taught to apply physical principles and sound reasoning to the mechanization of modern agricultural production and processing enterprises. Planning efficient operational systems and wise selection of equipment, based on function and economic suitability are stressed. Prereq: MTHSC 105, PHYS 207 or consent of instructor.
AG M 221 Surveying: Earthwork and Area Measurements 2(1,3) Fundamentals of surveying related to earthwork and land area measurements including linear measurements, leveling, angular measurements, and computations. Levels and total stations are used with an introduction to GPS. Prereq: MTHSC 102 or consent of instructor.

AG M 301 Soil and Water Conservation 2(2,0) Water management in agriculture is studied by applying principles of mathematics, fluid flow, hydrology, and soils as related to soil-water-vegetation complexes in erosion control, water conservation, drainage, and irrigation.

AG M 303 Calculations for Mechanized Agriculture 3(2,3) Enhances students' ability to analyze and solve a wide range of problems requiring engineering technology. Laboratory periods introduce students to microcomputer hardware. Basic programming and typical applications to agricultural mechanization problems are included. Prereq: PHYS 200, 207, or consent of instructor.

AG M 371 Agricultural Mechanization Practicum 1-3 Preplanned internship with an approved employer involved in agricultural technical or business endeavors. A minimum 130 hours of supervised responsibility are required per credit hour. A work journal, written/verbal reports, company consent and evaluation must be on file. May be repeated for a maximum of six credits. To be taken Pass/Fail only. Prereq: Sophomore standing and consent of department.

AG M 402, 602 Drainage, Irrigation, and Waste Management 3(2,3) Basic soil-water-plant relationships are used to determine the need for and methods of irrigation, drainage, and waste management. Topics include irrigation methods, drainage needs, drainage methods, and wastewater treatment methods.

AG M 405, 605 Agricultural Structures and Environmental Control 3(2,3) Technical considerations of buildings used for agriculture with emphasis on structural materials, structural adequacy, environmental control, and indoor air quality. Prereq: AG M 221, 303, PHYS 200.

AG M 406, 606 Mechanical and Hydraulic Systems 3(2,3) Study of power transmission systems for agricultural production with emphasis on mobile equipment. Characteristics, requirements, and design of both V-belt drive and roller-chain drives are presented. Emphasizes hydraulic power transmission systems, including pumps, actuators, control devices, and hydraulic circuits. Prereq: AG M 206, PHYS 200 or 207, or consent of instructor.

AG M 408 Equipment Sales and Service 3(3,0) Agricultural equipment sales and service techniques, inventory, and accounting procedures followed by the farm machinery industry.

AG M 410, 610 Precision Agriculture Technology 3(2,3) Principles and hands-on application of technologies supporting precision agriculture are included. Topics include global positioning system (GPS), geographic information system software, variable rate technologies, collection of spatial data, automated guidance of equipment, spatial data mapping and analysis, remote sensing, and economic considerations. Prereq: Junior standing.

AG M 452, 652 Mobile Power 3(2,3) Study of tractors with emphasis on internal combustion engines and support systems necessary for their proper functioning. Application of power, maintenance, adjustment, and general repair are also considered. Prereq: PHYS 200, 207, or consent of instructor.

AG M 460, 660 Electrical Systems 3(2,3) Students in agriculture and related curricula study electric and other utilities on the farm and in the home. Selection, installation, and maintenance of wiring systems, lighting systems, motors, controls, water systems, and waste disposal systems are emphasized. Prereq: Junior standing.

AG M 472 Capstone 2(2,3) Covers professional conduct, ethics, oral and written communication, and financial matters. Each student completes a comprehensive project on a subject technical. The results are given in a written report and oral presentation. Digital portfolio technology is used by the student to assess his/her education.

AG M 473 Special Topics in Agricultural Mechanization 1-3(1-3,0) Comprehensive study and application of new technologies and methods not covered in existing courses. Emphasis is placed on independent study using innovative approaches to problem solving. May be repeated for a maximum of six credits. Prereq: Consent of instructor.

AGRIC 104, H104 Introduction to Plant Sciences 3(3,0) Fundamental course in plant sciences, including agronomic and horticultural crops of the major agricultural areas of the world and emphasizing the crops of South Carolina.

AGRIC (EN SP) 315, H315 Environment and Agriculture 3(3,0) Survey of the interrelationships of the environment and current agriculture and agricultural practices to include both the environmental impacts of agriculture and the role of agriculture in conservation and improving the environment. Prereq: Sophomore standing and two semesters of biology or chemistry.

AGRIC 355 Team and Organizational Leadership in Food and Fiber System 3(3,0) Principles and practices in planning, developing, conducting, and evaluating leadership programs for agricultural groups. Focuses on helping students better understand themselves and others, improving group communications, becoming effective leaders and members of groups; improving leadership and personal development skills, assessing leadership situations, determining and administering appropriate leadership strategies.

AGRIC 412 Senior Agriculture Leadership Seminar I 1(1,0) Emphasizes leadership techniques and policies that affect agriculture. Students conduct research and make presentations on issues which influence agricultural policy. Prereq: AP EC 202, 302.

AGRIC 416 Ethics and Issues in Agriculture and the Food and Fiber System 3(3,0) Explores ethical theories, concepts of critical thinking, and major ethical issues in American agriculture. The major social, political, economic, and ethical issues that arise in connection to the "food and fiber system" are examined and potential solutions considered.

AGRIC 440, 640 Microclimatology 3(3,0) Study of energy balance in earth's atmosphere and soil: solar and thermal radiation, air and soil temperature, humidity, evaporation and the hydrologic cycle, wind fields. Weather variables to describe microclimates and the energy balance of plants, animals, and insects. Modification of microclimates. Rural and urban climates. Prereq: PHYS 240 or equivalent or consent of instructor; second semester Junior standing.

AGRIC H491 Senior Honors Research 3(1,6) Senior division honors research in an agricultural sciences curriculum. In consultation with and under the direction of a professor, students select a research topic, conduct experiments, record data, and make oral presentations of results to the College Honors Program Committee. Open to approved Honors Program students only.

AGRIC H492 Senior Honors Research 3(1,6) Continuation of AGRIC H491. Senior division honors research in an agricultural sciences curriculum. Upon termination of the research project, students submit formal written reports and make final oral presentations of results to the College Honors Program Committee. Professor-student discussions of additional topics are arranged.

AGRICULTURE

Professors: L. L. Bauer, D. E. Linvill, V. L. Quisenberry, P. A. Skewes; Associate Professor: W. C. Stringer

AGRIC 104, H104 Introduction to Plant Sciences 3(3,0) Fundamental course in plant sciences, including agronomic and horticultural crops of the major agricultural areas of the world and emphasizing the crops of South Carolina.

AGRIC (EN SP) 315, H315 Environment and Agriculture 3(3,0) Survey of the interrelationships of the environment and current agriculture and agricultural practices to include both the environmental impacts of agriculture and the role of agriculture in conservation and improving the environment. Prereq: Sophomore standing and two semesters of biology or chemistry.

AGRIC 355 Team and Organizational Leadership in Food and Fiber System 3(3,0) Principles and practices in planning, developing, conducting, and evaluating leadership programs for agricultural groups. Focuses on helping students better understand themselves and others, improving group communications, becoming effective leaders and members of groups; improving leadership and personal development skills, assessing leadership situations, determining and administering appropriate leadership strategies.

AGRIC 412 Senior Agriculture Leadership Seminar I 1(1,0) Emphasizes leadership techniques and policies that affect agriculture. Students conduct research and make presentations on issues which influence agricultural policy. Prereq: AP EC 202, 302.

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AGRIC H491 Senior Honors Research 3(1,6) Senior division honors research in an agricultural sciences curriculum. In consultation with and under the direction of a professor, students select a research topic, conduct experiments, record data, and make oral presentations of results to the College Honors Program Committee. Open to approved Honors Program students only.

AGRIC H492 Senior Honors Research 3(1,6) Continuation of AGRIC H491. Senior division honors research in an agricultural sciences curriculum. Upon termination of the research project, students submit formal written reports and make final oral presentations of results to the College Honors Program Committee. Professor-student discussions of additional topics are arranged.

AGRICULTURE, FORESTY, AND LIFE SCIENCES

AFLS 191 Directed Research 1-3(3-3,0) Research projects, supervised by faculty in the College of Agriculture, Forestry, and Life Sciences introducing research methods. Restricted to outstanding high school students, selected using Governor's School for Science and Mathematics ranking criteria. May be repeated for a maximum of six credits. Prereq: Entering high school junior or senior status and consent of faculty research supervisor and department in which research is conducted.

AMERICAN SIGN LANGUAGE

Associate Professor: W. A. Brant; Lecturer: B. Jordan

A S L 101 American Sign Language I 4(3,1) Introduction to the basics of American Sign Language, its history, and culture. Visual-gestural communication techniques are used.

A S L 102 American Sign Language II 4(3,1) Continuation of A S L 101 and culture to develop further communicative competencies. Proficiency oriented with the use of visual-gestural communication skills. Prereq: A S L 101 or consent of instructor.

A S L 201 American Sign Language II 3(3,0) Continuation of A S L 102. Covers additional vocabulary, sentences, and grammar structures. Main focus is on conversational and receptive skills as well as a better understanding of Deaf culture. Prereq: A S L 102 or consent of instructor.
A S L 202 American Sign Language II 3(3,0)
Continuation of A S L 201, concentrating on
intermediate and conversational discourse
skills using American Sign Language, more
complex American Sign Language grammar, reading
comprehension, and composition of short stories,
narratives, and dialogues with an emphasis on
topics related to the Deaf community. Class is conducted
totally in American Sign Language using visual-
gestural communicative techniques. Preq: A S L 201 or
consent of instructor.

A S L 301 Advanced American Sign Language I
3(3,0) Focuses on American Sign Language fluency,
vocabulary development, grammatical struc-
tures of American Sign Language, use of classifiers,
conversational skills, translating written texts
into American Sign Language, and vice versa.
Emphasis is on making formal presentations in
American Sign Language. Preq: A S L 202 or
consent of instructor.

A S L 302 Advanced American Sign Language II
3(3,0) Continuation of A S L 301. Focuses on
American Sign Language fluency, vocabulary
development, grammatical structures of American
Sign Language, use of classifiers, conversational
skills, translating written texts into American Sign
Language, and vice versa. Emphasis is on making
formal presentations in American Sign Language.
Preq: A S L 301 or consent of instructor.

A S L 305 Deaf Studies in the United States
3(3,0) In-depth look into language, culture,
and daily lives of approximately one million people
who use American Sign Language as their
primary language. Traces the roots of American
Sign Language from pre-revolutionary times to current
science and knowledge and how it applies to
professional fields. Taught in American Sign
Language. Preq: A S L 202 or consent of instructor.

A S L 401 Discourse in American Sign Language
I 3(3,0) Designed for advanced-level students in
American Sign Language. Primary goal is to fur-
ther develop students' understanding and knowl-
edge of American Sign Language by incorporating
in-depth analysis of American Sign Language's
historical development, linguistic structures, syn-
tax, grammar, and pragmatics. Preq: A S L 302 or
consent of instructor.

A S L 402 Discourse in American Sign Language
II 3(3,0) Continuation of American Sign
Language 401. Primary goal is to further develop
students' understanding and knowledge of Ameri-
can Sign Language by incorporating analysis of
time concepts, variations due to region and
ethnicity, pluralization, classifiers, locatives, tem-
poral aspects, and pronoun usage in American
Sign Language. Preq: A S L 401 or consent of
instructor.

A S L 460 Deaf Literature and Folklore 3(3,0)
Designed for advanced-level students in Ameri-
can Sign Language. Primary goal is to further de-
velop students' knowledge and understanding of
Deaf literature, folklore, and the community at
large. Includes introductions to deaf authors, li-
terary works, plays, poetry, painting, and sculpture.
Preq: A S L 302 or consent of instructor.

ANIMAL AND VETERINARY SCIENCES

Profs: J. A. Bertrand, G. P. Birrenkott, Jr., A.
B. Bodine II, Chair; T. Gimenez, A. K. Greene, T.
C. Jenkins, D. V. Maurice, T. R. Scott, P. A. Skewes;
Associate Prof: M. A. Hall; Assistant Prof: S.
E. Ellis, J. R. Gibbons; Lecturers: B. G. Bolt, K.
L. Vernon.

AVS 100 Orientation to Animal, Dairy, and Vet-
erinary Sciences 1(2,0) Study of the role of an
imal agriculture in the world today with emphasis
on supply and demand of end products and ca-
reers available in the animal industry.

AVS 101 Dairy Foods 1(1,0) Production aspects
of dairy foods from the farmer to the consumer
including such products as ice cream, yogurt,
and various cheeses; the use of these foods for nutri-
tion and pleasure. Students who have received
credit for AVS 430 will not be allowed to enroll
in or receive credit for AVS 101.

AVS 102 Mamalian Reproduction 1(1,0) Physi-
ology and endocrinology of the reproductive pro-
cesses in male and female mammals with empha-
sis on farm animals. Control of reproductive
cycles, diseases, sexuality, and effects of drugs on
reproduction are discussed.

AVS 106 Animal and Dairy Science Techniques
1(0,2) Basic principles in handling of livestock
and techniques of animal industries are discussed.

AVS 110 Avian Pets—Biology and Owner Res-
ponsibilities 1(1,0) Systematic coverage of the
many types of birds that humans keep as social
companions. Nutrition, environmental considera-
tions, reproductive habits, health, and legal and
economic aspects of these pets are considered.

AVS 120 Poultry Techniques 1(0,2) Basic prin-
ciples in the handling and production of poultry
are discussed and demonstrated. Students receive
hands-on experience and visit commercial opera-
tions to view equipment, facilities, and produc-
tion techniques. Preq: Consent of instructor.

AVS 150 Introduction to Animal Science 3(3,0)
Survey of animal industries and their role in so-
icety. Examines the relationship between man
and animals in both a current and historical context.

AVS 151 Introduction to Animal Science Lab-
atory 1(0,2) Examines the basic principles in the
handling of livestock and techniques of farm
animal production as well as orientation to ani-
mal production units. Coreq: AVS 150.

AVS 200 Beef Cattle Techniques 2(1,2) Examines
the basic principles in the techniques and
management associated with production of both
beef cattle and sheep. Coreq: AVS 150, 151.

AVS 201 Poultry Techniques 2(1,2) Basic prin-
ciples of the production of poultry are discussed
and demonstrated. Students receive hands-on
experience in the production and processing of poul-
try. Preq: AVS 151.

AVS 202 Introductory Animal Sciences 4(4,0)
Systematic coverage of the basic principles involved
in breeding, feeding, management, and product
marketing in beef and dairy cattle, swine, sheep,
goat, horse, and poultry operations. Not open to
students who have received credit for AGRIC 103.

AVS 203 Dairy Science Techniques 2(1,2) In-
troduction to dairy production and processing.
Laboratories include hands-on opportunities for
management of dairy cattle, quality control of
milk, and processing of milk and dairy products.
Preq: AVS 151.

AVS 204 Horse Care Techniques 2(1,2) Basic
principles of equine behavior, handling, and
management are discussed and demonstrated.
Students receive hands-on experience with various
management techniques including handling and all
aspects of health care.

AVS 205 Horsemanship I 2(0,4) Designed for
beginner to intermediate riders. The mechanics of
safety, handling, basic position, cues, and rider's
aids for both western and English disciplines are
covered. Preq: AVS 151.

AVS 206 Swine Techniques 2(1,2) Examines the
basic principles in the techniques and manage-
ment associated with production of swine. Preq:
AVS 150, 151.

AVS 207 Horsemanship II 2(0,4) Designed for
intermediate to advanced riders to enhance basic
horsemanship and develop specific skills for ad-
vanced maneuvers in both western and English
disciplines. Students concentrate on individual
work and establish finesse and subtlety of aids.
Training and artificial aids are discussed and/or
implemented in riding sessions. Preq: AVS 205
and consent of instructor.

AVS 208 Techniques of Teaching Horsemanship
3(2,2) Discusses teaching techniques and theory
and handling of large groups. Trains begin-
er through advanced levels. Preq: AVS 205.

AVS 210 Animal Science Techniques 1(0,2)
Live-
stock handling techniques used in the animal in-
dustry are discussed. Principles of animal care
and management for livestock production are empha-

AVS 260 Sophomore Internship 1-12(0,3-36)
Off-campus, preplanned, supervised educational
experience in a work environment related to ani-
mal/veterinary sciences. Students submit periodic
written reports and a final written report. To be
taken Pass/Fail only. Preq: Sophomore standing in
Animal and Veterinary Sciences and consent of
instructor.

AVS 301 Anatomy and Physiology of Domestic
Animals 4(3,3) Physiology and associated
anatomy of the body systems, including nervous,
skeletal, muscular, respiratory, digestive, circula-
tory, urinary, reproductive, and endocrine systems.
Designed primarily for students in Animal and
Veterinary Sciences. Preq: BIOL 104 or 111.

AVS 302 Livestock Selection and Evaluation I
2(1,2) Selection and evaluation of the meat spe-
cies of livestock with application of theory ap-
plied in multiple field exercises.

AVS 303 Livestock Selection and Evaluation II
2(1,2) Selection and evaluation of the meat spe-
cies of livestock with application of theory ap-
plied in multiple field exercises. AVS 302.
AVS 304 Evaluation of Dairy Products 2(1,2)
Emphasizes sensory evaluation of dairy products; discussion of basic principles of organoleptic evaluation, fundamental rules for scoring and grading dairy products; evaluation of all classes of dairy products based on established grades and score cards.

AVS 305 Meat Grading and Selection 2(1,2)
Classification, grading, and selection of beef, lamb, and pork carcasses and wholesale cuts and factors influencing quality and value are studied. Students are eligible to compete in intercollegiate meat judging contests.

AVS 309 Principles of Equine Evaluation 2(0,4)
Discusses the selection and evaluation of equines for various disciplines. Emphasis is placed on current industry standards with regard to "form to function." Students place classes of four horses and develop oral reasons to defend their placing. Opportunities for competitive horse judging teams are available.

AVS 310 Animal Health 3(3,0)
Basic principles of animal health. Emphasizes disease prevention in beef cattle, dairy cattle, goats, horses, poultry, and swine. The most common and important diseases and zoonosis of farm animals are explained. Prereq: AVS 150, BIOL 103 or 111.

AVS 311 Dairy Cattle Selection 2(1,2)
Dairy selection and evaluation methods are studied including evaluation according to the Purebred Dairy Cattle Association scorecard, linear evaluation, pedigrees, and Dairy Herd Improvement Association records. Emphasis is on presentation of oral reasons.

AVS 312 Forages and Grazing Systems 3(2,2)
Familiarizes students with the interaction of forage plants and grazing animals. Practical application of theory is applied to management issues as it relates to the relationship between plants and animals. Prereq: AVS 150, BIOL 103 or 111.

AVS 315 Animal Welfare 3(3,0)
Discussion of past, present, and future human/animal interaction. Topics include wild animals, domestication, animal welfare organizations, animal rights organizations, welfare assessment, animal agriculture, animal research, and other current topics. Prereq: Junior standing.

AVS 320 Veterinary and Medical Terminology 2(2,0)
Promotes students' understanding and use of basic scientific and medical terminology and concepts, especially those of basic science, biology, anatomy, physiology, and medicine. Prereq: BIOL 104.

AVS 323 Poultry and Poultry Products Evaluation 2(0,4)
Selection of layers, broilers, and turkeys. Grading of poultry products according to USDA grade standards is also studied. Students are eligible to compete in intercollegiate poultry judging contests. May be repeated for a maximum of four credits.

AVS 330 Animal Pathology 3(3,0)
Acquaints students with animal pathology including cell injury, inflammation, neoplasia, immunologic disease, and pathology of various organ systems. Prereq: AVS 301.

AVS 353 Meats 2(2,0)

AVS 354 Meats Laboratory 1(0,3)

AVS 360 Advanced Internship 1-12(0,3-36)
Off-campus, preplanned, reviewed, approved, and supervised educational experience in an area related to animal and veterinary sciences. Based on a multifaceted work experience in a highly structured professional environment. Students submit periodic written reports and a final written and oral report. To be taken Pass/Fail only. Prereq: Junior standing in Animal and Veterinary Sciences and consent of instructor.

AVS 370, H370 Principles of Animal Nutrition 3(3,0)
Familiarizes students with nutrients and feeds used in livestock and specialty animal production. Methods of evaluating common feedstuffs are covered along with a survey of the functioning of the various digestive systems. Practical aspect to feeding each species is covered. Prereq: AVS 150, CH 102.

AVS 375, H375 Applied Animal Nutrition 3(2,2)
Students learn procedures for formulating diets that meet nutrient requirements of livestock and poultry utilizing traditional mathematical approaches and computerized formulation. Computerized least-cost formulation of diets is covered along with familiarization with feeding systems and approaches. Prereq: AVS 370.

AVS 385 Equine Behavior and Training 2(0,4)
Introduces students to the initial processes in gentling and riding young horses. Students work with two- and three-year-old horses to desensitize them to stimuli in preparation for riding. Students do groundwork and put the initial rides on the horses. Prereq: AVS 205 or 207.

AVS 386 Advanced Equine Behavior and Training 2(0,4)
Students train young horses advanced skills in western or English disciplines. Students actively prepare horses for show or sale and participate in a show or marketing/sale of their assigned horse. Develops students' negotiation and communication skills, industry insight, and industry-specific jargon. Prereq: AVS 385.

AVS 390 Practicum 1-3(0,3-9)
On-campus, preplanned, supervised learning experience in an area related to animal and veterinary sciences. Gives experience not covered in other classwork. May be repeated for a maximum of four credits. To be taken Pass/Fail only. Prereq: Consent of instructor supervising practicum.

AVS 400, 600 Avian Physiology 2(2,0)
Detailed study of the structure and function of organ systems of avian species with emphasis on digestion and reproduction. Students are given an opportunity to study organ systems of their choice using quantitative physiological techniques. Prereq: AVS 201, 301, or consent of instructor.

AVS 401, H401, 601 Beef Production 4(3,2)
Discusses breeding, feeding, reproduction, and management of beef cattle. Emphasizes production systems integrating disciplines of animal agriculture into management plans and alternatives. Practical applications of beef production and management practices are also presented. Prereq: AVS 202, 370.

AVS 402, 602 Poultry Management 4(3,2)
Emphasizes management, decision making, and application of technology to the commercial production of poultry and poultry products.

AVS 403, 603 Laboratory Techniques 3(2,3)
Research and quality control techniques commonly used in dairy science and related agri- sciences. Prereq: CH 102.

AVS 404, 604 Dairy Cattle Feeding and Management 4(3,2)
Fundamental principles in the care, feeding, and management of dairy cattle of all ages. Topics include general consideration in selecting a breed and the individual cow, calf raising, growth and development of dairy heifers, care and maintenance of the milking herd, and feeding for milk production. Prereq: AVS 202, 370.

AVS 405 Advanced Selection and Evaluation 2(0,4)
Special and advanced training in selection and evaluation of breeding, performance, and market animals or their products. Species used are beef and dairy cattle, sheep, swine, and horses. Prereq: AVS 302 or 303 or 304 or 305, 309 or 311 and consent of instructor.

AVS 406 Seminars and Related Topics 2(3,0)
Students conduct in-depth library research on current topics related to animal science and give formal presentations using multimedia technology. Students also prepare scientific posters, learn interviewing skills, prepare resumes, and observe professional speakers. Prereq: Senior standing.

AVS 407, 607 Equine Theriogenology 3(2,2)
Review of reproductive anatomy and physiology in the mare and stallion, induction of estrus and ovulation, practices for optimal reproductive efficiency, semen collection, preservation and transport, embryo transfer, regulatory aspects of reproduction by various breed registries, noninfectious and infectious diseases affecting reproduction, reproductive health management. Prereq: AVS 453.

AVS 408, H408, 608 Pork Production 4(3,2)
Breeding, feeding, grading, marketing, and management of swine are studied. Practical applications from all phases of the production cycle are outlined in problem form to develop students' problem-solving abilities. Prereq: AVS 202, 370.

AVS 409 Selected Topics 1-3(1-3,0)
Topics of interest to students at the undergraduate, graduate, and professional levels. Provides experience with problems not covered in other courses or on thesis research. May be repeated for a maximum of six credits, but only if different topics are covered.

AVS 410, 610 Domestic Animal Behavior 3(3,0)
Provides knowledge and understanding of behavior related to perception, learning, sociality, reproduction, feeding, and health for application in production, training, and design of environments for optimum health and welfare of domestic animals. Prereq: AVS 150, 151.

AVS 411, 611 Animal Growth and Development 3(3,0)
Integration of the nutritional, physiologic, and genetic basis for animal growth and development with application to livestock and poultry production. Includes the cellular and molecular mechanisms controlling these processes and emphasizes the genes that regulate animal products (meat, eggs, wool, and milk). Prereq: AVS 301.
Courses of Instruction

AVS 412, H412, 612 Advanced Equine Management 4(3,2) Further discussion of special considerations of the equine regarding housing, management, nutrition, reproduction, transportation, and behavior. Students gain insight into how horses differ from other livestock species and their unique requirements for the above systems. Prereq: AVS 370.

AVS 413 Animal Products 3(3,3) Introduction to the safe and humane production of red meat, poultry, and dairy products. Includes HACCP principles and production of value-added animal products.

AVS (BIOSC, MICRO) 414, H414, 614 Basic Immunology 4(3,3) See MICRO 414.

AVS 415, 615 Contemporary Issues in Animal Science 3(3,0) Provides knowledge, understanding, and critical analytical skills on current issues in animal agriculture in diverse regional, national, and global social-cultural and political environments as they impact animals and man. Prereq: AVS 150, 151, Junior standing in Animal and Veterinary Sciences.

AVS 416 Equine Exercise Physiology 4(3,2) Integration of muscle, bone, cartilage, cardiovascular, and respiratory systems as related to the equine athlete. Encompasses biomechanics, kinetics, and kinesiology related concepts specific to the horse. Further discussion of diseases related to specific systems is covered. Prereq: AVS 301.

AVS 417 Animal Agribusiness Development 4(3,2) Team-based development of a business plan related to the animal industries. Students develop the business plan from the initial idea through operations. Focuses on the development of the business plan including financials, personnel management, and resources needed. Prereq: ACCT 201 and AP EC 202 or consent of instructor.


AVS 420, 620 Poultry Science Online 3(3,0) Online course covering the physiology, nutrition, health, reproduction, genetics, breeding, housing, and management of commercial poultry species including the processing of muscle and egg products.

AVS 422 Special Problems 1-3(0,3-9) Laboratory, library, or field study of problems related to animal and veterinary sciences, emphasizing development and testing of hypothesis and reporting of results. May be repeated for a maximum of four credits. Prereq: Junior standing and consent of instructor supervising study.

AVS 425, 625 Poultry Products Grading and Technology 3(2,3) Factors important in the quality of poultry products are considered. Effects of production, handling, packaging, and storage on consumer acceptability are discussed. Quality evaluation is considered from the standpoint of tenderness, flavor, microbiology, and USDA grades. Prereq: AVS 108, 202.

AVS 430, 630 Dairy Processing I 4(3,3) Processing and distribution of fluid milk and other dairy products with emphasis on composition, quality control, chemical, microbiological, and public health aspects. Prereq: BIOL 104, CH 102.

AVS 431, 631 Dairy Processing II 4(3,3) Continuation of AVS 430, with emphasis on processing of cultured dairy products and frozen dairy products. Processing procedures, quality control, ingredients, formulations, and compositional and cultural characteristics of cultured and frozen dairy products are discussed. Prereq: AVS 430.

AVS 441 Animal and Veterinary Sciences Teaching Experience 3(0,9) Formal teaching experience related to animal and veterinary sciences supervised by a faculty member. May involve classroom instruction, educational material development, and/or student evaluation and assessment. Students submit periodic written reports and a final written and oral report. To be taken Pass/Fail only. Prereq: Junior standing in Animal and Veterinary Sciences and consent of coordinating instructor.

AVS 442 Animal and Veterinary Sciences Extension Experience 3(0,9) Formal experience in extension education. Students are involved in development, implementation, or assessment of adult or youth educational programs related to animal and veterinary sciences, under supervision of extension professional. Students submit periodic written reports and a final written and oral report. To be taken Pass/Fail only. Prereq: Junior standing in Animal and Veterinary Sciences and consent of instructor.

AVS 443 AVS International Experience 1-3(0,9) Pre-approved international educational experience supervised by Animal and Veterinary Sciences faculty member. Periodic reports or record keeping are required. Final report and oral presentation are required at end of Experience. To be taken Pass/ Fail only. Prereq: Junior standing in Animal and Veterinary Sciences.

AVS 444 AVS Animal Agribusiness Travel Experience 2(1,2) Classroom and travel course to expose students to animal production operations, agribusiness, and industry leaders across various geographical areas. Travel is conducted during spring break and includes visits to farms, universities, and agribusinesses. Additional fee is required. To be taken Pass/ Fail only. Prereq: Junior standing in Animal and Veterinary Sciences and consent of instructor.


AVS 451, 651 Poultry Nutrition 2(2,0) Nutrient requirements of chickens, turkeys, and game birds and methods of determining these requirements are discussed. Deficiencies and excesses of vitamins and minerals and the effects of naturally occurring toxins are considered. Hand formulation and linear programming are introduced.

AVS 452, 652 Poultry Nutrition Laboratory 1(0,2) Provides training in basic laboratory skills and familiarizes students with common laboratory methods used in poultry nutrition.

AVS 453, H453, 653 Animal Reproduction 3(2,2) Reproductive physiology and endocrinology of mammals with emphasis on farm animals and frequent reference to reproduction in laboratory animals and humans. Prereq: AVS 150, 301.

AVS 455, 655 Animal Reproductive Management 1(0,3) Physiology and endocrinology of pregnant and nonpregnant cows are discussed. Emphasizes methods of artificial insemination, pregnancy detection, and computer record keeping to achieve a high level of reproductive efficiency in cattle. Prereq: AVS 150, 301; AVS 453 (or concurrent enrollment).

AVS 456, 656 Avian Microbiology and Parasitology 3(3,0) Agents causing poultry diseases, diagnosis, prevention, and treatment of specific diseases and their economic and public health significance.

AVS 461, 661 Physiology of Lactation 2(0,9) Anatomy and development of the mammary gland; physiological and biochemical regulation of mammary growth and milk secretion with emphasis on farm animals and reference to other mammals. Prereq: AVS 202, BIOC 305.

AVS 470, H470, 670 Animal Genetics 3(3,0) Fundamental principles related to the breeding and improvement of livestock including variation, heredity, selection, inbreeding, outbreeding, and other related subjects. Prereq: AVS 150.

AVS (BIOSC) 480, 680 Vertebrate Endocrinology 3(3,0) See BIOSC 480.

AVS 491 Animal and Veterinary Sciences Undergraduate Research Experience 3(0,9) Formal laboratory, library, or field study of problems related to animal and veterinary sciences, emphasizing hypothesis development, testing, and reporting results. Each project is pre-approved, reviewed, and approved. Students submit periodic written reports and a final written and oral report. To be taken Pass/Fail only. Prereq: Junior standing in Animal and Veterinary Sciences and consent of instructor.

ANIMAL PHYSIOLOGY
See also courses listed under Animal and Veterinary Sciences and Endocrinology.

Professors: G. P. Birrenkott, Jr., A. B. Bodine II, T. G. Gimenez, T. R. Scott, J. R. Tomasso, Jr.; Associate Professor: J. M. Colacino; Adjunct Professor: W. R. Boone; Adjunct Associate Professor: S. Valentino; Adjunct Assistant Professors: H. L. Higdon III, J. T. Wytelfs.

AN PH 401 Selected Topics 1-3(1-3,0) Comprehensive study of selected topics of interest in animal physiology not covered in other courses. May be repeated once for a maximum of six credits, but only if different topics are covered.

ANTHROPOLOGY

ANTH 201 Introduction to Anthropology 3(3,0) Cross-cultural examinations of contemporary human society; physical evolution of humans; development of societies in the archaeological record; environmental impact of human societies today.

ANTH 301 Cultural Anthropology 3(3,0) Explores human cultural diversity and current global issues; examines food production and economic distribution, political organization, marriage and family, and religious systems in contemporary cultures. Prereq: ANTH 201 or consent of instructor.
ANTH 320 North American Indian Cultures 3(3,0) Discussion of the prehistory of Native peoples, their cultural diversity at European contact, and the history and impact of that contact. Contemporary issues facing Native Americans are also examined. Prereq: ANTH 201 or consent of instructor.

ANTH 331 Introduction to Archaeology 3(3,0) Introduction to archaeology offering insights into the past by recovering and interpreting material remains. Methods and theories of anthropological archaeology are examined, particularly cultural history and ways in which human societies have evolved and become more complex over time.

ANTH 351 Physical Anthropology 3(3,0) Study of humans as biological organisms. Examines human evolution, primate social behavior, human physiological variations and disease resistance, and human skeletal anatomy and forensics.

ANTH 403, 603 Qualitative Methods 3(3,0) Methods and techniques of qualitative field research, including participant observation, ethnographic interviewing, data analysis, and report writing. Prereq: ANTH 201 or consent of instructor.

ANTH (JAPN) 417 Japanese Culture and Society 3(3,0) See JAPN 417.

ANTH (CHIN) 418 Chinese Culture and Society 3(3,0) See CHIN 418.

ANTH 495 Field Studies 1-6(1-2,2-12) Group field project in settings selected by the instructor to provide students with a variety of exposures to various cultural contexts. Anthropological digs are included. Project progress and student interpretations of findings are monitored by periodic group meetings and shared experiences. May be repeated for a maximum of six credits. Prereq: ANTH 301 or equivalent and consent of instructor.

ANTH 498 Independent Study 3(1,6) Individual readings or projects in anthropological areas not covered in other courses. Prereq: ANTH 201.

ARCHITECTURE


ARCH 101 Introduction to Architecture 3(3,0) Introduction to the discipline and profession of architecture. Lectures and discussion cover a broad range of architectural issues throughout history. Emphasizes the relationship between architecture and other disciplines as well as across cultures. Includes the development of individual digital portfolio.

ARCH 151 Architecture Communication 4(2,4) Introduction to principles and elementary vocabulary of architectural design. Collaborative studio which offers instruction in the specific skills of formal design composition, visual communication, oral presentation, and computer literacy. Prereq: ARCH 101.

ARCH 152 Collaborative Studio II 3(1,6) Continuation of ARCH 151. Introduction to an elementary vocabulary of architecture within basic spatial design problems, with emphasis on visual communications skills, oral presentations of work, and analysis and discussion of design issues through critical readings of canonical texts and buildings. Prereq: ARCH 151.

ARCH 201 Introduction to Architecture 3(3,0) Examines basic concepts of architectural design using historic and contemporary examples. Principles of design, programmatic concerns, design documents, and construction are discussed in the context of the practice of architecture.

ARCH 251 Architecture Foundations I 6(3,6) Architectural analysis and design problems with a focus on understanding the context of architecture. Specific investigation of buildings as part of the cityscape and the landscape. Instruction on visual communications skills, computer modeling, and oral presentation techniques support the design discussions. Prereq: ARCH 151.

ARCH 252 Architecture Foundations II 6(3,6) Continuation of ARCH 251. Architectural design problems with a focus on structural and construction principles and their relationship to contextual situations. Instruction in oral communications skills and computer graphics support the design discussions. Prereq: ARCH 251.

ARCH 351 Studio Clemson 5(1,11) Addresses architectural problems with varied scales, programs, and locations. Emphasizes the relationship between architecture and context. Projects include analysis, conceptual development, and architectural resolutions. Continued development of graphic and oral communication skills. Design problems vary every semester according to current issues. May be repeated for a maximum of 15 credits. Prereq: ARCH 252.

ARCH 352 Studio Charleston 5(1,11) Addresses architectural problems with varied scales and programs in the context of Charleston, South Carolina. Emphasizes the relationship between architecture and context. Projects include analysis, conceptual development, and architectural resolutions. Continued development of graphic and oral communication skills. Design problems vary every semester according to current issues. May be repeated for a maximum of ten credits. Prereq: ARCH 252.

ARCH 353 Studio Genoa 5(1,11) Addresses architectural problems with varied scales and programs in the context of Genoa, Italy, and historic Europe. Emphasizes the relationship between architecture and context. Projects include analysis, conceptual development, and architectural resolutions. Design problems vary every semester according to current issues. Continued development of graphic and oral communication skills. May be repeated for a maximum of ten credits. Prereq: ARCH 252.

ARCH 354 Studio Barcelona 5(1,11) Addresses architectural problems with varied scales and programs in the context of Barcelona, Spain. Emphasizes the relationship between architecture and context. Projects include analysis, conceptual development, and architectural resolutions. Continued development of graphic and oral communication skills. Design problems vary every semester according to current issues. May be repeated for a maximum of ten credits. Prereq: ARCH 252.

ARCH 355 Studio South 5(1,11) Addresses architectural problems with varied scales and programs in the context of the South. Emphasizes the relationship between architecture, community, and context. Projects include analysis, conceptual development, and architectural resolutions. Continued development of graphic and oral communication skills. Design problems vary every semester according to current issues. May be repeated for a maximum of ten credits. Prereq: ARCH 252.

ARCH 401 Architectural Portfolio II 1(1,0) Continues portfolio development for the architecture student including professional portfolio, academic portfolio, and digital portfolio. Prereq: ARCH 101. Coreq: ARCH 452, 453; Graduating Senior standing.

ARCH 403, 603 The Modern Architectural Movement 3(3,0) Seminar in the analysis and criticism of architectural and town building works. Course sequence includes historic and contemporary examples, literary searches, field trips, essays, and oral reports. Prereq: Senior standing or consent of instructor.

ARCH 404, 604 Current Directions in Architecture 3(3,0) Critical analysis of the development and current directions of modern movements in architecture. Prereq: Senior standing or consent of instructor.

ARCH 405, 605 American Architectural Styles 1650-1950 3(3,0) Survey of American architectural styles and of the architects responsible for them, from the Colonial period to our recent past. Considerable emphasis is placed on identifying those architectural elements which serve as clues in determining a building's architectural style.

ARCH 412, 612 Architectural History Research 3(3,0) Directed investigations related to the art and architectural history of Europe. May be repeated for a maximum of six credits. Prereq: Junior standing or consent of instructor.

ARCH 414, 614 Design Seminar 3(3,0) Exploration of topical issues in architecture, art, construction, and planning. May be repeated for a maximum of six credits. Prereq: Junior standing or consent of instructor.

ARCH 415, 615 Field Sketching 3(0,6) Study of media and techniques for expression, representation, and visual analysis through firsthand perspective field drawing of the built and natural environment. Prereq: Junior standing in School of Design and Building or consent of instructor.

ARCH 416, 616 Field Studies in Architecture and Related Arts 3(0,9) Documentation and analysis of architectural structures observed during European travels in graphic and written form. May be repeated for a maximum of six credits. Prereq: Junior standing or consent of instructor.
ARCH 421 Architectural Seminar 3(3,0) Lectures and seminars dealing with pertinent topics related to environmental and technological considerations in architecture and the building industry. Prereq: Senior standing or consent of instructor.

ARCH 422 New Directions Seminar 3(3,0) Exploration into careers which relate directly (i.e., construction law) or indirectly (i.e., public relations) to the making of our built environment.

ARCH 424, 624 Product Design 3(0,9) Furniture and product system design with emphasis on ergonomics and the relationship of form and materials. Prereq: Senior standing and consent of instructor.

ARCH 425, 625 Energy in Architecture 3(3,0) Climate design methodology and its influence on building energy patterns and architectural form. Prereq: Senior standing and consent of instructor.

ARCH 426, 626 Architectural Color Graphics 3(3,0) Architectural color graphics by computer. Theories of color classification and interaction; application of color theories to art and architecture. Prereq: Consent of instructor.

ARCH 427, 627 Advanced Color Graphics 3(3,0) Theories of color classification and interaction; three-dimensional color modeling by computer; advanced application of color theories to art and architecture. Prereq: ARCH 426 or consent of instructor.

ARCH 428, 628 Computer-Aided Design 3(2,3) Introduction to the concepts, skills, and applications of computer-aided design as they relate to the practice of architecture. Prereq: Senior standing or consent of instructor.

ARCH 429, 629 Architectural Graphics 3(3,0) Provides students with an understanding of the concepts, skills, techniques, and strategies of visual presentation as they relate to the design professions—architects/landscape architects. Prereq: Junior standing or consent of instructor.

ARCH 430, 630 Theories and Philosophies of Technology and Architecture 3(3,0) Theoretical and practical examination of technology and architecture from prescientific and modern view-points to study its non-neutral role in shaping and reflecting knowledge, beliefs, and actions within a cultural context.

ARCH 431, 631 Virtual Reality in Architecture 3(3,0) Introduction and exploration of the theories and concepts of virtual reality and their use in modeling three-dimensional spaces. Instruction in computer modeling, lighting, and texture mapping is offered. Projects focus on the creation and presentation of a virtual environment. Prereq: Junior standing or consent of instructor.

ARCH 440 New York Field Study 3(3,0) Study of architecture, art, planning, and urban design of New York. Two weeks of residence are required with scheduled field trips to relevant sites in all five boroughs, with counseling to determine research interests. Guidance is provided to resources in the city. A final report is required. Offered Maymester only.


ARCH 452 Synthesis Studio 5(1,11) Integrates acquired skills, abilities, and interests from previous architecture studios. Projects emphasize the accumulation of architectural experiences and knowledge. Coreq: ARCH 401, 453; Graduating Senior status.

ARCH 453 Writing Architecture 3(3,0) Advanced writing course for architecture majors. Emphasizes synthesis of the architectural education and development of architectural projects through writing. Prereq: Graduating Senior status. Coreq: ARCH 401, 452.

ARCH 485, 685 Health Care Facilities 3(3,0) Introduces concepts, organization, and direction of health care facilities within the context of health-care delivery systems. Special emphasis is placed on mental and physical health-care facilities concepts. Prereq: Consent of instructor.

ARCH 488, 688 Health Care Facilities Programming 3(3,0) Seminar on recent research and innovations in health-care facilities programming and original investigation of assigned programming problems. Prereq: Consent of instructor.

ARCH 490, H490 Directed Studies 1-5 Comprehensive studies and research of special topics not covered in other courses. Prereq: Written permission of instructor. May be repeated for a maximum of ten credits. Prereq: Consent of department chair.

ARCH 499, H499 Selected Topics in Architecture 1-3(1,3,0) Study of selected topics in architecture. May be repeated for a maximum of nine credits, but only if different topics are covered. Prereq: Junior standing or consent of instructor.

ARCH 557 Architecture Studio 6(0,18) City planning design and the development of complex building solutions.

ART


ART 103 Visual Arts Studio 3(0,6) Studio projects in basic visual elements and principles. The development of creative design process, visual organization, and design skills are introduced as a foundation for further study in visual arts.

ART 151 Foundations in 2-D Art 3(0,6) Intensive introduction to the visual arts and design fundamentals including the exploration of the history and practical applications of the elements and principles of design as they relate to a two-dimensional art work. Prereq: Visual Arts major.

ART 152 Foundations in 3-D Art 3(0,6) Intensive introduction to the visual arts and design fundamentals, including the exploration of the history and practical applications of the elements and principles of design as they relate to a three-dimensional art work. Prereq: Visual Arts major.

ART 153 Orientation to Visual Arts 1(1,0) Introduction to the visual arts profession focusing on the field and its variety of opportunities in creative, problem-solving methodologies, and current thinking in contemporary art. Prereq: Visual Arts major.

ART 154 Orientation to Visual Arts 2(1,0) Introduction to professional practice related to the visual arts. Addresses issues related to the development and documentation of professional activities in the various studio disciplines as well as health and safety concerns for the studio artist. Prereq: Visual Arts major.

ART 205 Beginning Drawing 3(0,6) Study of drawing based on the premise that drawing is a foundation discipline in the visual arts. Prereq: ART 103 (non-Art majors); ARCH 152 (Architecture majors); or consent of instructor.

ART 207 Beginning Painting 3(0,6) Introduction to basic materials, methods, and techniques of painting. Prereq: ART 103 (non-Art majors); or consent of instructor.

ART 209 Beginning Sculpture 3(0,6) Studio course investigating the meaning of sculpture through traditional and non-traditional approaches. Establishes a working knowledge of material and process in several media. Personal expression is encouraged and enhanced by employment of problem-solving techniques. Static, temporal, installation, and site-specific sculpture is explored. Prereq: ART 151, 152, 153, 154, 205 (Visual Arts majors); ART 103 (non-Art majors); ARCH 152 (Architecture majors); or consent of instructor.

ART 211 Beginning Printmaking 3(0,6) Studio course introducing basic techniques of relief printing, intaglio, lithography, silkscreen, and papermaking. Each semester concentrates on two of these techniques. Coursework integrates print-making processes and creativity. Prereq: ART 151, 152, 153, 154, 205 (Visual Arts majors); ART 103 (non-Art majors); ARCH 152 (Architecture majors); LARCH 152 (Landscape Architecture majors); or consent of instructor.

ART 213 Beginning Photography 3(0,6) Introduction to the use of photography as an art medium. Lectures and studio work cover the utilization of the camera, processing, and printing in black and white, with emphasis on perception and creative expression. Prereq: ART 151, 152, 153, 154, 205 (Visual Arts majors); ART 103 (non-Art majors); ARCH 152 (Architecture majors); LARCH 152 (Landscape Architecture majors); or consent of instructor.
ART 215 Beginning Graphic Design 3(0,6) Introduction to fundamental techniques, concepts, and principles of visual communication. Through a series of projects and studio work, students explore techniques of communication through the use of type design, typography, photography, illustration, symbolism, and product design. Individual creative development is stressed. Preq: ART 151, 152, 153, 154, 205 (Visual Arts majors); ART 103 (non-Art majors); ARCH 152 (Architecture majors); LARCH 152 (Landscape Architecture majors); or consent of instructor.

ART 217 Beginning Ceramics 3(0,6) Basic studio course introducing ceramic arts through its various processes and techniques. Hand building methods as well as throwing on the potter's wheel are developed. Weekly projects emphasize imagination, self-expression, and skill development. Ceramic history is introduced through slide lectures. Preq: ART 151, 152, 153, 154, 205 (Visual Arts majors); ART 103 (non-Art majors); ARCH 152 (Architecture majors); LARCH 152 (Landscape Architecture majors); or consent of instructor.

ART 219 Beginning Papermaking 3(0,6) Explores paper, not just as a surface to receive an image, but as a material capable of being an artistic expression in and of itself. Preq: ART 151, 152, 153, 154, 205 (Visual Arts majors); ART 103 (non-Art majors); ARCH 152 (Architecture majors); LARCH 152 (Landscape Architecture majors); or consent of instructor.

ART 223 Woodworking Studio 3(0,6) Introduces woodworking explorations in sculpture and furniture design with emphasis on technical understanding and creative application of woodworking processes and methodologies. Students experiment with wood as a vehicle for personal expression and thematic development and conduct research on the historical impact of woodworking in the visual arts. Preq: ART 151, ART 152 or ARCH 152, or LARCH 152, or consent of instructor.

ART 305 Drawing 3(0,6) Study of human figure drawing with emphasis on drawing from live models. Student's drawing skills and fundamental understanding of the structure and form of the human figure are studied. Augmented by critiques, demonstrations, and lectures. Preq: ART 205 or consent of instructor.

ART 307 Painting 3(0,6) Continuation of ART 209 with increased emphasis on personal expression and growth in technical competence. Some study of painting history is included in studio activity. Preq: ART 207 or consent of instructor.

ART 308 Painting Research 1 1-3(0,2-6) Continuation of ART 307. Technical and conceptual research in painting to further develop self-expression. Special projects are developed in consultation with instructor. May be repeated for a maximum of five credits. Preq: ART 307 or consent of instructor.

ART 309 Sculpture 3(0,6) Continuation of ART 209 with increased emphasis on personal expression and content of work. Further exploration of materials and processes including an introduction to foundry casting and advanced welding techniques. Individual investigation into current and historical aspects of sculpture is required. Preq: ART 209 or consent of instructor.

ART 310 Sculpture Research I 1-3(0,2-6) Continuation of ART 309. Technical and conceptual research in sculpture to further develop self-expression. Special projects are developed in consultation with instructor. May be repeated for a maximum of five credits. Preq: ART 309 or consent of instructor.

ART 311 Printmaking 3(0,6) Continuation of processes in beginning printmaking with emphasis on expanding the range and depth of technique. The relationship of technique and process to creative idea development is emphasized. Preq: ART 211 or consent of instructor.

ART 312 Printmaking Research I 1-3(0,2-6) Continuation of ART 311. Technical and conceptual research in printmaking to develop self-expression. Special projects are constructed in consultation with instructor. May be repeated for a maximum of five credits. Preq: ART 311 or consent of instructor.

ART 313 Photography 3(0,6) Continuation of ART 213. Advanced techniques and more diverse types of film and paper are used in making images of personal and expressive nature. The design and construction of a view camera, printing in color, and multiple imagery may also be included. Preq: ART 213 or consent of instructor.

ART 314 Photography Research I 1-3(0,2-6) Continuation of ART 313. Technical and conceptual research to develop personal and expressive work in photography. Projects are chosen in consultation with instructor. May be repeated for a maximum of five credits. Preq: ART 313 or consent of instructor.

ART 315 Graphic Design 3(0,6) Continuation of concepts and techniques introduced in ART 215 with emphasis on more applied projects. Individual creative solutions are emphasized. Preq: ART 215 or consent of instructor.

ART 317 Ceramic Arts 3(0,6) Continuation of skill development leading to more challenging projects and independent efforts. Further exposure to ceramic history and ceramic technology is presented. Preq: ART 217 or consent of instructor.

ART 318 Ceramics Research I 1-3(0,2-6) Continuation of ART 317. Technical and conceptual research in ceramics for the purpose of self-expression. Projects are conducted in consultation with instructor. May be repeated for a maximum of five credits. Preq: ART 317 or consent of instructor.

ART 321 Art with the Computer 3(0,6) Studio course using the microcomputer as an art medium. Studies in imaging systems, with emphasis on the creative use of the medium for artistic expression. Preq: ART 151, 152, 153, 154, 205 (Visual Arts majors); ART 103 (non-Art majors); ARCH 152 (Architecture majors); LARCH 152 (Landscape Architecture majors); or consent of instructor.

ART 322 Art with Computer Research I 1-3(0,2-6) Continuation of ART 321. Technical and conceptual research to develop personal and expressive work in computer imaging. Projects are chosen in consultation with instructor. May be repeated for a maximum of five credits. Preq: ART 321 or consent of instructor.

ART 405, 605 Advanced Drawing 3(0,6) Advanced level studies of drawing which explore the synthesis of refined drawing skills and philosophies of art. Students' understanding of drawing as a form of art is developed through studio practice augmented by critiques, demonstrations, lectures, field trips, and independent research. Preq: ART 305 or consent of instructor.

ART 407, 607 Advanced Painting 3(0,6) Advanced studio course in painting. Students select painting media and develop a strong direction based on prior painting experience. Study of contemporary painters and directions is included. Preq: ART 307 or consent of instructor.

ART 409, 609 Advanced Sculpture 3(0,6) Intensive independent studio concentration to further develop personal direction and content. Continued investigation of sculptural context, materials and processes, and relative historical research is emphasized. Preq: ART 309 or consent of instructor.

ART 411, 611 Advanced Printmaking 3(0,6) Culmination of process, techniques, and individual development. Students are expected to have mastered process and technique for the benefit of the image produced. Creativity and self-expression are highly emphasized as students select a process for concentrated study. Preq: ART 311 or consent of instructor.

ART 413, 613 Advanced Photography 3(0,6) Continuation of ART 313. Advanced problems in photography. Preq: ART 313 or consent of instructor.

ART 415 Advanced Graphic Design 3(0,6) Continuation of ART 315. Personal expression through communication techniques is further explored. Individual projects are emphasized. Preq: ART 315 or consent of instructor.

ART 417, 617 Advanced Ceramic Arts 3(0,6) Students are directed toward further development of ideas and skills. Glaze calculation and firing processes are incorporated to allow for a dynamic integration of form and ideas. Preq: ART 317 or consent of instructor.

ART 418 Ceramics Research II 1-3(0,2-6) Continuation of ART 417. Technical and conceptual research in ceramics for the purpose of self-expression. Projects are chosen in consultation with instructor. May be repeated for a maximum of five credits. Preq: ART 417 or consent of instructor.

ART 420, 620 Selected Topics in Art 1-3(0,6-9) Intense course in studio art. May be repeated for a maximum of six credits, but only if different topics are covered. Preq: Senior standing or consent of instructor.

ART 471 Bachelor of Fine Arts Senior Studio I 3(0,6) Individual studio project directed by an instructor and determined by the student in consultation with the instructor. Focuses on a particular studio area, concept, or theme. May be repeated for a maximum of six credits. Preq: Senior standing and completion of 30/400 sequence in the chosen studio area, minimum grade point ratio of 3.0 in focus studio area, participation in senior studio interview. Coreq: ART 473.
ART 472 Bachelor of Fine Arts Senior Studio II
5(0,15) Individual studio project directed by an instructor and determined by the student in consultation with the instructor. Usually focuses upon a particular studio area, concept, or theme. Preg: ART 471 with a B or better.

ART 473 Senior Seminar in Professional Career Preparation 2(0,90) Seminar and practical guide to prepare students for entry into the professional art world. Focuses on issues concerning visual artists in the early years of their professional activities. Presents career options and practical information for the graduating senior, including portfolio development. Coreq: ART 471.

ART 490, H490, 690 Directed Studies 1-5(0,2-10) Study of areas in the visual arts not included in other courses or additional advanced work. Must be arranged with a specific instructor prior to registration. May be repeated for a maximum of 18 credits. Preg: Consent of instructor.

ART AND ARCHITECTURAL HISTORY

Professor: W. W. Lew; Associate Professors: A. V. Feester, J. B. LeBlanc; Assistant Professor: K. Kouvelis

A A H 101, H101 Survey of Art and Architectural History I 3(3,0) Comprehensive survey of art and architectural history of Western heritage as well as significant coverage of Asian, African, Native American, and South American art. The arts are studied within the contexts of history, geography, politics, religion, and culture. Survey includes Ancient through Gothic.


A A H 205, H205 History and Theory of Art I 3(3,0) First of a two-semester sequence on special topics and issues in the history of art. Emphasis is on stylistic developments and specific art movements. Analysis of art within the larger context of social, political, and religious history. Examination of art techniques and theory as they have developed. Preg: A A H 102.

A A H 206, H206 History and Theory of Art II 3(3,0) Second of a two-semester sequence on special topics and issues in the history of art. Continued emphasis on stylistic developments and art movements, with specific attention directed toward post-Renaissance art. Analysis of the influence of past history on modern. Preg: A A H 205.

A A H 305 Contemporary Art History 3(3,0) Study of contemporary art from World War II to the present, exploring forces that have shaped various movements of art and architecture in the late 20th century. May be taught alternately as a compact short course during the academic year with a short stay in Europe or during the summer with an extended foreign experience. Essay topic must be approved by the instructor. Preg: A A H 204 or 206 or consent of instructor.

A A H 310 Introduction to Art and Architecture 3(3,0) One-semester lecture survey that introduces the student to the major events and developments in art and architecture from different time periods and cultures. Emphasis is on typologies of the house, governmental buildings, and sacred architecture. May be taught alternately as a compact short course during the academic year with a short stay in Europe or during the summer with an extended foreign experience. Essay topic must be approved by the instructor. Preg: A A H 204 or 206 or consent of instructor.

A A H 396 Special Topics in Visual American Studies I 3(3,0) On-site exposure to specific works of art and architectural monuments throughout the U.S., coupled with lectures and study problems. May be taught alternately as a compact short course during the academic year with a short stay in Europe or during the summer with an extended foreign experience. Essay topic must be approved by the instructor. Preg: A A H 204 or 206 or consent of instructor.

A A H 411, 611 Directed Research in Art History II 3(3,0) Comprehensive studies and research of special topics not covered in other courses. Emphasis is on field studies, research activities, and current developments in art history. Coreq: A A H 412.

A A H 424, 624 Studies in the Art and Architecture of the Renaissance I 3(3,0) Consideration of the visual arts and architectural monuments of the Renaissance (Western Europe from the 15th-18th centuries), with a study in depth of selected examples from the period. Preg: A A H 204 or 206 or consent of instructor.

A A H 427, 627 Studies in the Art and Architecture of the Renaissance II 3(3,0) Consideration of the visual arts and architectural monuments of the Renaissance (Western Europe from the 15th-18th centuries), with a study in depth of selected examples from the period. Preg: A A H 204 or 206 or consent of instructor.

A A H 428, 628 Nineteenth Century Visual Arts 3(3,0) Consideration of the visual arts of the 19th century: painting, sculpture, printmaking, ceramics, and so forth, in relation to the factors that have influenced the artist and the consequences on society. Preg: A A H 207.

A A H 429 Studies in the Art and Architecture of India and the Far East 3(3,0) Consideration of the visual arts and architectural monuments of India and the Far East, with a study in depth of selected examples from the period. Preg: A A H 204 or 206 or consent of instructor.

A A H 430, 630 Twentieth Century Art I 3(3,0) Acquaints students with the major artists' monuments and issues of the Modern period in art. Through lecture/discussions and the reading of primary sources, course places the major modern movements in the context of the period (1860-1945). Preg: Consent of instructor.

A A H 432, 632 Twentieth Century Art II 3(3,0) Overview of trends in art and architecture since World War II. Specific artists, artworks, and movements are presented in a socio/historic context with specific emphasis on the transition from a late-modernist to a post-modern perspective. Preg: Consent of instructor.

A A H (PHIL) 433, 633 Issues in Contemporary Art and Philosophy 3(3,0) See PHIL 433.

A A H 435, 635 Studies in Precolumbian Art and Architecture 3(3,0) Familiarizes students with the art and architecture of the Western Hemisphere's Precolumbian cultures in Mexico, Central, and South America. Preg: A A H 102 or 210 or consent of instructor.
ATHLETIC LEADERSHIP

Lecturer: D. J. Cadorette

A L 349 Principles of Coaching 3(3,0) Investigation into the scientific basis of the coaching profession, middle and high school levels. Topics include developing a coaching philosophy, sport psychology, sport pedagogy, sport physiology, athletic administration, and risk management. Current issues regarding sportsmanship, gender equity compliance, and cultural diversity are researched and synthesized. Prereq: Athletic Leadership minor or consent of Athletic Leadership coordinator.

A L 350 Scientific Basis of Coaching I: Exercise Physiology 3(3,0) Increases understanding of basic scientific information concerning athletic performance by using the conceptual approach. In-depth investigation into the physiological principles that can enhance athletic performance is the primary focus. Phases of physical training as well as comprehensive evaluative techniques are included. Prereq: A L 349 or consent of Athletic Leadership coordinator.

A L 351 Scientific Basis of Coaching II: Kinesiology 3(3,0) Increases understanding of basic scientific information concerning athletic movement by utilizing the conceptual approach. Deals with the basic laws of human motion necessary in evaluation of athletic movement, utilizing joint structure and anatomic landmarks as a basis for motion. Prereq: A L 349.

A L 353 Theory of Prevention and Treatment of Athletic Injuries 2(2,3) Increases understanding of principles involved in the prevention and treatment of athletic injuries. Deals with basic anatomy, first aid, and diagnostic techniques necessary for the understanding of basic athletic training procedures. Prereq: A L 349 or consent of Athletic Leadership coordinator.

A L 361 Administration and Organization of Athletic Programs 3(3,0) Study of modern techniques and practices used in administering athletic programs. Major emphasis areas such as practice and game organization, purchase and care of equipment, budget and finances, public relations, and legal liability in athletic programs are presented. Prereq: A L 349 or consent of Athletic Leadership coordinator.

A L 362 Psychology of Coaching 3(3,0) Study of psychological techniques utilized to promote maximum athletic performance. Areas of emphasis include motivation, coaching philosophy, athletic personality, mental preparation, and goal-oriented behavior. Prereq: A L 349 or consent of Athletic Leadership coordinator.

A L 367 Coaching Baseball 1(0,3) Increases understanding of basic technical and practical information concerning the coaching of baseball by utilizing the conceptual approach. Students study basic principles of coaching, competitive organization, and proper technical skills needed to improve athletic performances. Total program development is also covered as it pertains to specific levels of competition. Prereq: A L 349 or consent of Athletic Leadership coordinator.

A L 372 Coaching Basketball 1(0,3) Increases understanding of basic technical and practical information concerning the coaching of basketball by utilizing the conceptual approach. Students study basic principles of coaching, competitive organization, and proper technical skills needed to improve athletic performances. Total program development is also covered as it pertains to specific levels of competition. Prereq: A L 349 or consent of Athletic Leadership coordinator.

A L 373 Coaching Cross Country 1(0,3) Increases understanding of technical and practical information concerning the coaching of cross country by utilizing the conceptual approach. Students study basic principles of coaching, competitive organization, and proper technical skills needed to improve athletic performances. Total program development is also covered as it pertains to specific levels of competition. Prereq: A L 349 or consent of Athletic Leadership coordinator.

A L 374 Coaching Football 1(0,3) Increases understanding of basic technical and practical information concerning the coaching of football by utilizing the conceptual approach. Students study basic principles of coaching, competitive organization, and proper technical skills needed to improve athletic performances. Total program development is also covered as it pertains to specific levels of competition. Prereq: A L 349 or consent of Athletic Leadership coordinator.

A L 375 Coaching Soccer 1(0,3) Increases understanding of basic technical and practical information concerning the coaching of soccer by utilizing the conceptual approach. Students study basic principles of coaching, competitive organization, and proper technical skills needed to improve athletic performances. Total program development is also covered as it pertains to specific levels of competition. Prereq: A L 349 or consent of Athletic Leadership coordinator.

A L 376 Coaching Strength and Conditioning 1(0,3) Increases understanding of basic technical and practical information concerning the coaching of strength and conditioning by utilizing the conceptual approach. Students study basic principles of coaching, competitive organization, and proper technical skills needed to improve athletic performances. Total program development is also covered as it pertains to specific levels of competition. Prereq: A L 349 or consent of Athletic Leadership coordinator.

A L 377 Coaching Track and Field 1(0,3) Increases understanding of basic technical and practical information concerning the coaching of track and field by utilizing the conceptual approach. Students study basic principles of coaching, competitive organization, and proper technical skills needed to improve athletic performances. Total program development is also covered as it pertains to specific levels of competition. Prereq: A L 349 or consent of Athletic Leadership coordinator.

A L 400 Athletic Leadership Internship 0 Athletic coaching and administration internship for a minimum of 60 hours. To be taken concurrently with any other Clemson University course. To be taken Pass/Fail only. Prereq: Current CPR certification and consent of Athletic Leadership coordinator.
A L 453, 653 Athletic Injuries: Prevention, Assessment and Rehabilitation 3(3,0) Gives students an understanding of prevention, treatment, and rehabilitation procedures of injured athletes. Preq: A L 349.

BIOCHEMISTRY


BIOCH 103 Careers in Biochemistry and Genetics 1(1,0) Introduces students to biochemistry and genetics career paths, professional organizations, ethical issues, and requirements for advanced study. Also gives students training in design of a professional portfolio. A student may not receive credit for both BIOCH 103 and GEN 103. Preq: Freshman or sophomore standing in Biochemistry or Genetics or consent of instructor.

BIOCH 301 Molecular Biochemistry 3(3,0) Introduces the nature, production, and replication of biological structure at the molecular level and its relation to function. Preq: Organic chemistry.

BIOCH 302 Molecular Biochemistry Laboratory 1(0,3) Laboratory to accompany BIOCH 301. Introduction to fundamental laboratory techniques in biochemistry and molecular biology and demonstration of some of the fundamental principles of molecular biology discussed in BIOCH 301. Preq: Organic chemistry. Coreq: BIOCH 301.

BIOCH 305 Essential Elements of Biochemistry 3(3,0) Introduction to structure, synthesis, metabolism and function of biomolecules in living organisms. Preq: CH 201 or equivalent.

BIOCH 306 Essential Elements of Biochemistry Laboratory 1(0,3) Introduces students to fundamental techniques associated with tissue extraction and analysis of biomolecules. Students learn both principles and practical applications. Preq: or Coreq: BIOCH 305.

BIOCH 406, 606 Physiological Chemistry 3(3,0) Chemical basis of the mammalian physiological processes of muscle contraction, nerve function, respiration, kidney function, and blood homeostasis is studied. Composition of specialized tissue such as muscle, nerve, blood, and bone and regulation of water, electrolytes, and acid-base balance are discussed. Preq: BIOCH 305 or Organic chemistry.

BIOCH 423, 623 Principles of Biochemistry 3(3,0) Study of the chemistry of amino acids, monosaccharides, fatty acids, purines, pyrimidines, and associated compounds leads to an understanding of their properties and the relationship between structure and function that makes them important in biological processes. The use of modern techniques is stressed. Preq: CH 224 or equivalent.

BIOCH 431, H431, 631 Physical Approach to Biochemistry 3(3,0) Study of chemical and physical properties of amino acids, lipids, nucleic acids, sugars, and their biopolymers. Physical and mathematical analyses are correlated with biological structure and function. Preq: BIOCH 301 with a C or better or consent of instructor. Coreq: Physical chemistry.

BIOCH 432, H432, 632 Biochemistry of Metabolism 3(3,0) Study of the central pathway of carbohydrate, lipid, and nucleotide metabolism. Bioenergetics, limiting reactions, and the regulation and integration of the metabolic pathways are emphasized. Preq: BIOCH 423 or 431 or consent of instructor.

BIOCH 433, 633 General Biochemistry Laboratory I 1(2.0,4) Experiments to illustrate current methods used in biochemical research. Preq: Concurrent enrollment in BIOCH 423 or 431.

BIOCH 434, 634 General Biochemistry Laboratory II 1(2.0,4) Continuation of BIOCH 433. Preq: Concurrent enrollment in BIOCH 432.

BIOCH 436, 636 Nucleic Acid and Protein Biosynthesis 3(3,0) Examines how nucleic acids and proteins are synthesized in prokaryotic and eukaryotic cells. Designed for students interested in biochemistry, cell biology, molecular biology, and cell physiology. Preq: BIOCH 423, 431, or 432, or consent of instructor.

BIOCH 440 Selected Topics in Biochemistry 1-4(1-4,0) Comprehensive study of selected topics not covered in other courses. May be repeated for a maximum of eight credits, but only if different topics are covered. Preq: Junior standing or consent of instructor.

BIOCH 441, H441 Special Problems in Biochemistry 1-8(0,3-24) Orientation in biochemical research (i.e., experimental planning, execution, and reporting). May be repeated for a maximum of eight credits.

BIOCH (GEN) 493, H493 Senior Seminar 2(2,0) Analysis and discussion of papers from the primary literature in the life sciences particularly in biochemistry. Students find pertinent articles in the primary literature and present and analyze the selected reading.

BIOENGINEERING


BIO E 201 Organs and Their Replacements 3(3,0) Provides engineering, biological, and physical science students with an overview of the replacement of human body parts and the problems related to artificial devices. Offered fall semester only.

BIO E 302 Biomaterials 3(3,0) Study of metallic, ceramic, and polymer materials used for surgical and dental implants; materials selection, implant design, physical and mechanical testing, corrosion and wear in the body. In addition, physical and mechanical properties of tissue as related to microstructure are studied. Offered spring semester only. Preq: C M E 210 or consent of instructor.

BIO E 320 Biomechanics 3(3,0) Study of relation between biological and mechanical functions of musculoskeletal tissues such as bone, ligaments, muscles, cartilage, etc.; mechanics of human joints; analysis of implants and implant failure. Preq: or Coreq: M E 302 or consent of instructor.

BIO E 401 Biomedical Design 3(3,0) Covers basic steps in designing medical devices intended for short- or long-term implantation. Materials selection, fabrication processes, performance standards, cost analysis, and design optimization are covered. Design project is required. Preq: BIO E 302, 320, M E 302; engineering major.

BIO E 420 Sports Engineering 3(3,0) Study of engineering principles involved in sports: body systems in human motion, analysis of gait, basic performance patterns in athletic movements, performance improvements, design of sports equipment. Preq: BIO E 302 and 320 or consent of instructor.

BIO E 450, H450 Special Topics in Biomechanics 1-4(1-4,0) Comprehensive study of a topic of current interest in the field of biomedical engineering under the direct supervision and guidance of a faculty member. May be repeated for a maximum of six credits, but only if different topics are covered. Preq: Consent of instructor.

BIO E 470 Biomimetic Design 3(3,0) Introduction of fundamental topics in biomimetics focused on acquiring and monitoring of vital signals. Basic principles for the selection and appropriate use of instruments for solving biomimetic and medical problems such as radiography, computerized tomography, magnetic resonance imaging, and ultrasound, among others, are addressed. Preq: M T HSC 206, PHY S 221, or consent of instructor.

BIO E (C M E) 480, 680 Research Principles and Concepts 1(1,0) Introduces senior and graduate students to principles and practices of scientific research. Topics include developing scientific concepts, developing projects, pursuing research, collaborating in interdisciplinary teams, patenting and publishing technical and scientific information, and reviewing professional and ethical standards of performance. To be taken Pass/Fail only.
BIOSC 306 Invertebrate Biology Laboratory 10(0,3) Survey and comparison of the biology of living invertebrates, examples of which are drawn primarily from the southeastern coast of the United States. Preq: Introductory two-semester biology sequence with laboratory. Coreq: BIOSC 302.


BIOSC 308 Biology of Plants Practicum 10(0,3) Laboratory exercises that explore the major groups of plants, their biology, diversity, and evolution. Preq: Introductory. Coreq: BIOSC 302.

BIOSC 309 Algae/Fungi Practicum 10(0,3) Practice in the manipulation and examination of selected algae and fungi, with emphasis on culture techniques and examination of the structure and adaptations of the algae and fungi to different environments. Preq: Introductory. Coreq: BIOSC 305.

BIOSC (W FB) 313 Conservation Biology 3(3,0) See W FB 313.

BIOSC 315 Functional Human Anatomy 4(5,3) Introduction to the anatomical structures associated with all organ systems found in the human body at both the gross and microscopic level. Basic physiology is integrated into the course to assist with understanding the function of the anatomical systems. Preq: BIOSC 310 or 110.

BIOSC 320 Field Botany 42(2,4) Introductory study of the taxonomy, ecology, and evolution of plants in their natural environment with an emphasis on identification and characteristics of representative species and plant communities in the Carolinas. Includes one or two required Saturday field trips. Preq: BIOSC 104, 111, or BIOSC 205, or consent of instructor.

BIOSC 335 Evolutionary Biology 3(3,0) Introduction to basic concepts and underlying principles of modern evolutionary biology. Topics include a historical overview of evolutionary theories, elementary population genetics, principles of adaptation, speciation, systematic and phylogenetic inference, fossil record, biogeography, molecular evolution, and human evolution. Preq: GEN 302 or equivalent.

BIOSC (PL PH) 340 Plant Medicine and Magic 3(3,0) See PL PH 340.

BIOSC (ENT) 400, H400, 600 Insect Morphology 4(3,3) See ENT 400.

BIOSC 401, H401, 601 Plant Physiology 3(3,0) Relations and processes pertaining to maintenance, growth, and reproduction of plants, including absorption of matter and energy, water relations of the plant, utilization of reserve products and liberation of energy. Preq: BIOSC 104 or 111 or BIOSC 205.

BIOSC 402, H402, 602 Plant Physiology Laboratory 1(0,3) Laboratory exercises and experiments designed to indicate the relations and processes which pertain to maintenance, growth, and reproduction of plants, including absorption of matter and energy, water relations of the plant, utilization of reserve products, and liberation of energy. Coreq: BIOSC 401.

BIOSC 403, H403, 603 Protozoology 3(3,0) Survey of the protozoa with emphasis on organization and function. Representative types of both free-living and parasitic forms are examined for each major taxon. Preq: BIOSC 104 or 111.

BIOSC 404, H404, 604 Protozoology Laboratory 4(1,2) Laboratory exercises reinforce the material presented in BIOSC 403 and introduce students to techniques used in collection, preservation, and examination of protozoa. Coreq: BIOSC 403.

BIOSC (GEN) 405, H405, 605 Molecular Genetics of Eukaryotes 3(3,0) See GEN 405.

BIOSC 406, H406, 606 Introductory Plant Taxonomy 3(3,0) Introduction to the basic principles and concepts of plant systematics with emphasis on the plants of South Carolina. Preq: BIOSC 104 or 111 or BIOSC 205. Coreq: BIOSC 407.

BIOSC 407, 607 Plant Taxonomy Laboratory 1(0,3) Introduction to basic techniques of plant taxonomy with laboratory and field emphasis on the flora of South Carolina. Coreq: BIOSC 406.

BIOSC 408, H408, 608 Comparative Vertebrate Morphology 3(3,0) Phylogeny and diversity of vertebrates and study of their comparative morphology, leading to an understanding of the relationships and functioning of living organisms. Preq: BIOSC 104 or 111. Coreq: BIOSC 409.

BIOSC 409, H409, 609 Comparative Vertebrate Morphology Laboratory 2(0,5) Comparative anatomy of representative vertebrates; methods used in preparing specimens for study and display. Coreq: BIOSC 408.

BIOSC 410, 610 Limnology 3(3,0) Detailed introduction to the physical, chemical, and biological interrelationships that characterize inland water environments. A fundamental approach to the interactions of components of the environment is developed at a theoretical level. Preq: Junior standing in a life science or consent of instructor.

BIOSC 411, H411, 611 Limnological Analyses 2(1,2) Examines a broad range of topics covered with both standing and running fresh waters. About one-third of the laboratory exercises address the major physical components of lakes and streams. The remainder provides rationale and methods for quantitative analyses of biota, as well as some integrated analyses of whole ecosystems. Preq: Introductory. Coreq: BIOSC 410 or 445.

BIOSC (E N R) 413, 613 Restoration Ecology 3(3,0) See E N R 413.

BIOSC (AVS, MICRO) 414, H414, 614 Basic Immunology 4(3,3) See MICRO 414.

BIOSC (ENT) 415, 615 Insect Taxonomy 3(1,6) See ENT 415.

BIOSC (GEN) 416, 616 Recombinant DNA 3(3,0) See GEN 416.

BIOSC 417, 617 Marine Biology 3(3,0) Survey of the organisms that live in the sea and their adaptations to the marine environment. Characteristics of marine habitats, organisms, and the ecosystems are emphasized. Preq: BIOSC 104, 111, or consent of instructor.

BIOSC (GEN, MICRO) 418, 618 Biotechnology I: Nucleic Acids Techniques 4(2,4) See GEN 418.
BIOSC 420, H420, 620 Neurobiology 3(3,0) Broad background in neurobiology. Topics include neuroanatomical structure-function; conduction in the neuron; neurite growth and development; neuromuscular junction; chemistry, physiology, and pharmacology of specific neurotransmitters and receptors; visual process; axoplasmic transport; hypothalamic-pituitary regulation; theories of behavior, theories of learning and memory. Preq: BIOL 301 or 305 or consent of instructor.

BIOSC 425, H425, 625 Introductory Mycology 3(3,0) Introduction to the biology of all the groups of fungi and some related organisms, with consideration of the taxonomy, morphology, development, physiology, and ecology of representative forms. Preq: BIOL 104 or 111 or BIOSC 205.

BIOSC 426, 626 Mycology Practicum 2(1,2) Application of the principles of mycological techniques, including isolation, culture, identification, and microscopic study of fungi. Examples from all major groups of fungi are included. Preq: or Coreq: BIOSC 425.

BIOSC (ENT, ENTOX) 430, H430, 630 Toxicology 3(3,0) Study of the adverse effects of chemicals on living organisms. Topics include the classification of toxicants and the mechanisms of toxicity. Preq: BIOL 301 or 305.

BIOSC 432, H432, 632 Animal Histology 3(3,0) Structural and functional study of the tissue makeup of organs. Emphasis is on light microscopy level with selected tissue studied at the electron microscope level. Preq: BIOSC 303 or consent of instructor. Coreq: BIOSC 433.

BIOSC 433, H433, 633 Animal Histology Laboratory 2(1,2) Microscopic examination of basic animal tissue types and the tissue makeup of organs which comprise systems. Coreq: BIOSC 432.

BIOSC (ENT) 436, 636 Insect Behavior 3(2,3) Study of the behavior of insects. Topics include locomotion, communication, feeding, reproduction, and defense. Preq: or Coreq: BIOSC 436.

BIOSC 440, H440, 640 Developmental Animal Biology 3(3,0) Events and mechanisms responsible for the development of multicellular animals. Gametogenesis, fertilization, embryonic development, cellular differentiation, morphogenesis, larval forms and metamorphosis, axial reproduction, regeneration, malignancy, and aging are analyzed in terms of fundamental concepts and control processes. Preq: BIOSC 301 or 305 or consent of instructor. Coreq: BIOSC 450.

BIOSC 441, H441, 641 Ecology 3(3,0) Study of basic ecological principles underlying the relationships between organisms and their biotic and abiotic environments. Includes physiological, population, and community ecology, with applications of each to human ecological concerns. Preq: BIOL 104, 111, BIOSC 205, or consent of instructor.

BIOSC 442, H442, 642 Biogeography 3(3,0) Study of patterns of distribution of plants and animals in space and time. Preq: BIOSC 302 or 303 and 304 or 305 or consent of instructor.

BIOSC 443, 643 Aquatic Ecology 3(3,0) Study of basic ecological principles and concepts as they apply to aquatic environments: rivers and streams, lakes and ponds, reservoirs, swamps, marshes, estuaries, and marine systems. Preq: Junior standing in a life science or consent of instructor.

BIOSC 445, H445, 645 Ecology Laboratory 2(1,2) Modern and classical approaches to the study of ecological problems discussed in BIOSC 41. Students are introduced to field, laboratory, and computer-based analyses of plants and animal populations and communities. Preq or Coreq: BIOSC 441.

BIOSC 446, H446, 646 Plant Ecology 3(3,0) Study of plants in relation to their biotic and abiotic environments. Individual organisms, populations, and communities are considered with an emphasis on seed plants in terrestrial environments. Preq: BIOL 104, 111, BIOSC 205, or consent of instructor.

BIOSC 447, H447, 647 Plant Ecology Laboratory 2(1,2) Experimental and observational approach to addressing principles discussed in BIOSC 446. Students are introduced to field and laboratory methods involving individual organisms, populations, and communities. Preq or Coreq: BIOSC 446 or consent of instructor.

BIOSC 450, H450, 650 Developmental Biology Laboratory 2(1,2) Experiments concerned with development of multicellular animals such as gametogenesis, fertilization, embryonic development, cell differentiation, morphogenesis, larval metamorphosis, and regeneration. Laboratory exercises provide the rationale and methods for the descriptive and experimental analysis of development in representative invertebrates and vertebrates. Preq or Coreq: BIOSC 440 or equivalent.

BIOSC 452, H452, 652 Plant Anatomy and Morphology 3(3,0) Study of the anatomy, reproduction, and phylogenetic relationships of vascular plants. Preq: BIOL 104, 111, BIOSC 205, or consent of instructor.

BIOSC 453, 653 Plant Anatomy and Morphology Laboratory 2(1,2) Laboratory focusing on the anatomy, reproduction, and phylogenetic relationships of vascular plants. Coreq: BIOSC 452.

BIOSC 454, H454, 654 Plant Virology 4(3,3) Study of disease Prkts: viruses: their morphology, biochemistry, purification, and transmission; symptoms resulting from viral infection; virus vector relationships. Serological and nucleic acid hybridization procedures. Diagnosis of viral diseases and the identification of causal agents. Replication of plant viruses, the interaction between viral host and plant genome. Control of plant viral diseases. Preq: BIOL 301, MICRO 305, or consent of instructor.

BIOSC (ENT) 455, H455, 655 Medical and Veterinary Entomology 3(2,3) Study of insects and their interactions with humans and animals. Preq: or Coreq: BIOSC 455.

BIOSC 456, H456, 656 Medical and Veterinary Parasitology 3(3,0) Introduction to parasitism in the animal kingdom; emphasizes basic and applied principles related to economically and medically important diseases. Classical and experimental approaches to the study of parasitism are examined in reference to protozoa, helminths, and arthropods. Preq: BIOL 104 or 111. Coreq: BIOSC 457.

BIOSC 457, H457, 657 Medical and Veterinary Parasitology Laboratory 2(1,2) Laboratory to reinforce material presented in BIOSC 456. Introduction to the study of parasites and their interactions with hosts. Preq: or Coreq: BIOSC 456.

BIOSC 458, H458, 658 Cell Physiology 3(3,0) Study of the chemical and physical principles of cell function emphasizing bioenergetics and membrane phenomena. Preq: BIOSC 301 or 305 or consent of instructor.

BIOSC 459, H459, 659 Systems Physiology 3(3,0) Physiological systems of vertebrates and their homeostatic controls. Function of the major physiological systems is described in terms of anatomical structure and chemical and physical principles. Preq: One year each of biology, chemistry, and physics or consent of instructor.

BIOSC 460, 660 Systems Physiology Laboratory 2(1,2) Modern and classical experimental methods are used to demonstrate fundamental physiological principles discussed in BIOSC 459. Students are introduced to computer-aided data acquisition and computer simulations of physiological function. Preq or Coreq: BIOSC 459.

BIOSC 461, H461, 661 Cell Biology Laboratory 3(3,0) In-depth analysis of how individual cells are organized into multicellular tissues and extracellular molecules control general and specific cellular functions such as gene expression, secretion, motility, signaling, cell-cycle control and differentiation. Taught and graded at a level where students are expected to integrate and analyze cellular events. Preq: BIOSC 303 or consent of instructor.

BIOSC 462, 662 Cell Biology Laboratory 2(1,2) Accompaniments BIOSC 461; focuses on cell behavior and microscopic analysis of eukaryotic cells. Preq: BIOSC 461.

BIOSC 464, H464, 664 Mammalogy 3(2,3) Study of the evolution, distribution, structure, and function of mammals. Preq: BIOSC 302 or 303 or consent of instructor.

BIOSC (GEN, HORT) 465, H465, 665 Plant Molecular Biology 3(3,0) Study of the molecular mechanisms underlying plant development and function. Preq: BIOSC 303 or consent of instructor.

BIOSC (ENT, W F B) 469, H469, 669 Aquatic Insects 3(1,6) Study of aquatic insects. Preq: or Coreq: BIOSC 469.

BIOSC 470, H470, 670 Animal Behavior 3(3,0) Study of the behavior of animals. Emphasis is on behavioral observation and analysis. Preq: Consent of instructor.

BIOSC 471, H471, 671 Animal Behavior Laboratory 1(0,3) Laboratory exercises that explore the behavior of animals. Preq or Coreq: BIOSC 470 or consent of instructor.

BIOSC 472, H472, 672 Ornithology 4(3,3) Study of birds: their origin and diversification, adaptations, phylogeny, classification, structure and function, behavior, ecology, and biogeography. Field identification is emphasized, and field trips are required. Preq: BIOSC 303 or consent of instructor.
BIOSC 475, H475, 675 Comparative Physiology 3(3,0) Physiological systems of invertebrates and vertebrates with emphasis on environmental adaptation. Physiological principles as they relate to metabolism, thermoregulation, osmoregulation, respiration, and neural and integrative physiology. Coreq: One year each of biology, chemistry, and physics or consent of instructor.

BIOSC 476, H476, 676 Comparative Physiology Laboratory 2(1,2) Modern classical experimental methods are used to demonstrate fundamental physiological principles discussed in BIOSC 475. Students are introduced to computer-aided data acquisition and manipulation as well as computer simulations of physiological functions. Coreq: BIOSC 475.

BIOSC 477, 677 Ichthyology 3(2,3) Systematics, life history, distribution, ecology, and current literature of fish. Laboratory study of morphology and identification of U.S. genera, as well as all southeastern species. Field trips are required. Coreq: BIOSC 303 or consent of instructor.

BIOSC 486 Natural History 3(3,0) Interdisciplinary study of natural history, including morphology and physiology of various endocrine systems and hormone and chemistry and modes of action are considered. Coreq: BIOSC 303, organic chemistry, or consent of instructor.

BIOSC 490 Selected Topics in Biological Sciences 1-1(1-4,0-9) Comprehensive study of selected topics not covered in other courses. May be repeated for a maximum of eight credits, but only if different topics are covered. Coreq: Junior standing or consent of instructor.

BIOSC 491, H491 Special Problems in Biological Sciences 2-4(0-6,12) Research problems in selected areas of biological sciences to provide an introduction to research planning and techniques. May be taken for a maximum of eight credits. Coreq: Junior standing or consent of instructor.

BIOSC (MICRO) 493 Senior Seminar 2(2,0) Analysis and discussion of publications from the technical and non-technical literature in biological sciences and from current topics of biology appearing in other media. Students complete their undergraduate on-line e-portfolios, which were initiated in BIOSC 101. Emphasis is placed on ethical issues that arise as a result of biological research. Coreq: Senior standing; COMM 150 or ENGL 314; or consent of instructor.

BIOL 103, H103 General Biology I 4(3,3) First in a two-semester sequence on the fundamentals of biology. Lecture and laboratory emphasize the structural, molecular, and energetic basis of cellular activities, fundamentals of genetic variability, reproductive strategies of organisms, and scientific processes. Diversity of animals and principles of evolution are introduced. Credit toward a degree will be given for only one of the following combinations: BIOL 101/111 or 103/104, dependent on the requirements for the major.

BIOL 104, H104 General Biology II 4(3,3) Continuation of BIOL 103, emphasizing animals and plants as functional units, evolution and diversity of plants, and principles of evolution and ecology. Credit toward a degree will be given for only one of the following combinations: BIOL 110/111 or 103/104, dependent on the requirements for the major. Coreq: BIOL 103.

BIOL 109 Introduction to Life Science 4(3,3) Survey of topics in botany, zoology, microbiology, and ecology emphasizing comprehension and practical application of life-science concepts to experiments and activities for the elementary school classroom. Enrollment priority will be given to Early Childhood and Elementary Education majors.

BIOL 110, H110 Principles of Biology I 5(4,3) Introductory course designed for students majoring in biological disciplines. Integrates lecture and laboratory and emphasizes a modern, quantitative, and experimental approach to explanation of structure, composition, dynamics, interactions, and evolution of cells and organisms. High school chemistry is recommended. Credit toward a degree will be given for only one of the following combinations: BIOL 110/111 or 103/104, dependent on the requirements for the major. Coreq: CH 101.

BIOL 111, H111 Principles of Biology II 5(4,3) Continuation of BIOL 110; emphasizes the study of plants and animals as functional organisms and the principles of ecology. Credit toward a degree will be given for only one of the following combinations: BIOL 110/111 or 103/104, dependent on the requirements for the major. Coreq: BIOL 110.

BIOL 120 Biological Inquiry Laboratory 1(0,3) Required laboratory experience to accompany BIOL 121, 122, or 123. Focus is on the process and outcomes of scientific inquiry. Students employ scientific methodology in a laboratory environment as well as critical analysis of biological problems in a small group context. Coreq: BIOL 121, 122, or 123.

BIOL 121 Keys to Human Identity 3(3,0) Introduction to scientific inquiry that emphasizes the biological aspects of human identity, including genetics, development, and the brain. Application in biotechnology and ethical issues associated with these topics are discussed. The role of evolution in determining patterns of unity and diversity among living organisms is a unifying theme. Coreq: BIOL 120.

BIOL 122 Keys to Biodiversity 3(3,0) Introduction to scientific inquiry through analysis of the topic of biodiversity. Biological foundations for life are studied, including how evolution shapes patterns of unity and diversity among organisms and the environment. Also included is focused discussion of human influences on the living world and associated ethical issues. Coreq: BIOL 120.

BIOL 123 Keys to Human Biology 3(3,0) Introduction to scientific inquiry through focused analyses on human biology. Consideration is given to biological processes that occur within humans as well as human impact on global biological processes. Interrelationships with non-human organisms that ultimately affect evolution and diversity of life are explored. Coreq: BIOL 120.

BIOL 201 Biotechnology and Society 3(3,0) Introduction to the theories, fields, and applications of biotechnology including the structure and function of genes and their manipulation to improve plant and animal productivity and human health. Individual case studies are examined including social and ethical issues surrounding biotechnology-based research and development. Not open to Genetics majors. Coreq: BIOL 120 and 121, 122, or 123, or equivalent, or consent of the instructor.

BIOL 203 Human Disease and Society 3(3,0) Focuses on the basic biology underlying human disease, how disease is understood, and current methods of prevention and treatment of disease. The economics as well as the social and ethical issues surrounding human disease are a common thread throughout the course. Coreq: BIOL 104, 121, 122, or 123, 111; or consent of the instructor.

BIOL 210 Evolution and Creationism 3(3,0) Critical review of the scientific and technological basis for evolutionary theory compared to creationist explanations for the origin and diversity of life. Includes a historical survey of the impact of the evolution/creation debate has had on law, politics, education, and other important aspects of society. Coreq: BIOL 104, 111, 121, 122, or 123; consent of instructor.

BIOSYSTEMS ENGINEERING

Professors: W. H. Allen, Chair; D. E. Brune, R. B. Dodd, Y. J. Han; Associate Professors: J. P. Chastain, C. M. Drapcho, C. V. Privette, T. H. Walker; Assistant Professor: T. O. Owoins; Instructor: K. R. Kirk

B E 210 Introduction to Biosystems Engineering 2(1,3) Overview of topics and engineering applications that comprise the Biosystems Engineering profession. Significant emphasis is also given to development of oral and written communication skills needed by the engineering professional, introduction to design methodology, and application of engineering fundamentals to biological systems. Coreq: ENGR 130, MTHSC 106.
BE 212 Fundamentals of Biosystems Engineering 2(1,3) Introduction to fundamental concepts in biosystems engineering, including mass, energy, and momentum balances; mass, heat, and momentum transfer; biological response to environmental variables, biological materials, biological kinetics, and techniques of measurement and analysis of engineering and biological data. Laboratory includes hand-on exercises, problem solving and computer sessions, and oral presentations. Prereq: BE 210.

BE 222 Geomeasurements 2(1,3) Fundamentals of land measurement and traverse calculations. Leveling, earthwork, area, and topographic measurements using levels, total stations, and GPS. Application of mapping via GIS. Prereq: MTHSC 106.

BE H300 Biosystems Engineering Honors Seminar 0(0,1) Introduces undergraduate students to current faculty research. Project ideas are then developed to prepare students in choosing a research topic for the senior honors thesis. Students are required to attend senior honors thesis presentations. To be taken Pass/Fail only. Prereq: Junior standing in departmental honors program.

BE 312 Biological Kinetics and Reactor Modeling 3(2,2) Fundamentals of microbial and biochemical kinetics used in analysis and design of biological systems. Topics include mathematical and computer modeling of biological kinetics and systems, estimating model coefficients, and development of microbial kinetic models as basis for batch and continuous reactor design. Prereq: BE 212, MTHSC 208.

BE 314 Biosystems Engineering Mechanical Design 3(3,0) Basic mechanical design of biosystems; introduction to biomechanics and biomaterial properties; applications of machine components and their selection related to specific types of biosystems; team design project. Prereq: CE 206 or M 302.

BE 322 Small Watershed Hydrology and Sedimentology 3(3,0) Fundamental relationships governing rainfall disposition are used as bases for defining the hydrology of watersheds. Application of modeling techniques appropriate for runoff and sediment control is emphasized. Prereq: PHYS 122. Coreq: CSENV 202.

BE 370 Practicum 1-3 Preplanned internship with an approved employer involved with biosystems engineering endeavors. A minimum 130 hours of supervised responsibility is required per credit hour. Evaluation is based on activity journal, written/oral report, and an evaluation from the supervisor. May be repeated for a maximum of three credits. To be taken Pass/Fail only. Prereq: Junior standing and departmental consent.

BE H400 Biosystems Engineering Honors Undergraduate Research 1-3(0,2-6) Individual research projects conducted under the supervision and guidance of a faculty member. Senior honors thesis is required. May be repeated for a maximum of six credits. Prereq: BE H300 and consent of instructor.

BE (CSENV) 408, 608 Land Treatment of Wastewater and Sludges 3(3,0) See CSENV 408.

BE 412, 612 Heat and Mass Transport in Biosystems Engineering 3(3,0) Fundamentals of heat and mass transport used in engineering design and analysis of biological systems; principles of steady state and transient energy and mass balances including chemical and biological generation terms. Prereq: BE 312, MTHSC 208. Coreq: M E 310.

BE 414, 614 Biosystems Engineering Unit Operations 3(2,3) Applies the basic principles of statics, dynamics, and thermodynamics to design of mechanical and electrical systems supporting biological operations and processes. Prereq: BE 314, M E 310.

BE 415, H415, 615 Instrumentation and Control for Biosystems Engineers 4(3,3) Overview of modern instrumentation techniques and digital electronic components and subsystems to integrate them into digital data acquisition and control systems for biosystems. Laboratory use of equipment is emphasized. Topics include characteristics of instruments, signal conditioning, transducer theory and applications, programmable logic controllers, and digital data acquisition and control. Prereq: E C E 307.

BE 421 Engineering Systems for Soil Water Management 2(1,3) Fundamentals of design related to drainage of lands, irrigation, and modification of the microenvironment for optimum productivity are presented. Prereq: MTHSC 208. Coreq: CE 341.

BE 422, 622 Hydrologic Modeling of Small Watersheds 3(3,0) Design of structures and development of best management practices for runoff, flood, and sediment control from rural and urban areas, including natural and disturbed watersheds. Topics include modeling of prismatic and non-prismatic channels, culverts, and detention/retention ponds. Prereq: BE 322 or consent of instructor.

BE (CHE) 428, 628 Biochemical Engineering 3(3,0) Use of microorganisms and enzymes for the production of chemical feedstocks, single-cell protein, antibiotics, and other fermentation products. Topics include kinetics and energetics of microbial metabolism, design and analysis of reactors for microbial growth and enzyme-catalyzed reactions, and considerations of scale-up, mass transfer, and sterilization during reactor design. Prereq: BE 312, BIOC 301, MICRO 305 (for Biosystems Engineering majors); Coreq: CHE 312, 450 (for Chemical Engineering majors).

BE 431, 631 Structural Design for Biosystems 2(2,0) Analysis and design of structures and statically determinant components with emphasis on wood. Prereq: C E 206 or M E 302.

BE 435, 635 Applications in Biotechnology Engineering 2(3,2) Bioengineering principles applied to the expanding fields of agricultural biotechnology, ecotechnology, and biomedical technology. Specific applications include waste treatment and ecological engineering, bioreactor propagation of plant and animal cells and tissues, applied genomics and synthetic seed production, biosensors and biomonitoring, biological implants and materials biocompatibility. Prereq: BE (CHE) 428.

BE 438, 638 Bioprocess Engineering Design 3(2,2) Design and analysis of systems for processing biological materials. Topics include biotechnology, thermodynamics, transport processes, and biological properties related to bioprocess design and computational simulation. Unit operations include basic bioreactor operation, biopreparations, and preservation techniques. Prereq: BE 428.

BE 442, 642 Properties and Processing of Biological Products 2(1,3) Study of engineering properties of biological materials and their uniqueness as design restraints on systems for handling, processing, and preserving biological products. Prereq: BE 333, C E 341, M E 302, 310.

BE (EE&S, FOR) 451, H451, 651 Newman Seminar and Lecture Series in Natural Resources Engineering 1(0,2) Topics dealing with development and protection of land, air, water, and related resources are covered by seminar with instructor and invited lecturers. Current environmental and/or resource conservation issues are addressed. Prereq: Senior standing, consent of instructor.

BE 464, 664 Non-Point Source Management in Engineered Ecosystems 3(2,3) Fundamentals of non-point source pollution including quantification of environmental impact and ecosystem management related to contaminants and nutrients in and to planning and design of ecological systems. Prereq: MICRO 305, senior standing in engineering, or consent of instructor.

BE 473 Special Topics in Biosystems Engineering 1-3(1-3,0) Comprehensive study of special topics not covered in other courses. Emphasis is on independent pursuit of detailed investigations. Senior standing and consent of department.

BE 474 Engineering Project Management/Portfolio 2(1,3) Research into applications using hydrology principles, fluid mechanics, bioprocessing, heat/mass transfer, instrumentation, mechanical unit operations, and structural principles for project design, scheduling, and cost estimation. Topics also include engineering ethics, professional development, written and oral communication, and job skills. Senior portfolios are also developed. Prereq: Senior standing in Biosystems Engineering.

BE 475 Biosystems Capstone Design 2(0,6) Applications of hydrology, fluid mechanics, bioprocessing, heat/mass transfer, instrumentation, mechanical unit operations, and structural principles in design, project scheduling, cost estimation, ethics, environmental and social impacts; design drawings; and report documentation. Prereq: All 400-level engineering courses previously listed in curriculum.

BE (EE&S, S 1 E) 484, 684 Municipal Solid Waste Management 3(3,0) See EE&S 484.
BUSINESS

BUS 101 Business Foundations 1(1,0) Overview of the business environment. Topics include the economic and legal foundations of business and an introduction to the human, resource, marketing, operations, and financial functions of global businesses. To be taken Pass/Fail only.

BUS H291 Honors Seminar in International Business 1(1,0) Introduction to the International Business Honors Program presented through a discussion of thesis expectations, study abroad experiences, and seminars given by returning senior International Business Honors students. To be taken Pass/Fail only. Prq: Membership in Calhoun Honors College.

BUS H391 International Business Honors Thesis Research 1(1,0) Students work with a thesis advisor and an international advisor to develop a research topic for the senior thesis. Students work and conduct research while participating in an approved study abroad. To be taken Pass/Fail only. Prq: BUS H291.

BUS H392 International Business Honors Thesis Proposal 1(1,0) Students work with a thesis advisor and an international advisor to complete a proposal for the senior thesis. Students work and conduct research while participating in an approved study abroad. To be taken Pass/Fail only. Prq: BUS H391.

BUS H491 International Business Honors Thesis I 3(3,0) Students work with an advisor to conduct literature review and research on a senior thesis topic and present presentations and thesis drafts based on this work. Prq: BUS H392.

BUS H492 International Business Honors Thesis II 3(3,0) Students work with an advisor to complete a senior thesis. They prepare and present a seminar on the topic for presentation to faculty and other International Business Honors students. Prq: BUS H491.

CERAMIC AND MATERIALS ENGINEERING

The following courses may be taken to satisfy Accreditation Board for Engineering and Technology (ABET) requirements for depth in humanities and social sciences by pairing or sequencing with humanities or social science subject areas as designated in the syllabi for each Calhoun Honors Seminar course offering.

C H S H201 Structures and Society 3(3,0) Interdisciplinary honors seminar that examines selected structures regarded as monuments to artistic creativity and technological genius and the ways that structures affect and are affected by the societies that produce them. Prq: Membership in Calhoun Honors College.

C H S H202 Science, Culture, and Human Values 3(3,0) Interdisciplinary honors seminar that unifies natural scientific, social scientific, and humanistic disciplines into a holistic view of the modern world and its future. May be repeated for a maximum of six credits, but only if different topics are covered. Prq: Membership in Calhoun Honors College.

C H S H203 Society, Art, and Humanities 3(3,0) Combines readings and methodologies from the social sciences, arts, and humanities to study the interrelationships among the disciplines and their societal effects. Subjects vary. May be repeated for a maximum of six credits, but only if different topics are covered. Prq: Membership in Calhoun Honors College.

C H S H204 Honors Study/Travel 1(0,3) Study/travel experience related to a three-credit Calhoun Honors Seminar. May be repeated for a maximum of three credits, but only if different topics are covered. Prq: Membership in Calhoun Honors College.

C H S H205 Methods of Interpretation 1(1,0) Seminar to teach students how to interpret documents, works of art, structures, and scholarly materials related to a three-credit Calhoun Honors Seminar. May be repeated for a maximum of three credits, but only if different topics are covered. Prq: Membership in Calhoun Honors College.

C H S H400 Honors Contract 0 Advanced study and research taken in conjunction with any 300-400-level course. Contract requires prior approval by instructor and Honors Director. To be taken Pass/Fail only. May be repeated once, but only if in conjunction with different course. Prq: Membership in Calhoun Honors College.

C M E 210 Introduction to Materials Science 3(3,0) Introductory course in materials science designed primarily for engineering students. Study of the relation between the electrical, mechanical, and thermal properties of products and the structure and composition of these products. All levels of structure are considered from gross structure easily visible to the eye through electronic structure of atoms. Prq: CH 102, MTHSC 108.

C M E 222 Materials Processing II 3(3,0) Continuation of C M E 221 describing the principles underlying the processing/manufacturing of ceramic, polymeric, and metallic materials. Prq: C M E 319; Coreq: C M E 242.

C M E 225 Structure of Materials 3(3,0) Introductory course in fundamentals of atomic bonding as it relates to crystal structure and the resulting properties of metals, ceramics, and polymers. Emphasis is placed on the influence of crystallography and microstructure on the chemical and physical performance of materials. Prq: CH 102, PHYS 122, MTHSC 108.

C M E 241 Metrics Laboratory 1(0,3) Provides basic knowledge of statistical techniques and testing procedures used to test materials. Sampling procedures, calculation of averages, confidence intervals, Weibull statistics, precision and accuracy to enable quality decision making are included. Coreq: C M E 210.

C M E 242 Fabrication and Microscopy Laboratory 20(0,6) Laboratory demonstrating how useful engineering products and components may be fabricated. Statistical experimental design and ANOVA are introduced to evaluate the effects of processing inputs on material properties. Sampling and sample preparation methods and optical microscopy analysis are presented. Prq: C M E 225, 241; Coreq: C M E 222.


C M E 321 Characterization of Materials 3(3,0) Provides students with an overview of the commonly used materials characterization techniques, including x-ray diffraction, thermal analysis, microscopy, and surface analysis. Prq: C M E 225; Coreq: C M E 341.

C M E 322 Thermal Processing of Materials 3(3,0) Description and analysis of thermal processing steps. Treatment using the fundamental science of processes and the engineering of commercial scale equipment. Particular emphasis is placed on sintering, nucleation and growth, stress relief, thermal analysis and phase transformation processes are also discussed. Prq: C M E 227, 228; Coreq: C M E 341.

C M E 328 Phase Diagrams for Materials Processing and Applications 3(3,0) Teaches students to use single component, binary, and ternary phase diagrams to analyze material processing routes and utilization. Reaction pathways by which material microstructure evolves and the relationship of reaction pathway to equilibrium phase diagrams are considered, as are material interactions/degradation during use. Prq: C M E 328.

C M E 330 Powder Processing 3(3,0) Study of the cause-and-effect relationship in particular suspensions controlling rheological behavior, porosity, packing densities, shrinkages, and other properties in powder systems. Topics include particle size analysis techniques and measurements, particle packing, rheological properties and measurements, surface area analysis, and interfacial chemicals including both flocculants and defloculants. Prq: C M E 327; Coreq: C M E 342.
CME 341 Analytical Methods and Phase Development (2,0,6) Students learn how to use analytical tools such as XRD, thermal analysis, SEM and EDAX to characterize materials, evaluate processing effects, and determine failure modes. Provides understanding of how thermodynamics and kinetics affect the development of phases in materials. Prereq: CME 242; Coreq: CME 321.

CME 342 Structure/Property Laboratory (2,0,6) Provides a basic understanding of how microstructure-interrelationships and processes affect the physical properties of materials and how environmental effects modify structure and mechanical behavior of materials. Prereq: CME 241.

CME 361 Processing of Metals and Their Composites (3,0,3) Examines the control of microstructure-property relationships in metallic materials and their composites through development and selection of innovative manufacturing methods. Coreq: CME 327.

CME H395 Honors Research I (3,0,9) Individual research under the direction of a Ceramics and Materials Engineering faculty member. Coreq: CME 327, 328.

CME 402, 602 Solid State Materials (3,0,3) Discusses the properties of solids as related to structure and bonding with emphasis on electronic materials. Band structure theory, electronic, and optical properties are treated. Prereq: CME 326, MTHSC 208, PHYS 221.

CME 407 Senior Capstone Design (1,0) Work with industrial partners who have materials related processes or product problems. Emphasizes interdisciplinary approach and global perspective of products and problems. Critical thinking, group effectiveness and problem solving with materials and processes. Collaborative efforts between industry and student academic teams are employed. Prereq: CME 441, IE 384.

CME 413 Noncrystalline Materials (3,0,3) Study of the fundamentals of the noncrystalline state. Includes cooling kinetics and effects on formation, as well as physical properties of noncrystalline substances, in metallic, polymeric, and ceramic systems. Prereq: CME 326; Coreq: CME 402.

CME 416, 616 Electrical Properties of Materials (3,0,3) Covers a range of topics dealing with electrical and magnetic materials including metal and polymer conductors, insulators, ceramic and polymer materials for dielectric applications, and ferroelectric, piezoelectric, pyroelectric, and electrooptic materials. Metal and ceramic magnetic materials are also discussed.

CME 418, 618 Process Control (3,0,3) Process control techniques and apparatus with particular emphasis on temperature measurement and control systems. Application of laboratory techniques to the control of product quality and process efficiency is included. Prereq: CME 330, 361, 413.

CME 422 Mechanical Behavior of Materials (3,0,3) Covers the microstructural basis of deformation and fracture in ceramic, metallic, and polymeric systems. Prereq: E M 201, MTHSC 208.

CME 424, 624 Optical Materials and Their Applications (3,0,3) Introduces the interaction of materials with light. Specific topics include fundamental optical properties, materials synthesis, optical fiber and planar waveguides, and the componentry and systems-level aspects of optical communication systems. Prereq: CME 402, 413.


CME 431, 631 Advanced Ceramic Processing (3,0,0) Advanced study of ceramic forming processes. Focuses on the many types of ceramic forming processes, such as slip casting, extrusion, dry pressing, filter pressing, and plastic forming. Prereq: CME 330.

CME 432 Manufacturing Processes and Systems (3,0,3) Plant layout and design for manufacturing of ceramic products. Emphasizes process control and verification of processing results. Adaptation of computers in process simulation/robotics. Use of programmable logic controllers and robotics in processing. Prereq: CME 326.

CME 433 Combustion Systems and Environmental Emissions (3,0,3) Study of the application of burners, burner controls, firing atmospheres, hydrocarbon fuels, and other energy resources to industrial kilns, furnaces, and firing operations. Topics include energy resources, fuel chemistry, combustion analysis, ratio control systems, flow and pressure measurement and control, kiln atmosphere controls, industrial burners, and flames. Prereq: CME 326.

CME 441 Manufacturing Laboratory (1,0) Provides students with the understanding of process optimization. Use of complex experimental design schemes to elucidate the interrelationships between processing, microstructural development, and resulting properties is emphasized. Prereq: CME 342.

CME 445 Practice of Materials Engineering (1,1,0) Students working in groups present and discuss practical, ethical, safety, business, and selected technical topics. Invited speakers discuss various aspects of the engineering world. To be taken Pass/Fail only. Prereq: CME 432.

CME 460, 660 Metals and Their Composites (3,0,3) Examines the control of microstructure-property relationships in metallic materials and their composites through development and selection of appropriate thermal processing procedures. Prereq: CME 322, 342.

CME (BIO E) 480, 680 Research Principles and Concepts (1,1,0) See BIO E 480.

CME 490, H490, 690 Special Topics in Ceramic Engineering I (3,1,3) Study of topics not ordinarily covered in other courses. Taught as the need arises. Typical topics could include current research in a specific area or technological advances. May be repeated for a maximum of six credits, but only if different topics are covered. Prereq: Consent of instructor.

CME H495 Honors Research II (3,0,9) Individual research under the direction of a Ceramic and Materials Engineering faculty member. Prereq: CME H395.

CME H497 Honors Thesis (1,1,0) Preparation of honors thesis based on research conducted in CME H395 and H495. Prereq: CME H495.

CHEMICAL ENGINEERING


CH E 130 Chemical Engineering Tools (3,2,2) Tools and methods for analyzing engineering problems with applications in chemical and biocatalytic processes, including development of flow process diagrams, numerical methods, graphing, and applied statistics. Problem-solving and computer skills are developed in the lecture and laboratory activities. Prereq: CES 102. Coreq: MTHSC 108, PHYS 122.

CH E 211 Introduction to Chemical Engineering (4,3,2) Introduction to fundamental concepts of chemical engineering, including mass and energy balances, PVT relationships for gases and vapors, and elementary phase equilibria; problem-solving and computer skills are developed in lab. Prereq: CH E 102, ENGR 120, PHYS 122.

CH E 220 Chemical Engineering Thermodynamics (1,3,0) Topics include first and second laws of thermodynamics, ideal gases, PVT properties of real fluids, energy balances with chemical reactions, and thermodynamic properties of real fluids. Prereq: CH E 211, MTHSC 206.

CH E 230 Fluids/Heat Transfer (4,3,2) General principles of chemical engineering and study of fluid flow, fluid transportation, and heat transmission. Special emphasis is placed on theory and its practical application to design. Prereq: CH E 211. Coreq: CH E 220, MTHSC 206.

CH E H300 Honors Seminar I (1,0) Acquaints students enrolled in the Departmental Honors Program with current research issues in the profession. This assists the student in preparing a research proposal for the Senior Thesis. To be taken Pass/Fail only. Prereq: Admission to departmental honors program, Junior standing.

CH E 307 Unit Operations Laboratory I (3,2,3) Laboratory work in the unit operations of fluid flow, heat transfer, and evaporation. Stress is on the relationship between theory and experimental results and the statistical interpretation of those results and on the presentation of results. Prereq: CH E 311, 220, EG 209. Coreq: EX-ST 411 or MTHSC 302.

CHE 311 Fluid Flow (3,3,0) Fundamentals of fluid flow and the application of theory to chemical engineering unit operations, such as pumps, compressors, and heat exchangers. Special emphasis is placed on theory and its application to design. Prereq: CH E 220, 311.

CH E 319 Engineering Materials (3,3,0) Introduction to the fundamental properties and behavior of engineering materials, with emphasis on polymers, metals, ceramics, and composite materials. Prereq: CH E 211. Coreq: CH 223, CH E 220.
CHE 431 Process Development, Design, and Optimization of Chemical Engineering Systems I 3(2,3) Steps in creating a chemical process design from original concept to successful completion and operation of the plant. Topics include engineering economics, systems and analysis, simulation, optimization, process equipment sizing, selection, and costing. Prereq: CHE 307, 312. Coreq: CHE 413.

CHE 432 Process Development, Design, and Optimization of Chemical Engineering Systems II 5(1,12) Continuation of CHE 431. Principles of process development, design, and optimization are applied in a comprehensive problem carried from a general statement of the problem to detailed design and economic evaluations. Prereq: CHE 321, 353, 407, 413, and 450 or consent of department chair.

CHE 433 Process Design II 3(1,6) Continuation of CHE 431. Principles of process development, design, and optimization are applied in a comprehensive problem carried from a general statement of the problem to detailed design and economic evaluations. Prereq: CHE 330, 407, 431, 450.

CHE 443 Chemical Engineering Senior Seminar I 1(1,0) Preparation of senior chemical engineering students for entry into the profession. Timely information on job interviewing skills, career placement and guidance, professional registration, professional behavior and ethics, graduate school, and management of personal finances. Outside speakers are used frequently. To be taken Pass/Fail only. Prereq: CHE 312, Junior standing in Chemical Engineering.

CHE 4353 Process Dynamics and Control 3(3,0) Mathematical analysis of the dynamic response of process systems. Basic automatic control theory and design of control systems for process applications. Prereq: MTHSC 208, CHE 311 or 230. Coreq: CHE 330 or 413.

CHE 4395 Honors Research I 3(0,9) Individual research under the direction of a Chemical Engineering faculty member. Prereq: CHE 300 or consent of department honors coordinator.

CHE 401, 601 Transport Phenomena 3(3,0) Mathematical analysis of single and multi-dimensional steady-state and transient problems in momentum, energy, and mass transfer. Both the similarities and differences in these mechanisms are stressed. Prereq: CHE 312, MTHSC 208.

CHE 470 Unit Operations Laboratory II 3(1,6) Continuation of CHE 307 with experiments primarily on the differential operations. Additional lecture material on report writing and general techniques for experimental measurements and analysis of data, including statistical design of experiments. Prereq: CHE 307, 312.

CHE 412, 612 Polymer Engineering 3(3,0) Design-oriented course in synthetic polymers. Topics include reactor design used in polymer production, effect of steps before addition kinetics on reactor design, epoxy curing reactions, polymer solubility, influence of polymerization and processing conditions on polymer crystallinity. Prereq: CHE 242 and 332 or consent of instructor.

CHE 413 Separation Processes 3(3,0) Study of gas-liquid and liquid-liquid separation techniques with emphasis on gas absorption, distillation, and liquid-liquid extraction. Prereq: CHE 322, CHE 312, 321.

CHE (B E) 428, 628 Biochemical Engineering 3(3,0) See B E 428.

CHE 431 Process Development, Design, and Optimization of Chemical Engineering Systems I 3(2,3) Steps in creating a chemical process design from original concept to successful completion and operation of the plant. Topics include engineering economics, systems and analysis, simulation, optimization, process equipment sizing, selection, and costing. Prereq: CHE 307, 312. Coreq: CHE 413.

CHE 432 Process Development, Design, and Optimization of Chemical Engineering Systems II 5(1,12) Continuation of CHE 431. Principles of process development, design, and optimization are applied in a comprehensive problem carried from a general statement of the problem to detailed design and economic evaluations. Prereq: CHE 321, 353, 407, 413, and 450 or consent of department chair.

CHE 433 Process Design II 3(1,6) Continuation of CHE 431. Principles of process development, design, and optimization are applied in a comprehensive problem carried from a general statement of the problem to detailed design and economic evaluations. Prereq: CHE 330, 407, 431, 450.

CHE 443 Chemical Engineering Senior Seminar I 1(1,0) Preparation of senior chemical engineering students for entry into the profession. Timely information on job interviewing skills, career placement and guidance, professional registration, professional behavior and ethics, and management of personal finances. Outside speakers are used frequently. To be taken Pass/Fail only. Prereq: CHE 312, Senior standing in Chemical Engineering. Coreq: CHE 431.

CHE 444 Chemical Engineering Senior Seminar II 1(1,0) Working in groups, students present and discuss topics related to professional practice, ethics, business, industrial safety, the environment, and selected technical subjects of interest to society. To be taken Pass/Fail only. Prereq: CHE 344 or 443. Coreq: CHE 432.

CHE 445 Selected Topics in Chemical Engineering 3(3,0) Topics not covered in other courses, emphasizing current literature, research, and practice of chemical engineering. Topics vary from year to year. May be repeated, but only if different topics are covered. Prereq: Consent of instructor.

CHE 450, 650 Chemical Reaction Engineering 3(3,0) Review of kinetics of chemical reactions and an introduction to the analysis and design of chemical reactors. Topics include homogeneous and heterogeneous reactions, batch and continuous flow reactor systems, catalysis, and design of industrial reactors. Prereq: CHE 312, 321, CHE 332.

CHE 491, H491 Special Projects in Chemical Engineering 1-3(1,3,0) Topics requested by students or offered by faculty as the need arises. Topics may include review of current research in an area, technological advances, and national engineering goals. May be repeated for a maximum of six credits, but only if different topics are covered. Prereq: CHE H495 Honors Research II 3(0,9) Individual research under the direction of a chemical engineering faculty member. Prereq: CHE H395.

CHE E H497 Honors Thesis 1(1,0) Preparation of honors thesis based on research conducted in CHE E H395 and H495. Prereq: CHE E H495.

CHEMISTRY


CH 101, H101 General Chemistry 4(3,3) Introduction to the elementary concepts of chemistry through classroom and laboratory experience. Emphasizes chemical reactions and the use of symbolic representation, the mole concept and its applications and molecular structure. Credit toward a degree will be given for only one of CH 101 and 105. Prereq or Coreq: MTHSC 105 or higher placement in MTHSC.

CH 102, H102 General Chemistry 4(3,3) Continuation of CH 101, treating solutions, rates of reactions, chemical equilibrium, electrochemistry, chemistry of selected elements, and an introduction to organic chemistry. Credit toward a degree will be given for only one of CH 102 or 106. Prereq: CH 101 with a C or better.

CH 105 Beginning General and Organic Chemistry 4(3,3) Elementary treatment of principles of general and organic chemistry for students in liberal arts, education, business, health science, and selected life-sciences curricula. Laboratory is coordinated with lecture. May not be taken as a prerequisite for organic chemistry. Credit toward a degree will be given for only one of CH 105 or 106.

CH 106 Beginning General and Organic Chemistry 4(3,3) Continuation of CH 105. Topics in elementary organic chemistry with an emphasis on organic chemistry relevant to life processes are developed in both lecture and laboratory. May not be taken as a prerequisite for organic chemistry. Credit toward a degree will be given for only one of CH 106 or 108. Prereq: CH 105 with a C or better or consent of instructor.

CH 141 Chemistry Orientation 1(1,0) Lectures, discussions, and demonstrations devoted to health and safety in chemistry laboratories; use of the chemical literature; and career planning. Prereq: Registration in CH 101.

CH 152 Chemistry Communication 1 2(2,0) Methods for scientific communication including oral, written, and electronic formats. Service-learning projects engage participants and develop critical thinking skills and procedures relating to professional practice and ethics, business, industrial safety, the environment, and selected technical subjects of interest to society. To be taken Pass/Fail only. Prereq: CHE 344 or 443. Coreq: CHE 432.

CH 201 Survey of Organic Chemistry 4(3,3) Introduction to organic chemistry emphasizing nomenclature, classes of organic compounds, and chemistry of functional groups; for students needing one-semester course in organic chemistry. Credit toward a degree will be given for only one of CH 201 or 223. Prereq: CHE 102 or consent of instructor.

CH 205 Introduction to Inorganic Chemistry 3(3,0) One semester treatment which emphasizes the properties and reactions of the more common chemical elements. Prereq: CH 102.
CH 206 Inorganic Chemistry Laboratory 1(0,3)
Introduction to laboratory synthesis and characterization of inorganic compounds. Laboratory sessions consist of a set of six landmark inorganic experiments for which the original authors have been awarded Nobel prizes. Coreq: CH 102, 205.

CH 223 Organic Chemistry 3(3,0)
Introductory course in the principles of organic chemistry and the derivation of these principles from a study of the properties, preparations, and interrelationships of the important classes of organic compounds. Credit toward a degree will be given for only one of CH 201 or 223. Prereq: CH 102 or consent of instructor.

CH 224 Organic Chemistry 3(3,0)
Continuation of CH 223. Prereq: CH 223.

CH 227 Organic Chemistry Laboratory 1(0,3)
Synthesis and properties of typical examples of the classes of organic compounds. Credit toward a degree will be given for only one of CH 225, 227, or 229. Prereq: CH 223 or concurrent enrollment.

CH 228 Organic Chemistry Laboratory 1(0,3)
Continuation of CH 227. Credit toward a degree will be given for only one of CH 226 or 228. Prereq: CH 224 (or concurrent enrollment) and 227.

CH 229 Organic Chemistry Laboratory 1(0,3)
One-semester laboratory for chemical engineering students. Credit toward a degree will be given for only one of CH 225, 227, or 229. Prereq: CH 223.

CH 313 Quantitative Analysis 3(3,0)
Fundamental principles of volumetric, gravimetric, and certain elementary instrumental chemical analyses. Prereq: Concurrent enrollment for credit in CH 315 or 317.

CH 315 Quantitative Analysis Laboratory 2(0,6)
Laboratory techniques of volumetric, gravimetric, and elementary instrumental chemical analyses. Credit toward a degree will be given for only one of CH 315 or 317. Coreq: Concurrent enrollment for credit in CH 313.

CH 317 Quantitative Analysis Laboratory 1(0,3)
Standard techniques of analytical chemistry—gravimetric, volumetric, and instrumental. Credit toward a degree will be given for only one of CH 315 or 317. Coreq: Concurrent enrollment for credit in CH 313.

CH 330 Introduction to Physical Chemistry 3(3,0)
One-semester treatment of physical chemistry, emphasizing topics that are especially useful in the life sciences, agriculture, and medicine: chemical thermodynamics, equilibrium, solutions, kinetics, electrochemistry, macromolecules, and surface phenomena. Credit toward a degree will be given for only one of CH 330 or 331. Prereq: MTHSC 106.

CH 331 Physical Chemistry 3(3,0)
Includes the gaseous state, thermodynamics, chemical equilibria, and atomic and molecular structure, from both experimental and theoretical points of view. Credit toward a degree will be given for only one of CH 330 or 331. Prereq: MTHSC 206, PHYS 221.

CH 332, H332 Physical Chemistry 3(3,0)
Continuation of CH 331, including chemical kinetics, liquid and solid state, phase equilibria, solutions, electrochemistry and surfaces. Prereq: CH 331 or consent of instructor.

CH 339 Physical Chemistry Laboratory 1(0,3)
Experiments are selected to be of maximum value to Chemistry and Chemical Engineering majors. Coreq: CH 331 or CH E 220.

CH 340 Physical Chemistry Laboratory 1(0,3)
Continuation of CH 339. Prereq: Registration in CH 332.

CH 400 Selected Topics in Chemistry 1-3(1-3,0)
Comprehensive study of topics of current interest in chemistry. May be repeated for a maximum of twelve credits, but only if different topics are covered.

CH 402, 402, 602 Inorganic Chemistry 3(3,0)
Basic principles of inorganic chemistry are discussed with special emphasis on atomic structure, chemical bonding, solid state, coordination chemistry, organometallic chemistry, and acid-base theories. The chemistry of certain selected elements is treated. Prereq: CH 331, 332.

CH 403 Advanced Synthetic Techniques 2(0,6)
Introduction to advanced laboratory techniques in synthesis and characterization of inorganic and organic compounds. Laboratory sessions consist of a set of eight experiments in modern fields of chemistry, including superconductivity, buckminsterfullerene, bioorganic chemistry, medicinal chemistry, asymmetric synthesis, and polymer chemistry. Prereq: CH 227, 228, 402, or consent of instructor.

CH 411 Instrumental Analysis 3(3,0)
Principles of operation and application of modern chemical instrumentation in the field of analytical chemistry. Topics include basic electronics, statistics, optical, mass, magnetic resonance, electron and x-ray spectroscopy, radiochemistry, and separation science. Prereq: CH 331, 332.

CH 412 Instrumental Analysis Laboratory 2(0,5)
Reinforcement of principles of instrumental analysis described in CH 411 by practical, hands-on experience. Aspects of sample preparation, standardization, data acquisition and interpretation, and report formulation procedures common in chemical analyses are considered for a range of modern instrumental methods. Coreq: CH 411.

CH 413, H413 Chemistry of Aqueous Systems 3(3,0)
Chemical equilibria in aqueous systems, especially natural waters; acids and bases, dissolved CO2, precipitation and dissolution, oxidation-reduction, adsorption, etc. Prereq: CH 102 or 106.

CH 421, H421, 621 Advanced Organic Chemistry 3(3,0)
Survey of modern organic chemistry with an emphasis on synthesis and mechanisms. Prereq: CH 224, 332, or equivalent.

CH 425, 625 Medicinal Chemistry 3(3,0)
Survey of the pharmaceutical drug discovery process. Covers discovery of candidate compounds, bioassay methods, and associated regulatory and commercial issues. Case studies are selected from the current literature. Prereq: CH 224 or equivalent or consent of instructor.

CH 427, H427, 627 Organic Spectroscopy 3(2,3)
Survey of modern spectroscopic techniques used in the determination of molecular structure. Emphasis is on the interpretation of spectra: nuclear magnetic resonance, ultraviolet, infrared, mass spectroscopy, optical rotatory dispersion and circular dichroism. Prereq: One year each of organic chemistry and physical chemistry.

CH 435, H435, 635 Atomic and Molecular Structure 3(3,0)
Introduction to quantum theory and its application to atomic and molecular systems. Topics include harmonic oscillator, hydrogen atom, atomic and molecular orbital methods, vector model of the atom, atomic spectroscopy, and molecular spectroscopy. Prereq: CH 332 or consent of instructor.

CH 443, H443 Research Problems 1-6(0,3-18)
Original investigation of an assigned problem in a fundamental branch of chemistry. Work must be carried out under the supervision of a member of the staff. May be repeated for a maximum of six credits. Prereq: Senior standing in chemistry or consent of instructor.

CH 444, H444 Research Problems 1-6(0,3-18)
Continuation of CH 443. Original investigation of an assigned problem in a fundamental branch of chemistry. Work must be carried out under the supervision of a member of the staff. May be repeated for a maximum of six credits. Prereq: Senior standing in chemistry or consent of instructor.

CH 450 Chemistry Capstone 3(1,6)
Students undertake capstone projects in a team format. Projects necessitate the use of electronic and print resources, demonstrate expertise with a specific instrument or experimental technique, require strong collaboration within a team setting, and produce a peer reviewed oral and written report. Prereq: Senior standing or consent of instructor.

CH 451, 651 Frontiers in Polymer Chemistry 3(3,0)
Survey of selected areas of current research in polymer science with particular emphasis on polymer synthesis. Although a text is required for review and reference, course is primarily literature based and focused on areas of high impact to multidisciplinary technology. Prereq: CH 223, 224, PTC 415 or consent of instructor.

CH 452 Chemistry Communication II 1(1,0)
Methods for scientific communication including oral, written, and electronic formats. Student presentations focus on current chemical literature topics pertinent to their CH 443/444 undergraduate research or projects of that work are appropriate. Prereq: CH 152.

CH 471, 671 Teaching Chemistry 3(3,0)
Topics in chemistry addressed in the context of constructivist methodologies. Laboratory work and management, laboratory safety, and the use of technology in the chemistry classroom are also considered. Prereq: 300-level chemistry course or high school teaching experience or consent of instructor.

CHINESE
Assistant Professor: Y. An, Y. Zhang

CHIN 101 Elementary Chinese 4(3,1)
Introductory course stressing speaking, listening, and writing. Attention is given to the sound system of Chinese to enable students to distinguish the four tones and to develop basic communication skills. Participation in cultural activities is encouraged.

CHIN 102 Elementary Chinese 4(3,1)
Continuation of CHIN 101. Prereq: CHIN 101 or consent of instructor.
CHIN 201 Intermediate Chinese 3(3,1) Intermediate course with more emphasis on communication skills and structure. Reading and writing practice without phonetic aids; oral practice in and outside the class, paying special attention to idiomatic usage; introduction to cultural perspectives through readings and cultural activities. Preq: CHIN 102 or consent of instructor.

CHIN 202 Intermediate Chinese 3(3,1) Continuation of CHIN 201. Preq: CHIN 201 or consent of instructor.

CHIN 203 Chinese Reading and Composition I 4(3,1) Designed for students who already speak Chinese but cannot read and write it well. Covers grammatical points of first-year Chinese with special attention to reading and composition. Preq: Consent of instructor.

CHIN 204 Chinese Reading and Composition II 4(3,1) Continuation of CHIN 203. Covers all grammatical points of regular second-year Chinese. Through reading and discussion of materials regarding Chinese linguistics, history, literature, and philosophy, students improve their language skills and acquire a basic knowledge of Chinese culture. Preq: CHIN 203 or consent of instructor.

CHIN 305 Chinese Conversation and Composition I 3(3,0) Practice in the spoken language with emphasis on vocabulary, word-combinations, pronunciation, and comprehension. Learning practical language skills and intercultural communication by studying various topics. Preq: CHIN 202, 204, or consent of department chair.

CHIN 306 Chinese Conversation and Composition II 3(3,0) Continuation of CHIN 305. More practice in the spoken language with emphasis on vocabulary, word-combinations, pronunciation, and comprehension. Learning practical language skills and intercultural communication by studying various topics. Preq: CHIN 305 or consent of department chair.

CHIN (PHIL) 312 Philosophy in Ancient China 3(3,0) See PHIL 312.

CHIN (PHIL) 313 Philosophy in Modern China 3(3,0) See PHIL 313.

CHIN 316 Chinese for International Trade I 3(3,0) Study of language, concepts, and the environment of Chinese-speaking markets of the world. Sociocultural, political, and economic issues relevant to the Chinese-speaking business world and the ramifications of these issues in global marketing. Classes are conducted in Chinese. Preq: CHIN 316 or consent of department chair.

CHIN 411 Studies in the Chinese Language I: Literature 3(3,0) Advanced training in the spoken and written language through readings in contemporary literature with emphasis on vocabulary, syntax, and stylistics. All readings and discussions are in Chinese. Preq: CHIN 306 or consent of instructor.

CHIN 412 Studies in the Chinese Language II: Social Issues 3(3,0) In-depth study of terminology and syntax for specific subject areas in contemporary social issues. All readings and discussions are in Chinese. Preq: CHIN 306 or consent of instructor.

C R P 403, 603 Seminar on Planning Communication 3(3,0) In-depth analysis of methods to communicate planning and policy decisions effectively; attempts to familiarize students with the various communication skills needed by planners, policy makers, and other professionals to become successful practitioners. Preq: Consent of instructor.

C R P (CE) 412, 612 Urban Transportation Planning 3(3,0) See C E 412.

C R P 434, 634 Geographic Information Systems for Landscape Planning 3(1,6) Develops competence in geographic information systems technology and its application to various spatial analysis problems in landscape planning. Introduces basic principles of GIS and their use in spatial analysis and information management. Topics include database development and management, spatial analysis techniques, cartography, critical review of GIS applications, and hands-on projects.

CIVIL ENGINEERING


C E 203 Statics and Dynamics 4(4,0) Actions of forces and moments on rigid bodies, two and three-dimensional equilibrium, analysis of trusses and frames, centroids, distributed loads, moments of inertia, kinetics and kinematics of particles and rigid bodies, work and energy, impact and momentum, friction, vibrations. Preq: PHYS 122. Coreq: MTHSC 206.

C E 204 Civil Engineering and Society 3(2,2) Study of the history and societal impact of major civil engineering projects such as bridges, buildings, dams, tunnels, water supply systems, and transportation systems. Projects are examined in the light of modern concerns for safety, ethics, and their economic and environmental impacts. Preq: Sophomore standing or consent of instructor.

C E 206 Structural Mechanics 4(3,3) Builds on statics to develop relationships between external loads on structural elements of civil engineering interest and the resulting internal loads and deformations. Students are exposed to the development of stress and deformation formulas and the identification and use of significant mechanical properties of civil engineering materials. Preq: CE 203 or E M 201. Coreq: C E 253 or ENGR 130.

C E 251 Analysis Techniques in Civil Engineering 3(2,3) Solution to civil engineering problems using the techniques of dimensional analysis, data analysis, and numerical analyses. The latter includes introduction to FORTRAN programming, simulation analysis, and the numerical solution of systems of linear algebraic equations. Preq: ENGR 120. Coreq: MTHSC 206.
C E 253 Civil Engineering Measurements 2(3,0)
Principles and methods for measurement of loads, load effects, environmental variables, and performance of civil engineering systems. Classes integrate lectures and hands-on applications. Exercises provide students an introduction to sensors, basic electrical circuits, data acquisition systems, and data analysis methods used in civil engineering.

C E 255 Geomatics 3(2,3)
Spatial data collection methods including surveying, digital photogrammetry, and remote sensing, and global positioning systems. Methods and technologies used to manage, manipulate, and analyze spatially and associated attribute data including geographic information systems. Coreq: E G 209.

C E 301 Structural Analysis 3(3,0)
Calculation of design loads for buildings and other structures. Use of classical analysis techniques to determine support reactions, internal member forces, and structural displacements of statically determinate and indeterminate structural systems. Prereq: C E 206 or consent of instructor.

C E 311 Transportation Engineering Planning and Design 3(3,0)
Planning, design, and operation of transportation facilities including highways and airports. Coverage includes economic, safety, and environmental considerations. Public transit systems are covered. Prereq: C E 255, EX ST 301.

C E 321 Geotechnical Engineering 4(3,3)
Mechanical and physical properties of soils and their relation to soil action in problems of engineering, such as classification, permeability, bearing strength, and consolidation: design of embankments and retaining walls with geotextiles. Prereq: C E 206, C E 253 or ENGR 130.

C E 331 Construction Engineering and Management 3(3,0)
Construction contracts, technical specifications, cost estimating, project scheduling, cost control, materials management, quality control, and quality assurance. Prereq: Junior standing.

C E 341 Introduction to Fluid Mechanics 4(3,3)
Introduction to fluid mechanics, including hydrostatics and fluid flow. Problem-solving skills are emphasized, including the principles of mass, momentum, and energy conservation. Other topics include conduit flow and pump systems. Laboratory experiments familiarize students with techniques and instrumentation. The Effective Technical Communications Laboratory is used to prepare presentations for a lab assignment. Prereq: C E 203 or E M 202; C E 253 or ENGR 130; Junior standing.

C E 342 Applied Hydraulics and Hydrology 3(3,0)
Introduction to hydrologic cycle, including precipitation, evapotranspiration, infiltration, and runoff. Additional topics include hydrograph analysis, open channel flow, design of stable channels, flood routing, groundwater hydraulics, flood frequency analysis, and hydrologic design. Prereq: C E 341. Coreq: EX ST 301 or MTH 302.

C E 350 Economic Evaluation of Projects 3(3,0)
Comparison of design alternatives based on engineering economic analysis. Introduction of present worth, annual cost, rate of return, and benefit-cost ratio methods. Use of depreciation and taxation in project analysis. Students make oral presentations of historic and current civil engineering projects. Prereq: Junior standing.

C E 351 Civil Engineering Materials 4(3,3)
Introduces students to material science and basic properties of construction materials such as aggregate, Portland cement, asphalt cement, concrete, steel, ceramics, wood, and fibers. Experiments in lab and field trips to nearby plants are required. Oral and written communication skills are an integral part of this course. Prereq: C E 253 or ENGR 130; EX ST 301 or MTH 302.

C E 352 Economic Evaluation of Projects 2(2,0)
Comparison of design alternatives based on engineering economic analysis. Introduction of present worth, annual cost, rate of return, and benefit-cost ratio methods. Use of depreciation and taxation in project analysis. Prereq: Junior standing.

C E 353 Professional Seminar 1(1,0)
Various professional topics related to skills and techniques for evaluating career opportunities, seeking and obtaining civil engineering employment, career development, professional registration, professional ethics, and other factors necessary for achieving success in a professional career. Enables students to make better decisions that will help them succeed in their careers. Prereq: Junior standing.

C E 387 Junior Honors Project 1-3 Studies or laboratory investigations on special topics in the civil engineering field which are of interest to individual students and faculty members. Arranged on a project basis for a maximum of individual student effort under faculty guidance. May be repeated for a maximum of three credits. Prereq: Junior standing in Civil Engineering Senior Departmental Honors Program.

C E 388 Honors Research Topics 1(0,2)
Survey of ongoing research in the Civil Engineering Department to identify potential research topics for further individual study. Prereq: Junior standing in Civil Engineering Senior Departmental Honors Program.

C E 389 Honors Research Skills 1(1,0)
Research problem selection, research tools, research reports organization. Prereq: C E 388.

C E 401, 601 Indeterminate and Matrix Structural Analysis 3(3,0) Analysis of indeterminate structures using moment distribution, energy methods such as virtual work and Castigliano's Theorem, and the matrix formulation of the direct stiffness method. Prereq: C E 301 or consent of instructor.

C E 402 Reinforced Concrete Design 3(3,0) Design of reinforced concrete beams, slabs, columns, and footings using ultimate strength design. An introduction to working stress design methods is included. Prereq: C E 301 or consent of instructor.

C E 404, 604 Masonry Structural Design 3(3,0) Introduction to design of structural elements for masonry buildings.Lintels, walls, shear walls, columns, pilasters, and retaining walls are included. Reinforced and unreinforced elements of concrete or clay masonry are designed by allowable stress and strength design methods. Introduction to construction techniques, materials, and terminology used in masonry. Prereq: C E 402 or consent of instructor.

C E 406 Structural Steel Design 3(3,0) Introduction to the design of structural elements found in steel buildings, in particular the design of steel tension members, beams, columns, beam-columns, and connections. Additional topics include composite members and plate-girders. Emphasis is on the AISC-LRFD Specifications for steel design, though reference is made to the ASD Specification with comparisons made where appropriate. Prereq: C E 301 or consent of instructor.

C E 470, 670 Wood Design 3(3,0) Introduction to wood design and engineering: properties of wood and wood-based materials; design of beams, columns, walls, roofs, panels, and connections. Prereq: C E 402 or 406, or consent of instructor.

C E 410, 610 Traffic Engineering: Operations 3(3,0) Basic characteristics of motor-vehicle traffic, highway capacity, applications of traffic control devices, traffic design of parking facilities, engineering studies, traffic safety, traffic laws and ordinances, public relations. Prereq: C E 311 or consent of instructor.

C E 411, 611 Roadway Geometric Design 3(2,3) Geometric design of roadways, at-grade intersections, and interchanges in accordance with conditions imposed by driver ability, vehicle performance, safety, and economics. Prereq: C E 311 or consent of instructor.

C E (C P) 412, 612 Urban Transportation Planning 3(3,0) Urban travel characteristics, characteristics of transportation systems, transportation and land-use studies, trip distribution and trip assignment models, city patterns and subdivision layout. Prereq: C E 311 or consent of instructor.

C E 421, 621 Geotechnical Engineering Design 3(3,0) Relationship of local geology to soil formations, groundwater, planning of site investigation, sampling procedures, determination of design parameters, foundation design, and settlement analysis. Prereq: C E 321 or GEOL 320 or consent of instructor.

C E 424, 624 Earth Slopes and Retaining Structures 3(3,0) Principles of geology, groundwater and seepage, soil strength, slope stability, and lateral earth pressure and their application to the design of excavations, earth fills, dams, and earth retaining structures. Prereq: C E 321 or GEOL 320 or consent of instructor.


C E 434, 634 Construction Estimating and Project Control 3(3,0) Specifications, contracts, and bidding strategies; purchasing and subcontracting policies; accounting for materials, supplies, subcontracts, and labor; procedural details for estimating earthwork, reinforced concrete, steel, and masonry. Overhead and profit items. Prereq: C E 331 or consent of instructor.
CE 438, 638 Construction Support Operations
3(3,0) Describes activities necessary for the completion of a construction job although not specifically recognized as direct construction activities: general conditions, safety, security, quality assurance, value engineering; organizational support features and typical implementation procedures. Preq: CE 351 and EX ST 301, or consent of instructor.

CE 446, 646 Flood Hazards and Protective Design 3(3,0) Study of flood hazards and methods of protective design of the built environment; plainflow mapping and delineation; methods for determining base flood elevations; flood-resistant construction, flood proofing, and governmental regulations are discussed. Includes case studies and design projects. Coreq: CE 342 or consent of instructor.

CE 447, 647 Stormwater Management 3(3,0) Evaluation of peak discharges for urban and rural basins, design of highway drainage structures such as inlets and culverts; stormwater and receiving water quality; best management practices, detention and retention ponds, and erosion and sediment control. Preq: CE 342; Coreq: EES&S 401 or consent of instructor.

CE 448, 648 Physical Models in Hydraulics 3(2,3) Tools and techniques of physical modeling to aid in design of complex hydraulic systems. Students participate in construction, operation, and testing of physical models to solve hydraulic engineering design problems. Experimental design and operation are covered. Preq: CE 342 or consent of instructor.

CE 449 649 Hydraulic Structures 3(3,0) Design methods and procedures are taught for a variety of hydraulic structures including intake structures, complex open-channel and closed conduit control structures, transitions, spillways, small dam, and pond design. Field trips to actual hydraulic structures may be included. Preq: CE 342 or consent of instructor.

CE 455 655 Properties of Concrete and Asphalt 3(2,3) Properties of aggregate, concrete, and asphalt are discussed. Concrete and asphalt mix designs are conducted in the laboratory. Preq: CE 351 and EX ST 301, or consent of instructor.

CE 459 Capstone Design Project 3(1,6) Students apply creativity with their engineering knowledge in the solution of open-ended civil engineering problems. Problems are formulated and solutions are evaluated by faculty and practicing engineers. Oral communication skills are developed through presentations, correspondence, and project reports. Preq: All required 300-level C E courses and the Technical Design Requirement.

CE 462, 662 Coastal Engineering 1 3(0,3) Introduction to coastal and oceanographic engineering principles, including wave mechanics, wave-structure interaction, coastal water-level fluctuations, coastal-zone processes, and design considerations for coastal structures and beach nourishment projects. Preq: CE 341 or consent of instructor.

CE 482, 682 Groundwater and Contaminant Transport 3(3,0) Basic principles of groundwater hydrology and transport of contaminants in groundwater systems; groundwater system characteristics; steady and transient flow; well hydraulics, design, and testing; contaminant sources, movement and transformations. Preq: CE 341. Coreq: EES&S 401.

CE 487 Senior Honors Project 1-3 Studies or laboratory investigations on special topics in civil engineering which are of interest to individual students and faculty members. Arranged on a project basis for a maximum of individual student effort under faculty guidance. May be repeated for a maximum of three credits. Preq: Senior standing in Civil Engineering Senior Departmental Honors Program.

CE 488 Honors Research I 1-2 Individual research under the direction of a Civil Engineering faculty member. Preq: CE 389.

CE 489 Honors Research II 3(3,0) Individual research under the direction of a Civil Engineering faculty member. Preq: CE 488.

CE 490 Special Projects 1-3(1-3,0) Studies or laboratory investigations on special topics in civil engineering which are of interest to individual students and staff members. Arranged on a project basis with a maximum of individual student effort and a minimum of staff guidance. May be repeated for a maximum of three credits. Preq: Senior standing.

CE 491, 691 Selected Topics in Civil Engineering 1-6(1-6,0) Structural study of civil engineering topics not found in other courses. May be repeated for a maximum of six credits, but only if different topics are covered. Preq: Consent of instructor.

Clemson University

College of Engineering and Science

CES 101 Introduction to Engineering and Science 1(0,2) Introduction to the engineering profession and science disciplines to assist students in selection of a major. In addition, inventories are used to assess career interests and learning styles. Students also complete and demonstrate several mini-design projects. Credit may be received for only one of CES 101 or ENGR 101.

CES 102 Engineering Disciplines and Skills 2(1,2) Introduction to the engineering profession and science disciplines to assist students in selection of a major. Laptop computers are used to study spreadsheets, obtain graphical solution of problems, produce design project reports, and respond to various on-line surveys. Students complete two team-based design projects. Coreq: MTHSC 103, 105, or 106.

CES 110 Engineering and Science Workshop 1(0,2) Workshop that addresses issues and opportunities for women in science and engineering. Designed to help students succeed in engineering and science by strengthening their problem-solving, leadership, and teamwork skills and by introducing them to female role models and mentors in engineering and science.

Communications Studies


COMM 150 Introduction to Human Communication 3(2,2) Overview of theoretical approaches to the study of communication, including the theory and practice of interpersonal/small group/intercultural/public communication. Students complete a portfolio. Includes a laboratory.

COMM 162 Forensic Laboratory 1(0,3) Research, preparation, and practice leading to participation in on-campus and intercollegiate debate and individual events competition. May be repeated for a maximum of four credits.

COMM 163 Advanced Forensic Laboratory 1(0,3) Advanced research, preparation, and practice leading to continued participation in on-campus and intercollegiate debate and individual events competition. May be repeated for a maximum of four credits. Preq: COMM 162.

COMM 201 Introduction to Communication Studies 4(3,2) Introduces Communication Studies majors to and prepares them for continued study in the discipline by providing them with an overview of important issues, areas of study, and approaches to the field. Includes a writing laboratory experience.

COMM 250, H250 Public Speaking 3(3,1) Practical instruction in public speaking; practice in the preparation, delivery, and criticism of short speeches. Develops an understanding and knowledge of the process of communication. Students complete a portfolio. Includes a laboratory.

COMM 256 Introduction to Public Relations 3(3,0) Students learn the context and techniques of public relations (PR), a form of corporate communications. Types of PR work, theories of PR, the four-part structure of PR, and the history of the field.

COMM 300 Communication in a World Context 3(3,0) In-depth examination of differences in communication practices and meanings seen through a global perspective. Preq: COMM 201 with a C or better or consent of instructor.

COMM 301 Communication Theory 3(3,0) Various theories and models of communication characterizing the field. Focuses on how communication is conceptualized from different theoretical perspectives. Preq: COMM 201.

COMM 302 Mass Communication Theory 3(3,0) Survey of the breadth and history of theories of mass communication and mass media from the 19th century to the present. Especially emphasizes contemporary schools of thought, theoretical debates, and the continuing controversies in the field. Preq: COMM 201 with a C or better or consent of instructor.

COMM 303 Communication Law and Ethics 3(3,0) Major topics in communication law and free expression and in communication ethics. Preq: COMM 201 with a C or better and 301 or consent of instructor.
COMM 305 Persuasion 3(3,0) Studies the processes by which communication influences attitudes, beliefs, and behaviors in our personal, social, civic, and professional lives. After discussion of definitional and methodological issues, particular theories of persuasion are examined. Treatment of political, market-driven, and social persuasion concludes the course. Prereq: COMM 201 or consent of instructor.

COMM 306 Discourse and Society 3(3,0) Examines historical and contemporary theoretical and critical approaches to the description, analysis, interpretation, and evaluation of public discourse. Focuses on the power of public discourse to shape human existence. Prereq: COMM 201 with a C or better or consent of instructor.

COMM 307 Public Communication of Science and Technology 3(3,0) Examines the role of science and technology in society from a communication perspective. Particular attention is paid to this dynamic in public culture. Students examine an array of theoretical issues and case studies in this area. Prereq: COMM 201 with a C or better or consent of instructor.

COMM 308 Public Communication and Popular Culture 3(3,0) Examines artifacts of popular culture, paying particular attention to their relationship to politics and public life. Explores the structures and constraints of the culture industry. Students apply communication principles to various examples. Prereq: COMM 201 with a C or better or consent of instructor.

COMM 309 Visual Discourse and the Public 3(3,0) Examines the role of visuality in society and the cultural implications for ways of seeing. Using visual artifacts of various types, students learn the logic of visual representation. Prereq: COMM 201 with a C or better or consent of instructor.

COMM 310 Communication Research Methods 3(3,0) Students study methods of communication research, preparing research projects, conducting research studies, ethnography, observation, sampling, measurement, analysis, and the relationship between theory and research.

COMM 311 Humanistic Methods in Communication Studies 3(3,0) Explores qualitative and humanistic methods of inquiry about communicative practices. Students learn to use various representative techniques such as interviewing, ethnography, and rhetorical criticism to answer communication questions. Prereq: COMM 301 and 310 or consent of instructor.

COMM 312 Survey and Group Research Methods in Communication Studies 3(3,0) Examines group and survey methods commonly used in communication research. Students learn the methodological and ethical issues surrounding these methods and conduct research using these methods. Prereq: COMM 301 and 310 or consent of instructor.

COMM 313 Case-Based Research Methods in Communication Studies 3(3,0) Examines case-based research methods commonly used in communication research. Students design and conduct research using one or more of these methods. Prereq: COMM 201 with a C or better and 310 or consent of instructor.

COMM 320 Television Journalism 3(2,2) Explores both the philosophy of journalism and the applied skills of the journalist. In addition to classroom activities, students experience television journalism firsthand as participants on a weekly on-campus television news program.

COMM 325 Sports Communication 3(3,0) Examines the role of communication in sports environment. The basics of communicating for print and broadcast news, as well as communicating for public relations and sports information. Ethical considerations and the role of sports in American culture are covered. Prereq: COMM 201 with a C or better or consent of instructor.

COMM 326 Public Relations in Sports 3(3,0) Focuses on the preparation of professional sports communication materials for both internal and external audiences. Topics include the mechanics of creating press releases and other materials, as well as techniques in managing crises. Prereq: COMM 201 with a C or better or consent of instructor.

COMM 327 Sports Media Criticism 3(3,0) Students gain in-depth understanding of sports communication issues through critically analyzing actual media coverage of sporting events, addressing social issues involved in college and professional sports, and developing an understanding of sports promotion and advertising. Prereq: COMM 201 with a C or better or consent of instructor.

COMM 330 Nonverbal Communication 3(3,0) Develops a knowledge of the functions of nonverbal behaviors in human interaction. This includes the study of gesture and movement, physical appearance, vocal behavior, immediacy, time and space, and intercultural differences. Promotes understanding of nonverbal rules. Prereq: COMM 201 with a C or better or consent of instructor.

COMM 348 Interpersonal Communication 3(3,0) Survey of the theories and research in interpersonal communication with emphasis on the application of research findings and development strategies for intra- and inter-cultural relationships. Prereq: COMM 201 with a C or better or consent of instructor.

COMM 349 Communication and Aging 3(3,0) Major theories and concepts concerning communication with and between members of aging populations. Focuses on communication factors that affect the elderly and the implications for the creation and maintenance of satisfying relationships within and between generations. Prereq: COMM 201 with a C or better or consent of instructor.

COMM 350 Small Group and Team Communication 3(3,0) Examines the principles and skills involved in effective small group communication. Prereq: COMM 201 with a C or better or consent of instructor.

COMM 356 Stakeholder Communication 3(3,0) Focuses on external stakeholders such as the media, the community, and the government. Students learn how to manage various stakeholder relationships. Prereq: Junior standing.

COMM 361 Argumentation and Debate 3(3,0) Basic principles of argumentation with emphasis on developing skills in argumentative speech. The role of the advocate in contemporary society with an emphasis on and an appreciation of formal debate. Prereq: COMM 250 or consent of instructor.

COMM 364 Organizational Communication 3(3,0) Examines the process, theories, and techniques of communications within small groups and other organized bodies. Prereq: COMM 201 with a C or better or consent of instructor.

COMM 366 Special Topics in Communication Studies 3(3,0) Consideration of select major areas of study in the field. With consent of department chair, may be repeated for a maximum of 15 credits, but only if different topics are covered.

COMM 367 Negotiations Communication 3(3,0) Develops a knowledge of the basic strategies and elements of communication used in effective negotiation. Includes techniques of dealing with people, interests, options, and the criteria necessary to reach agreements and objectives. Prereq: COMM 201 with a C or better or consent of instructor.

COMM 368 Organizational Communication Simulation 3(3,0) Students develop and apply communication skills which are useful in a variety of organizational settings: taking and conducting interviews, group decision making, and oral reporting. Discusses communication processes and provides personal and professional development. Prereq: COMM 201 with a C or better and 250 or consent of instructor.

COMM 369 Political Communication 3(3,0) Examination of American political rhetoric after 1900, focusing on such notable speakers as Franklin D. Roosevelt, John F. Kennedy, and Martin Luther King Jr. Prereq: COMM 201 with a C or better or consent of instructor.

COMM 390 Communication Studies Internship 3(0,9) Preplanned, preapproved, faculty-supervised internship provides Communication Studies majors with field experience in areas related to their curriculum. May be repeated for a maximum of six credits. To be taken Pass/Fail only. Prereq: Junior standing, consent of faculty advisor.

COMM 402 Mass Communication: History and Criticism 3(3,0) Critical examination of mass communication in America, including discussions of history, theory, and current issues in television, film, popular music, telecommunications, and other media. Prereq: COMM 201 with a C or better or consent of instructor.

COMM 405 Public Contest and Change 3(3,0) Examines the role of public communication in the process of contesting social values and practices and the processes of change that sometimes occur. Students explore the public's relationship with mass media as well as other forms of communication practices that can produce cultural change. Prereq: COMM 201 with a C or better and 305 or consent of instructor.

COMM 425 Advanced Sports Communication 3(3,0) Combination seminar and primary research class that explores contemporary sports communication issues. Students write position papers on seminar topics and conduct primary research on sports communication topics of their choice. Prereq: COMM 325 or consent of instructor.

COMM (ENGL) 451, 651 Film Theory and Criticism 3(2,3) See ENGL 451.
COMM 455 Gender Communication 3(3,0) Explores the ways communication behavior and perceptions of communication behavior are affected by gender. The effects of gender on a variety of communication contexts are examined, including interpersonal, small group, organizational, and mass communication. Prereg: COMM 201 with a C or better or consent of instructor.

COMM 456, 656 Crisis Communication 3(3,0) In-depth examination of the use of communication in planning, managing, and responding to organizational crisis. Prereg: Senior standing or consent of instructor.

COMM 460 Communication and Conflict Management 3(3,0) Introduces the study of communication practices in conflict situations within various personal and professional settings. Emphasizes the central role of communication in the understanding and management of conflict. Prereg: COMM 201 with a C or better or consent of instructor.

COMM 464, 664 Advanced Organizational Communication 3(3,0) Application of speech communication methodology to the analysis of organizational communication processes. Students study methods of organizational communication analysis and intervention. Prereg: COMM 364 or consent of instructor.

COMM 470, 670 Communication and Health 3(3,0) Considers institutional and health-care communication issues as well as the relationship between social issues, communication, and health. Prereg: COMM 201 with a C or better or consent of instructor.

COMM 480 Intercultural Communication 3(3,0) Introduces the process of communication between and among individuals from different cultures or subcultures. Emphasis is on the effect of cultural practices within various communication relational contexts such as interpersonal, small group, and organizational communication. Prereg: COMM 201 with a C or better or consent of instructor.

COMM (ENGL) 491, 691 Classical Rhetoric 3(3,0) See ENGL 491.

COMM (ENGL) 492, 692 Modern Rhetoric 3(3,0) See ENGL 492.

COMM H493 Honors Prospectus Project 1(1,0) Completion of an honors project proposal and a prospectus meeting with a faculty committee. First in a three-course sequence with H494 and H496. Prereg: COMM 301, 310.

COMM H494 Honors Field Research 3(0,9) Honors students majoring in Communication Studies pursue field work with an outside organization related to concentration area in the major, gathering data for use in preparing original research project for COMM H496. Second in a three-course sequence with H493 and H496. Prereg: COMM H493.

COMM 495 Senior Communication Seminar 3(3,0) Students apply their knowledge and education to a significant research project involving the student's communication research interest. Project(s) culminate in a written document and a public presentation/discussion of the student's research. Prereg: COMM 301, 310, Senior standing in Communication Studies.

COMM H496 Honors Senior Communication Seminar 3(3,0) Plans developed in COMM H493 and data gathered from COMM H494 are applied to the production of a written product of conference or publication length and quality. Third in a three-course sequence with H493 and H494. Prereg: COMM H493, H494.

COMM 499 Independent Study 1-3(1-3,0) Tutorial work for students with special interests or projects in speech communication outside the scope of existing courses. Prereg: Consent of department chair.

COMMUNITY AND RURAL DEVELOPMENT

See also courses listed under Agricultural and Applied Economics
Professors: D. L. Barkley, M. S. Henny, L. C. O. Nyarkori, C. M. Sieverdees, Associate Professor: M. Espy; Assistant Professor: S. R. Templeton.

COMM 201 with C or better or consent of instructor.

C R D (AP EC) 412, 612 Regional Economic Development Theory and Policy 3(3,0) Development of rural economic activity in the context of historical, theoretical, and policy aspects of friction associated with spatial separation. Location factors, transfer costs, location patterns, and regional-growth policy are considered. Prereg: AP EC 202 or ECON 211 or equivalent.

C R D (AP EC) 491 Internship, Agribusiness, and Community and Rural Development 1-6(0,2-12) Internship under faculty supervision in an approved agency or firm. Internships are designed to provide students with work experience in agriculture or community and rural development. Students submit a comprehensive report within one week of the end of the internship. A maximum of six internship credits may be earned. Prereg: Junior standing and/or consent of instructor.

C R D 492, 692 Case Study Project 3(3,0) Capstone course engaging students in in-depth case study projects in community and economic development. Designed to enhance professional development, career interests, and practical experience. Students may participate in an internship, field experience, service learning activity, or investigation of a community, leadership, or economic development topic. Prereg: C R D 336 and consent of instructor.

COMPUTER SCIENCE


CP SC 101, H101 Computer Science I 4(3,2) Introduction to modern problem solving and programming methods. Special emphasis is placed on algorithm development and software life cycle concepts. Includes use of appropriate tools and discusses ethical issues arising from the impact of computing upon society. Intended for students concentrating in computer science or related fields. Prereg: AP EC 101 or satisfactory score on the Clemson Mathematics Placement Test or consent of instructor.

CP SC 102, H102 Computer Science II 4(3,2) Continuation of CP SC 101. Emphasized on problem solving and program development techniques. Typical numerical, nonnumerical, and data processing problems are examined. Basic data structures are introduced. Credit may not be received for both CP SC 102 and 210. Prereg: CP SC 101 with a C or better.

CP SC 104 Introduction to the Concepts and Logic of Computer Programming 2(1,2) Introduction to the concepts and logic of computer programming. Simple models are used to introduce basic techniques for developing a programmed solution to a given problem. Problem solving techniques are considered. Not open to students who have received credit for CP SC 101, 111, 157, or 210.
CP SC 110, H110 Elementary Computer Programming 3(3,0) Introduction to computer programming and its use in solving problems, intended primarily for technical majors. Basic instruction in programming techniques is combined with tools and discussions of ethical issues arising from the impact of computing on society.

CP SC 111 Elementary Computer Programming in C/C++ 3(2,2) Introduction to computer programming in C/C++ and its use in solving problems. Intended primarily for technical majors. Basic instruction in programming techniques is combined with tools and discussions of ethical issues arising from the impact of computing on society.

CP SC 120 Introduction to Information Technology 3(2,2) Investigation of ethical and societal issues based on the expanding integration of computers into our everyday lives. Historical background, terminology, new technologies and the projected future of computers are considered. Practical experience with common computer software technologies is included. Will not satisfy computing science requirements in any computer science major.

CP SC 157 Introduction to C Programming 2(2,0) Introduction to basic programming techniques. The C programming language is used.

CP SC 161 Introduction to Visual Basic Programming 3(2,2) Introduction to programming using the Visual Basic language. Topics include simple and complex data types, arithmetic operations, control flow, files, and database programming. Several projects are implemented during the semester.

CP SC 210 Programming Methodology 4(3,2) Introduction to programming techniques and methodology. Topics include structured programming, stepwise refinement, program design and implementation techniques, modularization criteria, program testing and verification, basic data structures, and analysis of algorithms. Credit may not be received for both CP SC 102 and 210. Preq: CP SC 111 or equivalent; satisfactory performance on a pretest.

CP SC 212 Algorithms and Data Structures 4(3,2) Study of data structures and algorithms fundamental to computer science; abstract data type concepts; measures of program running time and time complexity; algorithm analysis and design techniques. Credit may not be received for both CP SC 212 and 340. Preq: CP SC 102 or 210 with a C or better.

CP SC 215 Tools and Techniques for Software Development 3(2,2) Intensive course on software development using an imperative language. Topics include typical program development tools such as debuggers and “make” files, software development and testing techniques such as separate module development and testing, pointers and explicit heap management, and low-level file I/O. Preq: CP SC 102 or 210 with a C or better.

CP SC 220 Microcomputer Applications 3(3,0) Applications of microcomputers to formulate and solve problem models. Emphasis is placed on applications development in database and spreadsheet environments. Current software products are used. Preq: CP SC 120 or MGT 218 or equivalent.

CP SC 221 Introduction to a Computer Science Language 1(0,2) Introduction to the systems programming environment; languages and interfaces for programming operating systems tasks; use of the C programming language and UNIX operating system. Preq: CP SC 102 or 210 with a C or better.

CP SC 231 Introduction to Computer Organization 4(3,2) Study of the machine architectures on which algorithms are implemented; requirements of architectures that support high-level languages, programming environments, and applications. Preq: CP SC 102 or 210 with a C or better.

CP SC 281 Selected Topics in Computer Science 1-4(0,3-0,6) Areas of computer science in which new trends arise. Innovative approaches to a variety of problems in the use and understanding of basic computing concepts are developed and implemented. May be repeated for a maximum of eight credits, but only if different topics are covered. Preq: Consent of instructor.

CP SC 291 Seminar in Professional Issues 11(1,0) Impact of computing use on society is considered. Ethical use of software and protection of intelectual property rights are discussed. The profession is viewed historically; organizations important to the profession are discussed; the development process for standards is presented; and students are introduced to the professional literature. Preq: CP SC 102 or 210, or consent of instructor.

CP SC 322 Introduction to Operating Systems 3(3,0) Detailed study of the management techniques for the control of computer hardware resources. Topics include interrupt systems, primitive level characteristics of hardware and the management of memory, processor, devices, and data. Credit may not be received for both CP SC 322 and 332. Preq: CP SC 215, 231 with a C or better.

CP SC 330 Computer Systems Organization 3(3,0) Introduction to the structure of computer systems. Various hardware/software configurations are explored and presented as integrated systems. Topics include digital logic, basic computer organization, computer arithmetic, memory organization, input/output organization, interrupt processing, multiprocessors, and cluster computers. Preq: CP SC 212, 215, 231 with a C or better.

CP SC 332 Computer Systems Design 3(3,0) Introduction to design, integration, and use of hardware and software components in standard computer systems. Emphasis is on computer system at the component level, interfacing, basic operating system functions, and system utilities. Credit may not be received for both CP SC 322 and 332. Preq: CP SC 212, 215, 231 with a C or better.

CP SC 340 Algorithms and Data Structures 3(3,0) Basic concepts of data structures such as queues, stacks, and lists; methods of proof as they relate to program verification; sets, functions, and relations as they relate to the analysis of algorithms. Includes the study of algorithms, time complexity, and design techniques. Credit may not be received for both CP SC 212 and 340. Preq: CP SC 102 or 210.

CP SC 350 Foundations of Computer Science 3(3,0) Development of the theoretical foundations of programming, algorithms, languages, automata, computability, complexity, data structures, and operating systems; a broad range of fundamental topics is consolidated and extended in preparation for further study. Preq: CP SC 212 and MTHSC 119 with a C or better.

CP SC 356 Networks and Network Programming 3(3,0) Introduction to basic concepts of computer networking and network programming. Topics include network programming, layered protocol architectures, local and wide area networks, internetwork and intranetwork concepts, security. Socket level programming is introduced and used throughout the course. Preq: CP SC 212, 215 with a C or better.

CP SC 361 Data Management Systems Laboratory 1(0,2) Introduction to mainframe environments typical of large-scale data processing applications; programming languages, control languages, and file utilities; use of COBOL language and IBM JCL. Preq: CP SC 102 or 210, or equivalent. Coreq: CP SC 360.

CP SC 362 Distributed and Cluster Computing 3(3,0) Introduction to the basic technology and programming techniques for distributed and cluster computing. Standard techniques for developing parallel solutions to problems are introduced and implemented. Software systems that provide high-level abstractions for data communications are considered. Preq: CP SC 360 with a C or better.

CP SC 371 Systems Analysis 3(3,0) Incorporates a study of the decision-making process at all levels with the logical design of information systems. Extensive study of the system life cycle with emphasis on current as well as classical techniques for describing data flows, data structures, file design, etc. Preq: CP SC 360.

CP SC 372 Introduction to Software Development 3(3,0) Techniques and issues in software design and development; tools, methodologies, and environments for effective design, development, and testing of software; organizing and managing the development of software projects. Preq: CP SC 212 and 215 with a C or better.

CP SC H395 Honors Seminar 1(1,0) Research topics in various areas of computer science are presented. Methods for identifying and initiating research projects in various areas of computer science are considered. May be repeated for a maximum of two credits. Preq: Admission to Departmental Honors Program.

CP SC 405, 605 Introduction to Graphical Systems Design 3(3,0) Principles, computational techniques, and design concepts needed for designing systems for effective graphical displays. Preq: CP SC 212, 215, MTHSC 108, 311 with a C or better.
CP SC 411, 611 Virtual Reality Systems 3(3,0)
Design and implementation of software systems necessary to create virtual environments. Techniques for achieving real-time, dynamic display of photorealistic, synthetic images are discussed. Includes hands-on experience with electromagnetically-tracked, head-mounted displays and requires, as a final project, the design and construction of a virtual environment. Preq: CP SC 405 with a C or better.

CP SC 412, 612 Eye Tracking Methodology and Applications 3(3,0) Introduction to the human visual system; visual perception; eye movements; eye tracking systems and applications in psychology, industrial engineering, marketing, and computer science; hands-on experience with real-time, corneal-reflection eye trackers, experimental issues. Final project requires the execution and analysis of an eye tracking experiment. Preq: CP SC 360, MKT 431, or PSYCH 310.

CP SC 414, 614 Human and Computer Interaction 3(3,0) Survey of human and computer interaction, its literature, history, and techniques. Covers cognitive and social models and limitations, hardware, and software interface components, design methods, support for design, and evaluation methods. Preq: CP SC 212 and 215 with a C or better, or equivalent.

CP SC 424, 634 System Administration and Security 3(3,0) Topics related to the administration and security of computer systems are covered. Primary emphasis is placed on the administration and security of contemporary operating systems. Preq: CP SC 360 and 322 or 332 with a C or better.

CP SC 428, 628 Design and Implementation of Programming Languages 3(3,0) Overview of programming language structures and features and their implementation. Control and data structures found in various languages are studied. Runtime organization and environment and implementation models are also included. Preq: CP SC 231, 350, 360 with a C or better.

CP SC 429, H429, 629 Translation of Programming Languages 3(3,0) Techniques and considerations for compiling and interpreting programming languages. Topics include scanning, parsing, optimization, code generation, and their theoretical foundations. Implementation of a compiler or a major component of a compiler normally is a term project. Preq: CP SC 350, 428.

CP SC 455, 655 Computational Science 3(3,0) Introduction to the methods and problems of computational science. Course uses problems from engineering and science to develop mathematical and computational solutions. Case studies use techniques from Grand Challenge problems. Emphasizes the use of networking, group development, and modern programming environments. Preq: MTHSC 108, 311, and previous programming experience in a higher level language.

CP SC 462, H462, 662 Database Management Systems 3(3,0) Introduction to database/data communications concepts as related to the design of online information systems. Problems involving structuring, creating, maintaining, and accessing multiple-user databases are presented and solutions developed. Comparison of several commercially available teleprocessing monitor and database management systems is made. Preq: CP SC 360.

CP SC 463, 663 Online Systems 3(3,0) In-depth study of the design and implementation of transaction processing systems and an introduction to basic communications concepts. A survey of commercially available software and a project using one of the systems are included. Preq: CP SC 462.

CP SC 464, 664 Introduction to Computer Architecture 3(3,0) Survey of von Neumann computer architecture at the instruction-set level. Fundamental design issues are emphasized, illustrated using historical and current mainframe, supermini, and micro architecture. Preq: CP SC 330 or consent of instructor.

CP SC 472, H472, 672 Software Development Methodology 3(3,0) Advanced topics in software development methodology. Techniques such as chief programmer teams, structured design and structured walk-throughs are discussed and used in a major project. Emphasis is on the application of these techniques to large-scale software implementation projects. Additional topics such as mathematical foundations of structured programming and verification techniques are also included. Preq: CP SC 360 and 372.

CP SC 481, H481, 681 Selected Topics 1-3(1-3,0) Areas of computer science in which non-standard problems arise. Innovative approaches to problem solutions which draw from a variety of support courses are developed and implemented. Emphasis is on independent study and projects. May be repeated for a maximum of six credits, but only if different topics are covered. Preq: Consent of instructor.

CP SC 491 Seminar in Professional Issues II 1(1,0) Considers the impact of computing system development on society. Discusses ethical issues in the design and development of computer software. Standards for professional behavior, the profession's responsibility to the profession, and techniques for maintaining currency in a dynamic field are discussed by students. Preq: Senior standing.

CP SC H495 Senior Thesis Research 1-3(1-3,0) Directed individual research project for honors students supervised by departmental faculty. May be repeated for a maximum of six credits. Preq: Senior standing.

CONSTRUCTION SCIENCE AND MANAGEMENT
Professors: F. M. Eubanks, R. W. Liska, Chair; Associate Professors: S. N. Clarke, G. R. Corley, C. A. Piper, R. K. Schneider, Assistant Professor: D. C. Bausman

C S M 100 Introduction to Construction Science and Management 3(3,0) Introduction to the construction industry and the Construction Science and Management Department. Preq: Construction Science and Management major or consent of department chair.

C S M 150 Introduction to Research Methodology 10(0,2) Fundamentals of formal research methodology, critical thinking, and ethics. Preq: Construction Science and Management major.

C S M 201 Structures I 3(3,0) Study of statically determinate structural components and systems including force applications and distributions in structural elements and the resulting stress-strain patterns in axial, shear, and bending mechanisms. Preq: MTHSC 102 or 106, PHYS 207; Construction Science and Management major, or consent of department chair.

C S M 202 Structures II 4(3,2) Study of force distribution and behavior in statically determinate structural components and systems, analysis and design of basic reinforced concrete, steel, wood, and formwork components and systems including shear and moment stress, combined loading/stress conditions, and deflections. Preq: C S M 201, Construction Science and Management major, or consent of department chair.

C S M 203 Materials and Methods of Construction 3(3,0) Descriptive study of the materials and methods of construction, focusing on nomenclature, building materials, and assembly of building systems consisting primarily of wood, masonry, residential interior and exterior finishes, and building foundations. Preq: Construction Science and Management major, or consent of department chair. Coreq: A A H 210, C S M 100 (Construction Science and Management majors).

C S M 204 Contract Documents 3(2,3) Introduction to working drawings, specifications, and the various documents required to carry out a typical construction project. Preq: Construction Science and Management major or consent of department chair. Coreq: C S M 205.

C S M 205 Materials and Methods of Construction II 3(3,0) Descriptive study of materials and methods of construction, focusing on nomenclature, building materials, and assembly of building systems consisting primarily of steel and concrete in addition to roofing assemblies and interior and exterior commercial finishes. Preq: C S M 203, Construction Science and Management or Architecture major, or consent of department chair.

C S M 250 Construction Problem Solving Through Research 1(0,2) Application of the components of formal research methodology to real-life construction problems and documentation and presentation of process and solution. Preq: C S M 150 or consent of department chair.
C S M 301 Structures III 3(3,0) Analysis and design of basic determinate and indeterminate masonry and reinforced concrete structural components and systems; introduction to special structural systems and seismic loading. Preq: C S M 202, PHYS 208, Construction Science and Management or Architecture major, or consent of department chair.

C S M 303 Soils and Foundations 2(2,3) Study of various types of soils and foundations, including soil testing, reports, compaction, stability and function as they relate to the construction process. Preq: C S M 202, Construction Science and Management major, or consent of department chair.

C S M 304 Environmental Systems I 3(3,0) Theory and practice of heat, ventilating, air conditioning, and plumbing systems for buildings. Preq: C S M 205, PHYS 208, Construction Science and Management or Architecture major, or consent of department chair.

C S M 305 Environmental Systems II 3(3,0) Theory and practice of fire protection, specialty piping, lighting, and electrical systems for buildings. Preq: C S M 304, Construction Science and Management or Architecture major, or consent of department chair.

C S M 351 Construction Estimating 2(2,2) Basic estimating as applied to construction projects. Includes the take-off of material quantities, assigning labor and equipment production rates, and applying material prices, wage rates, and equipment costs to derive a total job cost. Preq: C S M 204, 205, CP SC 120, all required MTHSC courses, Construction Science and Management major, or consent of department chair. Coreq: B E 222, C S M 303.

C S M 352 Construction Scheduling 3(2,2) Analysis of construction projects with emphasis on estimating, scheduling, and resource leveling. Preq: C S M 304 (or concurrent enrollment), 351, Construction Science and Management major, or consent of department chair. Coreq: C S M 353.

C S M 353 Construction Estimating II 2(2,2) Continuation of basic construction estimating with the additional component of computerized estimating. Includes material, labor and equipment costs, production rates, bid ethics, constructability analysis, and understanding of other types of estimating procedures. Preq: C S M 304 (or concurrent enrollment), 351, Construction Science and Management major, or consent of department chair. Coreq: C S M 352.


C S M 420 Highway Construction and Contracting 3(3,0) Study of contracting and construction of highways, including selection and use of equipment, construction of pavements, bridges, and drainage structures, and related processes. Preq: C S M 303, 352, 353.

C S M 450 Construction Internship 1(1,0) Documented experience of 800 hours of approved experience in the construction industry with evaluation of student portfolio and preparation and sitting for the American Institute of Constructors CPC Level IV examination. To be taken Pass/Fail only. Preq: C S M 250 or consent of department chair.

C S M 453 Construction Project Management 3(3,0) Study of construction business organization, methods of project delivery, field organization, policy, ethics, project management, control systems, labor management relations, productivity. Preq: C S M 352, 353, LAW 322 (or concurrent enrollment), MGT 307 (or concurrent enrollment), Construction Science and Management major, or consent of department chair. Coreq: C S M 411, 461.

C S M 454 Construction Capstone 6(3,12) Study of current development in construction science. Comprehensive studies and research of topics concerned with construction science. Emphasis is on the application of knowledge and skills needed in the management of a construction project. Preq: C S M 453, Construction Science and Management major, or consent of department chair.

C S M 455, 655 Reducing Adversarial Relations in Construction 3(3,0) Focuses on the study of the delivery of projects and how adversarial relations can affect the successful completion of the venture. Topics include management of human resources, understanding the needs and processes of the participants, where problems lie, methods of avoiding and settling disputes. Preq: Construction Science and Management or Architecture major, senior standing, or consent of department chair.


C S M 490, 4990 Directed Studies 1-3(1-3,0) Comprehensive studies and research of special topics not covered in other courses. Emphasis is placed on field studies, research activities, and current development in construction science. May be repeated for a maximum of six credits. Preq: Consent of instructor.

C S M 498 Current Topics in Construction I 3(3,0) Study of current topics in the construction industry not central to other construction science courses. Specific titles and course descriptions to be announced from semester to semester. May be repeated for a maximum of six credits. Preq: Consent of advisor.

CROP AND SOIL

ENVIRONMENTAL SCIENCE

Professors: H. T. Knap, V. L. Quisenberry, E. R. Shipe, B. R. Smith; Associate Professor: W. C. Stringer; Assistant Professor: J. K. Nortonsworthy; Lecturer: B. E. Edge

CSENV 100 Introduction to Crop and Soil Environmental Science 1(1,0) Introduction to and survey of the agronomic and soil sciences and their application to current societal issues: career guidance, opportunities for professional certification, and discussion of skills used by agronomists and soil scientists. Offered fall semester only.

CSENV 202 Soils 4(3,2) Introduction to world land resources, soil formation, classification, and mineralogy. Emphasis is on the basic chemical and physical properties of soil. Soil microorganisms, plant nutrients, and fertilization are discussed. Soil properties are related to growth. Preq: CH 101, 102, or a geology sequence including GEOL 101; or consent of instructor.

CSENV 350 Practicum 1-3 Preplanned internship undertaken with an approved agency concerned with agronomic practices. May be repeated for a maximum of three credits. Preq: Crop and Soil Environmental Science minor and consent of department chair.

CSENV 403, 603 Soil Genesis and Classification 2(1,3) Study of soil morphology and characterization, pedogenic processes, soil-forming factors, and classification of soils. Offered fall semester only. Preq: CSENV 202 or consent of instructor.

CSENV 404, 604 Soils and Land Use 2(1,3) Soils interpretations for nonagricultural purposes and facilities. Emphasize uses of modern soil surveys and properties and features of soils important in nonfarm land uses. Not open to Crop and Soil Environmental Science minors or to students who have taken CSENV 202. Offered fall semester only.

CSENV 405, 605 Plant Breeding 3(2,2) Application of genetic principles to the development of improved crop plants. Principal topics include the genetic and cytophysiological basis of plant breeding, mode of reproduction, techniques in selfing and crossing, and identification of inheritance in the major crops, and biometrical methods. Offered spring semester only. Preq: GEN 302 or equivalent.

CSENV 406 Special Problems 1-3(0,3-9) Acquaints students with the scientific method. Literature investigation, planning, and execution of an experiment are integral parts of the course. Not open to AGRIC H491 and H492 students. May be repeated for a maximum of six credits. Preq: Senior standing, minor in Crop and Soil Environmental Science, and consent of department chair.

CSENV 407, H407, 607 Introductory Weed Science 3(2,2) Weed management in crops and pasture of the Southeast. Topics include weed identification, herbicide families and modes of action, herbicide formulations, herbicide diagnosis on crops and weeds, sprayer calibration and spray application, and nonchemical weed control strategies. Preq: AGRIC 104 or consent of instructor.
CSENV (B E) 408, 686 Land Treatment of Wastewater and Sludges 3(3,0) Principles for designing environmentally acceptable land application systems using municipal and industrial wastewater and sludges are presented. Topics include land-limiting constituent analysis; soil-plant interactions; system equipment and design; system operation and management; public acceptance, social, and regulatory issues. Case studies and field trips are planned. Prq: Senior standing in agriculture or engineering or consent of instructor.

CSENV 417, H417, 617 Weed Ecology and Morphology 3(2,2) Study of the morphological characteristics of weed plants of economic importance in row crops, pastures, and turf of South Carolina. Succession, reproduction, dissemination, distribution, competition, and allelopathy are discussed. Prq: CSENV 407 or 433 or consent of instructor.

CSENV 421, 621 Principles of Field Crop Production 3(3,0) Principles for production of field crops. Topics include botany and physiology, tillage, harvesting, storage, and crop quality. Principles are illustrated using examples from various crops. Prq: AGRIC 104 or equivalent introductory plant science, CSENV 202.

CSENV 422, 622 Major World Crops 3(3,0) Examines the distribution, adaptation, production, and utilization of major agronomic crops of the world. Emphasizes crops important to U.S. agriculture. Specific crops discussed in more detail include corn, wheat, rice, sorghum, soybean, cotton, tobacco, and peanuts. Prq: AGRIC 104 or equivalent introductory plant science, CSENV 202.

CSENV 423, H423, 623 Field Crop--Forages 3(3,0) Establishment, management, and utilization of forage crops in a forage-livestock agroecosystem context. Hay, silage, and pasture utilization are discussed. Computer model used to study complexity of forage-livestock production systems. Prq: AGRIC 104, CSENV 202, or consent of instructor.

CSENV 424, 624 Applied Aspects of Forage Management 1(0,2) Hands-on exposure to forage plantings, establishment and management practices. Pasture and harvested forage systems, equipment and practices; analysis of forage-livestock systems. Prq: CSENV 423 (or concurrent enrollment).

CSENV 425, 625 Seed Science and Technology 3(2,2) Topics include seed development, germination, dormancy, pathology, storage, and deterioration. Seed testing and commercial production of seed are also covered. Emphasis is on useful applications of current seed science knowledge. Prq: AGRIC 104, BIOSC 205.

CSENV (AP EC) 426, 626 Cropping Systems Analysis 3(2,2) Application of agronomic and economic principles in solving problems relating to production and marketing of agronomic crops. Major part of the course is a case study in which detailed analysis of a farm, agribusiness or environmental situation is made with students making formal written and oral presentations of results. Prq: AP EC 202, AGRIC 104, Junior standing.

CSENV (HORT) 433, 633 Integrated Weed Management for Agronomic and Horticultural Crops 3(2,2) See HORT 433.

CSENV 446, 646 Soil Management 3(3,0) Basic soil properties are related to compaction, water and solute movement, and root growth. Practical management problems are considered and solutions developed based on basic soil characteristics. Problems include erosion, no-tillage, compaction, irrigation, leaching, waste application, golf-green management, and orchard establishment. Prq: CSENV 202.

CSENV 452, 652 Soil Fertility and Management 3(3,0) Soil properties, climatic factors, and management systems in relation to soil fertility maintenance for crop production; plant nutrition and growth in relation to crop fertilization and management. Prq: CSENV 202 or consent of instructor.

CSENV 453, H453, 653 Soil Fertility Laboratory 1(0,3) Evaluation and interpretation of soil fertility production. Prq: CSENV 202 or consent of instructor.

CSENV 455 Seminar 1(1,0) Student presentation of current agronomic topics of special interest in crop production appearing in recent scientific journals and other publications. Prq: CSENV 202, CH 101, PHYS 207.

CSENV 490, 690 Beneficial Soil Organisms in Plant Growth 3(3,0) Aspects of biological nitrogen fixation, mycorrhizal fungi, microbial-pest interactions, bioremediation, nutrient cycles, and biological pest control related to plant growth, soil/vegetable quality; and sustainable agriculture are covered. Students who desire laboratory experience in these topics may register for CSENV 405 after consultation with instructor. Prq: CSENV 202, MICRO 305, PLPA 310, or consent of instructor.

DANCE Lecturer: C. Hosler

DANCE 130 Tap Dance I 1(0,3) Introduction to the fundamentals and vocabulary of tap dancing with opportunities to develop rhythmic patterns of various origins. May be repeated for a maximum of eight credits, with a maximum of 16 credits of dance applied toward a degree. Applied dance fee will be assessed.

DANCE 140 Jazz Dance I 1(0,3) Introduction to the basic principles and fundamentals of jazz technique, as well as exploration of flexibility and strength-building exercises. May be repeated for a maximum of eight credits, with a maximum of 16 credits of dance applied toward a degree. Applied dance fee will be assessed.

DANCE 150 Modern Dance I 1(0,3) Introduction to the basic principles of dance movement and vocabulary, as well as actively exploring and applying different methods of body alignment and theory. May be repeated for a maximum of eight credits, with a maximum of 16 credits of dance applied toward a degree. Applied dance fee will be assessed.

DANCE 160 Ballet Dance I 1(0,3) Introduction to the basic principles and fundamentals of classical ballet, with emphasis on good technique, center work, and across the floor work. May be repeated for a maximum of eight credits, with a maximum of 16 credits of dance applied toward a degree. Applied dance fee will be assessed.

DESIGN STUDIES


DSDGN 321 Wood Shop Practices, Materials, Tools, and Equipment 3(1,6) Instruction in the use of a full range of shop machinery, tools, equipment, and craftsmanship as well as an orientation to a wide variety of materials, techniques, and procedures. The paramount importance of safety is continually emphasized. Prq: Consent of instructor.

EARLY CHILDHOOD EDUCATION

Associate Professors: D. J. Sluss, D. A. Stegelin; Lecturer: R. S. N. Wilson

ED EC 220 Family, School, and Community Relations 3(3,0) Historical trends, theoretical models, and strategies of effective family/school/community relationships are examined. Special emphasis is placed on multicultural issues and on programs that support collaborative interaction with families that benefit children. Prq: Sophomore standing.

ED EC 300 Foundations of Early Childhood Education 3(3,0) Philosophical and historical foundations of Early Childhood Education, societal changes and influences, needs of young children and families, program differentiation, and future trends are examined through coursework and experiential activities. Prq: General Education requirements; ED EC 220, ED F 334, or consent of instructor.

ED EC 336, H336 Social Development of Infants and Young Children 3(3,0) Study of the behavior of the preschool child from infancy through age five. Theoretical concepts and observation of children's behavior are integrated, analyzed, and evaluated to discover implications for teaching and guiding preschool children. Includes a minimum of 10 one-hour observation/participation visits in public kindergartens. Prq: ED F 334, minimum grade-point ratio of 2.0 or consent of instructor.
ED EC 400 Observation and Assessment in Clinical Settings 3(3,0) Clinical experiences in early childhood settings prior to student teaching provide opportunities for observing, guiding, and assessing young children, birth to age eight, in a variety of high quality preschool and primary settings. Practicum spans the entire semester. To be taken Pass/Fail only. Prq: ED EC 336; concurrent enrollment in ED EC 420, 430, 440, 450, and READ 459.

ED EC 420 Early Childhood Science 3(3,0) Students develop knowledge, skills, and attitudes needed to foster science education among young children. Emphasis is on teaching strategies and techniques appropriate for young children (birth to age eight), understanding the unique learning needs of special populations, and integrating science across the curriculum. Prq: General Education requirements. Coreq: ED EC 400, 430, 450, READ 459.

ED EC 430 Early Childhood Mathematics 3(3,0) Theories and methods of teaching mathematics are examined in terms of how young children develop mathematical thinking. Topics include problem solving, current issues, diversity, current technologies, reflective teaching, and applications of math in everyday life. Prq: General Education mathematics requirement; admission to the professional level. Coreq: ED EC 400, 420, READ 459.

ED EC 440 Integrated Language Arts and Social Studies in Primary Schools 3(3,0) Integrates social studies and language arts in a course that reflects recommended teaching practices for young children (birth to age eight). Use language arts as an approach for teaching social studies content, techniques, and methods in primary schools. Prq: Admission to the professional level. Coreq: ED EC 400, 420, 430, 450, READ 459.

ED EC 450 Early Childhood Curriculum 3(3,0) Constructivist approach is used to explore children’s thinking as it influences curriculum design in early childhood; analyze the educational needs of the young child in the cognitive realm; and examine the implementation of activities, experiences, and play-based program models. Prq: Admission to the professional level. Coreq: ED EC 400, 420, 430, 450, READ 459.

ED EC 484 Directed Teaching in Early Childhood Education 12(1,33) Supervised observation and teaching experiences in cooperation with nursery schools, kindergartens, and early elementary schools. Restricted to seniors or graduates who have completed prerequisite courses and have the cumulative grade-point ratio for graduation. Prq: ED EC 400, 450, ED EL 321, 488, READ 459; admission to the professional level; consent of area committee chair.

EAST ASIAN STUDIES

EAS 123 Introduction to China 3(3,0) Introduction to various aspects of Chinese civilization, including geography, ethnic groups, language, history, philosophy, religion, literature, arts, architecture, and social customs. All readings and discussions are in English.

ECON 211, H211 Principles of Microeconomics 3(3,0) Introduction to economic reasoning and its application to the study of the behavior of consumers and business firms. Topics include competition, monopoly, international trade, and the impact of selected public policies. Intended as the first of a two-semester sequence in the foundations of economics. Prq: ECON 211 or consent of instructor.

ECON 212, H212 Principles of Macroeconomics 3(3,0) Continuation of ECON 211 in which fundamental economic principles are applied to the study of aggregate economic performance. Topics include the forces determining the rates of inflation, unemployment, and economic growth, with particular emphasis on the influence of fiscal and monetary policies through financial markets. Prq: ECON 211 or consent of instructor.

ECON 301 Economics of Labor 3(3,0) Introduces students to the economics of the labor market and labor relations. Considers the theories of wages and employment, determination, unemployment, investment in human capital, discrimination, and public policy toward the labor market. Also considers the role of labor unions. May not be used to satisfy requirements for a degree in Economics. Prq: ECON 211 or consent of instructor.

ECON 302 Money and Banking 3(3,0) Considers the function of money and banking in both the product and financial markets. Special emphasis is placed on the implications of monetary theory and current problems of monetary policy. May not be used to satisfy requirements for a degree in Economics. Prq: ECON 212 or consent of instructor.

ECON (MGT) 306 Managerial Economics 3(3,0) Uses tools of economic analysis in an analysis of organizations and management practices, and in comparing alternative courses of action. Bridges the gap between economic theory and managerial practices. May not be used to satisfy requirements for a degree in Economics. Prq: ECON 211 or consent of instructor.

ECON 307 Arbitration 3(3,0) Analysis of dispute settlement procedures with specific emphasis on mediation, fact-finding, and arbitration as they are used to resolve labor-management disputes in the public and private sectors. Prq: Consent of instructor.

ECON 308 Collective Bargaining 3(3,0) Practices, procedures, legal foundations, and legal structure associated with collective bargaining. Form and content of the labor contract, grievance machinery, and mediation and arbitration institutions are also studied. Prq: ECON 211 or consent of instructor.

ECON 309 Government and Business 3(3,0) Relationships between government and business, including, among other topics, government efforts to enforce competition; to regulate public utilities; and to protect the special interest of laborers, farmers, and consumers. May not be used to satisfy requirements for a degree in Economics. Prq: ECON 211 or consent of instructor.

ECON 310 International Economy 3(3,0) Studies of the process of international commerce. Covers basic theory of trade and exchange rates, institutional and legal environment, current policy issues. Not open to students who have taken ECON 412. May not be used to satisfy requirements for a degree in Economics. Prq: ECON 211 and 212 or consent of instructor.

ECON 314, H314 Intermediate Microeconomics 3(3,0) Analytical study of the basic concepts of value and distribution under alternative market conditions. Prq: ECON 211 or consent of instructor.

ECON 315, H315 Intermediate Macroeconomics 3(3,0) Macroeconomic problems of inflation and unemployment are focal points. Statistics (measures of real output and the price level) and theory (covering the sources of short-run fluctuations and long-run growth) are included. Appropriate public policies addressing these issues are analyzed. Prq: ECON 212 or consent of instructor.

ECON 319 Environmental Economics 3(3,0) Study of the application of economic logic to issues surrounding environmental management and policy. Examines individual, firm, and collective decision making as well as the evolution of regulatory approaches for controlling environmental use. Prq: ECON 314.

ECON (E L E) 321 Economics of Innovation 3(3,0) Examines the nature of entrepreneurship and the contribution of innovation to economic growth. The organizational and institutional sources of innovation in different firms and different countries are investigated as well as the work of economic theorists concerning the role entrepreneurs play in bringing new products to market. Prq: ECON 306 or 314.

ECON 324 Economics and Sports 3(3,0) Economic analysis of sports teams, leagues, and institutions. Analysis of basic economic issues using sports data. May not be used to satisfy requirements for a degree in Economics. Credit will not be given to students who have completed ECON 426. Prq: Sophomore standing, ECON 211.

ECON 325 Personnel Economics 3(3,0) Studies the various compensation and personnel practices that firms employ. Explains when each of those practices should be followed to elicit the desired employee effort and labor force quality. Topics include piece-rate and time-rate systems, seniority-based incentive schemes, promotion contests, evaluation systems, mandatory retirement, and up-or-out rules. Prq: ECON 211 or consent of instructor.
ECON 340 Behavioral Economics 3(3,0) Introduction into the economic, sociological, and psychological aspects of decision making under uncertainty. Presents the psychology of prediction, intuitive prediction biases, and corrective procedures. Topics also include framing, choice with costly information, and social influences on individual behavior. Prereq: ECON 211 or consent of instructor.

ECON 350, H350 Moral and Ethical Aspects of a Market Economy 3(3,0) Can a market system produce results that are fundamentally just? Is justice possible without voluntary exchange? Applies both economic and philosophical analyses to these questions. Emphasizes the causes, consequences, and morality of the distribution of wealth and income in a free-market system. Prereq: ECON 314 or consent of instructor.

ECON 360 Public Choice 3(3,0) Covers the economic approach to political activities and institutions. Topics include voting, voting rules, constitutions, political competition, political business cycles, vote trading, interest groups, bureaucracy, committees, legislators, executives, and judges. Designed for Economics and non-Economics majors and requires only basic skills in microeconomics. Prereq: ECON 211 or consent of instructor.

ECON H390 Junior Honors Research 1(1,0) Readings and research in conjunction with an approved economics course at the 300 or 400 level. Honors status required. May be repeated for a maximum of three credits.

ECON 401 Labor Market Analysis 3(3,0) Develops the methods of economic analysis of labor markets. Requires students to apply these methods to problems of the labor market. Topics include labor demand and supply, human capital, occupational choices, compensating wage differentials, organizational wage structures and incentive systems, unemployment, and discrimination. Prereq: ECON 314.

ECON 402 Law and Economics 3(3,0) Application of economics to the law of property, torts, and contracts; regulation of markets, business organizations, and financial transactions; distribution of income and wealth; and criminal law. Prereq: ECON 211 or consent of instructor.

ECON 404 Comparative Economic Systems 3(3,0) Comparative analytical and historical study of the principal economic systems which have been important in the modern world including, among others, capitalism and socialism. Prereq: ECON 314 or consent of instructor.

ECON 405, 605 Introduction to Econometrics 4(3,3) Introduction to methods of quantitative analysis of economic data. Reviews basic statistical methods and probability distribution. Topics include data management using professional statistical software applications; multiple regression analysis; hypothesis testing under conditions of multicollinearity, heteroscedasticity, and serial correlation. Prereq: ECON 211 and 212; MTHSC 108 or 207; EX ST 301 or MTHSC 301 or 309.

ECON 406, 606 Advanced Econometrics 3(3,0) Reviews statistical inference using multiple regression (OLS) analysis and model specification. Topics include multicollinearity, heteroscedasticity, and serial correlation; two-staged least squares and instrumental variables models; simultaneous equations models; limited dependent variable models using maximum likelihood estimation and time-series analysis; and presentation of results in technical writing. Prereq: ECON 405 or consent of instructor.

ECON 410, 610 Economic Development 3(3,0) Consideration and analysis of economic and related problems of underdeveloped countries. Attention is given to national and international programs designed to accelerate solution of these problems. Prereq: ECON 314 or consent of instructor.

ECON 411, 611 Economics of Education 3(3,0) Analysis of economic issues related to education. The decision to invest in education, elementary and secondary school markets and reform, the market for college education, teacher labor markets, and education's effects on economic growth and income distribution. Prereq: ECON 314 or consent of instructor.

ECON 412 International Microeconomics 3(3,0) Analysis of the essential aspects of international economic linkages. Gains and redistributive effects of trade and the barriers to trade are discussed within the context of a variety of economic models. The history of trade policy and the political economy of its determination are also discussed. Prereq: ECON 314 or consent of instructor.

ECON 413 International Macroeconomics 3(3,0) Examination of macroeconomic linkages between an individual country and the rest of the world and how these linkages are affected by the choice of exchange rate regimes. Topics include the relation between domestic and foreign interest rates and exchange rates and the ability to pursue independent monetary policies. Prereq: ECON 315.

ECON 419 Economics of Defense 3(3,0) Examines the American defense establishment in terms of resources utilized, alternative uses, and the contribution to the national and scientific progress generated by resources in a defense use. Discussed are economic problems inherent in shifting resources between defense and nondefense uses and among alternative defense uses. Prereq: ECON 314.

ECON 420 Public Sector Economics 3(3,0) Study of the role of government and its proper functions and limitations in a market. Provision of goods and services by all levels of government and instruments of taxation are evaluated according to efficiency and equity criteria. Contemporary public sector issues are emphasized throughout. Prereq: ECON 314 or consent of instructor.

ECON 422 Monetary Economics 3(3,0) Intensive study of the role of monetary factors in economic change. Modern monetary theories and their empirical relevance for policy are developed against a background of monetary history and institutions. Prereq: ECON 314 and 315 or consent of instructor.

ECON 424 Organization of Industries 3(3,0) Empirical, historical, and theoretical analyses of market structure and concentration in American industry: the effects of oligopoly, monopoly, and cartelization upon price, output, and other policies of the firm; antitrust and other public policies and problems are studied. Prereq: ECON 314 or consent of instructor.

ECON 425, 625 Antitrust Economics 3(3,0) Analysis of the economic and legal issues created by the exercise of market power. The motivation and execution of government policy towards mergers, predatory conduct, and various restraints of trade are intensively examined. Prereq: ECON 309 or 314 or consent of instructor.

ECON 426, H426, 626 Seminar in Sports Economics 3(3,0) Analysis of economic analysis of sports teams, leagues, and institutions. Topics include antitrust issues, public funding of sports venues, labor relations, wagering markets, athlete compensation, and application of economic principles to sports settings. Empirical research projects is cornerstone of course. Prereq: ECON 314, 405; or consent of instructor.

ECON 430 Topics in Mathematical Economics 3(3,0) Skills acquired in freshman mathematics are applied to selected topics in economic theory. Course is a good complement to ECON 314 and provides excellent preparation for 400-level courses in economics, especially ECON 425. May be taken concurrently with ECON 314. Prereq: ECON 314, and MTHSC 108 or 207.

ECON 440, 640 Game Theory 3(3,0) Introduction to the formal analysis of strategic interaction among rational, self-interested agents. Basic theoretical aspects of games are discussed and applied to such topics as bargaining, voting, auctions, and oligopoly. Prereq: ECON 314 and MTHSC 106, or ECON 430, or consent of instructor.

ECON H491 Senior Honors Thesis Research 3(3,0) Reading and research for the Senior Honors Thesis. Prereq: ECON 314, 315, senior honors standing.

ECON H492 Senior Honors Thesis Writing 3(3,0) Writing and oral presentation of the Senior Honors Thesis. Prereq: ECON H491.

ECON 496 Independent Study 1-3(1-3,0) Research and writing on a selected economics topic chosen by the student. A written proposal must be approved by the instructor prior to the start of the semester. May be repeated for a maximum of six credits. Prereq: ECON 314.

ECON 498, H498 Selected Topics in Economics 3(3,0) In-depth treatment of topics not covered fully in regularly scheduled courses. Specific topics vary from year to year. May be repeated for a maximum of nine credits, but only if different topics are covered. Prereq: ECON 314 and 315 or consent of instructor.

ECON 499 Senior Seminar in Economics 1-3(1-3,0) Discussion of topics of current interest in economics. Students conduct directed research on a particular topic. Prereq: Consent of instructor.

EDUCATION

Professor: W. R. Fisk, Chair; Lecturer: H. W. Millar

ED 105 Orientation to Education 1(1,0) Lectures and discussions on teaching. For a minimum of ten weeks, students spend one hour per week in schools, assisting teachers, observing, and tutoring individuals. Required of all students in approved teacher certification programs. To be taken Pass/Fail only.
ED 110 Introduction to Tutoring 1(1,0) Students develop and reinforce skills in tutoring and communication through use of techniques based in educational research. To be taken Pass/Fail only.

ED 111 Introduction to Supplemental Instruction 1(1,0) Students develop and reinforce interpersonal relationship skills in learning, decision making, communicating, group dynamics, leadership, assertiveness, time management, problem solving, and conflict resolution. To be taken Pass/Fail only.

ED 322 Responding to Emergencies 3(3,0) Provides the citizen responder with the knowledge and skills necessary in a variety of emergencies to help sustain life and to minimize pain and the consequences of injury until professional help arrives. First aid, CPR, and automated external defibrillation (AED) are included.

ED 405 Multiculturalism 3(3,0) Introduces prospective teachers to the influence of culture on learning from an anthropological and historical perspective. Prereq: HIST 172, 173, or consent of instructor.

ED 438 Selected Topics in Education 1-3(1-3,0) Specific education topics not found in other courses are selected for in-depth study. May be repeated for a maximum of six credits, but only if different topics are covered.

ED 439 Independent Study in Education 1-3(1-3,0) Study of selected topics in education under the direction of a faculty member chosen by the student. Student and faculty member develop a course of study different from any existing courses and designed for the individual student. May be repeated for a maximum of six credits, but only if different topics are covered.

ED 441, 641 Middle School Curriculum 3(3,0) Concepts and methods for teaching middle school students. Discusses nature of middle school students, teacher characteristics, curricular and co-curricular programs, organization, and teaching.

ED H499 Education Honors Capstone 3(1,4) Students seeking departmental honors complete research under faculty mentors. Seminar meetings occur across the semester and include the sharing and discussion of research results and experiences by students and faculty. Prereq: ED F H301, H302, departmental honors course specified by major area.

EDUCATIONAL FOUNDATIONS

ED F 301, H301 Principles of American Education 3(3,0) Study of the legal basis, historical development, characteristics, and functions of educational institutions in the United States. Prereq: Minimum grade-point ratio of 2.0.

ED F 302, H302 Educational Psychology 3(3,0) Introduction to classroom use of objectives, motivation theories, learning theories, tests and measurements, classroom management, and knowledge of exceptional learners. Prereq: Minimum grade-point ratio of 2.0.

ED F 308 Classroom Assessment 3(3,0) Introduction to classroom assessment and standardized testing. Prereq: ED F 302.

ED F (THRD) 315 Technology Skills for Learning 1.0, 2 Students develop technology skills, such as creating Web pages and multimedia presentations in the context of general education class requirements. Products developed are linked within the School of Education e-portfolio. Prereq: Admission to Teacher Education program.

ED F 334, H334 Child Growth and Development 3(3,0) Introduction to lifespan development. Heavy emphasis is placed on the physical, social, emotional, and cognitive characteristics. Includes a minimum of five one-hour observation/participation visits to an elementary school. Prereq: ED F 105 or concurrent enrollment, minimum grade-point ratio of 2.0, or consent of instructor for non-education majors.

ED F 335, H335 Adolescent Growth and Development 3(3,0) Introduction to lifespan development. Emphasis is placed on the physical, social, emotional, and cognitive characteristics of the 10- to 18-year-old and the educational implications of those developmental characteristics.

ED F 406 Philosophy, Schooling, and Educational Policy 3(3,0) Analysis of the development of contemporary educational theory and its impact on current schooling practices and educational policy development.

ED F 425 Instructional Technology Strategies 1(0,2) Helps future teachers learn to use technology effectively in support of content area instruction. To be taken concurrently with either methods classes or during student teaching as directed by major. Prereq: ED F (THRD) 315.

ED F (AG ED, THRD) 480, 680 Educational Applications of Microcomputers 3(2,2) Fundamentals of computer applications for teachers. Develops competencies in general computer applications such as word processing and database management and addresses educational uses of the Internet and computer-assisted instruction, with emphasis on legal and ethical issues and the impact of computer technology upon society. Prereq: Admission to a Teacher Education Program.

ED F (AG ED, THRD) 482, 682 Advanced Educational Applications of Microcomputers 3(2,2) Provides students with the knowledge and skills needed to apply microcomputer technology to the utilization and generation of educational software in accordance with sound educational principles. Prereq: ED F (AG ED, THRD) 480.

ED F 490, 690 Student Management and Discipline 3(3,0) Aids pre-service and in-service teacher development and refines knowledge, skills, and values important for managing students in school settings. Practical application of theory and research and legal and ethical considerations are emphasized. Prereq: ED F 302 or PSYCH 201; ED F 334, 335, or suitable alternative; minimum grade-point ratio of 2.0.

ED F 497, 697 Instructional Media in the Classroom 3(3,0) Integrated approach to the use of audiovisual media stressing systematic planning, selection, utilization, and evaluation as well as production of materials and equipment operation. Prereq: Minimum grade-point ratio of 2.0.

ELECTRICAL AND COMPUTER ENGINEERING

ED C 201, H201 Logic and Computing Devices 3(2,2) Study of logic with an introduction to Boolean algebra; number systems and representation of information; use of integrated circuits to implement combinational and sequential logic functions and computing elements; organization and structure of computing systems. Prereq: MTHSC 108, PHYS 122.


ED C 211 Electrical Engineering Laboratory 1(1,2) Principles of measurement and instruments used to measure parameters and dynamic variables in electric circuits, steady state and transient measurements in DC and AC circuits, and data analysis methods are included. Coreq: E C E 202.
ECE 212 Electrical Engineering Laboratory II
1(0,2) Emphasizes measurement techniques in AC steady-state circuits and comparison to theoretical predictions. Two-port network methodology and transfer functions are studied experimentally and related to analysis using transform techniques. Prereq: ECE 202, 211. Coreq: ECE 262.


ECE 223 Computer Systems Engineering 3(3,0) Analysis of implementation techniques for systems software. Applying engineering principles including code reading to the design of data structures and algorithms for low level computer systems, embedded systems, and hardware/software systems. Includes coverage of address translation, memory management, file systems, and process management. Prereq: ECE 222.

ECE 262, H262 Electric Circuits II 3(3,0) Continuation of the study of electric circuits, including three-phase circuits, complex frequency and network functions, frequency response, two-port parameters, magnetically-coupled circuits, Laplace transforms, and introduction to Fourier series and transforms. Prereq: ECE 202, MTHSC 206, PHYS 221. Coreq: ECE 212, MTHSC 208.

ECE 263 Circuit Analysis Problems II 1(0,3) Analysis of basic AC circuit analysis techniques to analyze the transient and steady-state behavior of both simple and complex circuits. Coreq: ECE 262, MTHSC 208.

ECE 272 Computer Organization 4(3,2) Introductory course in computer organization and architecture. Topics include basic hardware and software structure, addressing methods, control, processing units, I/O organization, arithmetic, main-memory organization, peripherals, microprocessor families, RISC architectures, and multiprocessors. Prereq: ECE 201 and CPSC 101 or 111 or 157 or 210.

ECE H300 Junior Honors Seminar 1(2,0) Acquaints students enrolled in the Departmental Honors Program with current research activities in the Department. Faculty provide seminars where research interests are summarized. Seminars are planned to prepare students in choosing research topics for their senior theses.

ECE 307 Basic Electrical Engineering 2(2,0) A first course in electrical engineering to provide non-Electrical Engineering majors with a knowledge of DC and AC circuit theory, AC power distribution, and numerous electrical devices, apparatus, and digital systems. Prereq: MTHSC 206, PHYS 221. Coreq: ECE 307.

ECE 308 Electronics and Electromechanics 2(2,0) Continuation of ECE 307. Energy conversion systems are considered, as well as basic electronics. Prereq: ECE 307.

ECE 309 Electrical Engineering Laboratory I 1(0,2) Laboratory to accompany ECE 307. Basic electrical circuits and instrumentation. Coreq: ECE 307.

ECE 311 Electrical Engineering Laboratory III 1(0,2) Measurements and characteristics of electronic devices and circuits; use of manual and automated instruments to acquire data; oral and written engineering reports. Prereq: ECE 262, MTHSC 208, PHYS 221. Coreq: ECE 310.

ECE 312 Electrical Engineering Laboratory IV 1(0,2) Design and characterization of functional circuits using solid-state devices; use of manual and automated instruments for measurements; statistical analysis of data; preparation of engineering reports. Prereq: ECE 311, 320. Coreq: ECE 321.


ECE 320 Electronics I 3(3,0) Introduction to electronic materials and devices; principles of design; design of DC and AC circuits using diodes, bipolar junction transistors, field-effect transistors and use of transistors in digital circuits. Prereq: ECE 262, MTHSC 208, PHYS 221. Coreq: ECE 311.

ECE 321 Electronics II 3(3,0) Analysis and design of discrete amplifier circuits at low and high frequencies, operational amplifiers, distortion in amplifiers, oscillator design, and circuit analysis of active digital devices. Prereq: ECE 320. Coreq: ECE 312.

ECE 327 Digital Computer Design 3(3,0) Design of high-speed ALUs, control and timing circuitry, memory systems and I/O circuitry; microcomputer design using bit-slice microprocessors; current hardware topics related to computer design; hands-on design experience; and use of logic analyzer for system debugging. Prereq: ECE 371.

ECE 329 Computer Systems Structures 3(3,0) Fundamental structures and issues that arise in the analysis and implementation of computer systems. Topics include operating systems, structures, and data structures and their relationship to computer organization. Engineering science background for computer systems design. Prereq: CPSC 102 or 210; CPSC 340 or 342; ECE 272.


ECE 352 Programming Systems 3(3,0) Second course in programming languages and systems. Topics include assemblers, compilers, and syntactical methods, string manipulation and list processing, concepts of executive programs and operating systems; introduction to time-sharing systems. Prereq: CPSC 340 or 212 and MTHSC 419.

ECE 360 Electric Power Engineering 3(3,0) Presents the basic principles of electromagnetic induction and electromagnetic forces developed. Topics include synchronous machines, power transformers, electric power transmission, and distribution systems, DC motors, and induction motors. Prereq: ECE 262, PHYS 221.

ECE 371 Microcomputer Interfacing 4(1-3,1-3) Interfacing of microcomputers to peripherals or other computers for purposes of data acquisition, device monitoring and control, and other communications. The interfacing problem is considered at all levels including computer architecture, logic, timing, loading, protocols, and software laboratory for building and simulating designs. Prereq: ECE 262, 272. Coreq: ECE 320.

ECE 380 Electromagnetics 3(3,0) Introduction to electric fields and potentials, dielectrics, capacitance, resistance, magnetic field, forces, work and energy, induction, time-varying fields, and Maxwell's equations. Prereq: ECE 262, MTHSC 206, PHYS 221.

ECE 381 Fields, Waves, and Circuits 3(3,0) Covers foundations of circuit theory, transmission lines and circuits, plane-wave propagation, fiber optics, radiation and antennas, coupled circuits. Prereq: ECE 380, MTHSC 208.

ECE 404, 604 Semiconductor Devices 3(3,0) Consideration of the principles of operation, external characteristics, and applications of some of the more important semiconductor devices presently available. Prereq: ECE 320. Coreq: MTHSC 311 or 434.

ECE 405 Design Projects in Electrical and Computer Engineering 1-3(0,2-6) Individually defined projects oriented toward providing experience in establishment of objectives and criteria, synthesis, analysis, construction, testing, and evaluation; development of student creativity through the solution of open-ended problems; individual instruction in design methodology. May be repeated for a maximum of three credits. Prereq: ECE 330 or 409, consent of project supervisor.

ECE 406, 606 Introduction to Microelectronics Processing 3(3,0) Microelectronic processing, MOS and bipolar monolithic circuit fabrication, thick and thin film hybrid fabrication, applications to linear and digital circuits, fundamentals of design. Prereq: ECE 320. Coreq: MTHSC 311 or 434.

ECE 409 Continuous and Discrete Systems Design 3(3,0) Introduction to classical linear control systems. Topics include continuous and discrete descriptions of systems, time and frequency response, stability, system specification, system design of continuous and discrete systems. Prereq: ECE 330. Coreq: ECE 495.

ECE 410, 610 Modern Control Theory 3(3,0) Introduction to modern control theory. Topics include fundamentals of matrix algebra, state space analysis and design, nonlinear systems and optimal control. Prereq: ECE 409.

ECE 412 Electrical Machines Laboratory 1(0,2) Selected experiments to familiarize students with characteristics of transformers, DC and AC motors and generators. Measurement techniques and component modeling are included. Coreq: MTHSC 434 or consent of instructor. Prereq or Coreq: ECE 360 or 419.

ECE 417, 617 Elements of Software Engineering 3(3,0) Foundations of software design, reasoning about software, the calculus of programs, survey of formal specification techniques and design languages. Prereq: ECE 329, 352, MTHSC 419.


Courses of Instruction

ECE 418, 618 Power System Analysis 3(3,0)
Study of power system planning and operational problems. Subjects covered are load flow, economic dispatch, fault studies, transient stability, and control of problems. System modeling and computer solutions are emphasized through class projects. Preq: ECE 360, 380.

ECE 419, 619 Electric Machines and Drives 3(3,0)
Performance, characteristics, and modeling of AC and DC machines during steady-state and transient conditions. Introduction to power electronics devices and their use in adjustable speed motor drives. Preq: ECE 321, 360, 380. Coreq: MTHSC 434 or consent of instructor.

ECE 422, 622 Electronic System Design 3(2,2)
Emphasizes the application of theory and skills to the design, building, and testing of an electronic system with both analog and digital components. Application varies each semester. Extensive use is made of computer software tools in the design process. Preq: ECE 321, 330, 360, 371, 381.

ECE 427 Communications Systems 3(3,0)
Study of communication systems design and analysis. Topics include signals and spectra, baseband signaling and detection in noise, digital and analog modulation and demodulation techniques, communications link budget analysis. Preq: ECE 317, 330.

ECE 429, 629 Organization of Computers 3(3,0)
Computer organization and architecture. Topics include a review of logic circuits, bus structures, memory organization, interrupt structures, arithmetic units, input-output structures, state generation, central processor organization, control function implementation, and data communication. Registered Transfer Language (RTL) for description and design of digital systems. Preq: ECE 272 or consent of instructor.

ECE 430, 630 Digital Communications 3(3,0)
Study of digital communication systems. Topics include error-control coding, synchronization, multiple-access techniques, spread spectrum signaling, and fading channels. Preq: ECE 427.

ECE 431, 631 Digital Electronics 3(2,2)
Electronic devices and circuits of importance to digital computer operation and to other areas of electrical engineering are considered. Active and passive waveshaping, waveform generation, memory elements, switching, and logic circuits are some of the topics. Experimentation with various types of circuits is provided by laboratory projects. Preq: ECE 321. Coreq: MTHSC 311 or 434.

ECE 432, 632 Instrumentation 3(3,0)
Theory and analysis of transducers and related circuits and instrumentation. Generalized configurations and performance characteristics of instruments are considered. Transducer devices for measuring physical parameters such as motion, force, torque, pressure, flow, and temperature are discussed. Preq: ECE 321. Coreq: MTHSC 311 or 434.

ECE 436, 636 Microwave Circuits 3(3,0)
Analysis of microwave networks comprising transmission lines, waveguides, passive elements, interconnects, and active solid state microwave circuits. Use of modern CAD tools to design microwave passive/active networks. Fabrication of typical circuits. Preq: ECE 381 or equivalent. Coreq: MTHSC 311 or 434.

ECE 438, 638 Computer Communications 3(3,0)
Digital data transmission techniques, modern and communications channels, communications software and protocols, multiprocessors, and distributed processing; concurrency and cooperation of dispersed processors. Preq: Senior standing in Electrical or Computer Engineering or Computer Science or consent of instructor.

ECE 439, 639 Fiber Optics 3(3,0)
The underlying principles of design for optical fibers in practical systems are covered. Optical fiber as a waveguide is examined using wave optics and ray optics. Design criteria for using mono- and multimode fibers are discussed. Other topics include fabrication, measurement. Preq: ECE 381. Coreq: MTHSC 434 or consent of instructor.

ECE 440, 640 Performance Analysis of Local Computer Networks 3(3,0)
Introduction to the design and performance analysis of local computer networks. Emphasis is on performance analysis of representative multi-access procedures. Three common types of networks are considered in detail. Preq: ECE 272, 317.

ECE 442, 642 Knowledge Engineering 3(3,0)
Introduction to the theoretical and practical aspects of knowledge engineering or applied artificial intelligence. Topics include symbolic representation structures and manipulation, unification, production systems and structures, rule-based and expert systems, planning and AI system architectures; system design in PROLOG and LISP. Project is required. Preq: ECE 329, 352.

ECE 446, 646 Antennas and Propagation 3(3,0)
Study of the theoretical and practical aspects of antenna design and utilization, input impedances, structural considerations, and wave propagation. Preq: ECE 330, 381 or 436, MTHSC 311 or 434.

ECE 449 Computer Network Security 3(1,4)
Hands-on practicum in the administration and security of modern network service with emphasis on intrusion prevention techniques, detection, and recovery. Preq: Senior standing in Computer Engineering.

ECE 453 Software Practicum 3(1,6)
Students design and implement a software system that satisfies both a requirements and specifications document. The resulting system is tested for compliance. Preq: ECE 329, 352.

ECE (M&E) 456, 656 Fundamentals of Robotics 3(3,0)
See M.E 456.

ECE 459, 659 Integrated Circuit Design 3(2,2)
Design concepts and factors influencing the choice of technology; fundamental MOS device design; silicon foundries, custom and semiconductor integrated circuits; computer-aided design software/hardware trends and future developments; hands-on use of CAD tools to design standard library cells; systems design considerations, testing, and packaging. Preq: ECE 321. Coreq: MTHSC 311 or 434.

ECE 460 Computer-Aided Analysis and Design 3(3,0)
Principles and methods suited to the solution of engineering problems on the digital computer. Topics include widely used methods for the solution of the systems of algebraic and/or differential equations which arise in modeling of engineering systems, data approximation and curve fitting, continuous system simulation languages, and design-oriented programming systems. Preq: ECE 262, MTHSC 311, 434, or consent of instructor.

ECE 467, 667 Introduction to Digital Signal Processing 3(3,0)
Introduction to characteristics, design, and applications of discrete time systems; design of digital filters; introduction to the Fast Fourier Transform (FFT), LSI hardware for signal processing applications. Preq: ECE 330.

ECE 468, 668 Embedded Computing 3(2,2)
Principles of using computing in the larger context of a system. Topics include bus and processor design types (e.g. microprocessor, microcontroller, DSP), codecs, digital circuit power management, real-time scheduling, and embedded operating systems. Lab work consists of projects on embedded hardware (e.g. PC-104+). Preq: CP SC 212 and ECE 371 or consent of instructor.

ECE H491 Undergraduate Honors Research 1--6
Individual research projects conducted under the direct supervision and guidance of a faculty member. May be repeated for a maximum of six credits.

ECE 491, 691 Special Problems 1-3
Special assignments in electrical or computer engineering. Some typical assignments include computer programs, term papers, technical literature searches, hardware projects, and design project leadership. May be taken only once for credit.

ECE 493, 693 Selected Topics 1-3(1-3,0)
Classroom study of current and new technical developments in electrical and computer engineering. May be repeated for a maximum of six credits, but only if different topics are covered. Preq: Consent of instructor.

ECE 495 Integrated System Design I 2(1,3)
Engineering design of systems is considered in a continuous process of project definition, planning, execution, and evaluation. This process includes consideration of both technical and non-technical factors in design. Strong emphasis is placed on the development of effective technical communications skills, particularly oral communications competency. Preq: ECE 321, 330, 360, 371, 381 (three of which must have been completed prior to enrollment, with the remaining taken as corequisite courses). Coreq: ECE 409 (in addition to any deficit courses in the prerequisites).

ECE 496 Integrated System Design II 2(0,6)
Project-oriented course which brings together electrical engineering students of dissimilar training into teams or project groups. Group assignments are made which are designed to develop appreciation for individual and creative thinking as well as team effort. Preq: ECE 321, 330, 360, 371, 381, 409, 495.
ED EL 304 Instructional Planning, Management, and Communications 3(3,0) Provides students with knowledge and techniques for short and long term planning of developmentally appropriate lessons. Students learn how to structure ADEPT lessons and activities to meet the needs of students. Students learn techniques for time and behavior management, organization, and effective communication with school audiences. Prereq: ED F 334, admission to the professional level.

ED EL 311 Teaching Diverse Populations 3(3,0) Pre-service teachers examine the role of teachers as they relate to culturally appropriate curricula, instruction, and evaluation. Prereq: Admission to the professional level.

ED EL 321 Physical Education Methods for Classroom Teachers 3(3,0) Provides education majors with a basic understanding of the methods and techniques utilized in teaching elementary physical education. Emphasis is placed on acquiring a basic understanding of the movement education approach and the ability to teach integrated lessons utilizing this approach. Prereq: Junior standing, admission to the professional level.

ED EL 401 Elementary Field Experience 3(0,9) Practical classroom experience prior to the student teaching semester for Elementary Education majors. For a twelve-week period, students spend two hours per week in schools observing, tutoring individuals, conducting small group activities, and teaching the class. To be taken Pass/Fail only. Prereq: ED F 334; concurrent enrollment in ED EL 451, 458, 487, 488; READ 460; admission to the professional level.

ED EL 451 Elementary Methods in Science Teaching 3(3,0) Development of process skills, technical skills, and attitudes needed to foster increased confidence and commitment to the teaching of elementary science, with emphasis on teaching strategies and techniques and their implications for what we know of how children learn science. Prereq: Elementary Education science requirements; concurrent enrollment in ED EL 401, 458, 487, 488 and READ 460, admission to the professional level.

ED EL 452 Elementary Methods in Mathematics Teaching 3(3,0) Special emphasis is given to the development of understanding, skills, and attitudes in the elementary curriculum with focus on strategies, techniques, and materials for teaching elementary mathematics. Prereq: General Education mathematics requirement; admission to the professional level.

ED EL 458 Health Education Methods for the Classroom Teacher 3(3,0) Study of the content, methodology, and resource materials necessary for teaching comprehensive health education in public schools. Emphasis is on the National Health Education Standards and the health behaviors of youth that are allied with the Coordinated School Health Program. Prereq: Minimum grade point ratio of 2.0.

ED EL 481 Directed Teaching in the Elementary School 12(1,33) Supervised observation and teaching experiences in cooperation with selected elementary schools. Restricted to seniors or graduates who have completed prerequisite courses. Prereq: ED EL 321, 401, 451, 452, 458, 487, 488, READ 460; admission to the professional level, consent of area committee chair.

ED EL 487 Teaching Social Studies in the Elementary School 3(3,0) Introduction for pre-service teachers to the skills of social studies and methods, materials, and techniques needed to teach these skills to students in the elementary school. Prereq: HIST 172, 173; GEOG 101 or 103, concurrent enrollment in ED EL 401, 451, 488 (for Elementary majors) and READ 460; admission to the professional level.

ED EL 488 Teaching The Language Arts in the Elementary School 3(3,0) Introduction for pre-service teachers to the skills of the language arts other than reading and the methods, materials, and techniques needed to teach these skills to students in the elementary school. Prereq: ENGL 103, 385; concurrent enrollment in ED EC 400, 450 (for Early Childhood majors); concurrent enrollment in ED EL 401, 451, 487 (for Elementary majors); READ 459, 460; admission to the professional level.

ENGINEERING

Professor: B. L. Sill, Director; Associate Professor: W. J. Park; Assistant Professor: M. W. Ohland; Lecturer: C. A. Balch; Visiting Instructor: E. A. Stephan

ENGR 101 Introduction to Engineering 1(0,2) Introduction to the engineering profession and engineering disciplines for the purpose of assisting students in their selection of an engineering major. Professional ethics, technical communications, word processing, and electronic communications are taught. Credit toward a degree will be given for only one of ENGR 101 or CES 101.

ENGR 110 Engineering Problems Workshop 1(0,2) Workshop devoted to the analysis and solution of engineering-oriented problems. Representative problems taken from the different fields of engineering are used to illustrate such analytical and problem-solving techniques as estimation and approximation, numerical aids to computation, and solutions by graphical methods.

ENGR 120, H120 Engineering Problem Solving and Design 3(1,4) Methodology and practice of engineering problem solving and engineering design. Selected computer tools, teamwork, and communication modes are employed. Ethics, safety, economics, and environmental concerns are considered. Prereq: ENGR 101, MTHSC 106. Coreq: PHYS 122.

ENGR 130 Engineering Fundamentals 2(1,2) Topics include dimensional analysis, basic statistics, advanced spreadsheet applications (conditional statements, functions). Also included are laptop-based instrumentation used in solving problems and graphical representation of various physical phenomena. Sections are flavored to the various disciplines. Coreq: MTHSC 106 or higher.

ENGR 141 Programming and Problem Solving in Mechanical Engineering 3(2,2) Students formulate mechanics-based problems and solve using MATLAB programming; estimate answers for comparison to computed solutions; read, interpret, and write programs; write user instructions; design output, iterate, evaluate conditional statements, and debug; analyze data collected using laptop-based instrumentation.

ENGR 150 Introduction to Materials 1(1,0) Introduction to materials used in modern technology. Different materials (metals, ceramics, and polymers) and different forms (bulk, fibers, gels, thin films, etc.) are discussed in the context of their application to consumer products, structural composites, refractories, biomedical implants, and electronic and optical materials. Prereq: Enrollment in General Engineering or consent of instructor.

ENGR 180 Computers in Engineering 3(2,3) Introduction to the use of computers in engineering analysis, design, and communications. A high-level programming language and other software are used on microcomputers. Prereq: Engineering major; knowledge of a computer language. Coreq: MTHSC 106.

ENGINEERING GRAPHICS

Lecturers: C. A. Balch, R. A. Emerit

EG 208 Engineering Graphics with Computer Applications 2(1,3) Introduction of basic concepts in engineering graphics as a means of communication. Areas of study include orthographic projections, descriptive modeling, and computer graphics. Credit toward a degree will be given for only one of EG 208 or 209. Coreq: ENGR 141.

EG 209 Introduction to Engineering/Computer Graphics 2(1,3) Introduction of basic graphical concepts needed for engineering application, including orthographic projections, descriptive modeling, and computer graphics. Credit toward a degree will be given for only one of EG 208 or 209. Prereq: ENGR 120 or consent of instructor.

EG 412, 612 Interactive Computer Graphics 3(3,0) Graphics hardware and display technology, reduction and presentation of engineering data, techniques of geometrical transformations, perspective, and object manipulation; methodology of computer-aided design; application of higher-level software to engineering problems. Prereq: EG 208 and MTHSC 208 or consent of instructor.

EG 490, 690 Special Topics in Engineering and Computer Graphics 1-3(1-3,0) Comprehensive study of any computer-aided topic in engineering graphics not covered in other courses. May be repeated for a maximum of six credits. Prereq: Consent of instructor.
ENGLISH MECHANICS

Professors: S. C. Anand, S. B. Biggers, R. H. Brown, J. M. Kennedy, E. H. Law; Associate Professors: P. E. Joseph, L. L. Thompson; Assistant Professor: J. D. Wood

E M 201, H201 Engineering Mechanics: Statics 3(3,0) Forces and force systems and their external effect on bodies, principally the condition of equilibrium. The techniques of vector mathematics are employed, and the rigor of physical analysis is emphasized. Preq: PHYS 122, MTHSC 206 (or concurrent enrollment).

E M 202, H202 Engineering Mechanics: Dynamics 3(3,0) Continuation of E M 201. Principal topics are kinematics and kinetics of particles and rigid bodies of finite size. Techniques of vector mathematics are employed. Preq: E M 201, MTHSC 206.

ENGLISH


ENGL 101, H101 Composition I 3(3,0) Training in correct and effective expression in brief expository essays; review of the fundamentals of grammar and punctuation; instruction in common expository methods.

ENGL 102, H102 Composition II 3(3,0) Continued emphasis on correct and effective expression; training in the organization and writing of the research report. Preq: ENGL 101.

ENGL 103, H103 Accelerated Composition 3(3,1) Training in composing correct and effective expository and argumentative essays, including writing documented essays. Students placed in ENGL 103 receive credit for ENGL 101 after completing ENGL 103 with a C or better. Students who have received credit for ENGL 102 will not be allowed to enroll in or receive credit for ENGL 103. Preq: Satisfactory score on departmental placement exam.

ENGL 111 English as a Second Language 3(3,2) Special course for students learning English as a second language. Intensive study and drill in American English pronunciation and listening comprehension. Required of all foreign students who do not make a satisfactory grade on screening examination in oral English. To be taken Pass/Fail only. Carries no credit for graduation.

ENGL 190 Introduction to the English Major 2(2,0) Orientation to the English major as a discipline and as a preparation for a range of careers. Introduction to the digital portfolio as a place to collect, synthesize, and reflect on learning. Required of English majors, recommended for minors.

ENGL 202, H202 The Major Forms of Literature 3(3,0) Study of the basic structures and elements of fiction, poetry, and drama, including literary and critical theory, with readings in American, British, and world literature. Proficiency in composition must be demonstrated. Preq: ENGL 102.

ENGL 203, H203 Survey of English Literature I 3(3,0) Chief British authors and works from Beowulf to the Romantic period. Proficiency in composition must be demonstrated. Preq: ENGL 102.

ENGL 204, H204 Survey of English Literature II 3(3,0) Chief British authors and works from the Romantic period to 1945. Proficiency in composition must be demonstrated. Preq: ENGL 102.

ENGL 205, H205 Survey of American Literature I 3(3,0) American literature to the Civil War, with emphasis on major writers. Proficiency in composition must be demonstrated. Preq: ENGL 102.

ENGL 206, H206 Survey of American Literature II 3(3,0) American literature from the Civil War to 1945, with emphasis on major writers. Proficiency in composition must be demonstrated. Preq: ENGL 102.

ENGL 207, H207 Survey of World Literature I 3(3,0) Translations of continental European literature from Homer to the Renaissance (together with some Asian classics), with emphasis on major authors. Proficiency in composition must be demonstrated. Preq: ENGL 102.

ENGL 208, H208 Survey of World Literature II 3(3,0) Translations of continental European literature from the 17th century to the present (together with some Asian classics), with emphasis on major writers. Proficiency in composition must be demonstrated. Preq: ENGL 102.

ENGL 209, H209 Contemporary Literature 3(3,0) Study of selected writers since 1945, primarily British and American. Proficiency in composition must be demonstrated. Preq: ENGL 102.

ENGL 210 Introduction to Literary Study 3(3,0) Literature and composition course for honors students who have exempted ENGL 101 and 102. Readings in American, English, and world literature and advanced training in writing and research. Preq: Exemption from ENGL 101 and 102 or consent of instructor.

ENGL 211 Introduction to the Writing and Publication Studies Major 3(3,0) Introduces the Writing and Publication Studies major and provides an overview of courses, possible writing interests within the major, and career possibilities. Students gain an understanding of the importance of theory, close reading, textual analysis, and research methodologies. Faculty representing various writing methodologies are employed. For-4

ENGL 212 World Literature 3(3,0) Introduction to selected works in continental European literature in translation from Homer to the modern era, together with some Asian classics, with emphasis on major authors. Preq: ENGL 102 or 103.

ENGL 213 British Literature 3(3,0) Introduction to selected authors and major periods of the British literary tradition, from the Middle Ages to WWII, with attention to poetry, fiction, and drama. Preq: ENGL 102 or 103.

ENGL 214 American Literature 3(3,0) Introduction to selected authors and major periods of the American literary tradition from 1620 to 1945. Preq: ENGL 102 or 103.

ENGL 215 Literature in 20th- and 21st-Century Contexts 3(3,0) Introduction to major contemporary cultural movements via selected authors in 20th and 21st century literature, primarily American and British, with attention to poetry, fiction, and drama since World War II. Preq: ENGL 102 or 103.

ENGL 217 Vocabulary Building 3(3,0) Development of a useful discriminating vocabulary for writing, speaking, and reading. Student notebooks and proficiency quizzes. Preq: ENGL 103.

ENGL 231 Introduction to Journalism 3(3,0) Instruction and practice in writing for mass media; editorial responsibilities. Preq: ENGL 103.

ENGL 265 Introduction to Editing 3(3,0) Introduction to the practice of editing texts. Includes instruction in the principles and symbols of copy-editing and proof-reading as well as work with electronic editing tools. Also addresses editor’s role in different types of editing, including copy-editing, comprehensive editing, and developmental editing for paper and electronic publication.

ENGL (G W) 301, H301 Great Books of the Western World 3(3,0) See G W 301.

ENGL 304 Business Writing 3(3,0) Introduction to audience, context, purpose, and writing strategies for texts common in professional business settings: memoranda, letters, reports, and proposals. Includes individual and team projects. Preq: Junior standing.

ENGL 310 Critical Writing About Literature 3(3,0) Terms and techniques for literary analysis, including close reading, vocabulary for analysis, research and writing skills, casebook study of critical approaches. Discussion of poetry and genres preferred. Preq: Sophomore literature (or concurrent enrollment) or consent of instructor.

ENGL 312 Advanced Composition 3(3,0) Workshop in practical writing focusing on principles and style. Preq: Sophomore literature or consent of instructor.

ENGL 314, H314 Technical Writing 3(3,0) Intensive, project-based application of principles of audience, context, purpose, and writing strategies of technical writing; proposals, reports, communication deliverables. Individual and team projects. Preq: Junior standing.

ENGL 316 Writing and International Trade 3(3,0) Students complete projects demanding a variety of communications skills that professionals in international trade need: sensitivity to foreign audiences and cultures in oral and written communication, electronic and graphic communication, collaborative writing and management. Preq: Sophomore literature.
ENGL 332 Visual Communication 3(3,0) Hands-on survey of visual communication theories and practices used by technical communicators in business and industry environments. Class meets regularly in computer classrooms. Preq: Sophomore literature; ENGL 211 or consent of instructor.

ENGL 333 Reporting for the News Media 3(3,0) Practical experience in gathering and writing news and feature copy for the media, concentrating on print journalism; examination of the role of the modern journalist; laws governing the profession; journalistic ethics. Preq: ENGL 231 or consent of instructor.

ENGL 334 Feature Writing 3(3,0) Practical experience in writing feature articles for newspapers, magazines, and free-lance markets. Preq: ENGL 231 or consent of instructor.

ENGL 335 Editing for Newspapers 3(3,0) Examination of the editing process of newspapers and magazines. Practical experience in article selection, copy-editing, headline writing, and page design. Preq: ENGL 231 or consent of instructor.

ENGL 345 The Structure of Fiction 3(3,0) An introduction to the creative writing and critical study of prose fiction. Preq: ENGL 310 or consent of instructor.

ENGL 346 The Structure of Poetry 3(3,0) Introduction to the creative writing and critical study of poetry. Preq: ENGL 310 or consent of instructor.

ENGL 347 The Structure of Drama 3(3,0) See THEA 347.

ENGL 348 The Structure of the Screenplay 3(3,0) Introduction to the creative writing and critical study of the screenplay. Screenplays vary from semester to semester. May be repeated once with department chair's consent. Preq: ENGL 310 or consent of instructor.

ENGL 349 Technology and the Popular Imagination 3(3,0) Examination of the relationship between technology in fiction and creative non-fictional texts, including print, film, and electronic media. Preq: Sophomore literature or consent of instructor.

ENGL 350 Mythology 3(3,0) Study of the great myths of the world with an emphasis on their applications to literature. Preq: ENGL 310 or consent of instructor.

ENGL 351 Ethnic American Literature 3(3,0) Critical examination of essays, poetry, fiction, and drama written by members of a variety of American racial and ethnic groups, such as Native Americans, African-Americans, Chicano/Mexican Americans, Asian Americans, Italian Americans, and American Jews. Preq: ENGL 310 or consent of instructor.

ENGL 352 Popular Culture 3(3,0) Examination of the nature, functions, history, and impact upon American society of best sellers, popular magazines, television, movies, and other like phenomena. Preq: ENGL 310 or consent of instructor.

ENGL 353 Science Fiction 3(3,0) Readings in science fiction from the 17th century to the present, with special emphasis on writers since Verne and Wells. Preq: ENGL 310 or consent of instructor.

ENGL 356 Film 3(2,3) Examination of the film medium as an art form: its history, how films are made, why certain types of films (western, horror movies, etc.) have become popular, and how critical theories provide standards for judging film. Preq: ENGL 310 or consent of instructor.

ENGL 357 Film 3(2,3) Examination of the film medium as an art form: its history, how films are made, why certain types of films (western, horror movies, etc.) have become popular, and how critical theories provide standards for judging film. Preq: ENGL 310 or consent of instructor.

ENGL 358 British and American Women Writers 3(3,0) Poetry, drama, fiction, and prose by established and little-known women writers in Britain and America. Particular attention is given to works treating themes and issues concerning women's lives. Readings on such topics as women and work, education, religion, creativity. Preq: ENGL 310 or consent of instructor.

ENGL 359 Special Topics in Language, Literature, or Culture 3(3,0) Studies in varied topics not central to other English courses, such as Literature and Art/Business/Sports; Language and Style; Black Literature. Specific titles and course descriptions to be announced from semester to semester. May be repeated once with department chair's consent. Preq: ENGL 310 or consent of instructor.

ENGL 360 H367 Special Topics for Honors Students 3(3,0) Varied topics of general interest in literature, language, rhetoric, or culture for all honors students. Specific topics announced each semester. May be repeated for a maximum of nine credits. Preq: ENGL 310 or consent of instructor.

ENGL 361 British and American Women Writers 3(3,0) Poetry, drama, fiction, and prose by established and little-known women writers in Britain and America. Particular attention is given to works treating themes and issues concerning women's lives. Readings on such topics as women and work, education, religion, creativity. Preq: ENGL 310 or consent of instructor.

ENGL 362 Children's Literature 3(3,0) Reading and analysis of literature written for readers age 12–18. Emphasis is on historical context, chief themes and motifs, and censorship issues, as well as connections with classic literature. Preq: ENGL 310 or consent of instructor.

ENGL 363 Adolescent Literature 3(3,0) Reading and analysis of literature written for readers age 12–18. Emphasis is on historical context, chief themes and motifs, and censorship issues, as well as connections with classic literature. Preq: ENGL 310 or consent of instructor.

ENGL 364 Book History 3(3,0) Examination of the material and theoretical constructions of the book. Covers both historical and contemporary dimensions of dissemination, reception, artistry, and influence of books. Preq: ENGL 103.

ENGL 365 Electronic Portfolio Studio 1(1,0) Studio course for English majors to complete their portfolios. Preq: ENGL 190, 310 (or concurrent enrollment).

ENGL 366 British Literature Survey I 3(3,0) Examination of key texts in British literature to 1789. Preq: Sophomore literature or consent of instructor.

ENGL 367 British Literature Survey II 3(3,0) Examination of key texts of British literature from 1789 to the present. Preq: Sophomore literature or consent of instructor.

ENGL 368 American Literature Survey I 3(3,0) Examination of key texts of American literature from beginnings of European settlement to the Civil War in historical context. Preq: Sophomore literature or consent of instructor.

ENGL 369 American Literature Survey II 3(3,0) Examination in historical context of key texts of American literature from the Civil War to the present. Preq: Sophomore literature or consent of instructor.

ENGL 370 English Language 3(3,0) Studies in English usage and historical development of the language. Preq: ENGL 310 or consent of instructor.

ENGL 401, 601 Grammar Survey 3(3,0) Survey of modern grammars with a focus on explaining the impact of structural grammars and how they have been used to inform other fields such as linguistics. Recommended for English majors. Preq: ENGL 310 or consent of instructor.

ENGL 402 The Classics in Translation 3(3,0) Examination of Homer’s Iliad and Odyssey, Virgil’s Aeneid, and Ovid’s Metamorphoses. A few shorter works by other Greek and Roman writers may also be read. Preq: ENGL 310 or consent of instructor.

ENGL 403 The Medieval Period 3(3,0) Selected works of Old and Middle English literature, exclusive of Chaucer. Preq: ENGL 310 or consent of instructor.

ENGL 404, 604 Chaucer 3(3,0) Selected readings in Middle English from The Canterbury Tales and other works by Chaucer. Preq: ENGL 310 or consent of instructor.

ENGL 405, 605 Drama of English Renaissance 3(3,0) Selected readings in non-Shakespearean dramatic literature of the 16th and 17th centuries. Preq: ENGL 310 or consent of instructor.

ENGL 406, 606 Shakespeare 3(3,0) Study of selected tragedies, comedies, and history plays by Shakespeare. Required of all English majors. Preq: ENGL 310 or consent of instructor.

ENGL 407, 607 Milton 3(3,0) Development of Milton’s art and thought from the minor poems and selected prose through Paradise Lost, Paradise Regained, and Samson Agonistes, set against the background of the late Renaissance. Preq: ENGL 310 or consent of instructor.

ENGL 408, 608 Restoration and Eighteenth Century 3(3,0) Readings in Dryden, Swift, Pope, and Dr. Johnson. Preq: ENGL 310 or consent of instructor.

ENGL 409, 609 The Romantic Period 3(3,0) Readings from the poetry and critical prose of Blake, Wordsworth, Coleridge, Byron, Shelley, Keats, and other representative figures. Preq: ENGL 310 or consent of instructor.

ENGL 410, 610 The Victorian Period 3(3,0) Reading from the poetry and nonfiction prose of selected Victorian authors, including works of Carlyle, Tennyson, Browning, Arnold, and other representative figures. Preq: ENGL 310 or consent of instructor.

ENGL 411, 611 The American Novel 3(3,0) Study of the English novel from its 18th century beginnings through the Victorian Period. Preq: ENGL 310 or consent of instructor.

ENGL 412, 612 The American Novel 3(3,0) Study of the American novel from its 18th century beginnings through the Victorian Period. Preq: ENGL 310 or consent of instructor.

ENGL 413, 613 The American Novel 3(3,0) Study of the American novel from its 18th century beginnings through the Victorian Period. Preq: ENGL 310 or consent of instructor.

ENGL 414, 614 Chaucer 3(3,0) Development of Milton’s art and thought from the minor poems and selected prose through Paradise Lost, Paradise Regained, and Samson Agonistes, set against the background of the late Renaissance. Preq: ENGL 310 or consent of instructor.

ENGL 415, 615 The Restoration and Eighteenth Century 3(3,0) Readings in Dryden, Swift, Pope, and Dr. Johnson. Preq: ENGL 310 or consent of instructor.

ENGL 416, 616 The Romantic Period 3(3,0) Readings from the poetry and critical prose of Blake, Wordsworth, Coleridge, Byron, Shelley, Keats, and other representative figures. Preq: ENGL 310 or consent of instructor.

ENGL 417, 617 The Victorian Period 3(3,0) Reading from the poetry and nonfiction prose of selected Victorian authors, including works of Carlyle, Tennyson, Browning, Arnold, and other representative figures. Preq: ENGL 310 or consent of instructor.

ENGL 418, 618 The English Novel 3(3,0) Study of the English novel from its 18th century beginnings through the Victorian Period. Preq: ENGL 310 or consent of instructor.

ENGL 419, 619 Post-Colonial Studies 3(3,0) Selected readings in post-colonial literature and theory, focusing on issues of nationalism, migration, resistance, race, language, and master narratives. Preq: ENGL 310 or consent of instructor.

ENGL 425, 625 The American Novel 3(3,0) Survey of the most significant forms and themes of the American novel from its beginnings to 1900. Preq: ENGL 310 or consent of instructor.
Courses of Instruction

ENGL 426, 626 Southern Literature 3(3,0) Intellectual and literary achievement of the South from 1607 to the present, with emphasis on the writers of the 19th century. Pr.: ENG 310 or consent of instructor.

ENGL 427, 627 Agrarianism and the Humanistic Tradition 3(3,0) Focuses on the importance of agriculture and rural life to the humanistic tradition of Western Civilization from antiquity through the early years of the American republic. Pr.: ENG 310 or consent of instructor.

ENGL 428, 628 Contemporary Literature 3(3,0) Focuses on American, British, and other fiction, poetry, and drama from the Post-World War II to the present. Pr.: ENG 310 or consent of instructor.

ENGL 429, 629 Dramatic Literature I 3(3,0) Selected reading in the dramatic literature from the classical era of Greece and Rome to the Renaissance. Pr.: ENG 310 or consent of instructor.

ENGL 430, 630 Dramatic Literature II 3(3,0) Principles and progress of drama from the Restoration to the present; analysis of representative plays; critical reports; discussion of trends in dramatic literature. Pr.: ENG 310 or consent of instructor.

ENGL 431, 631 Modern Poetry 3(3,0) The modern tradition in English and American poetry from Yeats to the present; relevant critical essays. Pr.: ENG 310 or consent of instructor.

ENGL 432, 632 Modern Fiction 3(3,0) American and British novels and short stories of the 20th century. Pr.: ENG 310 or consent of instructor.

ENGL 433, 633 The Anglo-Irish Literary Tradition 3(3,0) Exploration of the unique literary heritage and achievement of English-language Irish writers in the 19th and 20th centuries. Major figures of the Irish tradition: W. B. Yeats, James Joyce, Samuel Beckett, and other writers, consideration of the specifically Irish aspects of their works. Pr.: ENG 310 or consent of instructor.

ENGL 434, 634 Environmental Literature 3(3,0) Survey of literature that examines the relationship between human beings and the natural world, including analysis of environmental themes in myths and legends and in selected poetry and prose of the 19th and 20th century. Pr.: ENG 310 or consent of instructor.

ENGL 435, 635 Literary Criticism 3(3,0) Major critical approaches to literature. Pr.: ENG 310 or consent of instructor.

ENGL 436, 636 Feminist Literary Criticism 3(3,0) Introduction to the gerneral works of feminist literary theory and criticism. Outlines the development of modern literary criticism by studying feminist versions of the major critical methodologies. Pr.: ENG 310 or consent of instructor.

ENGL 437, 637 Directed Studies 1-3(1-3,0) Class and tutorial work for students with special interests or projects in American, British, or European literature outside the scope of existing courses. Applications must be approved during the registration period of the semester preceding the one in which directed studies will occur. May be repeated by arrangement with the department. Pr.: ENG 310 or consent of instructor.

ENGL 438, 638 Departmental Honors Research 3(3,0) Research for the preparation of an honors project. Pr.: ENG 310 or consent of instructor.

ENGL 439, 639 Departmental Honors Project 3(3,0) Preparation of an honors project. Pr.: ENG 310 or consent of instructor.

ENGL 440, 640 Literary Theory 3(3,0) Examination of how approaches such as Marxism, Psychoanalysis, Feminism, Deconstruction, New Historicism, Post-Colonialism, Cultural Studies, and Queer Theory answer the question, "What is literature?" Pr.: ENG 310 or consent of instructor.

ENGL 441 Literary Editing 3(3,0) Examination of how the theories and practices of editing construct texts, stressing the problems and objectives of editing and providing practical experience with literary editing. Pr.: Sophomore literature.

ENGL 442, 642 Cultural Studies 3(3,0) Investigation of the similarities and connections between a wide variety of cultural products, events, and practices—from fast food through open to online shopping—using theories ranging from Marxism to hybridity. Pr.: ENG 310 or consent of instructor.

ENGL 443, 643 Renaissance Literature 3(3,0) Selected readings in non-Shakespearean British literature from 1500-1660. Includes drama, poetry, and prose. Pr.: ENG 310 or consent of instructor.

ENGL 444, 644 Fiction Workshop 3(3,0) Workshop in the creative writing of prose fiction. May be repeated once for credit. Pr.: ENG 310 or consent of instructor.

ENGL 445, 645 Fiction Workshop 3(3,0) Workshop in the creative writing of poetry. May be repeated once for credit. Pr.: ENG 310 or consent of instructor.

ENGL 446, 646 Poetry Workshop 3(3,0) Workshop in the creative writing of poetry. May be repeated once for credit. Pr.: ENG 310 or consent of instructor.

ENGL 447, 647 Playwriting Workshop 3(0,3) See THEA 447.

ENGL 448, 648 Screenwriting Workshop 3(0,3) Workshop in the creative writing of screenplays. May be repeated once for credit. Pr.: ENG 310 or consent of instructor.

ENGL 450, 650 Film Genres 3(2,3) Advanced study of films that have similar subjects, themes, and techniques, including such genres as the Western, horror, gangster, science fiction, musical, and/or screwball comedy. Also considers non-traditional genres, screen irony, genre theory, and historical evolution of genres. Topics vary. Pr.: ENG 310 or consent of instructor.

ENGL 451, 651 Film Theory and Criticism 3(2,3) Advanced study into the theory of film/video making emphasizing understanding a variety of critical methods to approach a film. Examines the history of film theory and defines the many schools of film criticism, including realism, formalism, feminism, semiotics, Marxism, and expressionism. Pr.: ENG 310 or consent of instructor.

ENGL 452, 652 Great Directors 3(2,3) Intensive study of one to three film directors emphasizing understanding the entire canon of each director. Students study similarities in techniques, shifts in thematic emphasis, and critical methodologies for approaching the works of each director. Topics vary. Pr.: ENG 310 or consent of instructor.

ENGL 453, 653 Sexuality and the Cinema 3(2,3) Examination of male/female sexual roles and their evolution in American genre films, avant-garde cinema, and international films. Includes the study of movies in relation to cultural values and social stereotypes, introduction to feminist film theory, and consideration of film pornography. Pr.: ENG 310 or consent of instructor.

ENGL (LANG) 454 Selected Topics in International Film 3(2,3) See LANG 454.

ENGL 455, 655 American Humor 3(3,0) Native American humor of the 19th and 20th centuries. Pr.: ENG 310 or consent of instructor.

ENGL (HUM) 456, 656 Literature and Arts of the Holocaust 3(3,0) Addresses the Holocaust through literature, art, architecture, music, and film. Beginning with historical, political, and economic forces that contributed to the Holocaust, course then focuses on highly diverse creative responses to this event—responses that often reflect the difficulties and politics of these commemorative gestures. Pr.: ENG 310 or consent of instructor.

ENGL 459, 659 Advanced Special Topics in Language, Literature, or Culture 3(3,0) Advanced studies in topics not central to other English courses, such as certain authors, works, genres, themes, or areas of knowledge and culture. Specific topics are announced when offered. May be repeated once for credit with department chair's consent. Pr.: ENG 310 or consent of instructor.

ENGL 460 Issues in Writing Technologies 3(3,0) Examination of writing technologies from different historical periods. Investigates how writing is understood, circulated, legislated, and protected in terms of its production technology. Pr.: Sophomore literature, ENG 211 or consent of instructor.

ENGL 463, 663 Topics in American Literature 3(3,0) Selected readings in American literature from a variety of time periods for focused study of authors, movements, themes, critical approaches, and genres specific to the American experience. Topics vary and are constructed by individual faculty. May be repeated for a maximum of six credits, but only if different topics are covered. Pr.: ENG 310 or consent of instructor.

ENGL 464, 664 Topics in British Literature I 3(3,0) Selected readings in British literature to the Romantics for focused study of authors, movements, themes, critical approaches, and genres specific to the British experience. Topics vary and are constructed by individual faculty. May be repeated for a maximum of six credits, but only if different topics are covered. Pr.: ENG 310 or consent of instructor.

ENGL 465, 665 Topics in British Literature II 3(3,0) Selected readings in British literature from the Romantics to the present for focused study of authors, movements, themes, critical approaches, and genres specific to the British experience. Topics vary and are constructed by individual faculty. May be repeated for a maximum of six credits, but only if different topics are covered. Pr.: ENG 310 or consent of instructor.
ENGL 475, 675 Writing for Electronic Media 3(3,0) Hands-on workshop in new forms of writing and hypertextual design for interactive electronic media. May be repeated once for credit. Prereq: ENGL 310 or consent of instructor.

ENGL 478, 678 Digital Literacy 3(3,0) Examines how electronic texts differ from and resemble print texts. Includes reading, studying, and analyzing print and digital texts to determine how digital techniques change patterns of reading and how readers make sense of electronic texts. Prereq: ENGL 310 or consent of instructor.

ENGL 482, 682 African American Fiction and Nonfiction 3(3,0) Critical examination of the various forms and genres of African American prose including the novel, short fiction, autobiography, nonfiction, and oratory with some attention to emerging theories about African American culture and its impact on American cultural life in general. Prereq: ENGL 310 or consent of instructor.

ENGL 485, 685 Composition for Teachers 3(3,0) Practical training in teaching composition: finding workable topics, organizing and developing observations and ideas, evaluating themes, and creative writing. Prereq: ENGL 310 or consent of instructor.

ENGL 488, 688 Genre and Activity Theory 3(3,0) Examination of the forms that texts take, of the print and digital media in which they are composed, and of the ways they circulate among experts, in the public, and around the world. Prereq: Junior standing.

ENGL 489, 689 Special Topics in Writing and Publication Studies 3(3,0) Selected readings from topics in writing and publication studies, emphasizing areas such as major theories, practices, research, and critical approaches. May be repeated for a maximum of six credits, but only if different topics are covered. Prereq: ENGL 310 or consent of instructor.

ENGL 490, 690 Advanced Technical and Business Writing 3(3,0) Advanced work in writing proposals, manuals, reports, and publishable articles. Students produce work individually and in groups. Prereq: ENGL 310 or consent of instructor.

ENGL (COMM) 491, 691 Classical Rhetoric 3(3,0) Study of the major texts in classical rhetoric. Examines the nature and functions of rhetoric in Greek and Roman societies. Traces the development of rhetoric from Protagoras through Isocrates, Plato, Aristotle, Cicero, and Quintilian and considers questions essential to understanding persuasive theory and practices. Prereq: ENGL 310 or consent of instructor.

ENGL (COMM) 492, 692 Modern Rhetoric 3(3,0) Examines the "new rhetorics" of the 20th century, which are grounded in classical rhetoric but which include findings from biology, psychology, linguistics, and anthropology, among other disciplines. Considers the theories and applications of communication. Prereq: ENGL 310 or consent of instructor.

ENGL 494, 694 Writing About Science 3(3,0) Advanced work in scientific writing and editing for peer and lay audiences. Prereq: ENGL 310 or consent of instructor.

ENGL 495, 695 Technical Editing 3(3,0) Practical experience in editing and preparing technical manuscripts for publication. General introduction to the functions of the technical editor. Prereq: ENGL 310 or consent of instructor.

ENGL 496 Senior Seminar 3(3,0) Capstone course; requires participation and a substantial essay; allows graduating English majors the chance to work closely with faculty and other English majors on a special topic in the advanced study of literature. Fulfills English major distribution requirements. Prereq: ENGL 310, Senior standing in English, or consent of instructor.

ENGL 498, 698 Studio Composition and Communication 3(3,0) Preparation for students to work in the Class of 1941 Studio for Student Communication. Prereq: Sophomore standing or consent of instructor.

ENT 200 Six-Legged Science 3(3,0) Introduction to insects, their various relationships with humans, other animals, and plants. The general nature of this course makes it beneficial to all students regardless of specialty. Not open to students who have received credit for ENT 301 or equivalent.

ENT 201 Selected Topics 1(1,0) Discussion course covering topics dealing with insects and related arthropods. Subjects are chosen to reflect issues of current interest as well as those having significance in human history. May be repeated for a maximum of three credits.

ENT 300 Environmental Entomology 3(3,0) Exploration of diversity and roles of insects in natural and affected environments, impact of insects and pesticides on environmental quality, and discussion of environmental ethics in entomological science. Prereq: Any biological or physical science.

ENT (BIOSC) 301 Insect Biology and Diversity 4(3,3) Introduction to the study of insects, with emphasis on their structure, function, ecology, and behavior. Identification of commonly encountered species is highlighted. Relationships between insect and human populations are considered. Control technologies are introduced, with emphasis on environmentally responsible tactics.

ENT (BIOSC) 400, H400, 600 Insect Morphology 4(3,3) Study of insect structure in relation to function and of the variation of form in insects. Prereq: ENT 301.

ENT 401, H401, 601 Insect Pests of Ornamental Plants and Shade Trees 3(2,3) Recognition, biology, damage, and control of insect pests of woody and other ornamental plants and shade trees. Prereq: ENT 301.

ENT 404, H404, 604 Urban Entomology 3(2,3) Study of pests common to the urban environment with emphasis on biology, damage, control, and identification of household, structural, stored products, and food pests. Students learn both theoretical and practical aspects of urban pest management and the pest-control industry. Prereq: ENT 301.

ENT (PL PA) 406, H406, 606 Diseases and Insects of Turfgrasses 3(2,2) See PL PA 406.

ENT 407, 607 Applied Agricultural Entomology 4(3,3) Topics include recognition, biology, damage, and control of economically important insects and mites found on major Southeastern field, fruit, nut, and vegetable crops. Principles and practices of crop protection, including pesticide application, economic basis for decision making, and development of scouting programs are introduced. Prereq: ENT 301 or equivalent.

ENT (BIOSC) 415, 615 Insect Taxonomy 3(1,6) Identification of the principal families of the major orders of adult insects. Laboratory work consists of intensive practice of such identification; lecture material deals with theoretical discussion of taxonomic features observed in the laboratory. Prereq: ENT (BIOSC) 400 or consent of instructor.

ENT (BIOSC, ENTOX) 430, 630 Toxicology 3(3,0) See ENTOX 430.

ENT (BIOSC) 436, 636 Insect Behavior 3(2,3) Fundamentals of insect behavior in an evolutionary and ecological perspective. Laboratory emphasizes observation and testing of hypotheses and observation, description, and quantification of insect behavior. Prereq: ENT 301 or consent of instructor.

ENT (BIOSC) 455, H455, 655 Medical and Veterinary Entomology 3(2,3) Insects and their arthropod relatives which are of economic importance in their effect on man and animals. Prereq: ENT 301 or consent of instructor.

ENT 461 Directed Research in Entomology 1-3(0,3-9) Development of a senior thesis based on a research problem in a selected entomological area. Emphasis is on integrating the knowledge gained in the student's program with the results of the research project. May be repeated for a maximum of three credits. Prereq: Senior standing, consent of instructor.

ENT 462, 662 Seminar Presentation 1(1,0) Advanced instruction and practice in delivering oral seminar presentations of scientific information. Emphasis is on preparing visual aids, organization, content, and practice in speaking to a specialized scientific audience.

ENT (BIOSC, W FB) 469, H469, 669 Aquatic Insects 3(1,6) Identification, life history, habitats, and interrelationships of aquatic insects; techniques of qualitative field collecting; important literature and research workers. Prereq: ENT 301 or consent of instructor.
ENVIRONMENTAL AND NATURAL RESOURCES

Professors: J. D. Cullin, J. W. Foltz, R. L. Hedden, P. A. Layton, J. R. Sweeney, Coordinator; G. W. Wood, T. E. Wooten; Associate Professors: M. Espey, V. B. Shelburne; Assistant Professors: J. D. Lanham, C. J. Post

E N R 101 Introduction to Environmental and Natural Resources I (1,0) Informative overview of environmental and natural resources and their impact on society. Education and career opportunities are emphasized.

E N R 102 Introduction to Environmental and Natural Resources II (1,0) Continuation of E N R 101 with emphasis on education and career opportunities. Current issues and basic science related to the natural resources professions are introduced.

E N R 302 Natural Resources Measurements (3,2) Introduction to measurements of natural resources including land, vegetation, animal habitat, water quality and quantity, climate, and recreation. Remote sensing techniques are also introduced. May not be taken for credit by Forest Resource Management majors. Coreq: EX ST 301.

E N R (BIO) 413, 613 Restoration Ecology (3,0) Applies ecological principles to the restoration of disturbed terrestrial, wetland, and aquatic ecosystems. Includes the restoration of soils and waterways, of flora and fauna, and of natural ecological processes such as plant succession and nutrient cycling. Prereq: Introductory course in ecology or conservation biology, consent of instructor.

E N R (FOR) 416 Forest Policy and Administration 2 (2,0) See FOR 416.

E N R 429 Environmental Law and Policy 3 (3,0) Develops an understanding of the three branches of government that affect and dictate use and protection of natural resources. Attention is given to major federal environmental statutes. Examination of how policy is developed, implemented, and evaluated in the public and private sectors is covered. Prereq: Junior standing or consent of instructor.

E N R (FOR) 434, 634 Geographic Information Systems for Landscape Planning 3 (2,3) See FOR 434.

E N R 450, 650 Conservation Issues 3 (3,0) Interactive study and discussion of issues related to the conservation of natural resources, emphasizing current issues in the conservation of biodiversity, identification of conflicting issues between consumptive and nonconsumptive resource management, and development of viable solutions for conservation of natural resources. Prereq: W F B (BIO) 313 or consent of instructor.

ENVIRONMENTAL ENGINEERING AND SCIENCE


EE&S 401, 601 Environmental Engineering 3 (3,0) Introduction to the field of environmental engineering. Topics include environmental phenomena, impact of pollutants in the aquatic environment, solid waste management, air pollution control, radiological health, and simple water and wastewater treatment systems. Prereq: Junior standing in engineering or consent of instructor. Coreq: CE 341, CHE 311, M E 308, or consent of instructor.

EE&S 402, 602 Water and Waste Treatment Systems 3 (3,0) Study of fundamental principles, rational design considerations, and operational procedures of the unit operations and processes employed in water and waste treatment. Both physicochemical and biological treatment techniques are discussed. Introduction to the integration of unit operations and processes into water and waste treatment systems. Prereq: CE 341, CHE 311, M E 308 or consent of instructor.

EE&S 410, 610 Environmental Radiation Protection 3 (3,0) Fundamental principles of radiological health and radiation safety. Topics include radiation fundamentals, basic concepts of environmental radiation protection, internal and external dosimetry, environmental dose calculations and radiation protection standards. Prereq: Consent of instructor.

EE&S 411, 611 Ionizing Radiation Detection and Measurement 3 (2,3) Laboratory exercises in ionizing radiation detection and measurement. Topics include nuclear electronics; counting statistics; radiation interactions; basic gas, scintillation, and semiconductor detectors; gamma-ray spectroscopy; health physics survey instrumentation; and thermoluminescent dosimetry. Prereq: EE&S 410 or consent of instructor.

EE&S 430, 630 Air Pollution Engineering 3 (3,0) Introductory course in air pollution and its control. Topics include air pollutants and effects, sources, dispersion models, engineering controls, and air-quality legislation. Prereq: Senior standing in engineering or physical sciences.

EE&S (E, F, FOR) 451, 645, 651 Newman Seminar and Lecture Series in Natural Resources Engineering 10 (2,0) See B E 451.

EE&S 480, 680 Environmental Risk Assessment 3 (3,0) Quantitative estimation of human health risk posed by the release of a contaminant to the environment. Topics include methods for analyzing emission rates, environmental transport, exposure, and health effects; methods of uncertainty analysis; and the role of risk assessment in environmental regulation and environmental decision making. Prereq: EE&S 401 or consent of instructor.

EE&S (B, E, 1) 484, 684 Municipal Solid Waste Management 3 (3,0) Introduction to the problems, regulations, treatment, and ultimate disposal of hazardous and toxic materials. Spill cleanup, groundwater transport, land disposal, incineration, and treatment technologies are discussed. Prereq: EN SF 200 or EE&S 401 or consent of instructor, two semesters of general chemistry.

EE&S 486, 686 Pollution Prevention and Industrial Ecology 3 (3,0) Topics include pollution prevention technology, the role of pollution prevention within a corporation, source reduction and recycling assessments, treatment to reduce disposal, life-cycle assessment, design for environment, and industrial ecology. Emphasis is on case studies. Prereq: Senior standing in College of Engineering and Science.

EE&S 490, H490, 690 Special Projects 1-3 (1-3,0) Studies or laboratory investigations on special topics in the environmental engineering and science field. Arranged on a project basis with a maximum of individual student effort and a minimum of staff guidance. May be repeated for a maximum of three credits. Prereq: Consent of the instructor.

EE&S 491 Selected Topics in Environmental Engineering 1-3 (1-3,0) Study of the dynamic role of environmental engineering in maintaining environmental quality. A comprehensive study of any phase of environmental engineering. May be repeated for credit, but only if different topics are covered. Prereq: Consent of department chair.

ENVIRONMENTAL SCIENCE AND POLICY


EN SP 200 Introduction to Environmental Science 3 (3,0) Basic principles of environmental science including ecology, energy, resources, waste management, and air, water, and soil pollution. Consideration of issues, specific cases, investigative approaches, and remedial actions. Prereq: Sophomore standing and two semesters of freshman chemistry or biology.

EN SP (AGRIC) 315, H315 Environment and Agriculture 3 (3,0) See AGRIC 315.
ENVIRONMENTAL TOXICOLOGY
Professors: S. J. Klaine, C. D. Rice, J. H. Rodgers; Associate Professor: W. W. Bowerman; Assistant Professors: E. R. Carraway, A. R. Johnson, M. A. Schautman, P. van den Hurk

ENTOX 400, H400, 600 Wildlife Toxicology 3(3,0) Assessment of impacts of toxic substances on reproduction, health, and well-being of wildlife species; acute and chronic effects of agricultural chemicals, pesticides, hazardous waste, industrial waste, and oil releases are discussed. Prereq: BIOC 305 or organic chemistry, one year of general biology, WFB 350 or consent of instructor.

ENTOX 421, H421, 621 Chemical Sources and Fate in Environmental Systems 3(3,0) Chemical cycles in the environment are discussed on global and macroscale viewpoints. The dependence of fate processes on physical and chemical properties and environmental conditions is examined. Breakdown, movement, and transport of selected toxicants are addressed to illustrate the mechanisms that govern chemical fate. Prereq: Organic and analytical chemistry or consent of instructor.

ENTOX (BIOSC, ENT) 430, 630 Toxicology 3(3,0) Basic principles of toxicology including quantitation of toxicity, toxicokinetics, biochemical action of poisons, and environmental toxicology are studied. Acute and chronic effects of various classes of poisons (e.g., pesticides, drugs, metals, and industrial pollutants) are discussed in relation to typical routes of exposure and regulatory testing methods. Prereq: Organic Chemistry, one year of general biology, or consent of instructor.

ENTOX 437, 637 Ecotoxicology 3(3,0) Study of the effects of stressors on the ecosystem. Explores the integrative relationships that comprise the field of ecotoxicology in a hierarchical format that focuses on the various levels of ecological organization. Prereq: ENTOX 430 or consent of instructor.

EXECUTIVE LEADERSHIP AND ENTREPRENEURSHIP
EL E 301 Executive Leadership and Entrepreneurship I 3(3,0) Cross-disciplinary course which seeks to create an appreciation of the opportunities and uncertainties in an entrepreneur's life through extensive readings and interactions with entrepreneurs. Prereq: Sophomore standing.

EL E (MKT) 314 New Venture Creation I 3(3,0) See MKT 314.

EL E (MGT) 315 New Venture Creation II 3(3,0) See MGT 315.

EL E (ECON) 321 Economics of Innovation 3(3,0) See ECON 321.

EL E (PO SC, PSYCH, SOC) 356 Social Science of Entrepreneurship 3(3,0) See SOC 356.

EL E 400, 600 Technology Entrepreneurship 3(3,0) Introduction to technology entrepreneurship, with emphasis on idea optimization, opportunity assessment, market and technology forecasting, intellectual property protection, financial modeling and business valuation, project management, and cross-functional team building. Prereq: Junior standing in science or engineering major.

EL E 401 Executive Leadership and Entrepreneurship II 3(3,0) Continuation of EL E 400 with extensive use of a computer simulated business start-up. Prereq: EL E 401.

EL E 499 Executive Leadership and Entrepreneurship III 3-6(3-6-12) Continuation of EL E 401 and 401. Directed practical study of entrepreneurship and leadership. Students work closely with external firms to develop new products and bring existing products to market successfully. Prereq: EL E 401.

EXPERIMENTAL STATISTICS
Professors: W. C. Bridges, Jr., L. W. Grimes, H. S. Hill, Jr., J. R. Rieck, J. E. Toler; Lecturer: R. Martinez-Dawson

EX ST 222 Statistics in Everyday Life 3(3,0) Focuses on the role of statistics in a variety of areas including politics, medicine, environmental issues, advertising, and sports. Students explore common statistical misconceptions and develop an understanding of how principles of probability and statistics affect many aspects of everyday life. Not open to students who have received credit for EX ST 301, MTHSC 301, 302, or 309. Prereq: Satisfactory score on the Clemson Mathematics Placement Test or consent of department.

EX ST 301, H301 Introductory Statistics 3(2,2) Basic concepts and methods of statistical inference; organization and presentation of data, elementary probability, measures of central tendency and variation, tests of significance, sampling, simple linear regression and correlation. The role of statistics in interpreting research and the general application of the methods are stressed. Credit toward a degree will be given for only one of EX ST 301, MTHSC 301, 302, 309.

EX ST 311 Introductory Statistics II 3(2,2) Introduction to simple linear and multiple regression, principles of experimental design, and analysis of data using parametric and nonparametric techniques. Analysis of data is conducted using SAS. Examples come primarily from agriculture, food, life and health sciences, forestry, and natural resources. Credit toward a degree will be given for only one of EX ST 311 or MGT 310. Prereq: EX ST 301 or equivalent with a C or better.

EX ST 411, 611 Statistical Methods for Process Development and Control 3(3,0) Experimental design techniques for use in process development, application of screening experiments and response surface experiments, techniques for process control with implications for product quality control. Includes discussions of the use of statistical computer analyses and interpretations including computer generated graphics. Prereq: MTHSC 206 or consent of instructor.

EX ST 462, 662 Statistics Applied to Economics 3(3,0) Continuation of EX ST 301 with emphasis on statistical methods used in the collection, analysis, presentation, and interpretation of economic data. Special attention is given to time series analysis, the construction of index numbers, and the designing of samples for surveys in the social science fields. Prereq: EX ST 301.

FINANCE
Professors: J. C. Alexander, Jr., R. B. McElreath, Jr., Chair; M. F. Spivey, N. G. Waller; Associate Professors: J. M. Harris, Jr., R. H. Klein; Assistant Professors: D. J. Bradley, A. G. Morgan, J. G. Wolf; Lecturer: K. McMillan

FIN 301 Personal Finance 3(3,0) Analysis of the preparations of personal financial plans. Topics include savings and budgeting, personal taxes, housing and automobile decisions, loans, insurance needs, investments, and retirement needs. May not be counted toward a major or minor in Financial Management.

FIN 304 Risk and Insurance 3(3,0) Studies the nature of risk and the role of insurance in risk management from individual and business viewpoints. Topics include probability, theory of the firm under uncertainty, insurance carriers and contracts, underwriting, and regulation. Prereq: FIN 306 or 311 or consent of instructor.

FIN 305 Investment Analysis 3(3,0) Study of techniques useful in analyzing alternative investment opportunities with emphasis on corporate securities. Investment planning and portfolio management are considered. Prereq: FIN 306 or 311 with a C or better, or consent of instructor.

FIN 306 Corporation Finance 3(3,0) Introduction to financial management of nonfinancial firms. Includes such topics as analysis of financial statements, financial forecasting, capital budgeting, working capital management, and long-term financing decisions. Credit may not be received for both FIN 306 and 311. Prereq: ACCT 201; MTHSC 203 or 301 or 309 or EX ST 301; or consent of instructor.

FIN 307 Principles of Real Estate 3(3,0) Acquaints students with the theories, practices, and principles which govern real estate markets. Major emphasis is placed on the role of real estate brokerage, property rights, and ownership; making real estate investment decisions; and financing real estate investments. Prereq: FIN 306 or 311 with a C or better, or consent of instructor.
FIN 308 Financial Institutions and Markets 3(3,0) Study of the various types of financial institutions and of topics critical to the financial institutions practitioner. Topics include financial regulations, financial security types and their yields, interest rate risk management, foreign currency risks management, and stock index futures. Prqg. FIN 306 or 311 with a C or better, or consent of instructor.

FIN 311, H311 Financial Management I 3(3,0) First in a two-course sequence to provide in-depth exposure to the theory and practice of corporate financial management and to demonstrate how financial management techniques are applied in decision making. Credit may not be received for both FIN 306 and 311. Prqg. ACCT 204 with a C or better, and MTHSC 301 or 309 or EX ST 301, or consent of instructor.

FIN 312, H312 Financial Management II 3(3,0) Continuation of the two-course sequence that begins with FIN 311. Prqg. FIN 311 or 306 with a C or better and approval of Finance Department advisor.

FIN 399 Finance Internship 1-3(1-3,0) Pre-planned, pre-approved, faculty-supervised internships to give students on-the-job learning in support of classroom education. Internships must be no less than six full-time, consecutive weeks with the same internship provider. Restricted to students with a major or minor in Financial Management. To be taken Pass/Fail only. Prqg: Consent of instructor.

FIN 402, H402, 602 Advanced Corporate Finance 3(3,0) Study of the decision process and analytical techniques used in evaluating corporate investment and financing decisions. Topics include capital budgeting, real options, working capital management, mergers and acquisitions, bankruptcy and reorganization, and financial management in not-for-profit businesses. Prqg: FIN 312 or consent of instructor.

FIN 404, H404 Financial Modeling 3(3,0) Helps students develop the practical skills that combine theory, business planning, and forecasting needed to make financial decisions. Emphasis is placed on the use of spreadsheet software used to set up and solve these models. Topics include financial statement analysis, valuation, and cost of capital. Prqg: FIN 312; CP SC 220 or MGT 218; or consent of instructor.

FIN 405 Portfolio Management and Theory 3(3,0) Introduction to portfolio management. Includes the underlying theory, managing the equity and the fixed-income portfolios, portfolio evaluation, options-pricing theory, future markets and instruments. Prqg: FIN 305 with a C or better or consent of instructor.

FIN 406, 606 Analysis and Use of Derivatives 3(3,0) Consideration of the option pricing theory and strategy techniques most commonly used in the market for options. An overview of the future markets is also considered. Special emphasis is given to interest-rate futures, stock-index futures, and foreign-exchange futures. Prqg: FIN 305 or consent of instructor.

FIN 407 Management of Financial Institutions 3(3,0) Detailed study of the operational, marketing, and regulatory aspects of the management of depository financial institutions. Emphasis is on decision making through the extensive use of cases. Prqg: FIN 308.

FIN 409 Professional Financial Planning 3(3,0) Concepts and practical implementation of professional financial planning, with focus on essentials of budgeting and saving, risk management, tax planning, investment planning, and retirement and estate planning. Emphasis is on integrating these elements into a comprehensive personal financial plan. Prqg: ACCT 404, 408, FIN 304, 305.

FIN 410, H410 Research in Finance I-3 Directed research for students interested in careers in finance. Research topic is selected by student and approved by instructor. A formal research paper is required. Prqg: FIN 306 or 312, consent of instructor.

FIN 411 International Financial Management 3(3,0) Extension of the principles of finance to the international context. Focuses on implications of the existence of multiple currencies and the operations across borders of sovereign nation-states for the multinational corporation. Prqg: FIN 312 or 306 with a C or better or consent of instructor.

FIN 415, 615 Real Estate Investment 3(3,0) Focuses on the structure and analysis of real estate investment emphasizing financial theory and analysis technique. Case study and project-oriented homework assignments facilitate the understanding of real estate investments. Prqg: FIN 307 with a C or better or consent of instructor.

FIN 416, 616 Real Estate Valuation 3(3,0) Advanced course in commercial real estate valuation. Topics include income capitalization, cash equivalency, highest and best use analysis, the cost approach, the direct sales comparison approach, and DCF analysis. Prqg: FIN 307 with a C or better or consent of instructor.

FIN 417, 617 Real Estate Finance 3(3,0) Advanced course applying financial analysis and theory to real estate. Mortgage credit analysis and current financing techniques for residential and commercial properties are emphasized. Topics include financial institutions, syndications, and construction financing. Prqg: FIN 307 with a C or better or consent of instructor.

FOOD SCIENCE


FD SC 101 Epochs in Man's Struggle for Food 1(1,0) Study of significant developments in food preservation methods and the impact each has had on man's struggle for food.

FD SC 102 Perspectives in Food and Nutrition Sciences 2(2,0) Discussion course covering topics related to food science and human nutrition. Subjects include topics of current interest and involve familiarization with scientific literature in nutrition and food sciences.

FD SC 201 Man and His Food 2(2,0) Study of food and food products with emphasis on nutrients, nutrient needs, and the relationship between nutrient intake and health. Food additives, nutritional awareness (including nutrition labeling), food protection, and the influence of processing on nutritional quality of food are also discussed.

FD SC 214 Food Resources and Society 3(3,0) Introduces students to the basics of food science (food chemistry, food microbiology, and food processing principles) and relates how advances in food science have paralleled societal advances and created social controversy.

FD SC 215 Culinary Fundamentals 1(0,3) Culinary skills development lab course with emphasis on safety and sanitation. Practical preparation, evaluation, and presentation of fruits/vegetables, grains, eggs, salads/cold sauces, stocks, sauces, soups, poultry, red meat, seafood, quick breads, yeast breads, bakery desserts, frozen confections, and ice cream. Prqg: Food Science major or consent of instructor.

FD SC 250 Culinary Science Internship 0 Students experience the science and art of food preparation, with the ultimate objective of improving the ease of manufacture, as well as the overall quality and nutrition of the food produced. Students are able to observe, interact, and practice principles of culinary sciences. To be taken Pass/Fail only. Prqg: FD SC 215.

FD SC 306 Food Service Operations 3(3,0) Principles of management of resources in food service systems. Emphasizes menu planning, types of delivery systems, principles of quantity food production, techniques for cost control and concepts of food service and food safety. Prqg: FD SC 214 or equivalent or consent of instructor. Coreq: FD SC 404, 407.

FD SC 307 Restaurant Food Service Management 3(3,0) Essentials of successful operation of restaurants including menu design and pricing, marketing, customer satisfaction, purchasing, kitchen operations, and employment relationships.

FD SC 350 Food Science Internship 0 Summer internship offered by Food Science and Human Nutrition Department and the Clemson Microcreamery and Food Manufacturing Industries. Students are able to observe, interact, and practice principles of food science within the food industry. To be taken Pass/Fail only. Prqg: FD SC 214 or consent of instructor.

FD SC 401, H401, 601 Food Chemistry 14(3,3) Basic composition, structure, and properties of food and the chemistry of changes occurring during processing utilization. Prqg: BLOC 305 or consent of instructor.
FD SC 402, H402, 602 Food Chemistry II 4(3,3)
Application of theory and procedures for quantitative and qualitative analysis of food ingredients and food products. Methods for protein, moisture, lipid, carbohydrate, ash, fiber, rancidity, color, and vitamin analyses and tests for functional properties of ingredients are examined. Preq: BIOL CH 305 or consent of instructor.

FD SC 404, 604 Food Preservation and Processing 3(3,0)
Principles of food preservation applied to flow processes, ingredient functions, and importance of composition and physical characteristics of foods related to their processing; product recalls and product development concepts. Preq: Physics and organic chemistry or biochemistry.

FD SC 406, 606 Food Preservation and Processing Laboratory 110(0,3) Laboratory exercises on preservation methods, equipment utilized, and processes followed in food manufacturing. Coreq: FD SC 404.

FD SC 407, 607 Quantity Food Production 2(1,3)
Principles of the production of food in quantity for use in food service systems. Emphasis is on functions of components of foods and of ingredients in food, on the quality of the final product, on safe production of food, and on proper use of equipment. Coreq: FD SC 306, 404.

FD SC 408, 608 Food Process Engineering 4(3,3)
Study of basic engineering principles and their application in food processing operations. The relation between engineering principles and fundamentals of food processing is emphasized. Preq: CH 102, FD SC 214, MTHSC 106, PHYS 207 or 200 or 122 or consent of instructor.

FD SC (PKGSC) 409 Total Quality Management for the Food and Packaging Industries 3(3,0)
Introduction to the principles of modern quality management with emphasis on quality standards and issues and the practices necessary for food processing and packaging companies to survive in a customer-driven marketplace.

FD SC 417 Seminar 1(1,0) Literature research and oral presentation of a current food science topic.

FD SC 418 Seminar 1(1,0) Literature research and oral presentation of a current food science topic.

FD SC 420, H420 Special Topics in Food Science 1-3(1-3,0)
Special topics in food science not covered in other courses. May be repeated for a maximum of 12 credits, but only if different topics are covered. Preq: Consent of instructor.

FD SC 421, H421 Special Problems in Food Science 1-4(0-3,1-12) Independent research investigation in food science areas not conducted in other courses. May be repeated for a maximum of 12 credits. Preq: Consent of instructor.

FD SC 491 Practicum 1-4 Supervised experiential opportunities in the food industry. May be repeated for a maximum of 12 credits. Preq: Junior standing and consent of department chair.

FORESTRY

FOR 101 Introduction to Forestry 1(1,0) Informative sketch of forestry, forests, and forestry tasks of the nation; education and career opportunities for foresters. Offered fall semester only.

FOR 102 Introduction to Forestry 1(1,0) Continuation of FOR 101. Offered spring semester only.

FOR 205 Dendrology 2(1,3) Classification, nomenclature, and identification of the principal forest trees of the United States, their geographical distribution, ecological requirements, and economic importance. Field identification of native trees and commonly planted exotics of the South. Preq: BIOL 103. Coreq: FOR 221 or consent of instructor.

FOR 206 Forestry Ecology 3(2,3) Study of the nature of forests and forest trees, how they grow, reproduce, and their relationships to the physical and biological environment. Offered spring semester only. Preq: BIOL 103, CSENV 202, FOR 205 or consent of instructor.

FOR (PRTM) 209 Professional Application of Microcomputers 1(3,4) See PRTM 209.

FOR 221 Forest Biology 3(3,0) Study of woody plant form and function, wood properties, general physiology and forest biomes of North America. Presented as a comprehensive course to dendrology lab. Preq: BIOL 103. Coreq: FOR 205 or consent of instructor.

FOR 227 Arboricultural Field Techniques 1(0,3) Skills and techniques required to safely climb trees for tree maintenance. Emphasizes safety, proper equipment, and basic tree maintenance treatments. To be taken Pass/Fail only.

FOR 251 Forest Communities 2(0,6) Study of forest plant species and their successful status and habitat requirements with respect to landform, soil type, and other appropriate aspects of site classification. Preq: FOR 205 or consent of instructor.

FOR 253 Forest Mensuration 4(0,12) Introduction to measurements of land, individual trees, forest stands, forest products, and the application of mensurational techniques to the statistical and physical design of forest sampling methods, including measurement techniques of non-timber components of forest resources. Preq: FOR 205 or consent of instructor.

FOR 254 Forest Products (Summer Camp) 1(0,3) Tour of the forest products industry of South Carolina with emphasis on those products and processes of some distinction or special interest. Preq: FOR 205 or consent of instructor.

FOR 300 Christmas Tree Production 2(2,0) Theory and practice of establishing, managing, and marketing trees emphasizing Christmas tree production in the South. Preq: Consent of instructor.

FOR 302 Forest Biometrics 2(1,3) Application of statistical methods to forestry problems including sampling theory and methods, growth measurements and prediction, and application of microcomputing to analysis of forestry data. Preq: FOR 253. Coreq: EX ST 301 or consent of instructor.

FOR 304 Forest Resource Economics 3(3,0) Economic problems and principles involved in the utilization of forest resources and distribution of forest products; analysis of integrated forest operations. Preq: ECON 200 or consent of instructor.

FOR 305 Woodland Management 3(2,2) Compendium of forestry subjects providing a broad view of the forest environment as it relates to ecology, management, and utilization of forests, especially those of South Carolina. Field and laboratory exercises in the fundamentals of forest land management. Not open to Forest Resource Management majors. Preq: BIOL 103 or consent of instructor.

FOR 308 Remote Sensing and GIS in Forestry 2(1,3) Introduction to remote sensing, aerial photo interpretation, computer mapping, aerial photo timber estimating, and geographical information systems. Preq: Forestry summer camp or consent of instructor.

FOR 314 Harvesting and Forest Products 4(3,3) Harvesting of forest products, structure and properties of economically important timbers, and production and properties of primary forest products. Preq: Forestry summer camp or consent of instructor.

FOR 315 Woodland Ecology 3(3,0) Overview of the forest emphasizing the living and nonliving components of the woodland habitat. Understanding man's use of the forest and interpreting the signs of plants, wildlife, and landscapes.

FOR 341 Wood Procurement Practices in the Forest Industry 3(3,0) Study of wood raw material procurement practices currently employed by the forest products industry, including pulp, paper, and related areas. Preq: Consent of instructor.

FOR 400, 600 Public Relations in Natural Resources 3(3,0) Identifying relevant policies, their characteristics and acceptance to natural resource management and techniques of maintaining appropriate public relations. Preq: Senior standing.

FOR 406 Forested Watershed Management 2(1,3) Lectures and discussions on measurements and processes affecting water quality and quantity within watersheds. Introduction to hydrologic principles, geomorphology, and water quality assessment. Discussion of best management practices for silviculture and development of a watershed management plan. Preq: FOR 315 or consent of instructor.

FOR 413, 613 Integrated Forest Pest Management 4(3,3) Nature and control of pests of forest trees and products. Focuses on the relation of pests to silviculture, management, and natural forest ecosystems. Preq: Junior standing in Forest Resource Management.

FOR 415, 615 Forest Wildlife Management 3(2,3) Principles, practices, and problems of wildlife management with emphasis on upland forest game species. Habitat manipulation through use of appropriate silvicultural practices in association with other techniques is evaluated. Preq FOR 460 or consent of instructor.
FOR (E N R) 416, 616 Forest Policy and Administration 2(2,0) Introduction to the development, principles, and legal provisions of forest policy in the United States and an examination of administrative and executive management in forestry.

FOR 417, 617 Forest Resource Management and Regulation 3(3,0) Fundamental principles and analytical techniques in planning, management, and optimization of forest operations. Preq. FOR 302, 308, 418, 460.

FOR 418, 618 Forest Resource Valuation 3(3,0) Analysis of capital investment tools and their application to decision making among forestry investment alternatives; valuation of land, timber, and other resources associated with forestry, including the impact of inflation and taxes. Preq. FOR 304 or consent of instructor.

FOR 419 Senior Problems 1-3(1-3,0) Problems chosen with faculty approval in selected areas of forestry. With department chair's approval, may be repeated once for credit. Preq: Senior standing.

FOR 420, 620 Biology and Silviculture of Hardwood Forests 2(1,2) Study of silvics, growth, and development of major hardwood species of North America that relates these biological characteristics to the ecology, silviculture, and utilization of the hardwood forests of the eastern United States. Preq: FOR 406 or consent of instructor.

FOR 421, 621 Current Issues in Natural Resources 2(2,0) Lectures in various fields of forestry delivered by selected representatives from forest industries, consultants, agencies, associations, and other forestry operations. Course will not be taught when enrollment is less than 15. To be taken Pass/Fail only. Preq: Junior standing or consent of instructor.

FOR 425 Forest Resource Management Plans 2(1,3) Development of multiple resource forest management plans. Economic and environmental impacts of implementing management plans. Preq: FOR 417 or consent of instructor.

FOR 426, 626 Forest Resource Management Plans Seminar 1(1,0) In-depth exploration of topics and problems presented in FOR 425. To earn honors credit, student must be enrolled in corequisite FOR 425 and earn a B or better in both courses. Preq: Senior standing, approval of Department of Forest Resources. Coreq. FOR 425.

FOR (HORT) 427, 627 Urban Tree Care 3(3,0) Principles, practices, and problems of protecting and maintaining trees in urban and recreational areas. Examines environmental and biological factors affecting trees in high-use areas, their management and cultural requirements, and the practices necessary for their protection and care as valuable assets in the landscape. Preq: Junior standing or consent of instructor.

FOR 431, 631 Recreation Resource Planning in Forest Management 2(1,3) Analysis of forest recreation as a component of multiple-use forest management; techniques of planning; physical and biological effects on forest environments; and forest site, user, and facility management.

FOR 433, 633 GPS Applications 3(2,3) Develops competence in global positioning system (GPS) technology including theory, methods, and application to natural resources mapping. Topics include basic concepts of GPS; projection systems; types of data; mission planning; and data capture, correction, and export to geographical information systems (GIS). Preq: Senior standing or consent of instructor.

FOR (E N R) 434, 634 Geographic Information Systems for Landscape Planning 3(2,3) Develops competence in geographic information systems (GIS) technology and its application to various spatial analysis problems in landscape planning. Topics include data development and management, spatial analysis techniques, critical review of GIS applications, needs analysis and institutional context, GIS hardware and software, hands-on application. Credit may be received for only one of C R F 434, FOR (E N R) 434.

FOR 441, 641 Properties of Wood Products 3(3,0) Basic properties of wood, including the hygroscopic, thermal, electrical, mechanical, and chemical properties; standard testing procedures for wood. Preq: Junior standing or consent of instructor.

FOR 442, 642 Manufacture of Wood Products 3(3,0) Manufacture of lumber, plywood, poles, piles; drying, preservation, grading, and uses of wood products. Manufacture of particleboard, flakeboard, oriented-strand board, fiberboard, and paper products. Includes physical, mechanical, and chemical properties and their applications. Preq: Consent of instructor.

FOR 444, 644 Forest Products Marketing and International Trade 3(3,0) Study of marketing and international trade practices currently employed by the forest products industry and the application of basic marketing principles and global trade concepts in the industry's current and future environment. Preq: FOR 442 or consent of instructor.

FOR 447 Special Problems in Forest Products 3(0,3-9) Laboratory, library, or field study of problems in selected areas of forest products. Emphasis is on the planning and execution of research and the reporting of results. The research work must be conducted under the guidance of a Forest Products faculty member. May be repeated for a maximum of three credits, but only if different topics are covered. Preq: Senior standing and consent of instructor supervising the study.

FOR 450 Woody Plant Stress Physiology 3(3,0) Structure, function, and physiology of tree shoot and crown growth, wood formation, diameter growth, root growth, and reproduction especially as related to stress factors. Preq: BIOSC 401 or FOR 460 or consent of instructor.

FOR (B E, EE&S) 451, 651 Newman Seminar and Lecture Series in Natural Resources Engineering 1(0,2) See B E 451.

FOR 460, 660 Silviculture I 3(2,3) Discussion of the theory and practice of establishing, maintaining, and harvesting forest stands in accordance with ecological and economic principles. Preq: FOR 206 and Forestry Summer Camp or consent of instructor.

FOR H461 Silviculture Honors Seminar I 1(1,0) In-depth exploration of topics and problems presented in FOR 460. To earn honors credit, students must be enrolled in FOR 460 and earn a B or better in both courses. Preq: Junior standing and approval of Department of Forest Resources. Coreq. FOR 460.

FOR 462, 662 Silviculture II 3(2,3) Discussion of forest management practices that affect ability of the land to produce multiple forest resources, with emphasis on water, nutrients, and fire. Preq: Consent of instructor.

FOR H463 Silviculture Honors Seminar II 1(1,0) In-depth exploration of topics and problems presented in FOR 462. To earn honors credit, students must be enrolled in FOR 462 and earn a B or better in both courses. Preq: Junior standing and approval of Department of Forest Resources. Coreq. FOR 462.

FOR 465, 665 Silviculture 4(3,3) Discussion of the theory and practice of manipulating forests to meet the needs and values of landowners and society in accordance with biological, ecological, and economic principles. Preq: FOR 206 and Forestry Summer Camp or consent of instructor.

FOR 480 Selected Topics in Urban Forestry 3(3,0) Study of selected and varied topics, problems, and issues in urban forestry and arboriculture through readings, class discussion, and individual and group projects. Preq: FOR (HORT) 427.

FOR 493 Selected Topics in Forest Resources 1-15(1-15,2-30) Specialized topics not covered in other courses which explore current areas of research and management in forest resources in a format of lecture, lab, or both. May be repeated for a maximum of 15 credits, but only if different topics are covered. Preq: Junior standing or consent of instructor.

FOR 498 Senior Portfolio 1(1,0) Collection of Web-based materials representing the creative and scientific work performed throughout the senior experience, write resumes, and present resumes written by students to satisfy curriculum requirements. Students are informed in FOR 102 and regularly thereafter regarding the format and content of their portfolios. Preq: Senior standing in Forest Resource Management. Coreq. FOR 425.

FORESTRY AND NATURAL RESOURCES

F N R 102 Forest and Natural Resources Freshman Portfolio 1(1,0) Informative sketch of forestry, wildlife biology, and natural resources; education and career opportunities for natural resource professionals. Students initiate their Web-based student portfolios which showcase their skills and experiences (e.g., resumes, accomplishments, and work samples) during their undergraduate degree. To be taken Pass/Fail only. Restricted to Environmental and Natural Resources, Forest Resource Management, Forestry and Natural Resources—Undeclared, and Wildlife and Fisheries Biology majors only.
FR 101 Elementary French 4(3,1) Multimedia course for beginners that combines video, audio, and print to teach the foundations of the French language and culture. Emphasis is on communicative proficiency (listening comprehension and speaking, reading, and writing).  
FR 102 Elementary French 4(3,1) Continuation of FR 101; three hours a week of classroom instruction and one hour a week in the language laboratory.  
FR 104 Basic French 4(3,1) Intensive one-semester program combining FR 101 and 102 for students who have previously studied French. Includes fundamentals of grammar and vocabulary as a foundation for building written and oral proficiency.  
FR 151 French for Graduate Students 3(3,0) Intensive program only for graduate students preparing for the reading examination in French. A minimum grade of B on a final examination will satisfy graduate school foreign language requirement. May be repeated once for credit. To be taken Pass/Fail only. Prereg: Graduate standing.  
FR 202, H202 Intermediate French 3(3,1) Emphasis is on reading nontechnical French prose more rapidly. Writing, speaking, and listening skills continue to be developed. Includes literary and cultural perspectives. Prereg: FR 201.  
FR 209 Foreign Language Drama Laboratory 10(0,3) Participation in foreign drama productions. No formal class meetings, but an average of three hours per week in a foreign language drama workshop for production. May be repeated for a maximum of three credit hours. Prereg: Consent of instructor directing the play.  
FR 300 Survey of French Literature 3(3,0) Study of selected masterpieces of French literature in their artistic, cultural, and historical context. May include theme and genre studies. Prereg: FR 202 or consent of department chair.  
FR 304 French Short Story 3(3,0) Introduction to the study of French narrative literature and the elements of critical analysis through the examination of short stories spanning the medieval era to the present from both France and Francophone countries. Prereg: FR 202.  
FR 305 Intermediate French Conversation and Composition I 3(3,0) Practice in the spoken language, with stress on vocabulary building, pronunciation, intonation, and comprehension; written work to increase accuracy; assignments in the language laboratory. Prereg: FR 202 or consent of department chair.  
FR 307 French Civilization 3(3,0) Study of significant aspects of French culture from its origins to the present. Prereg: FR 202 or consent of department chair.  
FR 308 French Linguistics I: Phonetics, Phonology, and Morphology 3(3,0) Study of the fundamental sound patterns, melodic structure, and work-process formations of modern standard French. Prereg: FR 304 or 305 or consent of instructor.  
FR 309 French Linguistics II: Syntax and Semantics 3(3,0) Study of the fundamental structures of French syntax and semantics. Prereg: FR 304 or 305 or consent of instructor.  
FR 310 CLIP Summer Immersion Program 6(6,0) Conducted entirely in French for eight hours daily, this summer immersion program consists of activities that combine interrelating cultural topics with language skill practice. Frequent opportunities to converse with native speakers during meals and on excursions. Students receive six credits, three of which may be taken in lieu of FR 202. Prereg: FR 201.  
FR 312 Writing in French I 3(3,0) Study of the vocabulary, syntax, and stylistics in short compositions and creative papers in French, on both fiction and non-fiction topics. Prereg: FR 202 or consent of department chair.  
FR 316 French for International Trade I 3(3,0) Spoken and written French common to the French-speaking world of business and industry, with emphasis on business practices and writing and translating business letters and professional reports. Cross-cultural references provide opportunity to comparative and contrasting analyses of American and French cultural patterns in a business setting. Prereg: FR 202, 305 (or concurrent enrollment); or consent of department chair.  
FR 317 Contemporary French Civilization 3(3,0) Study of significant aspects of France today; the country, its economy, government, society. Taught in French. Prereg: FR 202 or consent of department chair.  
FR 320 Studies in French Theatre 3(3,0) Explores a variety of genres (medieval farce, classical comedy and tragedy, romantic melodrama, and the Nouveau Théâtre) with emphasis on staging. Class materials consist of scripts, videotaped performances, and theoretical readings on issues pertaining to spectacle in social, political, and artistic terms. May be repeated for a maximum of six credits. Prereg: FR 202 or consent of department chair.  
FR (PO SC) 383 French Foreign Language News 1(1,0) See PO SC 383.  
FR H391 Survey of French Literature 1(1,0) One-hour independent study to allow honors students to pursue supervised research on a topic relating to the literary, cultural, and artistic movement in France. Coreg: FR 300, membership in Calhoun Honors College.  
FR 398 Directed Reading I 3(1-3,0) Directed study of selected topics in French literature, language, and culture. May be repeated for a maximum of six credits. Prereg: Consent of department chair.  
FR 400 Modern French Literature 3(3,0) Study of selected works of 20th-century French literature in their artistic, cultural, and historical context. Prereg: FR 202 or consent of department chair.  
FR 409 Writing in French II 3(3,0) Intensive study of syntax and stylistics through composition and translations. Prereg: Senior standing or consent of department chair.  
FR 410 Francophone Literature 3(3,0) Study of selected works of francophone literature, with emphasis on Africa and the Caribbean, in their artistic, cultural, historical, and political contexts. Prereg: FR 300 or consent of department chair.  
FR 411 Advanced French Conversation and Composition 3(3,0) Continuation of FR 305, with emphasis on greater fluency and sophistication in oral and written expression. Prereg: FR 305 or consent of instructor.  
FR 412 French and Francophone Cinema 3(2,3) Examination of cinematic practice as a discourse and the role it plays in the representation of social relations, particularly race, ethnicity, class, power, sex, and gender in the French-speaking world. May include a study of major directors, genres, and movements. Taught in French. Films with English subtitles. Prereg: Sophomore standing or consent of department chair.  
FR 415 Translation Seminar 3(3,0) Methods and theory of translation and a comparison of French and English structures. Practical exercises in translating from French to English and vice versa in a variety of texts. Prereg: FR 202 or consent of department chair.  
FR 416 French for International Trade II 3(3,0) Study of language and cultural environment of the French-speaking markets of the world, including the linguistic and cultural idioms which support global marketing in general and the international marketing of textiles, agricultural products, and tourism in particular. Prereg: FR 316.  
FR 417 The French Corporation 3(3,0) Examination of the organization, structure, functioning, and economic role of the French business enterprise. Prereg: FR 316 or consent of department chair.
FR 420 French Enlightenment, Revolution and Romanticism 3(3,0) Cultural and literary studies of the century and a half (1715-1851) in which France occupied the center stage of world history and its modern institutions came into being. Emphasizes the free intellectual inquiry championed by philosophers and the romantic melancholy in the aftermath of the Revolution. Prereq: FR 202 or consent of department chair.

FR H439 French Honors Research 3(3,0) Individual honors research conducted under the direction of Language Department Faculty. May not be used to satisfy requirements for the major in Modern Languages–French or Language and International Trade or the minor in Modern Languages. Prereq: Junior standing and membership in Calhoun Honors College.

FR H439 French Honors Thesis 3(3,0) Individual honors research conducted and thesis completed under the direction of Language Department Faculty member. May not be used to satisfy requirements for the major in Modern Languages–French or Language and International Trade or the minor in Modern Languages. Prereq: Junior standing. FR H438, membership in Calhoun Honors College.

FR 475 Advanced French Seminar 3(3,0) Concentrated research and discussion on an advanced topic in French literature, film, drama, music, or philosophy. May be repeated for a maximum of six credits, but only if different topics are covered. Prereq: FR 304 or 305, Senior standing; or consent of instructor.

FR 476 Advanced Seminar on French Thought 3(3,0) Research and discussion of an advanced topic, text, or group of texts with a particular focus on French theory and philosophy but including works of French literature. Conducted in English. May be repeated for a maximum of six credits, but only if different topics are covered. Prereq: Senior standing or consent of instructor.

FR 477 Advanced Seminar on the French and Francophone Novel 3(3,0) Examination of the French novel and/or narrative prose focusing on a theme, genre, or period. May be repeated for a maximum of six credits, but only if different topics are covered. Prereq: FR 304 or 305, Senior standing; or consent of instructor.

FR H491 Modern French Literature 1(1,0) Independent study to allow honors students to pursue in depth an author, work, movement, or genre related to contemporary French culture, art, or literature. Coreq: FR 400, membership in Calhoun Honors College.

FR H492 The French Corporation 1(1,0) Independent study to allow honors students to pursue an in-depth study of the organization, structure, functions, and economic role of a French business enterprise. Coreq: FR 417, membership in Calhoun Honors College.

FR 498 Independent Study 1-3(1-3) Directed study of a selected topic in French literature, language, or culture. May be repeated for a maximum of six credits. Prereq: Consent of department chair.

FR 499, 699 Selected Topics in French Literature 3(3,0) Selected topics that have characterized French literature, language, and culture. May be repeated for a maximum of six credits. Prereq: Consent of department chair.

GENETICS

GEN 103 Careers in Biochemistry and Genetics 1(1,0) Introduces students to biochemistry and genetics career paths, professional organizations, ethical issues, and requirements for advanced study. Also gives students training in design of a professional portfolio. May not be used for both BIOCH 103 and GEN 103. Prereq: Freshman or sophomore standing in Biochemistry or Genetics or consent of instructor.

GEN 300 Fundamental Genetics 3(3,0) Introduces students to the fundamental principles of genetics in prokaryotes and eukaryotes. Inclusion in other courses. May be repeated for a maximum of eight credits, but only if different topics are covered. Prereq: BIOL 104 or consent of instructor.

GEN 301 Fundamental Genetics Laboratory 1(0,3) Experimental and observational approach addressing the concepts presented in GEN 300. Inclusion in other courses. May be repeated for a maximum of eight credits, but only if different topics are covered. Prereq: BIOL 104 or consent of instructor.

GEN 302, H302 Molecular and General Genetics 3(3,0) Rapidly-paced course covering Mendelian genetics and molecular genetics, with introductory coverage of quantitative and population genetics. Emphasis is on the molecular basis of heredity and gene expression in prokaryotes and eukaryotes and modern genetic technology. Prereq: BIOL 111 or consent of instructor.

GEN 303 Molecular and General Genetics Laboratory 1(0,3) Laboratory exercises introducing fundamental principles of inheritance in prokaryotes and eukaryotes. Prereq: GEN 302 or concurrent enrollment.

GEN (BIOSC) 405, H405, 605 Molecular Genetics of Eukaryotes 3(3,0) Molecular genetic analyses of eukaryotes in relation to mutations and repair, complex phenotypes, biochemical pathways, short- and long-term regulation of gene expression, and evolution. Prereq: GEN 302 or equivalent and one semester of biochemistry, or consent of instructor.

GEN 401, H410, 610 Fundamentals of Genetics 1(3,0) First in a two-semester sequence in genetics covering Mendelian genetics, topics in cyto genetics, extranuclear inheritance, quantitative, evolutionary, conservation, and population genetics. Prereq: CP SC 120 (or equivalent), EX ST 301, GEN 302, or consent of instructor.

GEN 411 Fundamentals of Genetics Laboratory 1(0,3) Crosses are carried out using eukaryotic organisms (C. elegans, Drosophila, yeast) with appropriate markers to follow inheritance. Population and evolutionary genetics concepts are also examined. Prereq: GEN 410 or concurrent enrollment.

GEN (BIOSC) 416, H416 Recombinant DNA 3(3,0) Familiarizes students with the most current facts and concepts of molecular genetics. Lectures focus on gene organization, structure, and expression in prokaryotes and eukaryotes, high-lighting current technologies and research in these areas. Prereq: GEN 302 or equivalent and one semester of biochemistry or consent of instructor. A developmental biology course is also strongly recommended.

GEN (BIOSC, MICRO) 418, 618 Biotechnology I: Nucleic Acids Techniques 4(2,4) Basic training in the manipulation of genetic information using recombinant DNA technology. Includes techniques in molecular cloning, Southern and Northern analyses, cloning procedures, and consent of instructor.

GEN 420, H420, 620 Fundamentals of Genetics II 3(3,0) Second in a two-semester sequence in genetics covering molecular genetics, gene expression, recombinant DNA technology, genomics, bioinformatics, proteomics, developmental, human, cancer, and behavioral genetics. Prereq: GEN 410 or consent of instructor.

GEN 421 Fundamentals of Genetics II Laboratory 1(0,3) Molecular genetics is emphasized by using prokaryotic organisms (lambda or T4 phage, E. coli, B. subtilis) and yeast. Slime molds are used to model developmental processes. Bioinformatic methods are integrated into laboratory exercises by employing simulations illustrating genetic principles underlying human behavior and cancer biology. Prereq: GEN 420 or concurrent enrollment.

GEN 440, H440, 640 Bioinformatics 3(3,0) Theory and application of computational technology to analysis of the genome, transcriptome, and proteome. Prereq: CP SC 120 (or equivalent), GEN 302, 410, or consent of instructor.

GEN 450, H450, 650 Comparative Genetics 3(3,0) Outlines the genome structure, function, and evolution based on available complete genome sequences. Topics include the evolution of multigene families, origin of eukaryotic organs, molecular phylogeny, gene duplication, domain stufing, transposition, and horizontal gene transfer. Prereq: GEN 420, 440 or consent of instructor.

GEN (BIOSC, HORT) 465, 665 Plant Molecular Biology 3(3,0) See HORT 465.

GEN 470, 670 Human Genetics 3(3,0) Basic principles of inheritance; population, molecular and biochemical genetics; cytogenetics; immunogenetics; complex traits; cancer genetics; treatment of genetic disorders; genetic screening and counseling; and the Human Genome Project. Prereq: GEN 302 or consent of instructor.

GEN 490 Selected Topics in Genetics 1-4(0,4,0-9) Comprehensive study of selected topics not covered in other courses. May be repeated for a maximum of eight credits, but only if different topics are covered. Prereq: Junior standing or consent of instructor.

GEN 491, H491 Special Problems in Genetics 1-8(0,3-24) Orientation in genetic research (i.e., experimental planning, execution, and reporting). May be repeated for a maximum of eight credits. Prereq: GEN 410, 411, 420, 421 or consent of instructor.

GEN (BIOCH) 493, H493 Senior Seminar 2(2,0) See BIOCH 493.

GEN (ENT) 495, 695 Insect Biotechnology 3(3,0) See ENT 495.
GEOG 301 Political Geography 3(3,0)
Survey of the nature of political geography, with emphasis on the political organization, economic development, and interpretation of geography. Topics range from the condition of the earth's surface and the processes that act on it. Topics include changes in land use, the human environment, and the development of political systems. Preq: GEOG 101 or 103 or consent of instructor.

GEOG 410, 610 Geography of the American South 3(3,0)
Study of the geography of the American South in its changing complexities across almost 400 years of development. Preq: GEOG 101 or 103 or consent of instructor.

GEOG 420, 620 Historical Geography of the United States 3(3,0) Survey that places the spatial concepts of geography into a time sequence with special emphasis upon the United States. Preq: GEOG 101 or 103 or consent of instructor.

GEOG (PRTM) 430, 630 World Geography of Parks and Equivalent Reserves 3(3,0) See PRTM 430.

GEOG 440, 640 Geography of Historic Preservation 3(3,0) Aspects of historic preservation with emphasis on sites and structures in their geographical, historical, and socioeconomic contexts. Emphasis is on developing a working knowledge of the landscapes of these areas. Examples are drawn from American architectural styles and settlement forms. Preq: GEOG 101 or 103 or consent of instructor.

GEOG 499 Independent Study in Geography 3(3,0) Study of selected topics in geography under the direction of a faculty member chosen by the student. Student and faculty member develop a course of study designed for the individual student and approved by the department chair prior to registration.

GEOLOGY


GEO 100 Current Topics in Geology 1(1,0) Lectures and demonstrations covering topics of current interest in the different fields of geology. Recent research developments and career opportunities in the geosciences are emphasized.

GEO 101, H101 Physical Geology 3(3,0) Study of minerals and rocks which compose earth's crust, their origins and transformations. Emphasizes geological processes, both internal and external, by which changes are produced on or in the earth.
Courses of Instruction


GEOL (ASTR) 220 Planetary Science 3(3,0) Survey of the formation and evolution of planetary bodies. Emphasis is on the origin of planetary material and comparative study of the primary processes operative on planetary surfaces. Major features of the planets and moons in our solar system, as revealed by recent space missions, are described.

GEOL 291 Introduction to Research I 1(1,0) Required group learning and research experience for Geology majors (open to others with consent of instructor). Introduction to problem solving through case studies and interdisciplinary team approaches. Focus is on, but not limited to, research approaches in geology. Social and ethical contexts, communication skills, and professional development are incorporated.

GEOL 292 Introduction to Research II 1(1,0) Required group learning and research experience for Geology majors (open to others with consent of instructor). Introduction to problem solving through case studies and interdisciplinary team approaches. Focus is on, but not limited to, research approaches in geology. Social and ethical contexts, communication skills, and professional development are incorporated. Prereq: GEOL 291 or consent of instructor.

GEOL 300, H300 Environmental Geology 3(3,0) Discussion-oriented introductory study of the relationships of man to his physical surroundings and problems resulting from upsetting the established equilibria of geologic systems; man’s role as a geologic agent, environmental conservation and management. Prereq: GEOL 101 or consent of instructor.

GEOL 302, H302 Structural Geology 4(3,3) Diverse geological structures of the earth, their description, origin, and field recognition. Practical problems in interpreting geologic structures are utilized, in addition to theoretical considerations of the mechanics and causes of tectonism. Prereq: GEOL 102 or consent of instructor.

GEOL 313 Sedimentology and Stratigraphy 4(3,3) Topics include origin, composition, and texture of sediments and sedimentary rocks; sedimentation processes, depositional environments, facies relationships, and diagenesis; introduction to stratigraphic methods and geochronology. Laboratory involves description and classification of hand specimens and thin sections and analytical methods. Prereq: GEOL 206 or consent of instructor.

GEOL 314 Sedimentary Petrology 3(2,3) Origin, composition, and texture of sediments and sedimentary rocks, including both siliciclastic and chemical varieties. Interpretation of tectonic settings, depositional systems, facies relationships, and diagenesis. Laboratory involves description and classification of hand specimens and thin sections and analytical methods. Prereq: GEOL 206 or consent of instructor.

GEOL 316, H316 Igneous and Metamorphic Petrology 3(2,3) Classification, occurrence, and origin of igneous and metamorphic rocks. Discussion of the chemical and physical processes involved in magmatic crystallization and metamorphism. Laboratory study of igneous and metamorphic rocks in hand specimen and thin section. Prereq: GEOL 206, 216 or consent of instructor.

GEOL 318 Introduction to Geochemistry 3(3,0) Introduction to distribution of elements in the core, mantle, and crust of the earth. Control of rock type on trace element content in soils and sediments. Weathering; soil and regolith formation; water-sediment interactions; solubility, mobility, and bioavailability in relation to redox, pH and complexation; biogeochemical cycles of selected elements. Prereq: GEOL 101 or consent of instructor.

GEOL 320, H320 Engineering Geology 3(3,0) Application of engineering principles to geologic problems. Identification of important material properties and mechanics of earth materials. Techniques of geologic site evaluation with emphasis on civil works and construction projects. Prereq: GEOL 101, 103, MTHSC 108, PHYS 122.

GEOL 375 Bahamian Field Study 3(1,4) Relationships among marine sediment types, physical processes, and biological activity are observed. The world’s third largest barrier reef is examined. Students stay one week at a field station on Andros Island in the Bahamas and travel by van and boat to various sites. Additional fees are required. Prereq: GEOL 101 or consent of instructor.

GEOL 391 Research Methods I 1(1,0) Required group learning and research experience for Geology majors (open to others with consent of instructor). Introduction to problem solving through case studies and interdisciplinary team approaches. Focus is on, but not limited to, research methods in geology. Social and ethical contexts, communication skills, and professional development are incorporated. Prereq: GEOL 292 or consent of instructor.

GEOL 392 Research Methods II 1(1,0) Required group learning and research experience for Geology majors (open to others with consent of instructor). Introduction to problem solving through case studies and interdisciplinary team approaches. Focus is on, but not limited to, research methods in geology. Social and ethical contexts, communication skills, and professional development are incorporated. Prereq: GEOL 292 or consent of instructor.

GEOL 405, 605 Geomorphology 3(2,3) Study of the surface features of the earth—their form, nature, origin, development, and rates and patterns of changes they are undergoing. Laboratory studies emphasize a process approach to terrain analysis stressing complex interactions of geologic, climatic, and tectonic forces. Prereq: GEOL 101, 102, or consent of instructor.

GEOL 408, 608 Geohydrology 3(3,0) Study of the hydrologic cycle, aquifer characteristics, theory of groundwater movement, mechanics of well flow, experimental methods, and subsurface mapping. Prereq: GEOL 101, 102.

GEOL 409 Subsurface Methods 4(3,3) Students develop an understanding of the principles and methods used to acquire, analyze, and interpret subsurface geological data. Emphasis is on borehole measurements; seismic gravimetric, magnetic, and electrical methods; and on their applications to hydrogeology, remediation, and oil and gas exploration. Prereq: GEOL 313.

GEOL 411, H411 Research Problems 1-3(0-3,9) Field, laboratory, or library study of an approved topic in geology. Topics would be one or normally covered in formal courses, but may be an extension of a course. Taught every semester. May be repeated for a maximum of six credits. Prereq: Senior standing or consent of instructor.

GEOL 413, 613 Stratigraphy 3(2,2) Analysis of stratified rocks as the repository of earth history and the conceptual framework used to synthesize the world geologic record as a coherent whole. Emphasis is placed not only on traditional stratigraphy but also on modern seismic stratigraphy, biostratigraphy, magnetostratigraphy, and current stratigraphic issues. Prereq: GEOL 314 or consent of instructor.

GEOL 415 Analysis of Geological Processes 3(3,0) Introduction to methods for analyzing geological processes. Mathematical methods are introduced to solve problems related to stream flow, reaction kinetics, radioactive decay, heat flow, diffusion, fluid flow through geologic media and related processes. Prereq or Coreq: MTHSC 206 or consent of instructor.

GEOL 421, 621 GIS Applications in Geology 3(1,4) Introduction to geographic information systems with applications to current geological and hydrological problems. Topics include the use of global positioning systems, spatial analysis, and image analysis. Hands-on training with geographic information systems software and techniques is covered in lab. Prereq: Senior standing, strong computer skills.

GEOL 451, 651 Selected Topics in Hydrogeology 1-4(1-3,0-3) Selected topics in hydrogeology, with emphasis on new developments in the field. May be repeated for a maximum of six credits, but only if different topics are covered. Prereq: GEOL 300 or 408, or consent of instructor.

GEOL 475 Summer Geology Field Camp 6(4,6) Introduction to field techniques emphasizing methods applied to hydrogeology. Description and mapping of hydrogeologic units and structures using outcrop data and lithologic and geophysical well logs. Construction of potentiometric maps from water level data. Performance of pumping tests on mapped aquifers and analysis of data to determine aquifer characteristics. Prereq: GEOL 302 and 206, or consent of instructor.
GER 491 Research Synthesis I 4(3,3) Required
capstone group learning and research experience
for Geology majors (open to others with consent
of instructor). Synthesis of applied geology and
other approaches for problem solving through col-
laborative teams. Cumulation of sequence of case
studies. Incorporates social and ethical contexts,
communication skills, and professional develop-
ment. Preq: GER 392 or consent of instructor.

GER 492 Research Synthesis II 4(3,3) Required
capstone group learning and research experience
for Geology majors (open to others with consent
of instructor). Synthesis of applied geology and
other approaches for problem solving through col-
laborative teams. Cumulation of sequence of case
studies. Incorporates social and ethical contexts,
communication skills, and professional develop-
ment. Preq: GER 392 or consent of instructor.

GERMAN
Professors: J. M. Melton, M. M. Riley, M. M. Sinka;
Assistant Professors: G. J. Love, J. Schmidt; Lecturer: L. J. Ferrell

GER 101 Elementary German 4(3,1) Course
for beginners in which, through conversation, com-
position, and dictation, the fundamentals of the
language are taught and a foundation is provided
for further study and the eventual ability to read
and speak the language. Three hours a week of
classroom instruction and one hour a week in the
language laboratory.

GER 102 Elementary German 4(3,1) Continuation
of GER 101; three hours a week of classroom
instruction and one hour a week in the language
laboratory.

GER 104 Basic German 4(3,1) Intensive one-se-
semester program combining GER 101 and 102 for
students who have previously studied German.
Includes fundamentals of grammar and vocabulary
as a foundation for written and oral proficiency.

GER 151 German for Graduate Students 3(3,0)
Intensive program only for graduate students
preparing for the reading examination in German.
A minimum grade of B on a final examination
will satisfy graduate school foreign language
requirement. May be repeated once for credit.
To be taken Pass/Fail only. Preq: Graduate standing.

GER 201, H201 Intermediate German 3(3,1)
Brief review of GER 101 and 102, with conversa-
tion, composition, and dictation, and the read-
ing of more serious German prose in short stories
and plays. Includes literary and cultural perspec-
tives. Preq: GER 102.

GER 202, H202 Intermediate German 3(3,1)
Emphasis on reading non-technical German prose
more rapidly. Writing, speaking, and listening
skills continue to be developed. Includes literary
and cultural perspectives. Preq: GER 201 or con-
sent of instructor.

GER 299 Foreign Language Drama Laboratory
1(0,3) Participation in foreign language drama
productions. No formal class meetings, but an av-
erage of three hours per week in a foreign lan-
guage drama workshop for production. May be
repeated for a maximum of three credits. Preq: Con-
sent of instructor directing the play.

GER 305 German Conversation and Composi-
tion 3(3,0) Training in spoken and written Ger-
man with emphasis on vocabulary acquisition, oral
and written communication strategies, appro-
priate linguistic formulations for specific cultural
contexts, and stylistics. Preq: GER 202 or con-
sent of instructor.

GER 306 The German Short Story 3(3,0) Ex-
amines the Austrian, German, and Swiss short
story as a distinct literary genre that flourished
particularly after 1945. Ample conversation and
composition practice, as well as introduction to
principles of literary prose analysis. Preq: GER 202
or consent of instructor.

GER 310 Summer Immersion Program 6(6,0)
Continued entirely in German for eight hours
daily. Program consists of activities that combine
interrelating cultural topics with language skill
practice. Frequent opportunities to converse with
native speakers during meals and on excursions.
Students receive six credits, three of which may
be taken in lieu of 202. Preq: GER 201.

GER 316 German for International Trade 1
3(3,0) Spoken and written German common to
the German-speaking world of business and indus-
try, with emphasis on business practices and
writing and translating business letters and pro-
fessional reports. Cross-cultural references provide
opportunity for comparative and contrastive
analysis of American and German cultural pat-
terns in a business setting. Preq: GER 202 and
305 (or concurrent enrollment); consent of de-
partment chair.

GER 340 German Culture 3(3,0) Examines the
cultures of German-speaking nations from their
origins to the present. Emphasis is on the Federal
Republic of Germany both before and after the
German unification of 1990. Preq: GER 202 or con-
sent of instructor.

GER 360 German Literature to 1832 3(3,0) Ex-
amines selected topics in German literature from
the Middle Ages to 1832. Readings may include
works by Lessing, Goethe, Schiller, and the Ro-
mantics. Preq: GER 305 or 306 (or concurrent
enrollment) or consent of instructor.

GER 361 German Literature from 1832 to Mod-
ernism 3(3,0) Examines drama, poetry, and prose
from the Biedermeier period through naturalism
and realism to the advent of Modernism. Preq:
GER 305 or 306 or consent of instructor.

GER 369 Special Topics in German Literature
3(3,0) Study of a significant aspect of German
literature. May be repeated for a maximum of six
credits, but only if different topics are covered.
Preq: GER 305 or 306 or consent of instructor.

GER 398 Directed Reading 1-3(1,2,3) Direc-
ted study of selected topics in German literature,
language, and culture. May be repeated for a
maximum of six credits. Preq: Consent of depart-
ment chair.

GER 405 Advanced Contemporary German Lan-
guage 3(3,0) Advanced study of spoken and writ-
ten contemporary German based on modern auto-
bibliographical texts, eyewitness accounts of recent
historical events, and media coverage of current
events. Employs Internet, print and audio texts,
TV programs, and photo series. Preq: One 300-level
German course or consent of instructor.

GER 416 German for International Trade II 3(3,0)
Study of language and cultural environment of
the German-speaking markets of the world, includ-
ing linguistic and cultural idioms which support
global marketing in general and the international
marketing of textiles, agricultural products, and tour-
ism in particular. Preq: GER 316.

GER 417 Topics in German for International
Trade 3(3,0) Examination and analysis of se-
lected topics related to the business culture and
economy of Germany, Austria, Switzerland, the
European Union, or the European Free Trade
Association. Topics may include the reconstruc-
tion of eastern Germany's economy, the expan-
sion of the European Union, or current events
of economic importance. May be repeated for a
maximum of six credits, but only if different top-
ics are covered. Preq: One 300-level German
course or consent of department chair.

GER 450 Advanced Studies in German Drama
3(3,0) Extensive study of a major theme or aspect
of German drama. May include recorded live
performances, stage design, theatre architecture,
and the music and art of the theatre. Preq: GER 305
or 306 or consent of instructor.

GER 455 German Film 3(2,3) Overview of Ger-
man cinema including the expressionist classics
of the Weimar Republic, entertainment and docu-
mentary movies of the Nazi era, classics of the
postwar New German Wave (West Germany), dis-
tinctive East German films, and vanguard con-
temporary films. Preq: GER 305 or 306 or con-
sent of instructor.

GER 460 Modernism in German Literature 3(3,0)
Study of major works of German literature and
culture in the modernist era (1888–1933). May in-
clude drama, music, philosophy, and the plastic arts.
Preq: GER 305 or 306 or consent of instructor.

GER 461 German Literature Since 1933 3(3,0)
Study of selected authors, texts, or genres in con-
temporary German literature. Preq: GER 305
or 306 or consent of instructor.

GER 475 Advanced German Seminar 3(3,0)
Concentrated research and discussion on ad-
vanced topics, works, or texts in German litera-
ture, film, art, drama, music, or philosophy.
Conducted in German. May be repeated for a
maximum of six credits, but only if different topics
are covered. Preq: One 400-level German course
or consent of instructor.

GER 476 Advanced Seminar in German Thought
3(3,0) Concentrated research and discussion on ad-
vanced topics, works, or texts in German litera-
ture, film, art, drama, music or philosophy.
Conducted in English. May be repeated for a
maximum of six credits, but only if different top-
ics are covered. Preq: Senior standing or consent
of instructor.

GER 484, 684 Independent Study 1-3(1,3,0) Su-
 pervised study of selected topics in German lit-
erature, language, or culture. May be repeated for
a maximum of six credits. Preq: Consent of de-
partment chair.
GRAPHIC COMMUNICATIONS

Professors:  S. T. Ingram, Chair;  J. M. Leininger;  Associate Professors:  J. B. Simmons, R. M. Snyder;  Assistant Professors:  E. M. Weisenmiller, N. L. Woolbright;  Lecturers:  K. T. Cox, M. H. Glaser, C. D. Jones, N. W. Leininger, R. N. Mansou, L. H. O'Hara, K. K. Osborne, P. G. Rose, J. K. Sperry;  Visiting Professors:  J. P. Crouch, F. T. Simon, W. E. West;  Adjunct Professor:  S. Edlein;  Adjunct Associate Professor:  L. W. Evans;  Visiting Lecturers:  S. Edlein;  Adjunct Lecturer:  C. Porcher

G C 101 Orientation to Graphic Communications 1(1,0) Introduction to the curriculum and the industry including its processes, products, and careers. Emphasis is placed on the attributes which are most desirable for successful entry and advancement up a variety of career ladders.

G C 104, H104 Graphic Communications I 4(2,6) Emphasis on basic graphic arts industrial concepts, principles, and practices, with laboratory applications in photography, layout and design, conventional and electronic copy preparation, reproduction photography, offset lithography, screen printing, and finishing operations. Flexography, gravure, letterpress, and specialty printing processes are also covered, along with environmental, health, and safety concerns.

G C 207, H207 Graphic Communications II 3(1,6) Continuation of G C 104. Intermediate course for graphic communications and graphic arts specialists which broadens skills and technical knowledge in areas of layout, copy preparation, reproduction photography, film assembly, screen printing, lithographic presswork, and finishing. Preq: G C 101, 104, typewriter/computer keyboarding skills of 20 net words per minute.

G C 215, H215 Photographic and Digital Imaging Techniques 3(1,6) Emphasizes application of black and white and color imaging by photographic and digital technologies. Laboratory experiences assure confidence in the use of photographic and digital techniques for creating and enhancing original images for graphic reproduction and distribution.

G C 245 Graphic Communications Mechanical Systems 3(2,3) Concepts in mechanical systems and their controls as related to equipment and facilities in graphic communications industrial manufacturing. Preq: G C 207 and THR 180, or consent of instructor.

G C 310, H310 Applied Principles of Electronic Workflow 4(2,6) Promotes the refining of skills learned in G C 104 and 207, with an in-depth study and application of computerized press systems and methodologies. Serves as a transition course to the advanced graphic classes teaching offset lithography, flexography, screen printing and gravure. Preq: G C 207, 215, or consent of instructor.

G C 350 Graphic Communications Internship I 1(0,3) Full-time supervised employment in an industrial plant setting for expansion of experience with materials and processes, production people, and organizations. Restricted to Graphic Communications majors. Preq: G C 104 or equivalent, consent of instructor. Coreq: CO-OP 101.

G C 405, H405, 605 Package and Specialty Printing 2(2,0) Problems and processes for printing and converting in package, label, and specialty printing industries. Flexographic preparation, printing, die making, diecutting, transfer printing, screen container printing, pad printing, and bar code production are covered. New developments and trends are discussed. Preq: G C 245, 310, 350; concurrent enrollment in G C 406; or consent of instructor.

G C 406, H406, 606 Package and Specialty Printing Laboratory 2(0,6) Laboratory in techniques for printing and converting in package, label, and specialty printing industries. Experiences in flexographic prepress, printing, die design, die making and diecutting for label, folding cartons and corrugated; and glass, plastic, and metal container printing. Preq: G C 245, 310, 350; concurrent enrollment in G C 405; or consent of instructor.

G C 407, 607 Advanced Flexographic Methods 4(2,6) In-depth study of the methods used in flexographic printing and converting of porous and nonporous substrates. Theory and laboratory applications include setting standards for process color, preparation of plate systems, ink mixing and color matching, testing of films and foils, analysis of recent developments, and prediction of future markets. Preq: G C 406 or consent of instructor.

G C 440, H440, 640 Commercial Printing 5(2,9) Advances skills learned in previous graphic communications courses and applies the knowledge to large format presses. Students work from the design conception stage through all aspects of preproduction, production, and finishing. Emphasis is placed on understanding and incorporating emerging technologies into the production work-flow. Preq: G C 310 and 350 or consent of instructor.

G C 444, H444, 644 Current Developments and Trends in Graphic Communications 4(2,6) Advanced course for Graphic Communications majors. Emphasis is on the theory and technical developments that affect process and equipment selection. Topics include color theory and application, electronic color scanning, electronic prepress and communications, gravure color quality control and analysis. Preq: G C 405, 406, 440.

G C 445, 645 Advanced Screen Printing Methods 3(2,3) In-depth study of the systems and materials used with the screen printing process. Emphasis is placed on techniques of control and procedures for establishing screen printing methods and standards. Preq: G C 207 or consent of instructor.

G C 446, 646 Ink and Substrates 3(2,3) Covers components, manufacturing, process use as well as end use of ink and substrates used in lithography, flexography, gravure, and screen printing. Examines the interrelationship between inks, substrates, and the printing process. Through controlled testing and examination, optimum conditions for improved printability are determined. Preq: G C 405, 406 or 440; or consent of instructor.

G C 448, H448, 648 Planning and Controlling Printing Functions 3(2,3) Study of systems for setting printing production standards, estimating, scheduling, job planning, and the selection of new hardware and technologies. Preq: G C 350, 405, 406, 440, 450 or consent of instructor.

G C 450 Graphic Communications Internship I 1(0,3) Continuation of G C 350. Preq: G C 350 405, 406 or 440; consent of instructor. Coreq: CO-OP 102.

G C 451, H451 Special Projects in Graphic Communications 1-6(0,3-18) Advanced projects covering theory and/or practices going beyond the scope of regular coursework. Written project approval required before registering. May be repeated with advisor's approval. Preq: Junior standing, three graphic communications courses completed, or consent of instructor.

G C 455 Advanced Graphic Communications Internship 1(0,3) Full-time employment in an industry directly or indirectly related to printing. Work site and job must be approved in advance. Preq: G C 350.

G C 480 Senior Seminar in Graphic Communications 2(2,0) Study of current trends and issues in the graphic communications industry. Class centers around group discussions dealing with relevant topics facing the graphic communications manager today. Students draw upon academic experiences, internship experiences, and library research to facilitate discussion. Must be taken during student's last semester on campus. Preq: G C 450.

G C 490, 690 Graphic Communications Selected Topics 1-3 (1-3,0) Subjects not covered in other graphic communications courses; organized according to industry trends and student needs. May be repeated for a maximum of 18 credits, but only if different topics are covered. Preq: Consent of instructor.

GREAT WORKS

G W (ENGL) 301, H301 Great Books of the Western World 3(3,0) Introduces Great Works minor. Includes readings about the Great Books concept, as well as various great books from the humanities, arts, and natural and social sciences. Preq: Sophomore literature (ENGL 207 or 208 strongly recommended).

G W 402, H402 Great Works of Science 3(3,0) Understanding of science in terms of its history and its approach to problem-solving through study of selected great works. Emphasizes developing students' abilities to reflect on the problems and methodologies encountered in the scientific method.

G W 403, H403 Special Topics in Continental Literature 3(3,0) Important primary texts written in modern European languages are taught in English. Content varies according to instructor. Preq: Sophomore literature.
Courses of Instruction

HLTH 460 Health Information Systems 3(3,0)
Focus on the application of information systems to patient care and management support systems. 
Provides a general understanding of how the information needs of health professionals and health service organizations can be met through the proper acquisition, storage, analysis, retrieval, and presentation of data.

HLTH 470 International Health 3(3,0)
Depends students' knowledge of global health and how public health work is conducted internationally. 
Introduction to assessment of international health needs and designing, implementing, managing, and evaluating public health programs in international settings. 
Prereq: HLTH 298.

HLTH 475 Principles of Healthcare Operations Management and Research 3(3,0)
Provides a foundation in concepts, structure, and analysis that enables an understanding of the importance of production/operations management within health-care organizations and systems. 
Includes training in operations research methods and objectives.

Prereq: HLTH 490.

HLTH 478 Health Policy Ethics and Law 3(3,0)
Critical examination of the legal and ethical dimensions of public health policy formation and change and how legal, ethical, and policy considerations influence health services administration and delivery. 
Health majors and minors will be given enrollment priority.

Prereq: HLTH 202, 240, 298, 380 or consent of instructor.

HLTH 479 Financial Management and Budgeting for Health Care Services Organizations 3(3,0)
Overview of basic principles of budgeting and financial management and analysis for health services organizations. Techniques for financial management are provided with an emphasis on health services environments.

Prereq: HLTH 440.

HLTH 480 Community Health Promotion 3(3,0)
Focuses on the participatory approach in the planning and implementation of community health programs. 
Emphasizes professional ethics, needs assessment, coalition building, proposal writing, and implementation of special events in the community.

Prereq: HLTH 303, 340, 380, Health Science major.

HLTH 490 Research and Evaluation Strategies for Public Health 3(3,0)
Discussion of research in health. Focus on analysis of reported research.
Ethical, medical, and legal issues are discussed.

Prereq: EXST 301, MTHSC 203, or 301.

HLTH H495 Honors Thesis Seminar 3(3,0) Senior honors thesis seminar in public health sciences. 
Independent research is conducted under the supervision and guidance of a faculty mentor for students enrolled in departmental honors program in support of an honors thesis/service learning research project. 
Prereq: HLTH H395, Senior standing, or consent of instructor.

HLTH H496 Honors Research Colloquium 1(1,0)
Students enrolled in departmental honors present independent research conducted under the supervision of a faculty member in a public research forum to other honors students and public health professionals and/or submit a paper or presentation based on this research for publication.

Prereq: HLTH H495, Senior standing.

HLTH 498, 698 Improving Population Health 3(3,0) 
Critical examination of current and emerging issues in improving public health practice and population health. 
Covers examples in empirical and applied research, revealing future trends in population health. 
Health Science majors and minors will be given enrollment priority.

Prereq: HLTH 240, 298, 380, or consent of instructor.

HLTH 499 Independent Study 1-3(1-3,0) 
Study of selected problems in health under the direction of faculty member chosen by the student. 
Student and faculty must develop a course of study designed for the individual student and approved by the department chair prior to registration. A course of study may be repeated for a maximum of three credits.

Prereq: Junior standing or consent of instructor.

HISTORIC PRESERVATION

Professor: J. Burden

H P 410, 610 History and Theory of Historic Preservation 3(3,0)
Survey history of preservation that explores a variety of theoretical issues that impact the discipline. Provides a basis for critical evaluation of historic preservation.

Prereq: Three semesters of Art and Architectural History or equivalent or consent of instructor.

H P 411, 611 Research and Documentation in Historic Preservation 3(3,0) 
Introduction to documenting and recording historic buildings and landscapes. 
Charleston and its environs provide case study projects for archival research, field investigation, and preparation of final documentation.

Prereq: Three semesters of Art and Architectural History or equivalent or consent of instructor.

H P 412, 612 Materials and Methods of Historic Construction 3(3,0) 
Survey of traditional materials and methods of construction in America from the 18th through the early 20th century. 
Scientific examination of historic construction provides case studies.

Prereq: Three semesters of Art and Architectural History or equivalent or consent of instructor.

HISTORY


HIST 100 Higher Education and Clemson 1(1,0)
Introduction to higher education; its background and development in the western world, emphasizing land-grant institutions and Clemson University in particular.

HIST 101, H101 History of the United States 3(3,0)
Political, economic, and social development of the American people from the period of discovery to the end of Reconstruction.

HIST 102, H102 History of the United States 3(3,0) 
Political, economic, and social development of the American people from the end of Reconstruction to the present.

HIST 122, H122 History, Technology, and Society 3(3,0) 
Topics in the history of technology with emphasis on how technology affects society and how society shapes technology. 
Emphasis is on 19th and 20th century America, but some material from other periods of Western Civilization and other world regions may be discussed.

HIST 172, H172 Western Civilization 3(3,0) 
Political, economic, and social movements of Western civilization from ancient times to the 17th century.

HIST 173, H173 Western Civilization 3(3,0) 
Political, economic, and social movements of Western civilization from the 17th century to the present.

HIST 193 Modern World History 3(3,0) 
Political, economic, social, and cultural history of the modern world from the 19th century to the present.

HIST 198 Current History 1(1,0) 
Examination of major events and problem areas in the news with emphasis on their historical context and possible long-range significance. 
May be repeated for a maximum of three credits.

Does not count toward the requirements of the major or minor in History.

HIST 200 Fort Hill Internship 1(0,1) 
Provides practical experience in public history museum work and historical preservation. May be repeated for a maximum of three credits.

Does not count toward the major or minor in History.

To be taken Pass/Fail only. 
Prereq: Consent of department chair.

HIST 201 Prelaw Internship 3 Faculty-supervised internship in law firm or other legal setting. 
Introduces students who are interested in law school to the workings of the legal system.

Offered summer session only. To be taken Pass/Fail only. 
Prereq: History major or minor and HIST 328 or 329 (with consent of internship coordinator).

HIST 299 Seminar: The Historian's Craft 4(3,2) 
Writing and speaking intensive course to introduce History majors to study of what history is and what a historian does, including historiography, research techniques, ethics of the historical profession, and forms of presentation.

Prereq: History major.

HIST 300 History of Colonial America 3(3,0) 
Development of American institutions and customs in the period before 1776. 
Considerable emphasis is placed on the imperial relations between Great Britain and her colonies and upon the movement towards and the philosophy of the American Revolution.

HIST 301 American Revolution and the New Nation 3(3,0) 
Study of the various historical explanations leading to an understanding of the American Revolution, the establishment of the Nation under the Constitution, and the first decade of the new nation. Special emphasis is on developing an understanding of individual motivations and ideological development present during the last four decades of the 18th century.

HIST 302 Age of Jefferson, Jackson, and Calhoun 3(3,0) 
Formation and growing pains of the new nation through the Federal and Middle periods of its history, with emphasis on economic and political development, the westward movement, and the conflicting forces of nationalism and sectionalism.
HIST 303 Civil War and Reconstruction 3(3,0) Study of the political, military, and social aspects of the sectional conflict and of the era of Reconstruction. Some emphasis is placed on the historical controversies which the period has inspired.

HIST 304 Industrialism and the Progressive Era 3(3,0) Study of American society in the period between the 1880s and 1930s. Emphasizes the effects of industrialization and urbanization on the American people.

HIST 305 The United States in the Jazz Age, Depression, and War: 1918-1945 3(3,0) Starting at Armistice Day, 1918, course analyzes the dawn of the ages of mass consumption and mass communication, the Crash of 1929, Franklin Roosevelt and the New Deal, the gathering war clouds in Europe and Asia, and the Great Crusade of World War II. Prereq: Sophomore standing.

HIST 306 The United States in the Postwar World: 1945-1975 3(3,0) Examination of the American experience from the end of World War II through the period of the Korean and Vietnam wars, the Cold War, the Civil Rights movement, the counter-culture of the 1960s, assassinations, and Watergate.

HIST 308 The United States in the Age of Reagan and Clinton: 1975-Present 3(3,0) The United States and the world in the recent era of economic and political upheaval, the end of the Cold War, the rise of the global economy and terrorism, social and cultural change, and deepening political and social divisions. Prereq: Sophomore standing.

HIST 311 African Americans to 1877 3(3,0) Study of the African-American experience in the United States from the past through slavery to 1877.

HIST 312 African American History from 1877 to the Present 3(3,0) Study of African American experience in the United States from 1877 to the present.

HIST 313, H313 History of South Carolina 3(3,0) Political, economic, and social development of South Carolina from 1670 to the present.

HIST 314 History of the South to 1865 3(3,0) Origins and development of political, social, economic, and cultural institutions of the South from the Colonial period to the end of the Civil War and the role of the South in the nation's development.

HIST 316 American Social History 3(3,0) Study of American society, including the relationship among classes, ethnic groups, regions, and sexes, from the Colonial period to the present.

HIST 318 History of American Women 3(3,0) Survey course of the history of American women emphasizing the changing role of women in American culture and society.

HIST 319 Women and Law in United States History 3(3,0) Survey of the legal status of women throughout United States history. Emphasis is on the relationship between legal rules and social conditions and the way in which law defined the status of women over time and helped change their status and rights.

HIST 321 History of Science 3(3,0) Survey of the development of science in the Western world, emphasizing the period from the Renaissance to the present.

HIST 322 History of Technology 3(3,0) History of the major developments in Western technology and their relationships to the societies and cultures in which they flourished.

HIST 323 History of American Technology 3(3,0) History of developments in technology and their role in American life with particular emphasis on the American Industrial Revolution and the 20th century.

HIST 324 History of the South, 1865 to the Present 3(3,0) Development of political, social, and cultural institutions of the South from the end of the Civil War to the present and the South's relationship to the rest of the nation.

HIST 325 American Economic Development 3(3,0) Economic development of the United States from Colonial times to recent times, emphasizing the institutional development of agriculture, banking, business and labor, and government regulations and policy.

HIST 327 American Business History 3(3,0) Survey of the history of American business using a case-study approach. Focus is on the effects that policies and institutions have on individual businesses.

HIST 328 United States Legal History to 1890 3(3,0) Survey of American legal system in its historical perspective from Colonial times to 1890. Emphasis is on the relationship between law and society, the way in which the practice of law changed American society, and the way in which social development affected both the theory and practice of the law.

HIST 329 United States Legal History Since 1890 3(3,0) Examination of the social, cultural, intellectual, economic, and political forces that have helped shape the law in the U.S. since 1890.

HIST 330 History of Modern China 3(3,0) Growth and development of Chinese civilization from ancient times to the present. Emphasis is on the 20th century China, particularly since the rise to power of the Communist regime.

HIST 333 History of Modern Japan 3(3,0) Origin and development of Japanese civilization with particular emphasis on modern Japan from mid-19th century to the present.

HIST 334 Premodern East Asia 3(3,0) Introduction to histories of China and Japan, from antiquity to approximately 1850. Political, religious, artistic, and other aspects of premodern society are examined and compared in order to gain significant insights regarding the premodern antecedents of these two dynamic and important nations.

HIST 337 History of South Africa 3(3,0) Examines the important trends in the history of South Africa from earliest times to the present. Topics include nature of pre-colonial society, European immigration, rise of industrial capitalism, advent of Apartheid, and the liberation struggle.

HIST 338 African History to 1875 3(3,0) Study of sub-Saharan Africa from antiquity to European colonial rule, exploring the development of Stone Age cultures; agricultural and pastoral societies; ancient civilizations; political, economic, and social systems; gradual shift of initiative from the interior to the coast; and various slave trades.

HIST 339 Modern Africa, 1875 to the Present 3(3,0) Study of sub-Saharan Africa from 1875 to the present, with the focus placed upon the development and decline of European imperialism, dilemmas of African independence, and ethnic struggles in Southern Africa.

HIST 340 Ancient Americans 3(3,0) Introduction to the geography of the Western Hemisphere; origin of human life in the Americas; structure and accomplishments of the major pre-Columbian societies, with emphasis on the rise and decline of the Classic civilizations; the impact of the European conquest, the formation of a new Ibero-American culture.

HIST 341 Modern Mexico 3(3,0) Introduction to the geography of the region, origins, and progress of the independence movements and political, economic, and social developments after 1825; current domestic and international problems.

HIST 342 South America Since 1800 3(3,0) Introduction to the geography of the region; origins and progress of the Independence movements; political, economic, and social developments after 1825; current domestic and international problems.

HIST 351 Ancient Near East 3(3,0) History of the peoples and civilizations of the Near East from the Sumerians to the establishment of Roman power in this region. Geography, mythology, religious, and economic currents, as well as the methods and discoveries of archaeology are included.

HIST 352 Egypt in the Days of the Pharaohs 3(3,0) Egyptian civilization from its beginning until the period of the Roman conquest. Includes a survey of political history, but also deals with daily life, making much use of archaeological evidence.

HIST 353 Women in Antiquity 3(3,0) Focuses on women in the ancient period in Mesopotamia, Israel, Egypt, Greece, Rome, and in the early Christian Church. Formation of gender roles and issues related to ancient sexuality also receive attention.

HIST 354 The Greek World 3(3,0) Study of Greek civilization from its beginning until the time of the Roman conquest, concentrating on the social institutions of the Greek city-states.

HIST 355 The Roman World 3(3,0) The rise of Rome to world empire and the international civilization it dominated. Concentration on the nature of the political change from Republic to monarchy with particular emphasis on city life and the causes of its decline.

HIST 361 History of England to 1688 3(3,0) Evolution of English political, social, economic, and cultural institutions to the 17th century. (Study Abroad)

HIST 363 History of England Since 1688 3(3,0) Evolution of English political, social, economic, and cultural institutions from the 17th century to the present.

HIST 365 English Cultural History 3(3,0) Survey of the cultural history of England, from Anglo-Saxon times to the present, focusing on the period after the English Renaissance.

HIST 370 Medieval History 3(3,0) Survey of the period from the eclipse of Rome to the advent of the Renaissance, emphasizing human migrations, feudalism, rise of towns, and cultural life.
HIST 372 The Renaissance 3(3,0) Examination of the transitional period of European civilization (ca. 1300–1500), with emphasis on institutional, cultural, and intellectual developments.

HIST 373 Age of the Protestant Reformation 3(3,0) Evolution of Modern Europe (ca. 1500–1660), as affected by the Reformation, wars of religion, and growth of nation-states. Study includes intellectual advances and the beginnings of European expansion overseas.

HIST 374 Europe in the Age of Reason 3(3,0) Study of the quest for order and the consolidation of the European state system between 1660 and 1789 with emphasis on the idea of absolutism, the question of French hegemony, and the synthesis of the 18th-century Enlightenment.

HIST 375 Revolutionary Europe 3(3,0) History of Europe from the outbreak of the French Revolution through the Revolutions of 1848, with emphasis on the conflict between the forces of change and those of conservatism, within the states and in Europe in general.

HIST 377 Europe, 1914–1945 3(3,0) Focus on Europe during two major wars and the peace-time adjustments Europeans made, or failed to make, during the twenty-year interim between those wars.

HIST 378 Europe Since 1945 3(3,0) Focus on how World War II completed the destruction of European global hegemony, creating a bipolar continent with the west dominated by the United States and the east by Soviet Russia; and how Europe adjusted to this situation.

HIST 380 Imperial Germany 3(3,0) German history from the beginning of the German Empire, 1870–71, through World War I. Emphasizes the influence of militarism, nationalism, anti-Semitism, and xenophobia on the German culture and political process.

HIST 381 Germany Since 1918 3(3,0) German history from the time of Germany's defeat in World War I, through the Nazi period and World War II. Concludes with the study of a divided Germany.

HIST 384 History of Modern France 3(3,0) French history from mid-19th century to the present with particular emphasis on France since 1900.

HIST 385 History of Imperial Russia 3(3,0) Survey of the formative years of the Russian Empire from the time of accession of Peter the Great to the time of the Russian Revolution. Social, political, diplomatic, and intellectual developments are given equal treatment.

HIST 386 History of the Soviet Union 3(3,0) Soviet history from the revolution to the present. Surveys the creation and subsequent development of the communist political and social system, with attention given to culture and diplomacy.

HIST 387 The Russian Revolution 3(3,0) History of one of the most formative series of events of the 20th century. Follows the crisis of Imperial Russia, its downfall during World War I, and subsequent revolutionary upheaval leading to the formation of the USSR.

HIST 390 Modern Military History 3(3,0) Survey of the development of modern warfare and the influence of technological change on warfare. Particular attention is given to the major conflicts of the 20th century.

HIST 391 Post World War II World 3(3,0) The world in the age of the Cold War, the breakdown of the colonial empires, and racial, religious, ethnic, national, and social tensions. The United States provides the central core to the class.

HIST (F&RR) 392 History of the Environment of the United States 3(3,0) Examination of the historical development of the attitudes, institutions, laws, people, and consequences that have affected the environment of the United States from pre-Columbian days until the present. Emphasis is placed on the interaction of human beings within and with the environment.

HIST 393 Sports in the Modern World 3(3,0) Analysis of the global evolution and diffusion of sports in the industrial age, with emphasis on the linkage of sports structure and performance to the larger social context.

HIST 394 Non-Western History 3(3,0) Examines the important trends in world history since 1500—including capitalism, industrialization, nationalism, migration, and imperialism—with a focus on non-Western regions. Preq: HIST 173.

With departmental consent, any 400- or 600-level course in history—except HIST 409, 436, 451, and 490—may be repeated once for credit. These courses require students to do historical research and writing.

HIST 400, 600 Studies in United States History 3(3,0) Topics and problems in the history of the United States from the Colonial era to the present.

HIST 409 Kennedy Assassination and Watergate 3(3,0) Journey into the underbelly that examines the diverse elements of national security, divisive politics, the Cold War and Cuba, FBI, CIA, the mob, fanaticism, anomic, and threats to the stability of the republic that seem to have come together in Dallas in 1963 and in Watergate. May not be repeated. Preq: Junior standing.

HIST 420, 620 History and Film 2(3,3) Analyzes the role of the cinema in the construction and dissemination of history.

HIST 428, 628 A Famous American Trial 3(3,0) Study of the social, cultural, and legal context of a famous American trial. Consideration is given to the actual trial record (transcripts, briefs, and opinions on appeal) and to historical studies of the time and place in which the trial arose. Trial selected varies. Preq: HIST 328 or 329 or consent of instructor.

HIST 436, 636 The Vietnam Wars 3(3,0) Wars in Vietnam are seen in two phases. The First Indochina War, 1946–54, is covered briefly. Main body of the course covers the Second Indochina War, which began as a guerrilla conflict in 1959–60 and ended as a mostly conventional war in the Communist victory of 1975.

HIST 438, 638 Problems in African Historiography and Methodology 3(3,0) Concentrates on major issues in the field of African history with an additional focus on methodological concerns.

HIST 440, 640 Studies in Latin American History 3(3,0) Consideration of selected and varied topics in Latin American history through readings, discussions, and individual or group projects. Special attention is given to the use of an inquiry or problem-solving method of historical analysis and to the cultivation of a comparative perspective.

HIST 450, 650 Studies in Ancient History 3(3,0) Selected topics in ancient history ranging from pre-Biblical times to the fall of the Roman Empire.

HIST 451, 651 Alexander the Great 3(3,0) Focuses on the career of Alexander the Great and deals with the history and archaeology of ancient Macedonia.

HIST 460, H460, 660 Studies in British History 3(3,0) Examination of selected themes, topics, or periods in British history from Anglo-Saxon times to the present.

HIST 470, 670 Studies in Early European History 3(3,0) Study of selected topics or themes in European history from the fall of the Roman Empire to the age of industrialization.

HIST 471, H471, 671 Studies in Modern European History 3(3,0) Study of selected topics or problems in European history from the end of the Old Regime to the present.

HIST 490 Senior Seminar 3(3,0) Seminar in current research themes in history. Students conduct directed research on a particular topic and learn research, writing, and oral presentation techniques. Seminar topics vary from section to section and from semester to semester. Preq: Senior standing in History or consent of instructor.

HIST 491, H491, 691 Studies in the History of Science and Technology 3(3,0) Selected topics in the development of science and technology, with emphasis on their social, political, and economic effects.

HIST 492, 692 Studies in Diplomatic History 3(3,0) Selected topics and problems in international conflict and conflict resolution among nations. Concentration is usually in 20th-century history.

HIST 493, 693 Studies in Social History 3(3,0) Studies in the ways people have earned their livings and lived their lives, individually and as communities, in the confines of different societies.

HIST 494, 694 Studies in Comparative History 3(3,0) Selected topics in comparative history, contrasting and comparing similar historic developments in different nations, geographic areas, or civilizations.

HIST 495, 695 Studies in the History of Ideas 3(3,0) Selected topics and themes in the development of ideas that have had an impact on the behavior of individuals and civilizations.

HIST 496, 696 Studies in Legal History 3(3,0) Study of selected problems in the development of law and the system of criminal and civil justice.

HIST H497 Senior Honors Research 3(3,0) Research for the preparation of senior honors thesis. Preq: Senior standing, completion of a 400-level history course, approval of the History Department.

HIST H498 Senior Honors Thesis 3(3,0) Writing of the senior honors thesis. Preq: HIST H497.

HIST H499 Independent Study 1-3(1-3,0) Study of selected problems in history under the direction of a faculty member chosen by the student. Student and faculty member develop a course of study designed for the individual student and approved by the department chair prior to registration.
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<th>Course Code</th>
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<td>HORT 471</td>
<td>671 Advanced Internship 1-6 (0,2-12)</td>
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<td>HORT 472</td>
<td>672 Garden Experiences in Youth Development 2 (1,3)</td>
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HUMANITIES
Professor: S. K. Eisinger; Associate Professor: A. Bennett

HUM 301 Humanities 3(3,0) Introduction to humanistic studies focusing on relationships among disciplines—painting, sculpture, architecture, music, literature, philosophy, and drama—beginning with prehistory and continuing to the Renaissance.

HUM 302 Humanities 3(3,0) Introduction to humanistic studies focusing on relationships among disciplines—painting, sculpture, architecture, music, literature, philosophy, and drama—beginning with the 17th century and continuing to the present.

HUM 306 Creative Genius in Western Culture 3(3,0) Investigation of creativity through study of great innovators in art, literature, music, and ideas. May be repeated once for credit.

HUM 309 Studies in Humanities 3(3,0) Interdisciplinary approach to the humanities. Special subject matter varies according to the instructor and as approved by the chair of the English Department. May be repeated once for credit.

HUM (ENGL) 456, 656 Literature and Arts of the Holocaust 3(3,0) See ENGL 456.

INDUSTRIAL ENGINEERING
Professors: A. K. Gramopadhye, Chair; D. L. Kimbler; Associate Professors: B. R. Cho, W. G. Ferrell, Jr., J. S. Greenstein, B. J. Mellor; Assistant Professors: M. E. Kurt, K. M. Taaffe

IE 201 System Design I 4(3,0) Introduction to the design of industrial engineering systems. Design methodologies are introduced in the context of a design process that includes identifying user needs; developing a design specification; generating, evaluating, refining, and selecting design concepts; detail design; constructing, testing, and refining prototypes; and delivering the product to the customer. Prereq: CES 102, ENGL 103.

IE 210 Design and Analysis of Work Systems 4(3,3) Workplace design, ergonomics of workplace design, performance measurement, and methods engineering are discussed.

IE 220 Design of Information Systems in Industrial Engineering 3(3,0) Introduction to Visual Basic and object-oriented programming principles, databases, and software applications of human-centered system design.

IE 280 Methods of Operational Research I 3(3,0) Introduction to operations research models, including linear programming, integer linear programming, transportation and assignment problems, and network flow. Prereq: MTHSC 106.

IE 300 Junior Honors Seminar 1(1,0) A quires students enrolled in the Departmental Honors Program with current research issues in the profession. This assists students in preparing a research proposal for the senior thesis. Prereq: Junior standing, admission to Departmental Honors Program.

IE 360 Industrial Applications of Probability and Statistics 3(3,0) Axioms of probability, discrete and continuous distributions, and sampling distributions applied to industrial engineering applications. Engineering applications of statistical estimation, hypothesis testing, and confidence intervals. Prereq: MTHSC 206.

IE 361 Industrial Quality Control 3(3,0) Quality engineering techniques focusing on process control using statistical methods including control charts and acceptance sampling. Prereq: IE 360.

IE 368 Professional Practice in Industrial Engineering I 1(1,0) Seminar to orient students to issues of professional development and professional practice of industrial engineering.

IE 381 Methods of Operational Research II 3(3,0) Probabilistic modeling of engineering systems. Topics include calculus-based probability, decision analysis, Markov processes, queuing, and reliability. Prereq: IE 280, 360.

IE 384 Engineering Economic Analysis 3(3,0) Basic principles and techniques of economic analysis of engineering projects. Consideration of time, value of money, short- and long-term investments, replacement analysis, depreciation methods, cost allocation, and measures of cost effectiveness. Prereq: MTHSC 108.

IE 386 Production Planning and Control 3(3,0) Fundamentals of forecasting demand, scheduling production, and controlling the movement and storage of materials required with production are studied. State-of-the-art manufacturing techniques are discussed. Prereq: IE 280, CP SC 161 or IE 220.

IE 440, 640 Decision Support Systems in Industrial Engineering 4(3,2) Design of decision support systems for production and service systems based on operations research models. Use of spreadsheets, databases, and integrated software development environments to implement decision support systems. Prereq: IE 280; CP SC 161 or IE 220.

IE (MGT) 444 International Perspectives in Industrial Management 3(3-3,0) See MGT 444.

IE 452, 652 Reliability Engineering 3(3,0) Probabilistic approach to assessing system reliability. Methods for analyzing serial, parallel, and complex systems. Reliability life testing and its acceleration are covered. Essential elements of maintainability are identified and related to system availability. Prereq: IE 360.

IE 456, 656 Service Chain Design and Control 3(3,0) Industrial engineering aspects of supply chains including design and control of material and information systems. Prereq: IE 360.

IE 460, 660 Quality Improvement Methods 3(3,0) Study of modern quality improvement techniques presented in an integrated, comprehensive context. Prereq: Senior standing.

IE 461, 661 Quality Engineering 3(3,0) Design aspects of quality and the engineer's role in problems of quality in production systems. Prereq: IE 360.

IE 465, 665 Facilities Planning and Design 3(3,0) Study of the principles and techniques of plan layout. Economic selection of materials handling equipment and integration of the equipment into the layout plan to provide effective product flow. Quantitative techniques for evaluation of facilities plans. Design project is required. Prereq: IE 280.

IE 467, 667 Industrial Engineering: Design II 3(3,2) Provides students with the challenge of synthesizing and integrating general engineering knowledge into creatively solving real-world, open-ended problems. This includes developing the problem statement, objectives, and criteria; data collection; technical analysis; developing and integrating recommendations; and presenting results. Prereq: All required industrial engineering courses in the Industrial Engineering curriculum.

IE 482, 682 Systems Modeling 4(4,0) Modeling of discrete industrial systems using a digital computer. The purpose, theory, and techniques of system modeling are presented. Prereq: IE 381.

IE (BE, EE&S) 484, 684 Municipal Solid Waste Management 3(3,0) See EE&S 484.

IE 485, 685 Industrial Systems Engineering 3(3,0) Modeling and analysis of multistage decision processes, recursive optimization, process and system design, and control problems. Prereq: IE 280, 381.

IE 487, 687 Industrial Safety 3(3,0) Recognition and prevention of hazards; recognition and control of hazardous materials; developing and managing a safety program; designing inherently safe equipment and workplaces. Prereq: Junior standing.

IE 489, 689 Industrial Ergonomics and Automation 3(2,3) Physical ergonomics and ergonomics in industrial settings, including work physiology, the physical environment, automated systems, and hybrid work systems. Prereq: IE 210.

IE 491, H491, 691 Selected Topics in Industrial Engineering 3(3-0,3,0-9) Comprehensive study of any timely or special topic in industrial engineering not included in other courses. May be repeated for a maximum of six credits. Prereq: Consent of instructor.

INTEGRATED PEST MANAGEMENT
Professor: D. Alverson

IPM 401, 601 Principles of Integrated Pest Management 3(3,0) Origin, theory, and practice of integrated pest management. Relationships among crop production and protection practices are explored. Economics of various control strategies are considered. Integrated pest management field projects are studied. Conventional and integrated pest management approaches are compared. Multidisciplinary plant problem analysis is introduced. Prereq: CSENV 407, ENT 301, PL PA 310, or consent of instructor.

ITALIAN
Associate Professor: B. M. Zaceck; Lecturer: J. Bridgwood

ITAL 101 Elementary Italian 4(3,1) Introductory course stressing grammar, pronunciation, oral practice, and reading skills. Attention is given to practical everyday living as well as cultural considerations.

ITAL 102 Elementary Italian 4(3,1) Continuation of ITAL 101. Prereq: ITAL 101 or consent of instructor.
ITAL 201, H201 Intermediate Italian 3(3,1) Intermediate course to build on the foundation of previous language courses, with practice in listening, speaking, reading, and writing. Introduction to cultural perspectives through readings of literary prose selections. Prereq: ITAL 102.

ITAL 202, H202 Intermediate Italian 3(3,1) Increasingly difficult readings in Italian literature, supplemented with classroom discussions and compositions. Prereq: ITAL 201.

ITAL 301 Introduction to Italian Literature 3(3,0) Study of selected texts of Italian literature in their artistic, cultural, and social context. May include theme and genre studies. Prereq: ITAL 202 or consent of department chair.

ITAL 302 Modern Italian Literature 3(3,0) Study of selected works from major 19th and 20th century Italian authors, including Manzoni, Verga, Svevo, Moravia, Ginzburg. Prereq: ITAL 202 or consent of department chair.

ITAL 305 Intermediate Italian Conversation and Composition 3(3,0) Practice in the written and spoken language with emphasis on vocabulary, pronunciation, and comprehension. Prereq: ITAL 202 or consent of department chair.

ITAL 306 Japanese Civilization and Culture 3(3,0) Study of the significant aspects of Italian civilization and culture through analysis of literary texts, paintings, films, and magazine articles. Prereq: ITAL 202 or consent of department chair.

ITAL 307 Italian Civilization and Culture 3(3,0) Study of the significant aspects of Italian civilization and culture through analysis of literary texts, paintings, films, and magazine articles. Prereq: ITAL 202 or consent of department chair.

ITAL 308 Intermediate Italian Conversation and Composition 3(3,0) Practice in the written and spoken language with emphasis on vocabulary, pronunciation, and comprehension. Prereq: ITAL 202 or consent of department chair.

ITAL 309 Japanese Civilization I 3(3,0) Study of the significant aspects of the culture of Japan. Prereq: ITAL 202 or consent of department chair.

ITAL 310 Japanese Civilization II 3(3,0) Study of significant aspects of the culture of Japan. Prereq: ITAL 202 or consent of department chair.

ITAL 398 Directed Reading 1-3(1-3,0) Directed study of selected topics in Italian literature, language, and culture. May be repeated for a maximum of six credits. Prereq: Consent of department chair.

ITAL 400 Image of an Italian City 3(3,0) Study of historical, social, and architectural images of Italian cities through analysis of literary texts and films. Prereq: ITAL 202 or consent of instructor.

ITAL 489 Selected Topics 3(3,0) Study of selected topics in Italian literature, language, and culture. Taught in Italian. May be repeated for a maximum of six credits, but only if different topics are covered. Prereq: Consent of department chair.

JAPANESE

Associate Professor: T. Kishimoto; Assistant Professor: E. L. Williams; Lecturers: M. Shimura, I. Tokunaga

JAPN 101 Elementary Japanese 4(3,1) Course for beginners. Fundamentals are taught, and a foundation is provided for further study and the eventual ability to read and speak the language. The Japanese writing system is introduced. Students learn how to recognize and write the two alphabets Hiragana and Katakana. Three hours a week of classroom instruction and one hour a week in the language laboratory.


JAPN 202 Intermediate Japanese 3(3,1) Brief review of JAPN 201, with conversation, composition, and dictation based on more difficult Japanese reading selections; includes a continuation of Kanji characters. Prereq: JAPN 201.

JAPN 303 Intensive Conversation and Composition in Japan 3(3,0) Study of Japanese with native instructors at a university in Japan. All coursework conducted in Japanese. May be repeated for a maximum of six credits. Prereq: JAPN 202 or consent of instructor.

JAPN 305 Japanese Conversation and Composition 3(3,0) Practice in the spoken language with emphasis on vocabulary, Kanji, pronunciation, and comprehension; learning practical language skills and intercultural communication through various topics. Prereq: JAPN 202 or consent of department chair.

JAPN 306 Japanese Conversation and Composition 3(3,0) Continuation of JAPN 305. More practice in the spoken language with emphasis on vocabulary, Kanji, pronunciation, and comprehension. Learning practical language skills and intercultural communication through various topics. Prereq: JAPN 305 or consent of department chair.

JAPN 307 Japanese Civilization I 3(3,0) Study of the significant aspects of the culture of Japan. Prereq: JAPN 202 or consent of department chair.

JAPN 308 Japanese Civilization II 3(3,0) Study of significant aspects of the culture of Japan. Prereq: JAPN 202 or consent of department chair.

JAPN 316 Japanese for International Trade 3(3,0) Spoken and written Japanese common to the Japanese-speaking world of business and industry, with emphasis on business practices and writing and translating business letters and professional reports. Cross-cultural references provide opportunity for comparative and contrastive analysis of American and Japanese cultural patterns in a business setting. Prereq: JAPN 306 or consent of department chair.

JAPN 398 Directed Reading 1-3(1-3,0) Directed study of selected topics in Japanese literature, language, and culture. May be repeated for a maximum of six credits. Prereq: Consent of department chair.

JAPN 401 Japanese Literature in Translation 3(3,0) Introduction to Japanese literature from 712 A.D. to the present. Cultivates an appreciation for Japanese literature and culture. All readings and discussions are in English. May not be used to satisfy general foreign language requirements.

JAPN 403 Internship in Japan 3(3,0) Minimum of one month of full-time work experience in Japan. All work activities with host companies conducted in Japanese. May be repeated for a maximum of six credits. Prereq: JAPN 202 or consent of instructor.

JAPN 404 Cultural Studies in Japan 3(3,0) Study of Japanese cultural topics on site in Japan through lectures, field trips, small student group reconnaissance excursions, and reporting sessions. All activities conducted in Japanese. May be repeated for a maximum of six credits. Prereq: JAPN 202 or consent of instructor.

JAPN 406 Introduction to Japanese Literature 3(3,0) Students read contemporary Japanese narrative fiction, poetry, and drama in their historical and cultural context. Prereq: 300-level Japanese course or consent of department chair.

JAPN 411 Studies in the Japanese Language I 3(3,0) Advanced training in the spoken and written language with emphasis on formal expressions. Prereq: JAPN 306 or consent of department chair.

JAPN 412 Studies in the Japanese Language II 3(3,0) In-depth study of Kanji characters. Prereq: JAPN 411 or consent of department chair.

JAPN 416 Japanese for International Trade II 3(3,0) Study of language and cultural environment of the Japanese-speaking market, including the linguistic and cultural idioms which support global marketing in general and the international marketing of textiles, agricultural products, and tourism in particular. Prereq: JAPN 316 or consent of department chair.

JAPN (ANTH) 417 Japanese Culture and Society 3(3,0) Focuses on basic themes in Japanese culture found in social interaction and ritual behavior. Japanese social organization, including marriage and family patterns, neighborhood and community organization, and gender roles receive extensive attention. All readings and discussions in English. May not be used to satisfy general foreign language requirements.

JAPN 490 Classical Japanese 3(3,0) Examination and analysis of premodern Japanese texts. Special emphasis is on the grammar and syntax of the classical language, its divergence from and influence upon the modern idiom. All coursework is conducted in Japanese. Prereq: JAPN 306 or consent of instructor.

JAPN 491 Senior Seminar in Japanese Literature 3(3,0) Close readings of various works of premodern and modern Japanese literature; study of important authors and their representative works in prose and poetry. Familiarizes students with the cultural and linguistic nuances of literature in the original language. All readings and activities in Japanese. Prereq: JAPN 306.

JAPN 499 Selected Topics in Japanese Culture 3(3,0) Topic-generated examination of fundamental cultural themes in premodern and modern Japan, including, but not limited to, such topics as Japanese drama, poetry, prose, religious traditions, cinema, and folklore/mythology. May be repeated for a maximum of six credits, but only if different topics are covered. Readings and discussions in English. May not be used to satisfy general foreign language requirements.

LANDSCAPE ARCHITECTURE

Professors: F. E. Chamberlain, D. L. Collins, D. J. Nadenicek; Chair: Associate Professor: S. Burmil, U. Yilmaz; Assistant Professor: C. L. Goetcheus; Visiting Assistant Professor: R. R. Hewitt; Lecturers: R. W. Bainbridge, C. L. E. Martin

LARCH 103 Landscape Architecture Portfolio I 1(1,0) First of two one-credit portfolio courses. Students learn basics of a digital portfolio as a record of academic achievement and the specific use of a portfolio in landscape architecture. Prereq: Landscape Architecture major or consent of instructor.
Courses of Instruction

LARCH 116 History of Landscape Architecture 3(3,0) History of design on the land from prehistoric to the present. Overview of the interface of aesthetics, science, technology, and natural features that influence cultures in shaping places.

LARCH 128 Technical Graphics 3(2,2) Introduction to rendering techniques, plan graphics, 3-D projection drawings, drafting skills, perspective drawing, and overview of computer graphics. Prereq: Landscape Architecture major.

LARCH 151 Basic Design I 3(0,6) Studio introduction to design fundamentals through 2D and 3D application of basic systems and development of attitudes essential to the creative design process. Prereq: Landscape Architecture major. Coreq: LARCH 153.

LARCH 152 Basic Design II 3(0,6) Further investigations into design fundamentals through 2D and 3D application of basic systems and development of attitudes essential to the creative design process. Prereq: Landscape Architecture major. Coreq: LARCH 153.

LARCH 153 Landscape Architecture Design Theory I 1(1,0) Lecture course on the underlying theories of design and visual perception that constitute the language of design. Topics include conceptual thinking and problem solving, visual communication, and interaction between design elements and principles. Prereq: Landscape Architecture major. Coreq: LARCH 151.

LARCH 154 Landscape Architecture Design Theory II 1(1,0) Second in a series of lecture courses on the underlying theories of design and visual perception that constitute the language of design and landscape architecture. Topics include light and value perception, color theories, basic perspective systems. Prereq: LARCH 151, 153. Coreq: LARCH 152.

LARCH 251 Landscape Architecture Design Fundamentals 6(1,10) Development of compositional skills introduced in LARCH 151 and applied to design in the landscape. Through design projects, readings, and discussion, students derive and apply design principles to place, study the processes and styles of design, and develop an understanding of design types. Prereq: LARCH 152 or consent of instructor.

LARCH 252 Site Design in Landscape Architecture 6(1,10) Students engage in real site design projects. They carry forward lessons from LARCH 251 and consider the material qualities and details of their designs. Also included are participatory and social behavioral aspects of design. Readings and seminar discussions are emphasized. Prereq: LARCH 251 or consent of instructor.

LARCH 262 Design Implementation I 4(2,4) Basics of landscape architecture construction, methods, and construction documents including site information gathering and analysis, basic site grading and drainage, cut and fill, and principles of storm water management. Explorations in hand and computer graphic techniques used in construction drawings. Prereq: Sophomore standing or consent of instructor.

LARCH 293 Field Studies Internship I 3(0,3-9) Skill-based practical work experience to give beginning students on-the-job learning opportunities. Requires a minimum of five weeks of uninterrupted, supervised, practical experience with preapproved commercial firm or public agency dealing with landscape architectural site issues. May be repeated for a maximum of six credits. To be taken Pass/Fail only. Prereq: Consent of instructor.

LARCH 351 Regional Design and Ecology 6(1,10) Study and analysis of natural and cultural landscapes at the regional scale. Introduction of landscape ecology as an informant to design. Basic overview of geographic information systems. Regional and ecological issues are applied in a final site design. Also includes relevant reading, discussion, and writing. Prereq: LARCH 252 or consent of instructor.

LARCH 352 Urban Design Studio 6(1,10) Landscape architectural design in the urban context. Students study urban issues and offer design solutions for urban areas. Includes a readings and theory component as well as an opportunity to collaborate with architecture students. Prereq: LARCH 351 or consent of instructor.

LARCH 362 Design Implementation II 4(2,4) Advanced study in construction documents and methods including road alignment, complex site grading, and storm water management. Exploration of characteristics, strengths, nominal sizes, and uses of materials (brick, concrete, stone, wood). Includes field trips, exercises, and preparation of construction documents. Students gain an understanding of how design ideas are realized in form. Prereq: LARCH 262 or consent of instructor.

LARCH 405, 605 Urban Genesis and Form 3(2,2) Exploration of urban forms and developments within their historical context through off-campus, on-site lectures and exposure to historic cities and sites. Students visit historic and contemporary cities and analyze those places through readings and direct observations. Offered Maymester only. Prereq: LARCH 252 or consent of instructor.

LARCH 413 Professional Development 3(2,2) Study of the various employment opportunities in the profession through a series of organized and intensive lab-based workshops with professionals and discussions of business law and operating procedures. In-depth exploration of one realm of practice. Prereq: Landscape Architecture major or consent of instructor.

LARCH 418 Off-Campus Study Seminar 1(1,0) Students study various cultural and environmental factors to inform and enhance their off-campus experiences in Istanbul, Barcelona, Genoa, or Charleston. Prereq: Landscape Architecture major or consent of instructor.

LARCH 419 Off-Campus Field Study 3(3,0) Intensive study of place in an off-campus setting as context for design. Numerous class trips to significant sites in the area of the off-campus programs. Bus trips to distant sites are also planned. Prereq: LARCH 451 or consent of instructor.

LARCH 421 Landscape Architectural Seminar 3(3,0) Lectures and seminars dealing with pertinent topics related to environmental, technological, and theoretical issues in landscape architecture, land planning, and urban design. May be repeated for a maximum of six credits. Prereq: Senior standing or consent of instructor.

LARCH 423, 623 Environmental Issues in Landscape Architecture 3(3,0) Overview of environmental and ecological issues and their relationship to landscape architecture practice and design. Prereq: LARCH 452 or consent of instructor.

LARCH 428 Landscape Architecture Computer-Aided Design 3(2,2) Lecture and lab class which focuses on computer-aided design and drafting using PowerCAD or MiniCAD-Vector programs in alternating years. Students learn how to create landscape architecture illustrative drawings, construction drawings and/or portfolio work in black and white and color. Prereq: Landscape Architecture major or consent of instructor.

LARCH 433, 633 Historic Preservation in Landscape Architecture 3(3,0) Study of historic landscape preservation in a number of contexts including gardens, vernacular landscapes, parks, cemeteries, and battlefields. Prereq: LARCH 452 or consent of instructor.

LARCH 438 Advanced Computer-Aided Design 3(2,2) Advanced study in computer-aided design for students wishing to develop skills beyond LARCH 428. Students develop advanced skills in illustrative drawings, construction drawings, desktop publishing, and other computer-based applications. Prereq: LARCH 428 or consent of instructor.

LARCH 443, 643 Community Issues in Landscape Architecture 3(3,0) In-depth study of issues relevant to community design. Overview of physical design and related social issues. Prereq: LARCH 452 or consent of instructor.

LARCH 451 Community Design Studio 6(1,10) Studio focused on the study and design of communities. Students design a mixed-use parcel on a large tract of land. Includes readings and a theory component. Prereq: LARCH 352 or consent of instructor.

LARCH 452 Off-Campus Studio 6(1,10) Off-campus landscape architecture studio in Istanbul, Charleston, Genoa, or Barcelona. Prereq: LARCH 451 or consent of instructor.

LARCH 453, 653 Key Issues in Landscape Architecture 3(3,0) Overview of research in landscape architecture and study of relevant research methods. Students write proposals for their own projects positioned within the larger context of research in the profession. Prereq: Fifth-year Landscape Architecture student or consent of instructor.

LARCH 462 Landscape Architectural Technology III 3(2,2) Advanced overview of construction materials and methods used in project implementation. Study characteristics, strengths, nominal sizes and uses of materials (asphalt, brick, concrete, stone, wood). Field trips, exercises, and preparation of construction documents develop understanding of how design ideas are realized in built form. Prereq: LARCH 362.
LARCH 490 Directed Studies and Projects in Landscape Architecture 1-5(0,3-15) Comprehensive studies and/or research of special topics not covered in other landscape architecture courses. May be repeated for a maximum of ten credits. Preq: Consent of instructor.

LARCH H491 Honors Research Methods for Landscape Architecture 1-3(1-3,0) Students investigate various research methodologies in landscape architectural design or related areas and apply to student generated project(s). Students generate a proposal for Landscape Architecture Honors Research. Preq: Junior standing; membership in Calhoun Honors College, consent of Department Honors Program Advisor.

LARCH 493 Professional Office Internship 1-3(0,3-9) Office experience for advanced students. On-the-job learning requires a minimum of five uninterrupted sequential weeks of employment under the direct supervision of a preapproved registered landscape architect, architect, urban planner, or civil engineer. May be repeated for a maximum of six credits. To be taken Pass/Fail only. Preq: LARCH 352, 362, consent of instructor.

LARCH H494 Landscape Architecture Honors Research 2-3(2,3-0) Independent, student-generated research on preapproved topic conducted under the supervision and weekly guidance of a faculty member; second in a sequence of three required courses for students enrolled in Departmental Honors Program. Written interim report and presentation to faculty and honors students required before the end of the semester. May be repeated for a maximum of six credits. Preq: LARCH H491; membership in Calhoun Honors College.

LARCH H495 Landscape Architecture Honors Thesis 2-3(2,3-0) Continuation of independent research, conducted under the supervision and weekly guidance of a faculty member; third in a sequence of three required courses for students enrolled in Departmental Honors Program. Written thesis is submitted and presented before the end of the semester to qualify for Departmental Honors. Preq: LARCH H494.

LARCH 503 Landscape Architecture Portfolio II 1(0,2) Final portfolio course. Students' academic and design experiences over the five-year program are put in the final form that best communicates their experiences and achievements. Preq: LARCH 103 or consent of instructor.

LARCH 550 Professional Project Studio 3(0,6) Comprehensive project with a client. Projects may be linked to the Design Arts Partnership, the Center for Community Growth and Change, or the Department of Planning and Landscape Architecture among other possibilities. Preq: LARCH 452 or consent of instructor.

LARCH 551 Landscape Architecture Design V 3(1,10) Studio work and adjunct lectures featuring complex problem-solving projects involving regional design analysis and planning, city planning and urban design, complex building relationships and intense site utilization in an urban setting. Studio may be taken in Charleston, Genoa, or Barcelona. Preq: LARCH 452.

LARCH 552 Landscape Architecture Exit Project 6(0,12) Studio work on student-selected professional level exit project including design-build project or substantive research project. Exit studio synthesizes and builds on skills developed throughout the Landscape Architecture program. Also provides opportunities for students to inquire into areas of interest not otherwise covered. Preq: LARCH 452.

LARCH 562 Landscape Architectural Technology IV 2(0,4) Studio course for the integration of design and technology. Preq: LARCH 462, professional standing. Coreq: LARCH 552.

LARCH 581 Landscape Architectural Professional Practice 3(3,0) Lecture course dealing with general consideration of landscape architectural office procedures. Study of the professional relationships of the landscape architects to client and contractor including problems of ethics, law, and business. Preq: Professional standing or consent of instructor.

LANGUAGE

LANG 300 Introduction to Linguistics and Foreign Language Learning 3(3,0) Introduction to the field of linguistics, including the study of phonetics, phonology, morphology, syntax, and semantics. Discussion of issues pertaining to foreign language acquisition.

LANG 303 Study Abroad Transfer 3-6(3,6,0) Course for credit transfer of any course taken abroad during a department-approved study. Requires a minimum of two contact hours per week for at least 15 weeks or equivalent. Students may take a course outside their concentration. May be repeated for a maximum of six credits. To be taken Pass/Fail only. Preq: Consent of department chair.

LANG 340 Cosmopolis: The Myth of the City 3(3,0) Cross-cultural inquiry into the idea of the city through literary, political, and philosophical texts as well as film and architecture. Preq: Junior standing or consent of instructor.

LANG 342 Sacred and Profane Bodies 3(3,0) Cross-cultural inquiry into the ambivalence surrounding female sexuality implicit in images of women and, in particular, the division of women into "earthly" and "divine" categories. Preq: Junior standing or consent of instructor.

LANG 346 Walking and the Road 3(3,0) Cross-cultural inquiry into the epistemological, political, and aesthetic questions generated by walkers and the roads they travel in literature, philosophy, and film. Preq: Junior standing or consent of instructor.

LANG 348 The Child and the Adolescent 3(3,0) Cross-cultural inquiry into important theoretical questions of personal and political identity raised by the figure of the child and the adolescent in literature and film. Preq: Junior standing or consent of instructor.

LANG (PO SC) 350 Seminar in International News 3(3,0) Review of current news of significance for the world and for U.S. foreign policy through authentic sources such as foreign newspapers, television/radio broadcasts, and the internet. Student-led discussions in the target language groups (i.e., French, German, Spanish) are supplemented by joint debates in English from global perspectives. May be repeated for a maximum of six credits. Preq: FR 202, GER 202, SPAN 202, or consent of department chair.

LANG 356 Faces of Evil 3(3,0) Cross-cultural inquiry into evil as an ineradicable challenge to representation as displayed by notions of the monstrous, the enemy, the infinite, and death in literature, cultural theory, and the arts. Preq: Junior standing or consent of instructor.

LANG 371 Language and Culture 3(3,0) Surveys key topics, theories, and methodological approaches in linguistic anthropology; examines the complex relationships among language, culture, and communicative behavior; and provides students with conceptual tools that inform the study of language in its cultural contexts.

LANG 400, 600 Phonetics 3(3,0) Study of basic phonetic concepts used in the study of sounds in language.

LANG 401 China Study Abroad 3(3,0) Six-week intensive summer course on Chinese culture offered in China. Main topics include origin and history of Chinese language, Chinese nationalities, geography, architecture, arts, and social customs. All readings and discussions are in English. May be repeated for a maximum of six credits.

LANG 420, 421 France and the Francophone World 3(3,0) Selected masterpieces of French and Francophone Literature are considered within their historical and cultural context. All readings and instruction are in English. No knowledge of the foreign language is required. May be repeated for a maximum of six credits. Preq: Sophomore standing or consent of department chair.

LANG 450 Risk and Danger 3(3,0) Cross-cultural inquiry into the meanings of risk and danger as they are articulated in various literary and philosophical texts and films about gambling, duels, stunts, bullfights, wilderness adventure, and smoking. Preq: Junior standing or consent of instructor.

LANG (ENGL) 454 Selected Topics in International Film 3(2,3) Presents subtitled films of specific world cultures and basic film theory and discourse applicable to the selected areas. Taught in English. May be repeated for a maximum of six credits with consent of department chair. Preq: ENGL 310 or consent of instructor.

LANG 455 Hispanic Film: Documentary and Feature 3(3,0) Overview of theory and discourse on Hispanic film. Through lectures, discussions, and films, students become acquainted with Hispanic film as a vehicle for understanding the Hispanic World. Taught in English. Films are in Spanish with English subtitles. Preq: Sophomore standing or consent of department chair.
LANG 460 Propaganda and the Totalitarian Recreation of the World 3(3,0) Cross-cultural inquiry into the various languages (philosophical, political, literary, and filmic, among others) that form a crucial weapon in the striving for hegemony over desire that marks the modern totalitarian project. Preq: Junior standing or consent of instructor.

LANG 462 Borders 3(3,0) Cross-cultural inquiry into representations of physical and non-physical borders. Provides a theoretical framework in which various forms of borders, limits, and boundaries can be studied through literature and other artistic media. Preq: Junior standing or consent of instructor.

LANGUAGE AND INTERNATIONAL TRADE

Professors: J. C. Bednar, P. R. Heusinkveld, Interim Director, S. C. King, C. K. Nakuma, Chair; Associate Professor: T. Kishimoto; Assistant Professors: J. Schmidt, M. M. Rojas-Massei, G. E. Tissera, Z. Zhang; Lecturer: L. J. Ferrell

L&IT 127 Introduction to Language and International Trade 1(1,0) Survey of the nature of international trade and related career opportunities. Information and applications of specific relevance to tourism, agriculture, and textile industries are offered. To be taken Pass/Fail only.

L&IT 400 Language and International Trade Internship 1-3 One-semester, full-time (or equivalent part-time) work assignment which provides the opportunity for students to extend theoretical classroom learning through work experience in an appropriate setting. A final report is required. May be repeated for a maximum of six credits. To be taken Pass/Fail only. Preq: FR 316, GER 316, or SPAN 316; 12 semester hours in a Language and International Trade technical option.

L&IT 401 Language and International Trade Practicum 1-3 Foreign language experience such as an approved study-abroad program which provides the student with the opportunity to apply theoretical classroom learning to a foreign language experience in an appropriate setting. To be taken Pass/Fail only. Preq: FR 316, GER 316, or SPAN 316; six credits in language.

L&IT 402 Language and International Trade Directed Study 3 Directed study of an individual project in language and international trade. To be taken Pass/Fail only.

LATIN

LATIN 101 Elementary Latin 4(4,0) Course for beginners designed principally to teach the reading of the language.

LATIN 102 Elementary Latin 4(4,0) Continuation of LATIN 101.

LATIN 201 Intermediate Latin 3(3,0) Review of the fundamental principles of grammar in conjunction with readings from the Classical period. Preq: LATIN 102 or equivalent.

LATIN 202 Intermediate Latin 3(3,0) Continuation of LATIN 201 with the introduction of writings from the late Latin and Medieval periods. Preq: LATIN 201 or equivalent.

LAW

Associate Professor: E. L. Edwards; Assistant Professor: M. E. Mowrey; Lecturers: J. R. Jahn, V. L. S. Ward-Vaughn

LAW 312 Commercial Law 3(3,0) Introduction to business law with primary attention given to contracts, agency, and negotiable instruments. Preq: Junior standing.

LAW 313 Commercial Law 3(3,0) Continuation of LAW 312 with emphasis on business organizations, personal and real property, estates and bankruptcy, sales and secured transactions. Preq: LAW 312 or consent of instructor.

LAW 322, H322 Legal Environment of Business 3(3,0) Examination of both state and national regulation of business. Attention is given to the constitution and limitations of power, specific areas in which governments have acted, and the regulations that have been imposed in these areas. Preq: Junior standing.

LAW 333 Real Estate Law 3(3,0) The nature of real property and means of acquiring rights therein: conveyance of ownership, creation and execution of deeds, mortgages, etc., landlord and tenant relationships, shared concepts, and government regulation.

LAW 399 Internship in Legal Studies 1-3 Faculty-supervised legal internship to give students learning opportunities that support their classroom experiences. Requires a minimum of six full-time weeks. Course enrollment and internship must occur in the same semester. Simultaneous credit cannot be received for another internship offering. May be repeated for a maximum of three credits. To be taken Pass/Fail only. Preq: Junior standing or consent of instructor.

LAW 405, 605 Construction Law 3(3,0) Continuation of LAW 312 with emphasis in the construction phase of a building or property. Topics include construction organizations, claims, warranties, and defense and enforcement of contracts in real estate law. Preq: LAW 312 or 322 or consent of instructor.

LAW 420, 620 International Business Law 3(3,0) Intensive examination of the historical background of modern public and private international law; selected issues of public international law—human rights, law of war, United Nations' system, and international litigation; selected issues of private international law—international sales, international trade, and formation and operation of multinational businesses. Preq: LAW 312 or 322 or consent of instructor.

LAW 499 Selected Topics 1-3(1-3,0) In-depth examination of timely topics in legal studies. May be repeated for a maximum of six credits, but only if different topics are covered. Preq: Senior standing and consent of instructor.

LEISURE SKILLS

Assistant Professor: M. H. Wynn; Lecturer: B. W. Stevens

L S 100 Selected Topics 1(0,3) Presentation of leisure skills not covered in other courses. May be repeated for a maximum of three credits, but only if different topics are covered.

L S 101 Challenge Recreation Activities 1(1,0) Encourages students to broaden their leisure skills and improve self-image through challenge activities. Classroom instruction stresses how to get started safely in flying, scuba, canoeing, skiing, windsurfing, mountainaing, hang-gliding, ballooning, and other challenge activities.

L S 111 Lapidary Arts 1(0,3) Students learn the techniques used to transform raw materials such as gems, minerals, gold, and silver into objects of art—primarily jewelry.

L S 125 Budget Travel 1(0,3) Teaches the necessary skills to travel internationally on a budget. Students learn how to get the best airfares, research destinations, and build an itinerary. Packing, security, local transportation, and culture/versus culture shock are also discussed.

L S 141 Top Rope Climbing 1(0,3) Basic rock climbing skills, including philosophy, safety, knots, climbing techniques, site and supplies selection, and nature/conservation issues are covered.

L S 145 Camping and Backpacking 1(0,3) Basic camping and backpacking skills including map and compass reading, outdoor cooking, camping hazards and safety, site selections, and trip planning.

L S 147 Alpine Skiing 1(0,3) Basic downhill snow skiing instruction including equipment selection, safety, and maintenance; parallel turns; edging: carved and linked turns; wedeling; and safety and etiquette. There is an additional fee for this course. Taught during Christmas recess. (Contact the Department of Parks, Recreation, and Tourism Management in October.)

L S 149 Snowboarding 1(0,1) Basic snowboarding instruction including equipment selection; safety; conditioning; and skills such as stopping, technical turns, for turning, and riding lifts. There is an additional fee for this course. Taught during the Christmas recess. (Contact the Department of Parks, Recreation, and Tourism Management in October.) May not be taken concurrently with LS 147 or 347.

L S 159 Hunting Traditions 1(0,3) Basic, hands-on instruction in the shooting sports (shotgun, rifle, and archery) and the sport of hunting. Designed to introduce students to the safe and responsible use of firearms and archery equipment and safe hunting practices. Students are required to complete the SC Department of Natural Resources Hunter Education certification.

L S 164 Whitewater Kayaking 1(0,3) Flat-water and whitewater skills, techniques, safety, rescue, equipment selection and maintenance, and selection of routes/trips to participate in basic whitewater kayaking. Preq: Basic swimming skills.
LS 165 Inland Kayak Touring 1(0,3) Introductory course which teaches basic skills necessary for safe enjoyment of flat water (non-tidal waters: slow moving rivers) kayaking. Students learn equipment selection, strokes, safety, and rescue techniques. Prereq: Demonstrated swimming competence.

LS 167 Canoeing 1(0,3) Basic instruction in the nomenclature, strokes, and safety techniques in canoeing. Prereq: Basic swimming skills.

LS 169 Sailing 1(0,1) Basic instruction in the nomenclature, safety and rescue techniques, and skills required to skipper sailing craft. Prereq: Basic swimming skills.

LS 171 Windsurfing 1(0,3) Basic windsurfing instruction including rigging, launching, tacking, jibing, rig and foot steering, safety, maintenance, equipment selection, rules-of-the-road, and racing techniques are covered. Offered Fall Break and first summer session. There is an extra fee for this course. Prereq: Ability to swim 300 yards and tread water for five minutes.

LS 175 Fly Fishing 1(0,3) Introductory course in the techniques of fly-fishing. Students learn casting, fly-tying, and equipment selection.

LS 179 Scuba I 1(0,3) Teaches basic open water diving techniques and prepares students to complete requirements for the open water diving certification. Certifications are granted by an internationally recognized and accepted certifying agency. Prereq: Swim test required by certifying agency.

LS 185 Bowling I 1(0,3) Basic instructional program on techniques of bowling.

LS 189 Tennis I 1(0,3) Fundamental course stressing rules, strokes, and strategy, with ample opportunity for practice.

LS 194 Racquetball I 1(0,3) Basic skills, knowledge of rules, strategy, and basic strokes.

LS 198 Golf I 1(0,3) Fundamental course stressing rules, strategy, and basic strokes.

LS 210 Learn to Dance 1(0,2) Students develop an understanding of the qualities of dance, recognize the importance of dance as a leisure pursuit, and learn to dance to different types of music. Dances include swing, waltz, cha-cha, fox-trot, as well as current dance trends.

LS 214 Modern Dance 1(0,3) Introduction to modern dance techniques with emphasis on developing the style of movement and understanding the dance art form.

LS 218 Ballroom Dance 1(0,2) Students develop an understanding of advanced dance methods, learn about dance at social and competitive levels, and increase knowledge of a variety of both smooth and Latin steps. Dances include tango, cha-cha, waltz, fox-trot, and swing.

LS 220 Shag 1(0,2) Students develop an understanding of the South Carolina state dance, its history and impact on the state. Students learn more advanced steps in shag, including bellyroll, sugarfoot, slide step, tiptoe up the ladder, pivot, and the thirteen steps.

LS 233 Aerobic Dance 1(0,3) Instruction in the development of skills for the safe improvement and maintenance of cardiovascular fitness, flexibility, and muscle tone utilizing dance movements and techniques.

LS 235 Basic Yoga 1(0,3) Develops flexibility, strength, sensitivity, energy, and a sense of relaxation through the study of basic yoga postures, conscious breathing, and meditation techniques.

LS 236 Power/Ashtanga Yoga 1(0,3) Power/Ashtanga Yoga is a comprehensive workout based on the Eastern philosophy of K. Pattabhi. Students learn the eight limbs of this philosophy and the rigorous series of postures that produce a high power, athletic workout with the purpose of detoxifying impurities in the body.

LS 237 Kripalu Yoga 1(0,3) Great emphasis is placed on learning breath work techniques to combine directly with the various kripalu yoga postures. The goal is to teach individuals the physiological reactions produced by this type of yoga in developing and restoring health.

LS 270 Sports Officiating I 1(0,3) Practical study of officiating for various sports. Includes studies and practical application of officiating rules and mechanics. Sports studied include football, basketball, softball, soccer, and introductions to a variety of other team sports.

LS 347 Advanced Alpine Skiing I 1(0,3) Advanced downhill snow skiing instruction in such techniques as mogul skiing, check turns, free-style, and racing. There is an additional fee for course. Taught over Christmas break. Credit is awarded for spring semester. (Contact Department of Parks, Recreation, and Tourism Management in October.) Prereq: LS 147 or consent of instructor.

MANAGEMENT


MGT 120 Collaborative Management I 3(2,2) Introduction to collaborative management theory and practice. Major concepts include managing change, conflict resolution, and team building.

MGT 218, Management Personal Computer Applications I 3(3,0) Personal computer applications that support managers. Students learn how to use Windows on handwork rather than lecture. To be taken Pass/Fail only. Prereq: CPSC 120 or consent of instructor.

MGT 219, Management Personal Computer Applications II 3(3,0) Advanced personal computer applications for managers. Topics include database management, spreadsheet applications, and presentation software.

MGT 301, H301 Principles of Management I 3(3,0) Management's role as a factor of economic production. Functions of management, principles of organization, and behavior in organizations.

MGT 305 Economics of Transportation I 3(3,0) Topics include history and structure of transportation systems in the United States, the nature of transportation costs and rates, transportation systems as factors in industrial location, transportation policy, and transportation's role in national security. Prereq: Junior standing.

MGT (ECON) 306 Managerial Economics I 3(3,0) See ECON 306.

MGT 307, H307 Personnel Management I 3(3,0) Principles, concepts, and techniques concerned with effective and efficient utilization of personnel. Emphasizes motivation, leadership, and human behavior related to employer-employee relations. Topics include personnel recruitment, classification, selection, training, development, and performance evaluation. Prereq: Junior standing; one of the following: MTHSC 203, 301, 302, EXST 301.

MGT 310, H310 Intermediate Business Statistics I 3(3,0) Quantitative methods of the management scientist with applications to business and industrial problems. Topics include regression analysis, correlation analysis, analysis of variance, sampling, and nonparametric methods. Credit toward a degree will be given for only one of MGT 310 or EXST 311. Prereq: EXST 310 or MTHSC 301.

MGT 312, H312 Decision Models for Management I 3(3,0) Exploration of ways in which management science decision models can help in making sound managerial decisions. Problem solving is Excel-based. Topics include linear programming, project scheduling, and simulation.

MGT (E L E) 315 New Venture Creation II 3(3,0) Second of a two-part series examining entrepreneurship. Using opportunity analysis developed in MGT (E L E) 314, course focuses on designing and managing an organization capable of effectively pursuing the opportunity. Topics include organization strategy and design, start-up capital, operations and sourcing issues, leadership, team building, and management of rapid growth. Prereq: MGT (E L E) 314.

MGT 317 Logistics Management I 3(3,0) Management of physical distribution and supply systems with emphasis on design concepts, cost determinants, and control. Prereq: Junior standing.

MGT 318 Management Information Systems I 3(3,0) Introduction to information systems concepts and applications in business. Topics include software, hardware, decision support and knowledge based systems, database, information systems design and implementation, and the management of information systems. Prereq: MGT 218 or consent of instructor.

MGT 390 Operations Management I 3(3,0) Examines the role of operations management in both manufacturing and service organizations. Discusses the concepts, tools, and techniques for managing the operations function. Topics include operations strategy, design, planning, and control. Prereq: MTHSC 301 or equivalent.

MGT 400 Management of Organizational Behavior I 3(3,0) Provides management students with a framework for understanding how behavior within business organizations is managed. Particular emphasis is on integrating management theory with recent developments in the behavioral sciences with distinct management applications. Theory, research, and business applications are considered. Prereq: MGT 301 with a C or better.

MGT 402, H402 Operations Planning and Control I 3(3,0) Managing, planning, and controlling production and service operations with emphasis on demand forecasting, aggregate planning, production scheduling, and inventory management. Prereq: MGT 310, 312, 390.
MGT 403 Special Problems 1-3(1-3,0) Planning, developing, and executing a research project related to the field of management and defense studies. May be repeated for a maximum of six credits. Prereq: Senior standing in Industrial Management or Management, consent of instructor.

MGT 404 Advanced Statistical Quality Control 3(3,0) Statistical quality control techniques as applied to all areas of quality control: process control, process capability, acceptance sampling, and economic aspects of quality decisions. Prereq: MGT 310, 390.

MGT 408 Design of Production Systems 3(3,0) Examines the design of systems for production and delivery of goods and services. Emphasizes the impact of alternative designs on the competitive posture of the firm. Discusses the concepts, tools, and techniques for designing facilities and jobs and systems for continuous performance improvement. Prereq: MGT 310, 312, 390.

MGT 411 Project Management 3(3,0) Examination and application of the project management body of knowledge. This consists of theories, tools, and techniques to organize, plan, and control individuals, teams, quality, and operations while conducting a project. Prereq: EXST 301 or MTHSC 301 or equivalent.

MGT 414 Statistical Analysis 3(3,0) Application of statistics in management decision making. Emphasis is on the proper design, analysis, and interpretation of planned experiments. Topics include single-factor through fractional factorial experiments. Prereq: MGT 310 or equivalent.

MGT 415, H415 Business Strategy 3(3,0) Capstone course for seniors. Various methods are used in analyzing complex business problems, requiring students to integrate their knowledge of all areas of business. Student participation and written and oral communications are stressed. Prereq: FIN 306 or 311; MGT 301; MKT 310; Senior standing.

MGT 416 Management of Human Resources 3(3,0) Recent developments in the management of human resources with emphasis on results of research into the motivation, development of potential, and full utilization of the human resources. Prereq: MGT 307 and 400 with a C or better; consent of instructor.

MGT 422 Small Business Management 3(3,0) Study of management of the small independently owned and operated business. Emphasizes analyzing new business opportunities, planning and establishing a growing concern, and managing the contemporary small business. Field experience in consulting with small businesses enhances students' understanding of the unique opportunities and problems of small business organizations. Prereq: MKT 301 or consent of instructor.

MGT 423 International Business Management 3(3,0) Survey of theoretical and institutional complexities of international business operations. Topics include exporting, importing, foreign investment, multinational corporations, and international payment systems. Prereq: Junior standing.

MGT 424 International Transportation and Logistics 3(3,0) Examination and analysis of international transportation systems and their logistics support systems. Topics include ocean shipping, international air transportation, port management, and EEC and Soviet-block transport systems. International transport legislation and policies are also examined. Prereq: Senior standing or consent of instructor.

MGT 425 Compensation Management 3(3,0) Examination of compensation employees seek in exchange for their efforts and contributions. Topics include government and union influences; job content analysis, description, and evaluation; developing pay structures; measuring and paying for performance; employee benefits; administration of the compensation plan; executive, managerial, professional, and sales. Prereq: MGT 307, 400 with a C or better.

MGT 426 Industrial Traffic Management 3(3,0) Surveys the responsibilities and functions of industrial traffic management in manufacturing and distribution. Emphasizes the role of the industrial traffic manager in optimizing the logistics system of the firm (i.e., the materials management of its inbound supplies and the distribution of its finished products). Prereq: MGT 305 or 317.

MGT 427 Managing Continuous Improvement 3(3,0) Examination of issues related to continuous improvement, including a systematic approach to selecting improvement areas, determining how to improve, plan, and manage the improvement process. Topics include selecting performance measurements, using teams to achieve breakthroughs, identifying root causes of problems, and developing and implementing solutions to problems. Prereq: MGT 390 or consent of instructor.

MGT 430 Senior Seminar in Management 3(3,0) In-depth study of current business topics; allows senior Management students to relate their academic studies to real-world problems. Senior paper is required. Prereq: Senior standing.

MGT 431 Employee Diversity, Rights, and Responsibilities 3(3,0) Focuses on employee and organizational rights and responsibilities. Topics include various types of discrimination (race, sex, religious, national origin, age, and disability status); drug and alcohol testing; AIDS in the workplace; employee discipline and termination issues; privacy and safety concerns; and union organizing campaigns. Prereq: MGT 307, 400 with a C or better.

MGT 435 Personnel Interviewing 3(3,0) Helps students understand current interviewing theory, conduct an employment interview, and advise their future employers how to improve interviewing programs. Topics include job analysis, legal issues, types of interviews, and evaluating applicants. Prereq: MGT 307 and 400 with a C or better.

MGT 436 White-Collar Crime 3(3,0) White-collar crime and corruption are examined from a managerial perspective. Topics include financial crimes, crimes against consumers, environmental crimes, acts of institutional corruption, the impact of organized crime on legitimate businesses, and computer crime. Prereq: Senior standing, FIN 306.

MGT 437 Trends in Business 3(3,0) Examines the consequences of emerging trends in business. Emphasizes understanding the impact of emerging trends on the business environment and the development of strategies for responding to these trends. Prereq: FIN 306.

MGT 438 International Management 3(3,0) Provides an international perspective to industrial management via organized plant visits to businesses in a foreign country and by discussions with senior operations managers. Cultural visits and lectures are also organized to provide a holistic perspective to cover cultural and economic environment of the host country. Students are responsible for travel costs. May be repeated for a maximum of six credits. Prereq: Consent of instructor.

MGT 452 Systems Analysis and Design 3(3,0) Follows the traditional systems development life cycle (SDLC), although alternative methodologies are also discussed. Focuses on earlier phases of the SDLC, from IS planning through specification of structured requirements and on the methods, techniques, and tools used to determine information requirements and their unbundled documentation. Prereq: Junior standing.

MGT 454 Systems Implementation 3(3,0) Builds upon skills of programming, database, and systems analysis and design by involving students with the later phases of the systems development life cycle (SDLC). Studies design and development of a system using various platforms. Focus is on the logical and physical system design. Prereq: CPSC 462 or equivalent, MGT 452.

MGT 455 Emerging Information Technology Trends in Business 3(3,0) In-depth study, through case studies, readings, and hands-on experience of emerging information technologies in and across business organizations. Focuses on understanding, effective deployment, and impact of these technologies on business outcomes. Prereq: Junior standing.

MGT 456 Decision Support Systems 3(3,0) In-depth study, through case studies, readings, and hands-on experience, of decision support systems and related knowledge-based technologies. Focus is on organizational decision making and its data, information, and knowledge-based support systems. Prereq: Junior standing.

MGT 490 Selected Topics in Industrial Management 3(3,0) In-depth examination of advanced topics in Industrial Management. Topics may vary in keeping with developments in the management profession and interests of faculty. Emphasis is on the application of these topics to the production and operations management environment. Prereq: MGT 402 or 404 or 408.

MARKETING


MKT 301, H301 Principles of Marketing 3(3,0) Principles and concepts involved in planning, pricing, promoting, and distributing of goods and services. Prereq: ECON 200 or 211 or 212; 45 credit hours completed.
MKT 302 Consumer Behavior 3(3,0) Examination of selected individual and group behavioral science concepts and their application to the understanding of consumer decision making. Preq: MKT 301.

MKT (E LE) 314 New Venture Creation 3(3,0) First in a two-part series with MGT (E LE) 315 assessing entrepreneurial opportunities. Focuses on creativity, idea generation, market opportunity analysis, strategy, and methods of entry. Opportunity analysis may be developed into a full new venture plan in MGT (E LE) 315. Preq: Junior standing.

MKT 321 Sports Marketing 3(3,0) Exploration of the essentials of effective sports marketing. Topics include application of marketing principles in the sports area, licensing issues, sponsorships and endorsements, stadium and arena marketing, broadcasting and media considerations, public policy and sports, and unique marketing challenges for sport specific products (football, basketball, baseball, motorsports, etc.). Preq: MKT 301 or consent of instructor.

MKT 399 Marketing Internship 3(3,0) Pre-planned, preapproved, faculty-supervised marketing internships. Credit will only be given for internships of at least ten full-time, consecutive weeks with the same internship provider. Restricted to students with a major or minor in Marketing. To be taken Pass/Fail only. Preq: MKT 301 and consent of instructor.

MKT 420 Professional Selling 3(3,0) Current theories about the selling of goods and services to organizational buyers in the context of long-term relationships. Role playing, video-taped presentations, and other techniques are generally employed to enhance interpersonal communication skills. Preq: Junior standing, MKT 301.

MKT 423, 623 Promotional Strategy 3(3,0) Emphasizes promotion as the communication function of marketing. Attention is given to communication theory and promotion's relation to mass and interpersonal communication. Factors affecting promotional decision-making process are explored, and promotion as a competitive tool is examined. Preq: MKT 301 or consent of instructor.

MKT 424 Sales Management 3(3,0) Comprehensive examination of the planning, implementation, and control of professional sales organizations. Preq: MKT 301 or consent of instructor.

MKT 425 Retail Management 3(3,0) Retailing is studied from a decision-making approach. Topics include target market analysis, location analysis, merchandising, human resources, pricing and promotion. Preq: MKT 301 or consent of instructor.

MKT 426 Business-to-Business Marketing 3(3,0) Study and analysis of the unique aspects of marketing goods and services to organizational buyers rather than household consumers. Emphasis is on developing strategic responses to marketing opportunities given competitive behavior. Preq: MKT 301 or consent of instructor.

MKT 427, 627 International Marketing 3(3,0) Study of marketing from the international point of view. Emphasis is on the necessary modification of marketing thinking and practice for foreign markets due to individual environmental differences. Preq: MKT 301.

MKT 428, 628 Services Marketing 3(3,0) Exploration and study of the nature of service organizations and the principles which guide the marketing of their products. Emphasis is on a marketing mix that is fundamentally different than that found in traditional goods marketing. Preq: MKT 301 or consent of instructor.

MKT 429, 629 Public and Nonprofit Marketing 3(3,0) Examines the role and application of marketing in public and nonprofit settings. Focuses on a conceptual understanding of the marketing discipline and marketing processes and shows how basic concepts and principles of marketing are applicable to public and nonprofit organizations. Preq: MKT 301 or consent of instructor.

MKT 430, 630 Marketing Product Management 3(3,0) Management of a firm's product or service offerings. Topics include new product screening, development, and evaluation; product line and mix analysis; abandonment decisions; brand manager's role; new product development department, and others. Emphasis is on decision making. Preq: MKT 310, MKT 301, or consent of instructor.

MKT 431, 631 Marketing Research 3(3,0) Research used in marketing decision making. Primary emphasis is on methods and techniques used in planning, collection, processing, and utilization of information. Topics include research design, sources of information, questionnaire design, sampling, data collection, and data analysis. Preq: MKT 310, MTBSC 301, or consent of instructor.

MKT 433 Sport Marketing 3(3,0) Emphasizes the promotional function of sport. Topics include event sponsorship, developing media relationships, endorsements, promotion, objective setting and budgeting, media planning and scheduling, and using the tools of promotion within a sport context. Integrated Marketing Communication provides the theoretical and managerial framework for how these factors are utilized optimally. Preq: MKT 321, 423.

MKT 435 International Sport Marketing 3(3,0) Provides working knowledge of international sport marketing. Consists of lecture and site visits. Topics include basic history of sport, sport marketing basics, building sport brands, sport strategies, and issues facing the new sporting goods industry. Preq: MKT 301.

MKT 450 Strategic Marketing Management 3(3,0) Application of marketing constructs in the analysis and solution of marketing problems. Emphasis is placed on information systems, data analysis, and critical-thinking skills in solving marketing problems in a wide range of managerial decision areas including, but not limited to, new product development, pricing, advertising, personal selling, channels, and international marketing. Preq: MKT 301, six hours of 400-level marketing courses.

MKT 495, 695 Selected Topics 3(3,0) In-depth examination of timely topics in marketing. May be repeated for credit, but only if different topics are covered. Preq: MKT 301 or consent of instructor.

MKT 499 Independent Study 1-3(1-3,0) Directed readings or independent research in selected marketing areas. Topics must be selected and proposed by student. Proposals must be approved by instructor. May be repeated for a maximum of three credits. Preq: MKT 301 and consent of instructor.

MATERIALS SCIENCE AND ENGINEERING

MS&E 450 Materials Science and Engineering Portfolio 2(2,0) Students working in groups present and discuss practical, ethical, safety, and business topics in the polymer and textile industries. Students are required to complete their electronic portfolios. To be taken Pass/Fail only.

MATHEMATICAL SCIENCES


MTBSC 101 Essential Mathematics for the Informed Society 3(3,0) Topics include logic and computers, probability and statistics, and financial mathematics. Specific topics include Boolean algebra, digital data formats, randomness, graphical representation of data, inference and estimation; interest, annuities, and amortization. Not open to students who have received credit for MTBSC 203, 301, 302, 309, or EX ST 301. Preq: Satisfactory score on the Clemson Mathematics Placement Test or consent of department.
Courses of Instruction

MTHSC 102 Introduction to Mathematical Analysis 3(3,0) Intuitive approach to the concepts and applications of calculus. Topics include functions and graphing, differentiation, and integration. Applications from social, biological, and management sciences are presented. Not open to students who have received credit for MTHSC 106. Prereqs: Satisfactory score on the Clemson Mathematics Placement Test or consent of department.

MTHSC 103 Elementary Functions 3(3,1) Gateway course for MTHSC 106. Comprehensive treatment of functions and analytic geometry with applications including polynomial, rational, algebraic, exponential, logarithmic, and trigonometric functions. Not open to students who have received credit for MTHSC 105. Prereqs: MTHSC 104 or satisfactory score on the Clemson Mathematics Placement Test.

MTHSC 104 College Algebra 3(3,1) Basic course to prepare students for subsequent courses in probability, mathematical analysis, elementary statistics, and elementary functions (precalculus). Fundamental concepts of algebra, equations, inequalities, functions, and graphs are studied. Students who have received credit for any other mathematical sciences course will not be allowed to enroll in or receive credit for MTHSC 104.

MTHSC 105 Precalculus 5(3,1) Extensive treatment of topics chosen to prepare students for the study of calculus. Special emphasis is given to polynomial, rational, exponential, logarithmic, and trigonometric functions and their graphs, as well as basic and analytic trigonometry. Students who have received credit for any other mathematical sciences course will not be allowed to enroll in or receive credit for MTHSC 105.

MTHSC 106, H106 Calculus of One Variable I 4(4,0) Topics include analytic geometry, introduction to derivatives, computation and applications of derivatives, integrals, exponential, and logarithm functions. Prereqs: MTHSC 103 or 105 or satisfactory score on the Clemson Mathematics Placement Test or consent of department.

MTHSC 107 Co-Calc I 1(0,2) Recitation course to accompany MTHSC 106. Reinforces precalculus and calculus topics covered in MTHSC 106 and provides additional instruction and practice for students. Required of students identified by the Clemson Mathematics Placement Test as being conditionally qualified for placement in calculus with supplemental instruction. To be taken Pass/Fail only. Prereq: Concurrent enrollment in MTHSC 106.

MTHSC 108, H108 Calculus of One Variable II 4(4,0) Topics include transcendental functions, applications of integration, integration techniques, indeterminate forms, improper integrals, parametric equations, polar coordinates, and infinite series. Prereq: MTHSC 106.

MTHSC 109 Co-Calc II 1(0,2) Recitation style course to accompany MTHSC 108. Reinforces precalculus and calculus topics covered in MTHSC 108 and provides additional instruction and practice. Recommendations are made to students based on their scores on a Calculus Basic Skills Quiz, given at the beginning of each semester. Prereq: Concurrent enrollment in MTHSC 108.

MTHSC 115 Contemporary Mathematics for Elementary School Teachers I 3(3,0) Cooperative learning groups, manipulatives, and concrete models are used to demonstrate logical reasoning, problem-solving strategies, sets and their operations, number systems, properties and operations of whole numbers, number theory, prime and composite numbers, divisibility, common factors, and multiples. Open to Elementary, Early Childhood, and Special Education majors only. Prereq: MTHSC 104 or satisfactory score on the Clemson Mathematics Placement Test.

MTHSC 116 Contemporary Mathematics for Elementary School Teachers II 3(3,0) Continuation of MTHSC 115. Manipulative and concrete models are used for properties, operations, and problem solving for integers, elementary fractions, rational numbers, and real numbers. Selected topics in statistics and probability are introduced with a hands-on approach to learning. Restricted to Elementary, Early Childhood, and Special Education majors only. Prereq: MTHSC 115 or consent of instructor.

MTHSC 117 Mathematics for Elementary School Teachers 14(4,0) Problem-solving strategies, logic, algebraic thinking, sets, relations, functions, number systems, rational numbers, integers, number theory, fractions, decimals, applications of percents, real numbers with their computational algorithms and properties are explored. Content, according to state standards, is taught with appropriate methodology for teaching K–8. Open to Elementary, Early Childhood, and Special Education majors only. Prereq: Satisfactory score on the Clemson Mathematics Placement Test or MTHSC 104.

MTHSC 118 Mathematics for Elementary School Teachers II 4(4,0) Two- and three-dimensional geometry including polygons, polyhedra, and their properties; congruence, similarity, construction, coordinate plane; standard measurement, area, surface area, volume; transformations, symmetries, and simple probability and descriptive statistics are explored. Content, according to state standards, is taught with appropriate methodology for teaching K–8. Open to Elementary, Early Childhood, and Special Education majors only. Prereq: MTHSC 117 or consent of instructor.

MTHSC 119 Introduction to Discrete Methods 3(3,0) Topics normally include elementary logic and methods of proof; sets, functions, and relations; graphs and trees; combinatorial circuits and Boolean algebras. Prereq: Satisfactory score on the Clemson Mathematics Placement Test or consent of department.

MTHSC 129 Problem Solving in Discrete Mathematics 3(2,2) Problem-solving approach to learning mathematics is applied to topics in modern discrete mathematics. Typical selection of topics includes logic and proof, sets, relations, functions, mathematical induction, graphs and trees, counting techniques, recurrence equations. For Bachelor of Science and Bachelor of Arts majors in Mathematical Sciences only. Credit may not be received for both MTHSC 119 and 129. Prereq: MTHSC 106.

MTHSC 199 Problem Solving in Mathematics 3(2,2) Functions and graphs, mathematical modeling, and applications. Applications from management and life and social sciences are presented. Specific topics include linear, quadratic, polynomial, exponential, and logarithmic functions with emphasis on problem solving. Students who have received credit for any other mathematical sciences course will not be allowed to enroll in or receive credit for MTHSC 199. To be taken Pass/Fail only.

MTHSC 203 Elementary Statistical Inference 3(3,0) Data-based course in statistical methodology; collecting and summarizing data, the normal distribution, one and two sample inference on means and proportions, simple linear regression, analysis of categorical data. May not be taken for credit by students who have passed MTHSC 301, 302, 309, or EX ST 301. Prereq: Satisfactory score on the Clemson Mathematics Placement Test or MTHSC 101 or consent of department.

MTHSC 206, H206 Calculus of Several Variables 4(4,0) Topics include real valued functions of several variables, multiple integration, differential calculus of functions of several variables, vector field theory. Prereq: MTHSC 108.

MTHSC 207 Multivariable Calculus 3(3,0) Introduction to the calculus of several variables, differential calculus and optimization of several variables, multiple integrals. Topics from the management sciences are used to illustrate the above concepts. May not be taken by students who have passed MTHSC 206. Prereq: MTHSC 102, or 106 with consent of instructor.

MTHSC 208, H208 Introduction to Ordinary Differential Equations 4(4,0) Introduction to the study of differential equations and their application to physical problems. Topics include exact, series, and numerical solutions; solutions by means of Laplace transforms; and solutions of systems of differential equations. Prereq: MTHSC 206.

MTHSC 210 Applied Matrix Algebra 3(3,0) Introduction to the basic principles of matrix algebra with applications to the behavioral and managerial sciences. Major areas of application include linear programming, directed graphs, and game theory. Prereq: MTHSC 101 or 102 or 106.

MTHSC 216 Geometry for Elementary School Teachers 3(3,0) Informal treatment of the basic concepts of geometry. Open to Elementary, Early Childhood, and Special Education majors only. Prereq: MTHSC 116 or consent of instructor.

MTHSC 231 Mathematics of Life Insurance 3(3,0) Introduction to basic mathematics of finance and life insurance. Topics include compound interest, annuities certain, mortality tables, life annuities, net premiums, net level reserves, modified reserves, nonforfeiture values, and dividends.

MTHSC 250 Introduction to Mathematical Sciences 1(1,0) Introduction to areas of study, degree options, career choices, and professional development in mathematical sciences. Includes guidelines and requirements for portfolio development and an introduction to ethical issues.
MTHSC 301, H301 Statistical Methods I 3(3,0)
Principal topics include collecting and summarizing data, probability distributions, inferences about central values and variation, analysis of categorical data, simple linear regression, basic experimental designs, and the analysis of variance. Credit toward a degree will be given only for one of MTHSC 301, 302, 309, EX ST 301. Preq: MTHSC 106 or 207 or 210.

MTHSC 302 Statistics for Science and Engineering 3(3,0) Methodology for collecting, organizing, and interpreting data. Topics include understanding variability, graphical and numerical summarization of data, introductory probability, normal and related distributions, statistical inference, experimental design, simple linear regression. Statistical software is used. Credit toward a degree will be given only for one of EX ST 301, MTHSC 301, 302, 309. Preq: MTHSC 206.

MTHSC 308 College Geometry 3(3,0) Theorems and concepts more advanced than those of high school geometry. Treatment of the various properties of the triangle, including the notable points, lines, and circles associated with it. Preq: MTHSC 106.

MTHSC 309 Introductory Business Statistics 3(3,0) Introductory probability and statistics for business students, particularly those who will take MGT 310. Topics include descriptive statistics, probability, expectations, binomial, normal, sampling distributions, one and two sample estimation and testing. Credit toward a degree will be given only for one of EX ST 301, MTHSC 301, 302, 309. Preq: MTHSC 106 or 207 or 210.

MTHSC 311, H311 Linear Algebra 3(3,0) Introduction to the algebra of matrices, vector spaces, polynomials, and linear transformations. Preq: MTHSC 108 or consent of instructor.

MTHSC 360 Intermediate Mathematical Computing 3(3,0) Continuing study of mathematical computing using the FORTRAN language. Emphasis is on subroutine computation with applications to problems in science and engineering. Preq: CP SC 110 or consent of instructor.

MTHSC H382 Honors Seminar 1(1,0) Weekly seminar to prepare students in Departmental Honors Program for undergraduate senior research. At the end of the second semester, each student must have identified a research topic and a faculty advisor. May be repeated for a maximum of two credits. Preq: Junior standing in departmental honors program.

MTHSC 400, H400, 600 Theory of Probability 3(3,0) Principal topics include combinatorial theory, probability axioms, random variables, expected values, special discrete and continuous distributions, jointly distributed random variables, correlation, conditional expectation, law of large numbers, central limit theorem. Preq: MTHSC 206 or consent of instructor.

MTHSC 403, H403, 603 Introduction to Statistical Theory 3(3,0) Principal topics include sampling distributions, point and interval estimation, maximum likelihood estimators, method of moments, least squares estimators, tests of hypotheses, likelihood ratio methods, regression and correlation analysis, introduction to analysis of variance. Preq: MTHSC 400 or equivalent.

MTHSC 405, H405 Statistical Theory and Methods II 3(3,0) Principal topics include simple linear regression, multiple regression and correlation analysis, one-way analysis of variance, multiple comparison, multifactor analysis of variance, experimental design. Computation and interpretation of results are facilitated through use of computer packages. Preq: MTHSC 301.

MTHSC 406, 606 Sampling Theory and Methods 3(3,0) Probability-based treatment of sampling methodology. Theory and application of estimation techniques are treated using simple and stratified random sampling, cluster sampling, and systematic sampling. Preq: MTHSC 302 and 400, or consent of instructor.

MTHSC 407, 607 Regression and Time Series Analysis 3(3,0) Theory and application of the regression and time series. Approaches to empirical model building and data analysis are treated. Computation and interpretation of results are facilitated through the use of interactive statistical packages. Preq: MTHSC 302, 311, 400, or consent of instructor.

MTHSC 408, 608 Topics in Geometry 3(3,0) Introduction to topics in special geometries which include non-Euclidean spaces such as projective geometry, finite geometries, and intuitive elementary topology. Brief introduction to vector geometry. Preq: MTHSC 306.

MTHSC 410 Number Theory 3(3,0) Introduction to topics in integers and related number systems. Topics include historical development, principles of mathematical induction, divisibility, primes, congruences, number-theoretic functions, primitive roots, quadratic residues, and diophantine equations. Preq: MTHSC 108 or consent of instructor.

MTHSC 412, H412, 612 Introduction to Modern Algebra 3(3,0) Introduction to the concepts of algebra. Topics include the number system and the elementary theory of groups, rings, and fields. Preq: MTHSC 311.

MTHSC 419, H419, 619 Discrete Mathematical Structures I 3(3,0) Applies theoretical concepts of sets, functions, binary relations, graphs, Boolean algebra, propositional logic, semigroups, groups, homomorphisms, and permutation groups to computer characteristics and design, words over a finite alphabet and concatenation, binary group, and other communication or computer problems. Preq: MTHSC 311.

MTHSC 420 Actuarial Science Seminar I 1(1,0) Introduction to topics in relative actuarial science. Preq: MTHSC 300 or consent of instructor.

MTHSC 430 Actuarial Science Seminar II 1(1,0) Problem-solving seminar to prepare students for the examination on the Society of Actuaries' and Casualty Actuarial Society's Course 2 (Interest Theory, Economics and Finance). Preq: ECON 211, 212, FIN 306 or 311, MTHSC 431, or consent of instructor.

MTHSC 434, 634 Advanced Engineering Mathematics 3(3,0) Fourier series, Laplace and Fourier transforms, and numerical methods for solving initial value and boundary-value problems in partial differential equations are developed. Applications to diffusion wave and Dirichlet problems are given. Matrix methods and special functions are utilized. Preq: MTHSC 208.

MTHSC 435, H435, 635 Complex Variables 3(3,0) Elementary functions, differentiation and integration of analytic functions; Taylor and Laurent series; contour integration and residue theory; conformal mapping; Schwarz-Christoffel transformation. Preq: MTHSC 206.

MTHSC 440, H440, 640 Linear Programming 3(3,0) Introduction to linear programming covering the simplex algorithm, duality, sensitivity analysis, network models, formulation of models, and the use of simplex codes to solve, interpret, and analyze problems. Preq: MTHSC 206, 311, or consent of instructor.

MTHSC 450 Introduction to Mathematical Models 3(3,0) Includes a study of the modeling process and examples of existing models chosen from physical, biological, social, and management sciences, depending on the instructor. Written and oral report is required for at least one of the models studied. May be repeated for a maximum of six credits. Preq: MTHSC 302, 360, 440, or consent of instructor.

MTHSC 454, H454, 654 Advanced Calculus I 3(3,0) Limits, continuity, and differentiation of functions of one and several variables, the Riemann integral, and vector analysis. Preq: MTHSC 206.

MTHSC 455, H455, 655 Advanced Calculus II 3(3,0) Continuation of MTHSC 454. Transformations, multiple integrals, line and surface integrals, infinite sequences and series, and improper integrals. Preq: MTHSC 453.

MTHSC 460, 660 Introduction to Numerical Analysis 1 3(3,0) Introduction to the problems of numerical analysis emphasizing computational procedures and application. Topics include sources of error and conditioning, matrix methods, systems of linear equations, nonlinear equations, interpolation and approximation by splines, polynomials, and trigonometric functions. Preq: MTHSC 206 or 207 and 360 or equivalent.

MTHSC 463, H463, 663 Mathematical Analysis I 3(3,0) Basic properties of the real number system, sequences and limits; continuous functions, uniform continuity and convergence. Integration, differentiation, functions of several real variables, implicit function theory. Preq: MTHSC 206.
MTHSC 481 Seminar in Mathematics 1-3(1-3,0)
Attention is focused on mathematical areas in which nonroutine problems can be posed with comparative ease. Emphasis is on independent study and student use of previously acquired mathematical skills. Open to students only by invitation for a maximum of three credits.

MTHSC 482, H482 Undergraduate Research 3(3,0) Independent research conducted under the supervision and guidance of a faculty member. May be repeated for a maximum of six credits.

MTHSC 491 Independent Study 3(3,0) Independent study or internship in mathematical sciences under faculty supervision. A written report and oral post presentation of the results of the independent study or internship are required. May be repeated for a maximum of six credits. Prq: Mathematical Sciences major.

MTHSC 492 Professional Development 1(1,0) Issues in professional development in the Mathematical Sciences. Individual portfolios are evaluated and critiqued for continued career use.

MECHANICAL ENGINEERING


M E 202 Foundations of Mechanical Systems 3(3,0) Introduction to basic physical elements of mechanical engineering systems. Problem-solving, design, and resourceful application of mathematics and general principles from students' science courses are emphasized throughout. Prq: MTHSC 108, PHYS 122, E M 201 (or concurrent enrollment).

M E 203 Foundations of Thermal and Fluid Systems 3(3,0) Introduction to control volumes, conservation laws of mass, momentum, and energy. Concepts of work and heat are introduced, including rate forms. Properties of pure substances. Prq: MTHSC 206, PHYS 221.

M E 205 Computer Analysis in Engineering 2(2,0) Application of undergraduate mathematics and basic engineering principles, emphasizing numerical methods and the use of mathematical software packages in the solution of engineering problems. Problems are drawn from dynamics, vibrations, kinematics, thermodynamics, heat transfer, materials engineering, fluid mechanics, and other engineering fields. Prq: ENGR 120, MTHSC 208 (or concurrent enrollment), PHYS 122, Mechanical Engineering major.

M E 221 Mechanical Engineering Laboratory I 1(0,3) Discovery of mechanical engineering principles and phenomena. Introduction to laboratory safety practices, instrumentation, calibration techniques, data analysis, and report writing. Prq: M E 202 (or concurrent enrollment), 203 (or concurrent enrollment), PHYS 221.

M E 222 Mechanical Engineering Laboratory II 2(0,6) Discovery of mechanical engineering principles and phenomena. Introduction to laboratory safety practices, instrumentation, calibration techniques, data analysis, and report writing. Introduction to basic manufacturing processes. Prq: PHYS 122 and 124, 221 (or concurrent enrollment).

M E H 300 Junior Honors Seminar 0 Acquaints students enrolled in Departmental Honors Program with current research activities in the Department of Mechanical Engineering. Faculty provide seminars in which research interests are summarized. These seminars are planned to prepare students in choosing a research topic for the senior thesis. Prq: Junior standing in departmental honors program.

M E 301 Materials for Mechanical Engineering Applications 3(3,0) Properties and selection of materials of interest to mechanical engineers. Emphasis is on the interrelations between the microstructure, processing, and properties of materials. Prq: CH 102, M E 302 (or concurrent enrollment).

M E 302, H302 Mechanics of Materials 3(3,0) Relationships between external loads on solid bodies or members and the resulting internal effects and dimension changes, including the derivation of rational formulas for stresses and deformations and the identification and use of important mechanical properties of engineering materials. Prq: E M 201, MTHSC 206.

M E 303 Thermodynamics 3(3,0) Study of the second law and entropy; applications to fixed mass systems and control volumes; vapor and gas power cycles; mixtures of gases; vapor psychrometrics; combustion and the third law. Thermochemical equilibrium. Prq: M E 203.

M E 304 Heat Transfer 3(3,0) Steady and transient heat conduction, free and forced convection, radiation, and multi-mode heat transfer. Emphasis is on analytical and numerical solutions to engineering heat transfer problems with a design orientation. Prq: M E 203, 308.

M E 305 Modeling and Analysis of Dynamic Systems 3(3,0) Techniques for developing and analyzing physical and mathematical models of mechanical and electromechanical systems are presented.Transient and frequency response are determined using analytical and numerical methods. Basic feedback systems are introduced. Prq: E C B 307, E M 202, M E 202, 205, MTHSC 208.

M E 306 Fundamentals of Machine Design 3(3,0) Introduction to failure theory, fatigue analysis, and energy methods for deflection analysis. Integration of these topics with selected portions of mechanics of materials and application of them to the design and analysis of machine elements. Prq: M E 302.

M E 308, H308 Fluid Mechanics 3(3,0) Behavior of fluids at rest or in motion, including the study of fluid properties. Emphasis is on a rational, analytical approach from which are developed basic principles of broad applicability to all fields of engineering. Prq: E M 202, M E 303 (or concurrent enrollment).

M E 310 Thermodynamics and Heat Transfer 3(3,0) Introduction to thermodynamics and heat transfer for nonmajors: properties of liquids and gases, first and second law analysis, introduction to cycles for power and refrigeration, heat flow by conduction and radiation, and convective heat flow and heat exchangers. Prq: Junior standing in an engineering curriculum.

M E 312 Manufacturing Processes and Their Application 3(3,0) Fundamental principles associated with production processes and their application to the manufacture of products from metals, polymers, ceramics, and composites. Emphasizes the physical and quantitative aspects of processing, the selection of processes to create products, and the identification processes used to manufacture existing products. Prq: M E 304 (or concurrent enrollment), 306 (or concurrent enrollment), 333 (or concurrent enrollment).

M E 333 Mechanical Engineering Laboratory II 2(1,3) Mechanical engineering principles and phenomena are reinforced through student conducted experiments. Presentation of fundamentals of instrumentation, calibration techniques, data analysis, and report writing in the context of laboratory experiments. Prq: M E 221, 302 (or concurrent enrollment), 303 (or concurrent enrollment), 308 (or concurrent enrollment), MTHSC 208.

M E 400 Senior Seminar 1(1,0) Seminars address the problems encountered by engineering graduates in professional practice. Invited lecturers as well as faculty provide the lectures and demonstrations. Prq: All required 300-level E C E, E M, and M E courses or consent of instructor.

M E 401 Mechanical Engineering Design 3(3,0) Project-oriented course in mechanical engineering. Emphasis is on the role of analysis, synthesis, and evaluation in design and on written reporting of design solutions. Influence of economics and optimization, concurrent development, integration of design and manufacturing, and system creation are utilized for engineering design decisions. Prq: M E 301, 303, 304, 305, 306 (Concurrent enrollment in one of these courses is permitted with departmental approval.)

M E 402 Internship in Engineering Design 3(1,6) Creative application of general engineering knowledge in solving an open-ended design problem provided by a sponsor typically external to the University. Progress is evaluated by a faculty judge. Students present results to the judge and sponsor through written reports and oral presentations addressing University written/oral competency goals. Prq: M E 401, 404 (or concurrent enrollment).
ME 403 Control and Integration of Multidomain Dynamic Systems 3(3,0) Introduction of control theory with sensor, actuator, and dynamic plant integration to develop, model, control, and analyze mathematical models of mechanical, electrical, hydraulic, and pneumatic systems. Transient dynamics are determined using analytical and numerical methods with feedback control systems. Strong emphasis is placed on system design using computer simulation tools. Req: M E 305.

ME 404 Manufacturing Processes and Their Application 3(3,0) Fundamental principles associated with production processes and their application to the manufacture of products from metals, polymers, ceramics, and composites. Emphasizes the physical and quantitative aspects of processing, the selection of processes to create products, and the identification of processes used to manufacture existing products. Req: ME 301, 303, 304, 305, 306, 444.

ME 405 Kinematics and Dynamics of Machinery I 3(3,0) Graphical, analytical, and numerical techniques are used in the dynamic analysis and synthesis of machines. Emphasis is on the application of these analysis techniques to planar linkages. Req: E M 202, 304, M E 205.

ME 407, 607 Applied Heat Transfer 3(3,0) Application oriented extension of M E 304, considering topics in transient conduction, fluid flow, energy exchange by radiation, and mass transfer. Applications in heat-exchange design with emphasis on economics and variation of operating conditions from the design point. Req: M E 304, consent of instructor.

ME 415, H415 Undergraduate Research I-3 Individual research projects conducted under the direct supervision and guidance of a faculty member. May be repeated for a maximum of six credits. Req: Consent of instructor.

ME 416, 616 Control of Mechanical Systems 3(3,0) Physical modeling and feedback principles are presented for control of mechanical systems. Transient response, root locus, and frequency response principles are applied to the control of basic mechanical systems such as electric motors, fluid tanks, or thermal processes. PID control laws are emphasized. Req: M E 305.

ME 417, 617 Mechatronics System Design 3(3,0) Mechatronics integrates control, sensors, actuators, and computers to create a variety of electromechanical products. Includes concepts of design, appropriate dynamic system modeling, analysis, sensors, actuating devices, and real-time microprocessor interfacing and control. Case studies, simulation, and projects are used to exemplify the system design principles. Req: M E 305 or consent of instructor.

ME 418 Finite Element Analysis in Mechanical Engineering Design 3(2,3) Introduction to the finite element method and solid modeling, finite element modeling and analysis using commercial codes; analysis strategies using finite elements; applications to heat transfer, fluid flow, and structures. Req: M E 205, 302, 304, 308, or consent of instructor.

ME 420, 620 Energy Sources and Their Utilization 3(3,0) Covers availability and use of energy sources such as fossil fuels, solar (direct and indirect), and nuclear; addresses energy density and constraints to use (technical and economic) for each source. Req: M E 303, 304.

ME 421, 621 Introduction to Compressible Flow 3(3,0) Introductory concepts to compressible flow; methods of treating one-dimensional gas dynamics including flow in nozzles and diffusers, normal shocks, moving and oblique shocks, Prandtl-Meyer Flow, Fanno Flow, Rayleigh Flow, and reaction propulsion systems. Req: M E 303, 308.

ME 422, 622 Design of Gas Turbines 3(3,0) Guiding principles in gas turbine cycles are reviewed. Turbine and compressor design procedures and performance prediction for both axial and radial flow machines are presented. Methods of design of rotary heat-exchangers and retrofitting gas turbine for regeneration operation are presented. Design projects are used to illustrate the procedures. Req: M E 308.

ME 423, 623 Introduction to Aerodynamics 3(3,0) Basic theories of aerodynamics are presented for the purpose of accurately predicting the aerodynamic forces and moments which act on a vehicle in flight. Req: M E 308.

ME 424 Mechanical Engineering Laboratory IV 1(0,3) Continuation of M E 323. Mechanical engineering principles and phenomena are reinforced through open-ended, student designed and conducted experiments. Utilization of mature skills in measurement techniques, data analysis, and reporting. Req: M E 301, 303, 304, 305, 306, 307, 444 (or concurrent enrollment).

ME 429, 629 Thermal Environmental Control 3(3,0) Mechanical vapor compression refrigeration cycles, refrigerators, thermoelectrical cooling systems, cryogenics, thermodynamic properties of air, psychometric charts, heating and cooling coil, solar radiation, heating and cooling loads, insulation systems. Req: M E 303, 308.

ME 430, 630 Mechanics of Composite Materials 3(3,0) Fundamental relationships for predicting the mechanical and thermal response of multilayered materials and structures are developed. Micromechanical and macroscopic mechanical relationships are developed for laminated materials with emphasis on continuous filament composites. The unique nature of composites and the advantages of designing with composites are discussed. Req: M E 302.

ME 431 Applied Fluids Engineering 3(3,0) Applications-oriented course in industrial fluids engineering, primarily directed toward the analysis and design of piping systems and components for liquid and gas flow. Topics include friction factors, heat loss, flow capacities, piping networks, flow measurement, pumps, control valves, and hydraulic and pneumatic components. Req: M E 208, 333.

ME 432, 632 Advanced Strength of Materials 3(3,0) Topics in strength of materials not covered in M E 302. Three-dimensional stress and strain transformations, theories of failure, shear center, unsymmetrical bending, curved beams, and energy methods. Other topics such as stress concentrations and fatigue concepts are treated as time permits. Req: M E 302.

ME 440 Materials for Aggressive Environments 3(3,0) Emphasizes the engineering aspects of selecting materials for applications in aggressive environments. Various types of material degradation are discussed as are methods for protection prevention, including especially engineering design and material selection approaches. Structural metallic alloys are emphasized; however, technically important ceramics and polymers are also discussed. Req: M E 301, 306.

ME 444 Mechanical Engineering Laboratory III 2(1,3) Continuation of M E 322. Mechanical engineering principles and phenomena are reinforced through student-conducted experiments. Presentation of fundamentals of instrumentation, calibration techniques, data analysis, and report writing in the context of laboratory experiments. Req: M E 301 (or concurrent enrollment), 304 (or concurrent enrollment), 305 (or concurrent enrollment), 444 (or concurrent enrollment), M E 333, MTHSC 302 or EX ST 411.

ME 450, 650 Mechanical Vibrations 3(3,0) Mathematical analysis of physical problems in the vibration of mechanical systems. Topics include linear-free vibrations, forced vibrations, and damping in single degree of freedom systems, transient vibrations, critical speeds, whirling of shafts, dynamic balancing, and multi-degree of freedom systems with lumped parameters. Req: E M 202, M E 302, MTHSC 208.

ME 453, 653 Dynamic Performance of Vehicles 3(3,0) Introduces techniques for analyzing the dynamic behavior of vehicles. Types of vehicles to be considered are chosen from aircraft, surface ships, automobiles and trucks, rail systems, and magnetically levitated vehicles. Req: M E 205, 305, or consent of instructor.

ME 454, 654 Design of Machine Elements 3(3,0) Design of common machine elements including clutches, brakes, bearings, springs, and gears. Optimization techniques and numerical methods are emphasized as appropriate. Req: M E 306 or consent of instructor.

ME 455, 655 Design for Computer-Automated Manufacturing 3(3,0) Concepts of product and process design for automated manufacturing are considered. Topics include product design for automated manufacturing, inspection and assembly, using automation, industrial robots, knowledge-based systems and concepts of flexible product manufacture. Req: M E 301, 306, 404 (or concurrent enrollment), or consent of instructor.

ME (EC) 456, 656 Fundamentals of Robotics 3(3,0) Introduction to the fundamental mechanics and control of robots, including their application to advanced automation. Topics include robot geometries, kinematics, dynamics, and control. Planar machine structures are emphasized, including methods using computer analysis. Application considerations include the design and operation of robot systems for manufacturing and telerobotics. Req: M E 305, 416 (or concurrent enrollment), or consent of instructor.
ME 471, 671 Computer-Aided Engineering Analysis and Design 3(3,0) Students are exposed to geometric and solid modeling, finite elements, optimization, and rapid-prototyping. Students design an artifact, represent it on the computer, analyze it using FEA, then optimize before prototyping it. Emphasizes use of computer-based tools for engineering design. The World Wide Web is used for reporting. Prereq: Numerical methods and programming experience or consent of instructor.

ME 493, 693 Selected Topics in Mechanical Engineering 1-6(1-6,0) Study of topics not found in other courses. May be repeated for a maximum of six credits, but only if different topics are covered. Prereq: Consent of instructor.

MICROBIOLOGY

MICRO 101 Microbes and Human Affairs 1(1,0) Introduces Microbiology majors to University career and library services, evaluation of computer program proficiency, Web page development, Microbiology emphasis areas, and Microbiology faculty. Students initiate their own Web-based student portfolios, which showcase their skills and experiences (e.g., résumés, accomplishments, and work samples) during their undergraduate programs. Coreq: BIOL 103 or 110 or consent of course coordinator.

MICRO 205 Introductory Microbiology 4(3,3) Basic concepts of microbiology, introduced through classroom and laboratory experiences. Emphasis is on practical applications in various areas of importance to man. Recommended for students not majoring in a biological science. Not open to Microbiology majors. Prereq: CH 101, 102, BIOL 103.

MICRO 305 General Microbiology 4(3,3) Morphology, physiology, classification, distribution, and cultivation of microorganisms. Prereq: Introductory biology, CH 101, 102.

MICRO 400, 600 Public Health Microbiology 3(3,0) Epidemiology of transmissible diseases including pathogenic characteristics of the infectious organism, modes of transmission, mechanism of infection, diagnostic aids, effective treatments, immunizing procedures, and methods of preventing infection. Prereq: MICRO 305.

MICRO 401, H401, 601 Microbial Diversity and Ecology 4(2,6) In-depth survey of microbial morphology, ecology, and diversity. Study of the interaction and adaptation of microbes in a wide range of environmental conditions, including consideration of their metabolism, nutrition, growth, and the use of microbial processes. Prereq: CH 201 or 223, 227, MICRO 305.

MICRO 403, 603 Marine Microbiology 3(2,3) Discussion of the microbes that inhabit the marine environment, their peculiar physiological traits, and contributions to the ecology of oceans. Prereq: MICRO 305, organic chemistry.


MICRO 410, H410, 610 Soil Microbiology 3(2,3) Role of microorganisms in the decomposition of organic substances, transformation of nitrogen and mineral substances in the soil; interrelationships between higher plants and microorganisms; importance of microorganisms in soil fertility. Prereq: MICRO 305.

MICRO 411, H411, 611 Pathogenic Bacteriology 4(3,3) Study of pathogenic bacteria, their morphology, cultural requirements and classification; diagnostic tests, methods of differentiation, and the diseases caused. Prereq: MICRO 305.

MICRO 412, H412, 612 Bacterial Physiology 4(3,3) Consideration of the cytology, physiology, metabolism, and genetics of bacteria. Includes studies of growth and death, reproduction and mutation, nutrition and metabolic pathways, regulatory mechanisms, and effects of environment. Prereq: CH 224, MICRO 305, one semester of biochemistry, or consent of instructor.

MICRO 413, H413, 613 Industrial Microbiology 3(2,3) Microbial aspects of large-scale processes for the production of foods, antibiotics, enzymes, fine chemicals, and beverages. Topics include strain selection, culture maintenance, biosynthetic pathways, continuous cultivation and production of single cell protein. Prereq: MICRO 305.

MICRO 414, H414, 614 Basic Immunology 4(3,3) Consideration of the nature, production, and function of basic immune responses in animals. Procedures and mechanisms of antigen-antibody and other immune reactions. Prereq: MICRO 305, organic chemistry.

MICRO 415, H415, 615 Microbial Genetics 4(3,3) Cytological basis of bacterial, fungal, and viral genetics; molecular aspects; mutations; mechanisms of genetic transfer, episomes and plasmids; and population changes. Prereq: BIOCH 301, CH 224, MICRO 305, or consent of instructor.

MICRO 416, H416, 616 Introductory Virology 3(3,0) Introduction to the field of virology, including animal, bacterial, and plant viruses. Topics include nomenclature and classification, biochemical and biophysical characteristics, mechanisms of replication, chemotherapy, and techniques for isolation, assay, and purification. Prereq: BIOCH 301, MICRO 305, or consent of instructor.

MICRO 417, H417, 617 Molecular Mechanisms of Carcinogenesis and Aging 3(3,0) Changes which occur at the cellular and subcellular levels during transformation and aging. Accumulated damage and "intrinsic clock" theories of aging; genetic and epigenetic theories of carcinogenesis; epidemiology of cancer; viral, radiation-induced, and chemical carcinogenesis; the immune system and cancer. Prereq: BIOCH 301, MICRO 305, or consent of instructor.

MICRO (BIOSC, GEN) 418, 618 Biotechnology I: Nucleic Acids Techniques 4(2,4) See GEN 418.

MICRO 419, 619 Selected Topics in Molecular Medicine 3(3,0) Introduction to various areas of molecular medicine. Examines the latest research and developments in molecular medicine. Designed for students interested in medicine and biomedical research. Graduate students may repeat for a maximum of six credits. Prereq: BIOCH 301, MICRO 305, or consent of instructor.

MICRO 491 Special Problems in Microbiology 1-3(3,0,9) Research problems in various areas of microbiology which introduce undergraduate students to the planning and execution of research experiments and the presentation of research findings. May be repeated with advisor's approval.

MICRO H491 Honors Special Problems in Microbiology 3(0,9) Research problems in various areas of microbiology which introduce undergraduate students to the planning and execution of research experiments and the presentation of research findings. May be repeated for a maximum of six credits with consent of instructor. Prereq: Membership in Calhoun Honors College, consent of instructor.

MICRO (BIOSC) 493 Senior Seminar 2(2,0) See BIOSC 493.

MILITARY LEADERSHIP
Professor: P. E. Kaiser, Chair; Assistant Professors: D. W. Eaton, R. Gladden, A. L. Hunter, B. S. Moore, W. M. Parker, J. G. Walker

ML 101 Leadership Fundamentals I 2(2,1) Study of leadership focused at the individual level. Students learn effective communicating skills, ethical decision making, small group management, and mental and physical conditioning. Skills are applied in a variety of challenging training events during laboratory, including rappelling, water survival, land navigation, and team athletics.

ML 102 Leadership Fundamentals II 2(2,1) Continued study of leadership focused at the individual and team levels. Topics include problem solving, critical thinking, leadership styles, and group cohesion. Leadership laboratory training includes small tactics and weapons firing.

ML 103 Becoming a Leader 3(3,0) Study of basic leadership, covering leadership theory and skills, organizational systems to support leaders, problem solving, values and ethics, and communication skills. Includes lecture, practical exercises, and guest speakers.

ML 201 Leadership Development I 2(2,1) Study of leadership focused at the team level. Students develop leadership skills through public speaking, managing small groups, and mentoring first-year students. Skills are applied in a variety of challenging training events during leadership laboratory, including rappelling, water survival, land navigation, and team-building exercises.

ML 202 Leadership Development II 2(2,1) Continued study of leadership at the team and small group levels. Focuses on moral leadership, officership, and the Army as a profession. Leadership laboratory training includes small unit tactics, airborne operations, and weapons firing. Students lead teams throughout the semester.
MUSIC 101 Beginning Class Piano I (0,2)
Thorough introduction to basic keyboard skills including solo and ensemble repertoire, technique, applied keyboard theory, and performance. Applied music fee is assessed. Preq: Consent of instructor.

MUSIC 102 Beginning Class Piano II (0,2)
Continued work on keyboard skills, applied keyboard theory, solo and ensemble repertoire, and performance. Applied music fee is assessed. Preq: MUSIC 101 or consent of instructor.

MUSIC 105 Music Fundamentals 3(3,0)
Covers rudiments of music theory and aural skills. Includes notation, scales, key signatures, intervals, and chord construction as well as sight singing and ear training. Preq: Consent of instructor.

MUSIC 111 Beginning Class Guitar I (1,0,2)
Introduction to basic guitar skills, including finger-style technique, strumming, and song accompaniment. Students develop skills and appreciation of the discipline through teacher-led drills, ensemble playing, and the exploration of guitar history, style, and the impact of various players and composers on the medium. Applied music fee is assessed. Preq: Consent of instructor.

MUSIC 112 Beginning Class Guitar II (1,0,2)
Continued work on guitar skills, including finger-style, strumming, pick playing, ensemble playing, and soloing. Also includes music theory for guitarists such as keys, scales, and chord building, as well as discussions of the impact of various players and composers on the medium. Applied music fee is assessed. Preq: MUSIC 111 or consent of instructor.

MUSIC 121 Beginning Class Voice 1(0,2)
Introduction to basic vocal skills, including breathing, tone production, diction, intonation, and interpretation. Includes solo and ensemble repertoire. In-class group and individual performances are required. Applied music fee is assessed. Preq: Consent of instructor.

MUSIC 131 Beginning Instrumental Class 1(0,2)
Introduction to basic instrumental skills in a class setting, including proper playing position, tone production, intonation, and ensemble playing. Includes history and usage of the given instrument. Different instrumental groups are taught as separate course sections. May be repeated for a maximum of six credits, but only on other instruments. Applied music fee is assessed. Preq: Consent of instructor.

MUSIC 151 Applied Music 1(0,1)
Individual study in performance medium (piano, voice, strings, woodwinds, brass, percussion, guitar, organ, or carillon). One 30-minute lesson each week, for which a minimum of four hours practice is required. May be repeated for credit with departmental approval of differing performance media. Applied music fee is assessed. Preq: Consent of instructor, based upon a qualifying audition.

MUSIC 152 Applied Music 1(0,1)
Continuation of MUSIC 151. May be repeated for credit with departmental approval of differing performance media. Applied music fee is assessed. Preq: Consent of instructor, based upon a qualifying audition.

MUSIC 153 Applied Music for Majors 1(0,1)
Individual study in vocal or instrumental performance (voice, woodwinds, brass, strings, percussion or keyboards). One 45-minute lesson each week. Jury required. May be repeated for credit with departmental approval of differing performance media. Applied music fee is assessed. Preq: Consent of instructor, based upon a qualifying audition.

MUSIC 154 Applied Music for Majors 1(0,1)
Continuation of MUSIC 153. Jury and performance on a recital are required. May be repeated for credit with departmental approval of differing performance media. Applied music fee is assessed. Preq: Consent of instructor, based upon a qualifying audition.

MUSIC 180 Introduction to Music Technology 3(2,3)
Introduction to music notation, sequencing, digital audio, sound reinforcement, analog and digital recording, and other current music technologies. Preq: Performing Arts major or consent of instructor.

MUSIC 205 Music Theory I 3(3,0)
Beginning analytical techniques in both the classical and popular genres, including aspects of harmony, melody, and rhythm. Preq: MUSIC 105, satisfactory score on departmental placement exam, or consent of instructor. Coreq: MUSIC 207.

MUSIC 206 Music Theory II 3(3,0)
Continuation of MUSIC 205, with added emphasis on modulation and formal structures. Preq: MUSIC 205. Coreq: MUSIC 208.

MUSIC 207 Aural Skills I 1(0,2)
Beginning studies in sight-singing and dictation (melodic, harmonic, and rhythmic). Coreq: MUSIC 205.

MUSIC 208 Aural Skills II 1(0,2)
Continuation of MUSIC 207 with music of greater complexity and the use of C clefs. Coreq: MUSIC 206.

MUSIC 210, H210 Music Appreciation: Music in the Western World 3(3,0)
Deepest appreciation of students' musical heritage through study of the elements of the musical language and its development in Western culture.

MUSIC 251 Applied Music 1(0,1)
Continuation of MUSIC 152. Applied music fee is assessed. Preq: MUSIC 152, consent of instructor.

MUSIC 252 Applied Music 1(0,1)
Continuation of MUSIC 251. May be repeated for credit with departmental approval of differing performance media. Applied music fee is assessed. Preq: MUSIC 251, consent of instructor.

MUSIC 253 Applied Music for Majors 1(0,1)
Continuation of MUSIC 252. May be repeated for credit on other performance media with departmental approval. Jury is required. Applied music fee is assessed. Preq: MUSIC 254, consent of instructor.

MUSIC 254 Applied Music for Majors 1(0,1)
Continuation of MUSIC 253. May be repeated on other performance media with departmental approval. Jury and performance on a recital are required. Applied music fee is assessed. Preq: MUSIC 253, consent of instructor.

MUSIC 279 Music Practicum 1(0,3)
Practical work in music on productions designed for public presentation. Emphasis is placed on sound support, amplification, and mixing. May be repeated for a maximum of four credits. Preq: Consent of instructor.

MUSIC 280 Sound Reinforcement 3(2,2)
Theory and practice of using audio equipment for amplifying sound in venues ranging from conference rooms to concert halls and sports arenas. Preq: Performing Arts major or consent of instructor.
MUSIC 310 Survey of Music History 3(3,0)
Comprehensive survey of the Western art music tradition from the Middle Ages to the present. Prq: MUSIC 206, Performing Arts major, or consent of instructor.

MUSIC 311 History of American Music 3(3,0)
Music in America from 1620 to the present. Indigenous and borrowed influences are examined.

MUSIC 312 History of Jazz 3(3,0)
Comprehensive survey of jazz elements and styles. A historical perspective from Dixieland to bebop to jazz/rock is included.

MUSIC 313 History of Rock and Roll 3(3,0)
Comprehensive survey of rock elements, styles, and artists. Emphasis is on the evolution of rock and roll including a broad examination of musical influences. Course content examines how rock and roll both reflected and influenced social issues.

MUSIC 314 World Music 3(3,0)
Introduction to ethnomusicology and music of the world's peoples. Emphasis is placed on music through culture.

MUSIC 317 History of Country Music 3(3,0)
Chronological study of country music origins, styles, and artists. Emphasis is on the evolution of country music from a cultural expression of the South to a commercial art form of worldwide appeal.

MUSIC 321 Principles of Piano Performance I 3(3,0)
In-depth study of the principles of piano performance focusing on how to interpret a musical score, develop technical skills and practice techniques, and use the body correctly at the keyboard. Prq: By audition.

MUSIC 322 Principles of Piano Performance II 3(3,0)
Continuation of MUSIC 321. Prq: MUSIC 321 or consent of instructor.

MUSIC 323 Piano Accompanying I 1(0,3)
Group study in piano accompanying. Focus on sight-reading and choral, vocal, and instrumental accompanying. Students take group lessons accompanied in groups and/or applied music students. Prq: Consent of instructor.

MUSIC 325 CU Carillonneurs 1(0,2)
Group study in playing the carillon. One hour class meeting each week for which a minimum of two hours of individual practice is required. Participation in a recital is required. Prq: Musical keyboard experience, consent of instructor.

MUSIC 330 Small Ensemble 1(0,3)
Ensembles: devoted to the musical training of instrumental, vocal ensemble members through reading and rehearsal of appropriate music. Public performances are given periodically in addition to the minimum rehearsal time. Enrollments in multiple sections is allowed. Prq: Consent of director.

MUSIC 331 Pep Band 1(0,3)
Ensembles: devoted to the musical training of ensemble members through reading and rehearsal of appropriate music. Public performances are given in addition to the minimum rehearsal time. Simultaneous enrollments in multiple sections is allowed. Prq: Consent of director.

MUSIC 332 Woodwind Quintet 1(0,3)
Ensembles: advanced study of woodwind chamber music media. One-hour class meeting each week, for which a minimum of two hours of ensemble practice is required. Prq: By audition only; concurrent enrollment in MUSIC 362.

MUSIC 333 String Quartet 1(0,3)
Ensembles: advanced study of string quartet repertoire. Two 90-minute meetings each week for which a minimum of two hours of practice is required. Prq: By audition only. Coreq: MUSIC 369, Applied Music.

MUSIC 334 Flute Choir 1(0,3)
Ensemble study of flute ensemble literature. One 60-minute meeting each week for which a minimum of two hours of practice is required. Prq: By audition only.

MUSIC 336 Percussion Ensemble 1(0,2)
Ensembles: study and performance of percussion ensemble literature. One two-hour class meeting each week, for which a minimum of two hours of individual practice is required. Coreq: MUSIC 331, 362, 363, 364, or 369.

MUSIC 337 Steel Drum Band 1(0,2)
Ensembles: devoted to the musical training of ensemble members through reading and rehearsal of appropriate music. Public performances are given in addition to the minimum rehearsal time. Rehearsals also include discussions of steel band history and performance practice. Prq: Consent of director.

MUSIC 341 Men's Breakout Ensemble 1(0,2)
Small ensembles: study of male a cappella/popular music on an advanced level. Coreq: MUSIC 370 or 372 or consent of instructor.

MUSIC 342 Women's Breakout Ensemble 1(0,2)
Small ensembles: study of women's a cappella/popular vocal music on an advanced level. Enrollment is limited to women whose are enrolled in a large choral ensemble. Coreq: MUSIC 370 or 371 or consent of instructor.

MUSIC 343 Men's Small Ensemble 1(0,2)
Small ensembles: study of male a cappella/popular, barbershop, and a cappella music on an advanced level. Coreq: MUSIC 370 or 372 or consent of instructor.

MUSIC 344 Vocal Jazz Ensemble 1(0,3)
Ensembles: devoted to the musical training of ensemble members through reading and rehearsal of appropriate music. Public performances are given periodically in addition to the minimum rehearsal time. Coreq: MUSIC 370, 371, or 372 or consent of instructor.

MUSIC 351 Applied Music 1(0,1)
Continuation of MUSIC 252. May be repeated for credit with departmental approval of different performance media. Applied music fee is assessed. Prq: MUSIC 252, consent of instructor.

MUSIC 352 Applied Music 1(0,1)
Continuation of MUSIC 351. Students are required to perform an appropriate solo in a student recital. May be repeated with departmental approval of different performance media. Applied music fee is assessed. Prq: MUSIC 351, consent of instructor.

MUSIC 353 Applied Music for Majors 1(0,1)
Continuation of MUSIC 254. May be repeated on other performance media with departmental approval. Jury is required. Applied music fee is assessed. Prq: MUSIC 254, consent of instructor.

MUSIC 354 Applied Music for Majors 1(0,1)
Continuation of MUSIC 353. May be repeated on other performance media with departmental approval. Jury is required. Applied music fee is assessed. Prq: MUSIC 353, consent of instructor.

MUSIC 361 Marching Band 1(0,3)
Ensembles: devoted to musical training of ensemble members through reading and rehearsal of appropriate music. Public performances are given periodically in addition to the minimum rehearsal time. Offered fall semester only. Prq: Consent of director.

MUSIC 362 Symphonic Band 1(0,3)
Ensembles: devoted to the musical training of ensemble members through reading and rehearsal of appropriate music. Public performances are given periodically in addition to the minimum rehearsal time. Prq: Consent of director.

MUSIC 363 Jazz Ensemble 1(0,3)
Ensembles: devoted to the musical training of ensemble members through reading and rehearsal of appropriate music. Public performances are given periodically in addition to the minimum rehearsal time. Prq: Consent of director.

MUSIC 364 Concert Band 1(0,2)
Devoted to the musical training of ensemble members through reading and rehearsal of appropriate music. Public performances are given periodically in addition to the minimum rehearsal time. Prq: Consent of director.

MUSIC 369 Symphony Orchestra 1(0,3)
Mid-sized, college-community orchestra devoted to performing works from standard repertoire. Weekly evening rehearsals with one or more performances per semester. Prq: Consent of director.

MUSIC 370 Clemson University Singers 1(0,3)
Ensembles: devoted to the musical training of ensemble members through reading and rehearsal of appropriate music. Public performances are given periodically in addition to the minimum rehearsal time. Prq: Consent of director.

MUSIC 371 Women's Glee 1(0,3)
Ensembles: devoted to the musical training of ensemble members through reading and rehearsal of appropriate music. Public performances are given in addition to the minimum rehearsal time. Prq: Consent of director.

MUSIC 372 Men's Glee 1(0,3)
Ensembles: devoted to the musical training of ensemble members through reading and rehearsal of appropriate music. Public performances are given in addition to the minimum rehearsal time. Prq: Consent of director.

MUSIC 373 University Chorus 1(0,3)
Ensembles: devoted to the musical training of ensemble members through reading and rehearsal of appropriate music. Public performances are given periodically in addition to the minimum rehearsal time. Prq: Consent of director.

MUSIC 380 Audio Engineering I 3(2,2)
Intermediate-level course in music technology focusing on digital hard disk recording and acoustical considerations in audio engineering. Prq: MUSIC 180 or consent of instructor.

MUSIC 398 Special Topics in Music 3(3,0)
Consideration of select areas of study in music not addressed by other music courses. May be repeated once for credit. Prq: Consent of instructor.

MUSIC 400, 600 Music in the Elementary Classroom 3(3,0)
Familiarizes teachers in the elementary classroom with traditional, Kodaly, Orff, and Kindermusik approaches in correlating music with language arts, mathematics, and social studies.
MUSIC 405 Instrumental and Vocal Arranging 3(2,3) Advanced study of the properties of instruments and voices and their combination in various small and large ensembles. Emphasis is placed on applying this knowledge to the creation of instrumental and vocal arrangements. Prereq: MUSIC 180, 205, or consent of instructor.

MUSIC 415 Music History to 1750 3(3,0) Development of Western music from antiquity to 1750, emphasizing representative literature from various styles and periods. Prereq: MUSIC 210, 310, or consent of instructor.

MUSIC 416 Music History Since 1750 3(3,0) Continuation of MUSIC 315. Music from 1750 to the present. Prereq: MUSIC 210, 310, or consent of instructor.

MUSIC 430 Conducting 3(3,0) Study of choral and instrumental conducting. Emphasis is on manual conducting techniques, attitudes, philosophies, and responsibilities necessary for the preparation, planning, and execution of artistic conducting. Prereq: MUSIC 205 or consent of instructor.

MUSIC 451 Applied Music 1(0,1) Continuation of MUSIC 352, guiding students in interpretation of advanced solo and ensemble literature. Students are required to perform an appropriate solo in a student recital. May be repeated for credit with departmental approval of differing performance media. Applied music fee is assessed. Prereq: MUSIC 352 and consent of instructor.

MUSIC 452 Applied Music 1(0,1) Continuation of MUSIC 451. Students are required to perform an appropriate solo in a student recital. Applied music fee is assessed. Prereq: MUSIC 451 and consent of instructor.

MUSIC 453 Applied Music for Majors 1(0,1) Continuation of MUSIC 354. May be repeated on other performance media with departmental approval. Jury is required. Applied music fee is assessed. Prereq: MUSIC 354, consent of instructor.

MUSIC 454 Applied Music for Majors 1(0,1) Continuation of MUSIC 453. May be repeated on other performance media with departmental approval. Juries full recital performance is required. Applied music fee is assessed. Prereq: MUSIC 453, consent of instructor.

MUSIC 480, 680 Audio Engineering II 3(2,2) Advanced course in music technology focused on music production integrating digital audio and virtual instruments. Prereq: MUSIC 380 or consent of instructor.

MUSIC 485 Production Workshop 3(2,2) Project-based course focused on music production. Students produce an audio CD that includes recorded audio tracks and/or newly-created sequenced material with creative and appropriate packaging. Prereq: MUSIC 480.

MUSIC 499, 699 Independent Studies 1-3(1-3,0) Tutorial work for students with special interests in music study outside the scope of existing courses. May be repeated for a maximum of six credits. Prereq: Consent of department chair.

NONPROFIT LEADERSHIP

NPL 300 Foundations in Nonprofit Leadership 2(2,0) Students develop an understanding of historical and philosophical aspects of nonprofit organizations, as well as special skills needed to develop boards, recruit volunteers, raise funds, and manage day-to-day operations. Career development opportunities are also explored.

NPL 390 Practicum I 1(0,3) Under agency supervision, students spend 60 hours observing and implementing activities, events, and programs in a nonprofit, faith-based, grassroots, or organization approved by instructor. To be taken Pass/Fail only. Prereq: Enrollment in Nonprofit Leadership minor, consent of instructor.

NPL 490 Practicum II 2(0,6) Under agency supervision, students spend 100 hours planning, organizing, and implementing activities, events, and programs in a nonprofit, faith-based, grassroots, or organization approved by instructor. Prereq: Enrollment in Nonprofit Leadership minor, consent of instructor.

NURSING


NURS 140 Computer Applications in Health Care 3(3,0) Introduction to the application of computer systems in the delivery of health care. Covers existing health-care applications and forecasts future needs. Multiple computer systems are discussed. Nursing majors will be given enrollment priority.

NURS 301 Seminar in Health Care Topics 1-4 (1-4,0-9) Individualized in-depth study in a selected health-care area; may have a clinical component and/or special projects. Open to non-nursing majors. May be repeated for a maximum of six credits. Prereq: Consent of instructor.

NURS 303 Community Health Nursing 3(3,8) Incorporates theoretical and empirical knowledge from physical and social sciences. Uses critical thinking to provide holistic, safe, individualized nursing care to adults, including health promotion, maintenance, restoration, and health teaching. Prereq or Coreq: NURS 320.

NURS 304 Home Health Nursing 3(3,0) Focuses on the role of the nurse in home health care. Emphasizes patient, family, and community needs within the context of the home environment. Prereq: Consent of instructor.

NURS 305 Psychosocial Nursing 3(3,0) Focuses on psychosocial, developmental, family, and cultural factors that influence individuals from diverse populations and their families in the promotion, maintenance, and restoration of health. Prereq: Consent of instructor.

NURS 307 Family Nursing in the Community 3(4,2) Bridge course for RN students focusing on nursing care of families including childbearing clients, infants, children, adolescents, adults, and older adults in the community. Emphasis is on strategies to assist individuals in achieving or maintaining wellness in the family, home, and community environment. Prereq: Consent of instructor.

NURS 310 Health Assessment 3(2,2) Introduces concepts of health, wellness, and illness. Focuses on physical, psychosocial, and cultural assessment for the well adult client with variations across the lifespan. Includes interviewing techniques. Prereq: All required non-nursing courses and electives.

NURS 311 Introduction to Community Nursing 2(2,0) Focuses on health promotion and illness prevention activities across the lifespan for individuals and families in the community. Major emphasis is on nursing's role in the acquisition and maintenance of health as well as the identification and modification of health risk factors. Prereq: NURS 310, 312, 320. Prereq or Coreq: NURS 304, 340.

NURS 312 Therapeutic Nursing Interventions 4(2,4) Focus on therapeutic nursing interventions, including selected psychomotor skills, communication skills, and teaching/learning. Prereq: All required non-nursing courses and electives.

NURS 313 Health Assessment Through the Lifespan 4(3,2) Expands on RN's knowledge of health assessment. Focuses on physical and psychosocial assessment for the well client through the lifespan. Interviewing techniques are included. Prereq: Admission to RN/BS program.

NURS 317 Development of the Nursing Profession 3(3,0) Explores the evolution of nursing as a profession, the social and technological factors and challenges, struggles, and accomplishments of past nursing leaders. Includes strategies for effecting change based on experiences of the past.

NURS 318 Multidisciplinary Approach to End-of-Life Care 3(3,0) Integrates principles of care to increase comfort at the end of life, presented within a framework which encompasses the physical, psychosocial, and spiritual dimensions of an individual. Coursework also includes ethical and legal issues related to advance directives, reimbursement, and regulatory topics. Prereq: PSYCH 201, SOC 201, or consent of instructor.

NURS 320, H120 Professionalism in Nursing 2(2,0) Application of critical thinking skills in the professional nursing roles in multidisciplinary approaches to health care. Analysis of the historical development of modern nursing. Examination of issues of nursing care to diverse populations within context of ethical and professional standards. Prereq: All required non-nursing courses and electives or consent of instructor.
NURS 323 Gerontology Nursing 2(2,0) Introduction of theories of aging. Focuses on complex health care issues of aging and chronic care including promotion, maintenance, and restoration of health of the elderly. Scientific concepts address physiological, psychological, and sociological issues of aging and chronic illness. Prereq. NURS 310, 312, 320, PSYCH 201, SOC 201. Prereg or Coreq: NURS 304, 340.

NURS 330, H330 Research in Nursing 3(3,0) Introduction to conceptual frameworks, models, and theories related to nursing. Analysis of reported research in nursing and related disciplines. Emphasis on ethical, moral, and legal issues are discussed in relation to nursing research. Prereq. NURS 310, 312, 320 or admission to RN/BS program.

NURS 340 Pharmacotherapeutic Nursing Interventions 3(3,0) Focuses on the integration of nursing process with pharmacotherapeutics, administration, monitoring, and related client education. Includes major drug classifications, indications for use, side effects, interactions, routes of administration, usual dosages and contraindications. Prerequisite: All required non-nursing courses and electives.

NURS (PHIL) 350 Technology and Philosophy in Nursing 3(3,0) Analyzes influence of increasing application of scientific technology to healthcare delivery and concomitant ethical issues.

NURS 401 Mental Health Nursing 5(3,4) Application of theories and the nursing process to identify, implement, and evaluate nursing interventions for the care of clients with psychiatric disorders. Prereq. All required 300-level nursing courses.

NURS 403 Complex Nursing of Adults 5(3,4) Focuses on the psychological, philosophical, and sociocultural influences on complex health problems related to acute and terminal conditions. Emphasizes the concepts of circulation, respiration, homeostasis, and compensation in acutely ill adults. Prereq. NURS 401, 411, 412.

NURS 405, H405 Leadership and Management in Nursing 3(2,2) Focuses on the role of the professional nurse in managing nursing care. Theories and research related to leadership, power, management, organizations, regulation, and ethics are discussed. Directed laboratory experiences are provided. Prereq. NURS 401, 411, 412, or admission to RN/BS program.

NURS 406 Issues in Professionalism 3(3,0) Analysis of the development of professional nursing. Consideration of educational issues, legal and economic issues, health policy, leadership, cultural variations, and the influence of values in ethical decisions and nursing practice. Prereq. Admission to RN/BS program.

NURS 408 Senior Nursing Practicum 3(1,4) Impact of selected health issues and problems on the practice of nursing is considered. License preparation, maintaining currency in the field, and other relevant topics facing the professional nurse are presented. Under preceptor supervision, students observe, organize, and implement entry level nursing practice. To be taken Pass/Fail only. Prereq: NURS 401, 411, 412. Coreq: NURS 403, 415.

NURS 411 Nursing Care of Children 5(3,4) Focuses on child health problems and health maintenance. Emphasizes biological, pathophysiological, psychological, and sociocultural concepts related to nursing care of children with acute, critical, and chronic illnesses. Includes strategies for alleviation of illness, restoration of wellness, promotion and maintenance of health, growth, and development. Prereq. All required 300-level Nursing courses.

NURS 412 Nursing Care of Women and Their Families 5(3,4) Emphasizes biological, psychological, and sociocultural concepts; identification of appropriate nursing strategies to enhance individual capacity to achieve or maintain wellness in the family, home, community, and hospital environment. Prereq. All required 300-level Nursing courses.

NURS 415 Community Health Nursing 4(2,4) Consideration of health promotion activities for family and community groups with emphasis on community assessment, screening, and health teaching/counseling. Practice activities are related to health promotion in population groups and nursing care of homebound clients. Laboratory settings include homes, schools, industries, and other community organizations. Prereq. NURS 401, 411, 412, or admission to RN/BS program.

NURS H420 Senior Honors I 2(2,0) Students develop a proposal for a major thesis, directed study project, or research project under the guidance of a faculty preceptor. Prereq: Senior Honors standing. NURS H330.

NURS H428 Senior Honors II 2(2,0) Students implement a proposal for a major directed study project or research thesis under the guidance of a faculty preceptor. Prereq: Senior Honors standing. NURS H405, H420.

NURS 485 Nurse Extern Practicum 6(0,18) Practicum consisting of preceptor-supervised and faculty-led nursing clinical experiences in a regional health-care facility. Prereq. Completion of at least one adult health and one pathophysiology course or consent of instructor.

NURS 499 Independent Study 1-4(1,0-0,9) In-depth study in an area of special interest in Nursing. Students develop specific objectives with a faculty member with expertise in the area of interest. May be repeated for a maximum of six credits. Prereq: Consent of instructor.

NUTR 203 Principles of Human Nutrition 3(3,0) Principles of nutrition including functions, digestion, and requirements of nutrients; factors affecting food choices and dietary adequacy, and roles of nutrition in physical fitness and health maintenance. May not be substituted for NURS 401.

NUTR 210 Nutrition and Physical Activity 3(3,0) Topics include role of carbohydrates, fats, and proteins on energy utilization during exercise; altering body composition and improving fitness with diet and physical activity; importance of fluid intake on performance, effectiveness of dietary supplements and ergogenic aids; and choosing a diet appropriate for individual physical activity levels. Prereq: BIOL 102 or equivalent.

NUTR 401, H401, 601 Fundamentals of Nutrition 3(3,0) Biochemical and physiological fundamentals of nutrition applicable to man and domestic animals. Considers digestive processes and absorption and metabolism of carbohydrates, lipids, proteins, water, minerals, and vitamins. Discusses energy metabolism and comparative anatomy and physiology of digestive systems. Offered fall semester only. Prereq: BIOCH 305, CH 223, or consent of instructor.

NUTR 420 Selected Topics in Nutrition 1-3(1-3,0) Comprehensive study of special topics in nutrition not covered in detail or contained in other courses. Current developments in each area are stressed. May be repeated for a maximum of three credits, but only if different topics are covered. Prereq: Senior standing or consent of instructor.

NUTR 421 Special Problems in Nutrition 1-4 (0.5-12) Independent research investigation in nutrition. Special emphasis is on developing research proposal, conducting the research, and reporting the findings. May be repeated for a maximum of six credits, but only if different topics are covered. Prereq: Senior standing or consent of instructor.

NUTR 424, 624 Medical Nutrition Therapy 1 4(3,3) Principles of nutritional assessment, education, and counseling skills; development of medical nutrition therapy for individuals with obesity and eating disorders, inflammatory disorders, and metabolic and renal disorders. Prereq: BIOCH 223, NUTR 451, or consent of instructor.

NUTR 425, H425, 625 Medical Nutrition Therapy II 4(3,1) Development of medical nutrition therapy for individuals with various disease states including cardiovascular, hepatic, musculoskeletal, and neoplastic disorders; with consideration of sociocultural and ethnic aspects of food consumption and alternative nutrition therapies. Prereq: BIOCH 223, NUTR 424, or consent of instructor.

NUTR 426, 626 Community Nutrition 3(3,0) Study of fundamentals of nutrition care delivery in community programs beginning with assessment and problem identification and continuing through the development, implementation, and evaluation of nutrition intervention programs. Prereq: NUTR 451 or equivalent or consent of instructor.

NUTR 451, H451, 651 Human Nutrition 3(3,0) Essentials of nutrition and principle nutritional deficiency conditions. Factors affecting adequacy of dietary intake, methods of determining nutritional status, development of nutrition standards, and recent advances in human nutrition. Prereq: BIOCH 305/306 or equivalent or consent of instructor.

NUTR 455, 655 Nutrition and Metabolism 3(3,0) Concepts of metabolism fundamental to understanding normal and therapeutic nutrition are examined. Bioenergetics as well as metabolism of carbohydrates, lipids, amino acids, vitamins, and minerals as they relate to nutrition are discussed. Prereq: NUTR 451 and BIOCH 305 or 423 or 406 or consent of instructor.
PACKAGING SCIENCE

Professors: E. H. Hoyle, R. L. Thomas, Chair; Associate Professor: D. K. Cooksey, D. O. Darby, R. M. Kimmel, W. S. Whiteside; Assistant Professor: H. P. Batt; Lecturers: G. S. Batt, R. T. Moore; Adjunct Professor: R. C. Cooksey; Adjunct Associate Professors: H. J. Park, J. J. Song; Adjunct Lecturers: L. R. Byrne, R. J. Giangiorgi

PKGSC 101 Packaging Orientation I (1,0) Overview of the various principles and practices in packaging science, historical development, packaging as a career.

PKGSC 102 Introduction to Packaging Science 2(2,0) Functions of a package: materials, processes, and technology used in package development; the relationship of packaging to the corporation, consumer, and society as a whole. Preq: PKGSC 101 or consent of instructor.

PKGSC 201 Packaging Perishable Products 3(3,0) Covers fundamental characteristics and applications of various materials and systems used to package perishable products such as foods and pharmaceuticals. Discusses packaging issues regarding food, pharmaceutical, and medical packaging. Includes product/package interactions and packaging requirements. Preq: CH 201, PKGSC 202, or consent of instructor.

PKGSC 204 Container Systems (Rigid and Flexible) 3(3,0) Examination of all the packages and containers used to develop systems to distribute products. Compatibility of product and package, structural design, costs, and merchandising considerations are stressed. Preq: PKGSC 202, 206 (or concurrent enrollment) or consent of instructor.

PKGSC 206 Container Systems Laboratory 1(0,3) Laboratory practice in sample making, designing and constructing various containers. Preq: PKGSC 204 (or concurrent enrollment).

PKGSC 320 Package Design Fundamentals 3(2,3) Study of specific package design concepts. Students understand how the design affects manufacturing processes, costs, and protective functions; begin skill development using hand-drawing and model packages; then move to software-based design and real packages. Preq: PKGSC 204, 206.

PKGSC 368, H368 Packaging and Society 3(3,0) The role of packaging in today’s society as it specifically relates to the responsibilities of the packaging scientist in protecting people and the environment. Study of environmental regulations and guidelines currently in place. Students present their informed opinions through class discussions and a group project involving a controversial topic. Preq: PKGSC 102 or consent of instructor.

PKGSC 401, 601 Packaging Machinery 3(3,0) Systematic study of machinery used to form, fill, seal, laminate, combine, and print continuous and automated packaging lines and auxiliary material handling equipment, including principles of machine design, operation, selection, and specification. Preq: PKGSC 204, PHYS 207 or consent of instructor.

PKGSC 404, H404, 604 Mechanical Properties of Packages and Principles of Package Evaluation 3(3,0) Study of the mechanical properties of packages, principles and standard methods (ASTM, TAPP) of determining these properties. Evaluation of functional properties of packages including shock and vibration isolation. Preq: PHYS 207, PKGSC 204, or consent of instructor.

PKGSC 405, FSC 409 Total Quality Management for the Food and Packaging Industries 3(3,0) See FD SC 409.

PKGSC 416, 616 Application of Polymers in Packaging 4(3,3) Detailed study of polymer chemistry and polymerization technology. Emphasis is on polymers which are significant in packaging. Study includes polymer morphology, rheology, physical properties, and processing methods. Preq: PKGSC 204, 206; CH 201 or 223; PHYS 207, or consent of instructor.

PKGSC 420, 620 Package Design and Development 3(2,3) Study of the principles and methods practiced in designing and developing packages and packaging systems and of methods used to coordinate and analyze package development activities including interfacing with product development, manufacturing, marketing, purchasing, and accounting. Preq: Second semester sophomore standing; PKGSC 368, 401, 404, 416, 464; or consent of instructor.

PKGSC 421 Special Problems in Packaging Science 1-4(0,3-12) Independent research investigations in packaging science related to packaging materials, machinery, design, and applications. Special emphasis is placed on organizing a research proposal, conducting research, and reporting results. May be repeated for a maximum of 15 credits. Preq: Consent of instructor.

PKGSC 422 Selected Topics in Packaging Science 1-3(1,3-6) Comprehensive study of selected topics in packaging science not covered in detail or contained in other courses. Contemporary developments in each area are stressed. May be repeated for a maximum of 15 credits, but only if different topics are covered. Preq: Consent of instructor.

PKGSC 430, 630 Converting for Flexible Packaging 3(1,6) Study of materials, methods, processes, and equipment used in converting materials for flexible packaging. Laboratory provides hands-on experience preparing and operating pilot-scale converting equipment. Preq: PKGSC 204, 206; or consent of instructor.

PKGSC 440, 640 Packaging for Distribution 3(3,0) Delivery of a packaged product from point of manufacture to point of sale often involves several shipping methods, e.g., truck, rail, air, or ship. To assure both product protection and lowest cost, students must be familiar with the fundamentals of distribution packaging technology. Preq: Senior standing, consent of instructor.

PKGSC 454, 654 Package Evaluation Laboratory 2(0,6) Laboratory experiments to determine properties of packaging materials and to evaluate the performance of packages including shipping tests (shock and vibration). Students learn how to operate standard testing apparatus and become familiar with industry-recognized test methods and standards. Preq: PKGSC 404 or consent of instructor.

PKGSC 464, H464, 664 Food and Health Care Packaging Systems 4(3,3) Characteristics, engineering properties, and applications of various materials and systems used in the packaging of foods, pharmaceuticals, and medical devices. Packaging systems for specific food and medical applications are considered. Laboratory and field exercises on food and medical packaging operations and packaging materials are included. Emphasis is on evaluation methods. Preq: PKGSC 201, 204, 206, or consent of instructor.

PKGSC 471, 671 Wood and Paper Packaging 3(3,0) In-depth study of use of wood and paper in packaging. Covers characterization of raw materials, basic conversion processes, and the use of converted products in packaging. Emphasizes the relationship between structure, processing, and properties. Preq: PKGSC 102 or consent of instructor.

PARKS, RECREATION, AND TOURISM MANAGEMENT


PRTM 101 Concepts of Leisure 3(3,0) Introduces recreation professions and organizations; government, voluntary, and commercial; overviews professional preparation; outlines development of man’s uses of leisure and evolution of recreation, city parks, natural resources conservation, and preservation movements as philosophical forces affecting leisure services. Restricted to Parks, Recreation, and Tourism Management majors.

PRTM 201, H201 The Recreation/Leisure Environment 3(3,0) Discusses the development characteristics of built and natural environmental resource settings for recreation, tourism development, and community expression. Examines human/environment interactions during leisure, including the impact of the recreation environment on people and the impact of people on the recreation environment. Surveys public agencies and private interests in these settings.

PRTM 205 Program and Event Planning 3(3,0) Principles and methods of program development. Time and facility utilization for sports activities, social functions, arts and crafts, outdoor activities, hobbies or special-interest groups, and activities in the cultural and performing arts are pursued. Preq: PRTM 101.
PRTM 206 Practicum I 1(0,3) Students conduct a recreation program in a supervised setting. A minimum of 90 hours with a leisure agency approved by the University is required. To be taken Pass/Fail only. Prereq: PRTM 205, Sophomore standing in Parks, Recreation, and Tourism Management.

PRTM 207 Practicum II 1(0,3) Continuation of PRTM 206. Experience in a leisure situation different from the PRTM 206 exposure. A minimum of 90 hours with a leisure agency approved by the University is required. To be taken Pass/Fail only. Prereq: PRTM 205, Sophomore standing in Parks, Recreation, and Tourism Management.

PRTM (FOR) 209 Professional Application of Microcomputers 3(1,4) Basic competencies in and professional applications of the following areas are realized: GUI, word processing, databases, spreadsheets, graphics, and electronic communication. Legal and ethical issues of computer use and information access and exchange are also presented. Majors in Parks, Recreation, and Tourism Management or Forest Resources will be given enrollment priority.

PRTM 210 Serving Diverse Populations in Parks, Recreation, and Tourism Management 3(3,0) Introduces students to the leisure patterns and constraints of diverse constituents, including members of ethnic and racial minorities, people of diverse socioeconomic status, women, older adults, people with disabilities, and people with alternative lifestyles. Prereq: PRTM 101.

PRTM 241 Introduction to Community Recreation Management 3(3,0) Conceptual examination of community recreation, including the history and structure of public and private nonprofit recreation agencies with an emphasis on programs and services, career opportunities, funding mechanisms, the role of government, and current trends and issues impacting delivery of services. Prereq: PRTM 101.

PRTM 254 Introduction to Sport Management 3(3,0) Development of a conceptual understanding of sport management, career opportunities in sport management, and the necessary competencies for the different career fields.

PRTM 270, H270 Introduction to Recreation Resources Management 3(3,0) Fundamentals of recreation resources management are presented to include the framework of management, management of specific resources, management of visitors, and management of services.

PRTM 281 Introduction to Golf Management 3(3,0) Development of a conceptual understanding of the golf industry, career opportunities in professional golf management, and specific introductory competencies utilized within the field. Prereq: Professional Golf Management concentration and consent of instructor.

PRTM 282 Principles of Golfer Development 3(3,0) Introduction to golf instruction. Provides knowledge and skills necessary to develop successful golf programs. Prereq: PRTM 281 or consent of instructor.

PRTM 283 Advanced Methods of Teaching Golf 3(3,0) Provides students with the knowledge and skills necessary to succeed as golf instructors. Particular emphasis is on golf swing mechanics, learning styles and motivation theory, the business of teaching golf, and the use of advanced technology in golf instruction. Prereq: PRTM 282.

PRTM 295 Seminar I 1(1,0) Introduction to the golf industry, professionalism, and current issues of interest in the industry. Special emphasis is placed on topics covered in the PGA/PGM Training Program Level I. Prereq: PRTM 281.

PRTM 301 Recreation and Society 3(3,0) Investigation of the role of recreation in a technological and work-oriented society. Particular emphasis is on recreation behaviors, resources, and programming in public and private organizations which serve the public wants. Not open to Parks, Recreation, and Tourism Management majors, may not be substituted or otherwise used to meet Parks, Recreation, and Tourism Management area requirements. Prereq: 2.0 cumulative grade-point ratio.

PRTM 304 Challenge Course Facilitation 3(2,2) Develops knowledge and skill in planning, directing, and evaluating group performance in an adventure challenge course environment. Emphasis is placed on low and high ropes elements, processing, assessment, safety, and course management. Prereq: 2.0 cumulative grade-point ratio.

PRTM 305 Safety and Risk Management in Parks, Recreation, and Tourism Management 3(3,0) Provisions of safe services, facilities, and activities in the parks, recreation, and tourism domain are studied through the application of general concepts from the areas of safety, risk management, and liability. Prereq: PRTM 321, Junior standing, 2.0 cumulative grade-point ratio.

PRTM 307 Facility Planning and Operations 3(3,0) Introduction to recreation facility planning and operations processes. Design, planning, financing, construction, budgeting, personnel, operating policies and procedures, maintenance, and equipment considerations are covered.

PRTM 308, H308 Leadership and Group Processes in Recreation 3(3,0) Leadership is analyzed through experience-based learning. Various styles of leadership and communication and their probable consequences are examined. Techniques for planning large and small group meetings are considered. Examination is made of literature in the field of leadership and group processes. Prereq: 2.0 cumulative grade-point ratio.

PRTM 309 Behavioral Concepts in Parks, Recreation, and Tourism 3(3,0) Studies social psychological concepts concerning leisure behavior in various park, recreation, and tourism settings. Students learn to apply those theories and behavioral concepts required to understand and manage leisure activities and environments. Prereq: PRTM 101; PSYCH 201 or SOC 201; 2.0 cumulative grade-point ratio; consent of instructor.

PRTM 311, H311 Therapeutic Recreation 3(3,0) Examination of the profession of therapeutic recreation by analyzing the history, philosophy, concepts, roles, and functions involved in the therapeutic recreation services. Prereq: 2.0 cumulative grade-point ratio.

PRTM 314 Therapeutic Recreation Interventions I 1(0,3) Experiential examination of program interventions used with mental health, chemically dependent, and related populations. Prereq: PRTM 101, 2.0 cumulative grade-point ratio.

PRTM 315 Therapeutic Recreation Interventions II 1(0,3) Experiential examination of program interventions used with physically disabled and other populations. Prereq: PRTM 314, 2.0 cumulative grade-point ratio.

PRTM 317 Group Initiatives 3(2,2) Examination and development of initiative modalities used by therapeutic recreators to teach teamwork, problem-solving communication, goal setting, leadership and personal interaction to diverse populations in a variety of settings. Prereq: 2.0 cumulative grade-point ratio.

PRTM 318 Leisure Lifestyle Management 3(3,0) Examines principles and techniques applicable to guiding disabled as well as nondisabled individuals in an exploration of leisure needs, barriers, consequences, and accessibility. Prereq: 2.0 cumulative grade-point ratio.

PRTM 320, H320 Recreation Policymaking 3(3,0) Structures and processes for public park and/or recreation policy formation in the United States. Prereq: 2.0 cumulative grade-point ratio.

PRTM 321, H321 Recreation Administration 3(3,0) Analysis of the internal organization of a recreation department dealing with finances and accounting, records and reports, publicity and public relations, state and federal legislation, staff organization, coordination of community resources. Prereq: PRTM 308, Junior standing, 2.0 cumulative grade-point ratio.

PRTM 330, H330 Visitor Services and Interpretation 3(3,0) Introduction to the philosophy and principles of the art of environmental interpretation. Comprehensive survey of interpretive theory as it applies to the recreation and parks practitioner and the varying settings within the profession. Prereq: 2.0 cumulative grade-point ratio.

PRTM 342, H342 Introduction to Tourism 3(3,0) Survey of travel and tourism in the United States with focus on terminology, demographics, financial significance, and trends. Prereq: 2.0 cumulative grade-point ratio.

PRTM 343 Spatial Aspects of Tourism Behavior 3(3,0) Spatial patterns of national and international leisure travel destinations are explored and analyzed regarding their tourism attractiveness. Prereq: 2.0 cumulative grade-point ratio.

PRTM 344 Tourism Markets and Supply 3(3,0) Acquaints students with the principles of matching tourism markets and supply. Students examine the strategies used in developing markets. Prereq: 2.0 cumulative grade-point ratio.

PRTM 349 Survey of Tourism Sites 1(0,3) On-site study of various exemplary components of the travel and tourism industry in the Southeast. There are additional costs to students to cover travel. To be taken Pass/Fail only. Prereq: PRTM 342, Junior standing in Parks, Recreation, and Tourism Management, 2.0 cumulative grade-point ratio, consent of instructor.
PRTM 352 Camp Organization and Administration 3(2,3) Surveys the development and trends of camping in America. Considers programming for the operations of agency and private camps. Enables students to master the techniques of group living. Laboratory offers practical experience in camp craft including trips and outdoor cooking. Prereq: 2.0 cumulative grade-point ratio.

PRTM 380 Community Recreation in South Carolina 3(1,4) Students study indoor and outdoor recreation facilities, governmental jurisdiction, funding, programming, management, and staffing at community recreation agencies throughout South Carolina during a hands-on five-day field trip. Prereq: PRTM 101.

PRTM 383 Golf Shop Operations 3(3,0) Provides students with the knowledge and skills necessary to succeed as managers of golf shops. Particular emphasis is on fundamental business planning, development of policies and procedures, merchandising, inventory control, pricing, and customer service. Prereq: PRTM 282.

PRTM 390 Independent Study in Parks, Recreation, and Tourism Management 2.0 cumulative, 3(3,0) Concurrent enrollment) Comments on topics not covered in other courses. Emphasis is on field studies, community service, and independent readings. May be repeated for a maximum of three credits. Prereq: Junior standing, 2.0 cumulative grade-point ratio, consent of instructor.

PRTM 391 Selected Topics in Parks, Recreation, and Tourism Management 2(2-3,0) In-depth examination of trends in parks, recreation, and tourism that warrant timely study. May be repeated twice for a maximum of six credits, but only if different topics are covered. Prereq: Junior standing, 2.0 cumulative grade-point ratio.

PRTM 395 PGM Seminar II 1(1,0) Current issues of interest in the golf industry. Special interest is placed on topics covered in the PGM/PGM Training Program Level II checkpoint. Prereq: PRTM 295.

PRTM 403 Elements of Recreation and Park Planning 3(3,0) Basic recreation and park planning principles, processes, and trends in area and facility development combine to form the basis for formulation of a relevant knowledge of planning. Prereq: Senior standing, 2.0 cumulative grade-point ratio.

PRTM 404 Field Training I 1(1,0) Preparation for field training experience including topics such as resume development, interviewing techniques, internship agency selections, and responsibilities of the student, department, and agency. To be taken Pass/Fail only. Prereq: PRTM 206, 207 (or concurrent enrollment), 2.0 cumulative grade-point ratio, consent of instructor.

PRTM 405 Field Training II 60(18) Minimum ten weeks (400 hours) of uninterrupted, supervised work in a park, recreation, or tourism management agency. Under agency supervision, students observe, organize, and implement activities, events, and programs. To be taken Pass/Fail only. Prereq: PRTM 206, 207, 404; Senior standing in Parks, Recreation, and Tourism Management; 2.0 cumulative grade-point ratio; consent of instructor.

PRTM 409 Methods of Recreation Research I 3(3,0) Analysis of the principal methods of recreation research, the application of descriptive statistics to recreation research, and the development of a research proposal. Prereq: Senior standing in Parks, Recreation, and Tourism Management; 2.0 cumulative grade-point ratio.

PRTM 410, H410 Methods of Recreation Research II 3(3,0) Continuation of PRTM 409; includes supervised execution and reporting of results of research project developed in PRTM 409 and the application of inferential statistics to research. Prereq: PRTM 409, 2.0 cumulative grade-point ratio, consent of instructor.

PRTM 412, H412, 612 Therapeutic Recreation and Mental Health 3(3,0) Therapeutic recreation services in mental health clinics, institutions, and outdoor settings. Review of disorders and current modes of treatment as they relate to therapeutic recreation. Prereq: PRTM 311, 2.0 cumulative grade-point ratio, consent of instructor.

PRTM 413, 613 Recreation Therapy in Physical Rehabilitation 3(3,0) Examination of the potential psychological, physical, and sociological implications of disability to the individual and to the planning and directing of therapeutic recreation services. Prereq: PRTM 311, three credit hours of human anatomy and physiology, 2.0 cumulative grade-point ratio, consent of instructor.

PRTM (ED SP) 414, 614 Recreation and Leisure for Special Populations 3(3,0) Provides class participants with practical experience in designing recreation and leisure activities for special populations (e.g., handicapped, elderly). Prereq: 2.0 cumulative grade-point ratio.

PRTM 416 Leisure and Aging 3(3,0) Examines the role of leisure services in later life, the needs of community-based and institutionalized elderly, and the development of service-delivery systems to meet those needs. Prereq: 2.0 cumulative grade-point ratio.

PRTM 417 Therapeutic Recreation Processes I 4(3,2) Examination of models, principles, and procedures applicable to comprehensive program planning, specific program plans, individualized care plans, activity analysis, documentation, and evaluation. Prereq: PRTM 311 or consent of instructor, three credit hours of human anatomy and physiology, 2.0 cumulative grade-point ratio.

PRTM 418 Therapeutic Recreation Processes II 4(3,2) Examination of theories and concepts that guide therapeutic recreation interventions, including knowledge and use of communication skills, therapeutic relationships, counseling theories, and group processing techniques. Prereq: PRTM 311 and 417 or consent of instructor, 2.0 cumulative grade-point ratio.

PRTM 420 Therapeutic Recreation Trends and Issues 3(3,0) Advanced principles and practices of therapeutic recreation, including philosophy, ethics, professional development, standards of practice, certification, recreation inclusion, and marketing services. Prereq: PRTM 416, 418 or consent of instructor, 2.0 cumulative grade-point ratio.


PRTM (GEOG) 430, 630 World Geography of Parks and Equivalent Reserves 3(3,0) Major international patterns in the provision and use of urban and rural parks and recreation are examined. Prereq: 2.0 cumulative grade-point ratio.

PRTM 431, 631 Methods of Environmental Interpretation 3(2,3) Practice and instruction in the use of equipment and methods available to the interpreter in public contact work. Coaching in presentation and evaluation of live programs and in design, execution, and evaluation of mediated programs is the major emphasis. Programs are delivered to public audiences in the Clemson area. Prereq: PRTM 330; Senior standing in Parks, Recreation, and Tourism Management; 2.0 cumulative grade-point ratio; consent of instructor.

PRTM 441, 641 Commercial Recreation 3(3,0) Components of offering leisure services and products to the public by individuals, partnerships, and corporations for the purpose of making a profit. Prereq: 2.0 cumulative grade-point ratio.

PRTM 443, 643 Resorts in National and International Tourism 3(3,0) A variety of resort types are studied with respect to their development, organization, visitor characteristics, and environmental consequences. A case-study approach is used. Prereq: 2.0 cumulative grade-point ratio.

PRTM 444, 644 Tour Planning and Operations 3(3,0) Provides the opportunity to understand the psychology of touring, with emphasis on packaged and group tours and tour operators. Prereq: 2.0 cumulative grade-point ratio; consent of instructor.

PRTM 445, 645 Conference/Convention Planning and Management 3(3,0) Provides the opportunity to understand the problems of and solutions to conference and convention planning and management from both the sponsoring organization's and facility manager's perspectives. Prereq: 2.0 cumulative grade-point ratio.

PRTM 446, 646 Community Tourism Development 3(3,0) Provides a community-based perspective of organizational, planning, development, and operational needs for a successful tourism economy at the local level. Prereq: PRTM 342, 2.0 cumulative grade-point ratio, consent of instructor.

PRTM 447, 647 Perspectives on International Travel 3(3,0) Using the United States as a destination, international travel patterns and major attractions are presented. Factors which restrain foreign travel to the United States are analyzed. Prereq: 2.0 cumulative grade-point ratio.

PRTM 452, 652 Campus Recreation 3(3,0) Study of the basic components required for administration of successful college union and intramural-recreation sport programs. Prereq: 2.0 cumulative grade-point ratio.
PERFORMING ARTS

PA 401 Senior Independent Study 1-3(1-3,0) Exploration of the responsibilities leaders have to those who are being led. Responsibility decisions and actions. Focuses on ethical issues and problems and modes of ethical reasoning.

PHIL 105 Introductory Seminar in the Big Questions 3(3,0) Introductory seminar dealing with a single important philosophical question ("Who are we?" "What is the meaning of life?" "Are we free or determined?" etc.). Course is designed to analyze philosophical questions with the incorporation of existing philosophical questions, and executive of the exercise of leadership.

PHIL 225 Art and Logic of Scientific Reasoning 3(3,0) Examines applications and misapplications of inductive reasoning and causal inference in scientific explanation and everyday discourse. Includes correlation and confirmation, natural laws, natural kinds, scientific explanation, causal inference, and experimental methods.

PHIL 303 Philosophy of Religion 3(3,0) Critical examination of the meaning and justification of religious beliefs. Representative topics are the nature and existence of God, religious knowledge, religious language, the problem of evil.

PHIL 304 Moral Philosophy 3(3,0) Study of moral problems, their origin in conflicts between duty and desire, and alternative solutions proposed by classical and contemporary writers.
PHIL (CHIN) 312 Philosophy in Ancient China 3(3,0) Study of the history of Chinese philosophy from fifth century B.C.E., including Confucianism, Daoism, Moism, legalism, Buddhism, Neo-Daoism, and Neo-Confucianism. Examination of Chinese philosophers' views and arguments on questions of life and death, history and society, education and personal cultivation. May not be used to satisfy general foreign language requirements.

PHIL (CHIN) 313 Philosophy in Modern China 3(3,0) Study of the history of Chinese philosophy from the 19th century to the present including Neo-Confucianism, Conservatism, Liberalism, Nationalism, and Chinese Marxism. Examination of the conflict and fate of traditional and modern values in China. All readings and discussions are in English. May not be used to satisfy general foreign language requirements.

PHIL 314 Comparative Topics in Eastern and Western Philosophy 3(3,0) Study of issues and areas of overlapping concern to Eastern and Western philosophical traditions (e.g., ontology, ethics) with emphasis on both contrasting and convergent influences in philosophical approaches. Topics may vary.

PHIL 315 Ancient Philosophy 3(3,0) Origins and development of rationality as found in the thought of selected philosophers such as Socrates, Plato, and Aristotle.

PHIL 316 Modern Philosophy 3(3,0) Development of the modern view as seen in major Western philosophers of the 16th, 17th, and 18th centuries. Thought of Berkeley, Descartes, Hume, Leibniz, Locke, and Spinoza may be considered to illustrate the development of rationalism and empiricism.

PHIL 317 Nineteenth-Century Philosophy 3(3,0) Development of 19th-century philosophy emphasizing selected works of philosophers such as Kant, Hegel, Marx, Nietzsche, and Kierkegaard.

PHIL 318 Twentieth-Century Philosophy 3(3,0) Historical overview of selected significant movements in 20th-century Western philosophy such as Continental and/or analytic philosophy.

PHIL 320 Social and Political Philosophy 3(3,0) Critical consideration of the views of some major philosophers on the nature of the individual's relation to society and the state in the context of their wider philosophical (logical, epistemological, metaphysical, and ethical) doctrines. Philosophers may include Plato, Aristotle, Augustine, Hobbes, Rousseau, Mill, Marx, Hegel, Rawls, and Nozick.

PHIL 321 Crime and Punishment 3(3,0) Investigates what sorts of conduct should be criminalized and what society should do with those who engage in criminal activity. Specific topics may include the enforcement of morals, euthanasia, hate crimes, deterrence, retribution, and restitution.

PHIL 322 Theory of Knowledge 3(3,0) Examination of concepts, criteria, and decision procedures underlying rational belief and the justification of knowledge claims. Representative answers to the problem of skepticism are considered, with special attention to some leading theories of knowledge.

PHIL 324 Philosophy of Technology 3(3,0) Examines technology and representative philosophical assessments of it with a focus on understanding its impact on the human condition.

PHIL 325 Philosophy of Science 3(3,0) Philosophical study of problems generated by science, but which are not themselves scientific, such as what comprises a scientific theory; how scientists formulate theories and acquire knowledge; what, if anything, differentiates science from other ways of knowing; what role concepts play in scientific knowledge; whether scientific progress is rational.

PHIL 326 Science and Values 3(3,0) Examination of several features of the relation between science and values. Topics may include ethical and social obligations of scientists, role of value judgments in scientific practice, and influence of social and political values on science and scientists.

PHIL 327 Philosophy of Social Science 3(3,0) Inquiry into the philosophical foundations of social science, in particular questions of objectivity, explanatory structure, causality, agency, normativity and naturalism, and social determinations of knowledge.

PHIL 330 Contemporary Issues in Philosophy 3(3,0) Examination of a variety of issues of broad concern to philosophers today. Issues may vary. May be repeated once for credit with departmental consent.

PHIL 333 Metaphysics 3(3,0) Examination of issues and problems concerning the ultimate nature of reality. Topics may include the appearance/reality distinction, the nature of existence, freedom and determinism, personal identity, idealism, and realism.

PHIL 343 Philosophy of Law 3(3,0) Examination of the nature of legal theory and the law through a critical examination of the basic concepts and principles of these fields.

PHIL 344 Business Ethics 3(3,0) Study of ethical issues created by business activities, relating them to fundamental questions of ethics generally. Representative topics may include hiring, firing, promotions, business and minorities, organizational influence in private lives, consumer interests, economic justice, and reindustrialization.

PHIL 345 Environmental Ethics 3(3,0) Study of ethical problems in our dealings with the rest of nature and of how they relate to ethics in general. Representative topics may include the basis of ethics, nature and intrinsic value, duties to future generations, economics and the environment, rare species, animal rights, ethics and agriculture, energy doctrine.

PHIL 346 Medical Ethics 3(3,0) Examines ethical dilemmas facing modern medicine. Topics may include controversies surrounding death, reproductive technologies, abortion, allocation of resources, the concept of disease, the doctor-patient relationship, and medical research.

PHIL 347 Ethics in Architecture 3(3,0) Interdisciplinary course focused on the architectural profession and the practices of design, building, and other processes in a social and business context. Consideration is given to both general moral principles and particular case studies.

PHIL 348 Philosophies of Art 3(3,0) Examines some of the predominant attempts to understand art in ancient and modern philosophy and also considers a variety of contemporary views and controversies about the nature, meaning, value, and future of art.

PHIL (CHIN) 320 Philosophy of Technology 3(3,0) Study of issues and areas of overlapping concern to Eastern and Western philosophical traditions (e.g., ontology, ethics) with emphasis on both contrasting and convergent influences in philosophical approaches. Topics may vary.

PHIL 321 Crime and Punishment 3(3,0) Investigates what sorts of conduct should be criminalized and what society should do with those who engage in criminal activity. Specific topics may include the enforcement of morals, euthanasia, hate crimes, deterrence, retribution, and restitution.

PHIL 322 Theory of Knowledge 3(3,0) Examination of concepts, criteria, and decision procedures underlying rational belief and the justification of knowledge claims. Representative answers to the problem of skepticism are considered, with special attention to some leading theories of knowledge.

PHIL 324 Philosophy of Technology 3(3,0) Examines technology and representative philosophical assessments of it with a focus on understanding its impact on the human condition.
PHYSICS


PHYS 101 Current Topics in Modern Physics 1(0,2) Demonstrations and lectures serving as an introduction to different areas of physics and astronomy are presented by various members of the staff. May include such topics as astrophysics, energy, relativity, and weather, as well as visits to the planetarium.

PHYS 122, H122 Physics with Calculus I 3(3,0) First of three courses in a calculus-based physics sequence. Topics include vectors, laws of motion, conservation principles, rotational motion, oscillations, and gravity. Credit for a degree will be given for only one of PHYS 122, 200, or 207. Coreq: PHYS 108.

PHYS 124 Physics Laboratory I 1(0,3) Introduction to physical experimentation with emphasis on experimental methods and in the statistical treatment of data. Coreq: PHYS 122.

PHYS 200 Introductory Physics 4(3,2) Introduction to classical physics. Includes elements of mechanics, heat, electricity, and light. May not be substituted for PHYS 221. May be repeated for a maximum of six credits. Preq: Consent of instructor.

PHYS 207 General Physics I 3(3,0) Introductory laboratory course for students who are not majoring in physical science or engineering. Covers such topics as mechanics, waves, fluids, and thermal physics. Credit for a degree will be given for only one of PHYS 122, 200, or 207. Coreq: MTHSC 105 or equivalency.

PHYS 208 General Physics II 3(3,0) Continuation of PHYS 207. Covers such topics as electricity, magnetism, electromagnetic waves, optics, and modern physics. Credit for a degree will be given for only one of PHYS 208 or 221. Preq: PHYS 207. Coreq: PHYS 210.

PHYS 209 General Physics I Laboratory 1(0,2) Introductory laboratory course for students who are not majoring in physical science or engineering. Covers such topics as mechanics, waves, fluids, and heat. Coreq: PHYS 207.

PHYS 210 General Physics II Laboratory 1(0,2) Covers such topics as electricity, magnetism, electromagnetic waves, optics, and modern physics. Preq: PHYS 207, 209. Coreq: PHYS 208.

PHYS 221 H221 Physics with Calculus II 3(3,0) Continuation of PHYS 221. Topics include thermodynamics, kinetic theory of gases, electric and magnetic fields, electric currents and circuits, and motions of charged particles in fields. Credit for a degree will be given for only one of PHYS 221 or 222. Preq: PHYS 212.

PHYS 222, H222 Physics with Calculus III 3(3,0) Continuation of PHYS 221. Topics include wave motion, electromagnetic waves, interference and diffraction, relativity, atomic particles, and atomic and nuclear structure. Coreq: PHYS 222.

PHYS 223 Physics Laboratory II 1(0,3) Experiments in heat and thermodynamics, electrostatics, circuits, and magnetism. Computers are used in statistical treatment of data. Coreq: PHYS 221.

PHYS 224 Physics Laboratory III 1(0,3) Experiments involve atomic, molecular, and nuclear systems. Wave particle dualism of light and matter is emphasized. Calculators and computers are used in statistical treatment of data. Coreq: PHYS 222.

PHYS 240 Physics of the Weather 3(3,0) Descriptive introduction to meteorology. Includes atmospheric thermodynamics, solar radiation, heat budget, atmospheric circulation, force laws governing air motion, fronts, precipitation, synoptic prediction. Special topics of current interest such as the effect of environmental pollution on weather and the effect of weather on health are included.

PHYS 262 Physics of Music 3(3,0) Elementary, nontechnical study of the relationship between the laws of physics and the production of music for the music student or layman who wishes to understand the physical principles of the art. Topics include mechanical and acoustical laws, harmonic analysis, musical scales, sound production in instruments, physiology of hearing, etc.

PHYS 290 Physics Research I 3(3,3) Individual research project in any area of experimental or theoretical physics or astronomy, supervised by a physics or astronomy faculty member. Project need not be original but must add to students' ability to carry out research. May be repeated for a maximum of six credits. Preq: Minimum grade-point ratio of 3.0; consent of instructor.

PHYS 300, H300 Introduction to Research 1(2,0) Acquaints students with current research in physics. Seminars are provided where research activities in various areas of physics and astronomy are summarized. Provides a basis for students to choose a suitable topic for a senior thesis. Preq: Junior standing in Physics.

PHYS 311 Introduction to the Methods of Theoretical Physics 3(3,0) Survey of methods and techniques of problem-solving in physics. Emphasizes the application of mathematical techniques to the solution of problems of vectors, fields, and waves in mechanics, electromagnetism, and quantum physics. Preq: PHYS 222 or consent of instructor.

PHYS 312 Methods of Theoretical Physics II 3(3,0) Continuation of PHYS 311 focused on introducing various mathematical notations widely used in upper level physics courses, such as differential equations, special functions and complex numbers, and complex functions. Preq: PHYS 311 or consent of instructor.

PHYS 321, H321, 621 Mechanics I 3(3,0) Statics, motions of particles and rigid bodies, vibratory motion, gravitation, properties of matter, flow of fluids. Preq: PHYS 221.

PHYS 322, H322, 622 Mechanics II 3(3,0) Dynamics of particles and rigid bodies, Lagrangian and Hamiltonian formulations, vibrations of strings, wave propagation. Preq: PHYS 321 or consent of instructor.

PHYS 325, H325, 625 Experimental Physics I 3(1,4) Introduction to experimental modern physics, measurement of fundamental constants, repetition of crucial experiments of modern physics (Stem-Gerlach, Zeeman effect, photoelectric effect, etc.). Coreq: PHYS 321 or consent of instructor.

PHYS 326, H326, 626 Experimental Physics II 3(1,4) Continuation of PHYS 325.
PHYS 355, H355 Modern Physics 3(3,0) Study of the topics of modern physics, including relativity, atomic physics, quantum mechanics, condensed-matter physics, nuclear physics, and elementary particles. \textit{Preq:} PHYS 222, MTHSC 206, or consent of instructor.

PHYS 356 Modern Physics Overview 1(1,0) Overview of topics in modern physics, including a short description of the structure of solids, nuclear physics, and particle physics. \textit{Preq:} PHYS 222 or consent of instructor.

PHYS 401, H401 Senior Thesis 1-3 Semi-original theoretical, experimental, or computational research project performed under the direction of a faculty member. Fields available include astronomy, astrophysics, atmospheric physics, biophysics, high energy physics, relativistic, solid state physics, and statistical mechanics. May be repeated for a maximum of six credits. \textit{Preq:} Nine credits of physics at the 300-400 level.

PHYS 417, H417, 617 Introduction to Biophysics 1(3,0) Introduction to the application of physics to biological problems. Topics include a review of elementary chemical and biological principles, physics of biological molecules, and fundamentals of radiation biophysics. \textit{Preq:} MTHSC 206, PHYS 221, or consent of instructor.

PHYS 420, H420, 620 Atmospheric Physics 3(3,0) Study of physical processes governing atmospheric phenomena. Topics include thermodynamics of dry and moist air, solar and terrestrial radiative processes, convection and cloud physics, precipitation processes, hydrodynamic equations of motion and large-scale motion of the atmosphere, numerical weather prediction, atmospheric electricity. \textit{Preq:} MTHSC 108, PHYS 208 or 221.

PHYS 432, H432, 632 Optics 3(3,0) Covers a selection of topics, depending on the interest of the student. Topics may include the formation of images by lenses and mirrors, design of optical instruments, electromagnetic wave propagation, interference, diffraction, optical activity, lasers, and holography. \textit{Preq:} PHYS 221.

PHYS 441, H441, 641 Electromagnetics 1(3,0) Study of the foundations of electromagnetic theory. Topics include electric fields, electric potential, dielectrics, electric circuits, solution of electrostatic boundary-value problems, magnetic fields, and magnetostatics. \textit{Preq:} PHYS 221 and MTHSC 208, or consent of instructor.

PHYS 442, H442, 642 Electromagnetics II 3(3,0) Continuation of PHYS 441. Study of foundations of electromagnetic theory. Topics include magnetic properties of matter, microscopic theory of magnetization, electromagnetic induction, magnetic energy, AC circuits, Maxwell's equations, and propagation of electromagnetic waves. Other topics may include waves in bounded media, antennas, electrodynamics, special theory of relativity, and plasma physics. \textit{Preq:} PHYS 441 or consent of instructor.

PHYS 445 Solid State Physics I 3(3,0) Topics include an overview of crystal structures, chemical and atomic bonding, and periodicity in relation to solid materials. Covers electronic, thermal, and magnetic properties of metals, electrical conduction in metals and semiconductors. Overview of the role of electrons and phonons and their interactions is presented. \textit{Preq:} PHYS 455 or consent of instructor.

PHYS 446, H446, 646 Solid State Physics II 3(3,0) Continuation of PHYS 445, including selected topics in solid-state physics such as optical properties, superconductivity, non-crystalline solids, dielectrics, ferroelectrics, and nanomaterials. Plasmons, polarons, and excitons are discussed. Brief introduction into methods of solid-state synthesis and characterization tools is presented. \textit{Preq:} PHYS 445 or consent of instructor.

PHYS 452, H452, 652 Nuclear and Particle Physics 3(3,0) Study of our present knowledge concerning subatomic matter. Experimental results are stressed. Topics include particle spectra, detection techniques, Regge pole analysis, quark models, proton structure, nuclear structure, scattering and reactions.

PHYS 455, H455, 655 Quantum Physics I 3(3,0) Discussion of solution of the Schrödinger equation for free particles, the hydrogen atom, and the harmonic oscillator. \textit{Preq:} PHYS 322 and 441, or consent of instructor.

PHYS 456, H456, 656 Quantum Physics II 3(3,0) Continuation of PHYS 455. Application of principles of quantum mechanics as developed in PHYS 455 to atomic, molecular, solid state, and nuclear systems. \textit{Preq:} PHYS 455.

PHYS 465, H465, 665 Thermodynamics and Statistical Mechanics 3(3,0) Study of temperature development of the laws of thermodynamics and their application to thermodynamic systems. Introduction to thermodynamics is given. \textit{Preq:} Six hours of physics beyond PHYS 222 or consent of instructor.

PHYS 475 Selected Topics 1-3(0.3-0.9) Comprehensive study of a topic of current interest in the field of physics. May be repeated for a maximum of six credits, but only if different topics are covered. \textit{Preq:} Consent of instructor.

PLANT PATHOLOGY

Professors: N. D. Camper, B. A. Fortnum, A. P. Keinath, S. A. Lewis, S. B. Martin, J. D. Mueller, M. B. Riley, S. W. Scott; \textit{Associate Professor:} S. N. Jeffers; \textit{Assistant Professor:} G. Schnabel

PL PA 302, H302 Plant Pathology Research 1-3(0.3-0.9) Research experience in a plant pathology project for undergraduates who understand basic concepts of research. Students develop research objectives, procedures, and collect data. A written report includes interpretation of results. To be taken Pass/Fail only. \textit{Preq:} Consent of instructor.

PL PA 310 Plant Diseases and People 2(3,3) Introduction to diseases caused by biotic and abiotic agents, symptom development, diagnosis, economics, control, and relationships of plant diseases to human welfare including the use of genetic engineering to develop disease resistant crops. \textit{Preq:} BIOL 104 or equivalent.
PO SC 310 Political Science Internship 1-3(1-3,0) Off-campus internship for at least one semester or its equivalent. May be repeated for a maximum of three credits. No more than six hours credit from PO SC 310, 311, and 312 may be counted toward any degree. Prereq: PO SC 101 and consent of instructor.

PO SC 311 Model United Nations 1(0,1) Participation in United Nations simulation exercises, in competition with other colleges and universities. May be repeated for a maximum of six credits; however, no more than six hours credit from PO SC 310, 311, and 312 may be counted toward any degree. Prereq: Consent of instructor.

PO SC 312 State Student Legislature 1(0,1) Participation in state student legislature simulation exercises, in competition with other colleges and universities in the state. May be repeated for a maximum of six credits; however, no more than six hours credit from PO SC 310, 311, and 312 may be counted toward any degree. Prereq: Consent of instructor.

PO SC 321 Public Administration 3(3,0) Introduction to public administration including the elements of organization, personnel and financial management, public responsibility, and administrative management. Prereq: FOSC 101, Junior standing, or consent of instructor.

PO SC 341 Quantitative Methods in Political Science 3(3,1) Introduction to quantitative research methods in political science. Topics include research design, measurement, data collection, sampling, procedures, and applications of statistical techniques to research problems in political science. Laboratory stresses computer use for elementary data analysis.

PO SC 343 The Media in American Politics 3(3,0) Role and impact of the mass media in the American political system, emphasizing the media's role in shaping public opinion and in influencing government and public policy. Prereq: PO SC 101, Junior standing, or consent of instructor.

PO SC (LANG) 350 Seminar in International News 3(3,0) See LANG 350.

PO SC (E E, PSYCH, SOC) 356 Social Science of Entrepreneurship 3(3,0) See SOC 356.

PO SC 361, H361 International Politics in Crisis 3(3,0) Factors contributing to the prevalence of tension and violence in the contemporary global arena are identified and analyzed, with particular emphasis on political, economic, and military roots and manifestations of conflict. Prereq: PO SC 102 or 104, Junior standing, or consent of instructor.

PO SC 362 International Organizations 3(3,0) Examines normative and institutional foundations of the society of nations. Explores the formal institutions, decision-making processes, and international and intergovernmental organizations. Prereq: PO SC 102 or 104, Junior standing, or consent of instructor.

PO SC 363 United States Foreign Policy 3(3,0) American foreign policy in historical perspective, with particular emphasis on decision-making processes in contemporary America, its capabilities and challenges, and analysis of key issues. Prereq: PO SC 102 or 104, Junior standing, or consent of instructor.

PO SC 367 Political Risk Assessment 3(3,0) Risks associated with conducting business and other activities in different countries, especially in the frequently unstable setting of the developing world. Major commercial providers of country risk assessment are identified and critiqued. Prereq: PO SC 102 or 104, Junior standing, or consent of instructor.

PO SC 371 European Politics 3(3,0) Major emphasis on European governments and issues of importance in the European context. Current methods of comparison are studied and applied to the formal and informal functioning of European governments. Prereq: PO SC 102, Junior standing, or consent of instructor.

PO SC 372 Political Culture of East Asia 3(3,0) Introduction to political culture that commonly characterizes East Asian countries, with emphasis on political subcultures of different nations, and on the analysis of the mutual influence between political culture and politic. Prereq: PO SC 102 or 104, Junior standing, or consent of instructor.

PO SC 375, H375 European Integration 3(3,0) European Union. Prereq: PO SC 102 or 104, Junior standing, or consent of instructor.

PO SC 381 African American Politics 3(3,0) The political thought, interests and agenda setting, and dynamics of African American participation in political and governmental decision making. Prereq: PO SC 101, Junior standing, or consent of instructor.

PO SC (SPAN) 382 Spanish Foreign Language News 1(1,0) Weekly discussions of Spanish-language news articles in the foreign press with an emphasis on politics and on the connections among political, economic, social, and cultural trends. Emphasis on Spanish vocabulary as well as cross-cultural contrasts with the United States. May be repeated for a maximum of three credits. Prereq: SPAN 202 or equivalent or consent of instructor.

PO SC (FR) 383 French Foreign Language News 1(1,0) Weekly discussions of French-language news articles in the foreign press with an emphasis on politics and the connections among political, economic, social, and cultural trends. Emphasis on French vocabulary as well as cross-cultural contrasts with the United States. May be repeated for a maximum of three credits. Prereq: FR 202 or equivalent or consent of instructor.

PO SC 389 Selected Topics 1-3(1-3,0) Study of a selected area of political science. May be repeated for a maximum of six credits, but only if different topics are covered. Prereq: Consent of instructor.

PO SC H395 Junior Honors Research Seminar 1(1,0) Readings and discussion to prepare for the Junior Research Paper and the Senior Thesis. Prereq: Junior standing, membership in Calhoun Honors College, consent of instructor.

PO SC H396 Junior Honors Research 1(1,0) Readings and research in conjunction with an approved political science course at the 300 or 400 level. Prereq: Junior standing, membership in Calhoun Honors College, and consent of instructor.

PO SC 403 United States Congress 3(3,0) Examination of the evolution of Congress, congressional elections, the organization of the legislative branch, congressional rules and procedures, decision-making, styles of representation, and policymaking. Prereq: PO SC 101, Junior standing, or consent of instructor.

PO SC 405 The American Presidency 3(3,0) Examination of the evolution of the presidency, the powers of the chief executive, the public presidency, executive branch organization and staffing, decision making, and the implementation of public policy. Prereq: PO SC 101, Junior standing, or consent of instructor.

PO SC 407 Religion and American Politics 3(3,0) Examination of the impact of religion on American politics, including an analysis of the role of religion in politics, political behavior of major religious groups, constitutional issues and voting behavior. Prereq: PO SC 101, Junior standing, or consent of instructor.

PO SC 409, 609 Directed Study in American Politics 1-3(1-3,0) Supervised reading and/or research in selected areas of American government. May be repeated for a maximum of six credits. Prereq: Consent of instructor.

PO SC 410 Directed Study in International Politics 1-3(1-3,0) Supervised readings and/or research in selected areas of international and comparative politics. Prereq: Consent of instructor.

PO SC 416, 616 Interest Groups and Social Movements 3(3,0) Empirical and normative examination of the origins, roles, and influence of interest groups and social movements in the United States and of the relationships among interest groups, social movements, and democratic theory. Prereq: PO SC 101, Junior standing, or consent of instructor.

PO SC 421, 621 Public Policy 3(3,0) Introduction to the major approaches to public policy making in American government. Topics include theories and models of policy making, the identification of policy problems, agenda setting, the formulation and adoption of policy, implementation, and program evaluation. Prereq: PO SC 101, Junior standing, or consent of instructor.

PO SC 423, 623 Urban Politics 3(3,0) Examines the nature and scope of politics in urban communities and offers an analysis of urban governance, especially in the interaction of public authority and private institutions in metropolitan areas. Emphasis is on the structure, processes, and problems challenging governments in urban America. Prereq: PO SC 101, Junior standing, or consent of instructor.

PO SC 424, 624 Federalism and Intergovernmental Relations 3(3,0) Introduction to the historical, theoretical, legal, and fiscal aspects of constitutionally divided government. Federal, state, and local division of responsibility for public services is emphasized along with the emerging devolution of those responsibilities from the federal government to states and localities. Prereq: PO SC 101, Junior standing, or consent of instructor.
PO SC 453 American Political Thought 3(3,0)
American political philosophy from the 17th century to the present with emphasis on political and social developments since 1776. Prereq: PO SC 101, junior standing, or consent of instructor.

PO SC 454, 654 Southern Politics 3(3,0)
Examination of the unique political environment of the American South, with emphasis on the events and social forces which have shaped politics in the region since World War II. Course material is approached from a variety of perspectives, including history, literature, social themes, and political culture. Prereq: PO SC 101, junior standing, or consent of instructor.

PO SC 456 International Diplomacy and Conflict Resolution 3(3,0)
Examination of war, organized violence, and the conditions needed for peace. Critical analysis of theoretical approaches to the causes and prevention of war. Emphasis is on peace-making, multinational cooperation, and international negotiation. Prereq: PO SC 102 or 104, junior standing, or consent of instructor.

PO SC 457, 657 Political Terrorism 3(3,0)
Examination and analysis of the international phenomenon of terrorism in terms of origins, operations, philosophy, and objectives. Prereq: PO SC 102 or 104, junior standing, or consent of instructor.

PO SC 458, 658 Political Leadership 3(3,0)
Comparative examination of political leaders, focusing particularly on types, methods, and consequences of leadership and on the relationship between leaders and followers. Prereq: PO SC 101, junior standing, or consent of instructor.

PO SC 459 Ethnic Violence 3(3,0)
Examination of both theories and case studies of ethnic violence in today's world, with emphasis on understanding potential strategies of conflict resolution. Prereq: PO SC 102 or 104, junior standing, or consent of instructor.

PO SC 466 African Politics 3(3,0)
Comprehensive survey of major regional blocs as well as analysis of individual states and thematic concepts. Prereq: PO SC 102 or 104, junior standing, or consent of instructor.

PO SC 471 Russian Politics 3(3,0)
Comprehensive examination of the Russian Federation since the fall of the Soviet Union. The successes and failures of democratic transition are analyzed, with topics covering political participation, organized crime and corruption, center-periphery conflict, and ethnic/religious unrest. Prereq: PO SC 102 or 104, junior standing, or consent of instructor.

PO SC 472 Japanese Politics 3(3,0)
Concepts and operation of contemporary Japan's political system. Emphasis is on institution-building and political economy after World War II. Prereq: PO SC 102 or 104, junior standing, or consent of instructor.

PO SC 473 Eurasian Politics 3(3,0)
Examination of the areas of the Caucasus and Central Asia, covering themes including democratization, globalization, terrorism, and stability. Prereq: PO SC 102 or 104, junior standing, or consent of instructor.

PO SC 476 Middle East Politics 3(3,0)
Comprehensive thematic and empirical analysis of the Middle East region. Issues covered include democratization, political and religious freedom, oil, the role of women, and terrorism. States analyzed include Syria, Jordan, Iran, Iraq, Saudi Arabia, Turkey, and the Gulf States. Prereq: PO SC 102 or 104, junior standing, or consent of instructor.

PO SC 477 Chinese Politics 3(3,0)
Concepts and operation of contemporary China's political system; emphasizes institutional innovation and political economy in recent reforms. Prereq: PO SC 102 or 104, junior standing, or consent of instructor.

PO SC 478 Latin American Politics 3(3,0)
Survey of prominent trends in Latin American politics, with a focus on major countries in the region and major issues affecting the region. Relations between Latin America and the United States and other prominent countries are also considered. Prereq: PO SC 102 or 104, junior standing, or consent of instructor.

PO SC 480, 680 Gender and Politics 3(3,0)
Examination of the role of gender in politics in the United States and in other countries. Particular emphasis on the role of women in electoral politics, the impact of nationalism, and development policies on women's lives, and on women's rights as human rights. Prereq: PO SC 101, 102, or 104, junior standing, or consent of instructor.

PO SC 482 The Political Novel and Film 3(3,0)
Examination of political novels and films. Emphasizes the development of these media as art forms; the relationship between political novels and films and politics at large; and the role of these media in shaping public opinion. Prereq: PO SC 101, junior standing, or consent of instructor.

PO SC 485, 685 Global Affairs and Governments 3(3,0)
Designed for teachers and education students who wish to learn how to incorporate global affairs more fully into high school curricula. Overview of major topics involving foreign policies and world politics is provided.

PO SC 489, 689 Selected Topics 1-3(1,3,0)
Intensive examination of a selected area of political science. May be repeated for a maximum of six credits, but only if different topics are covered. Prereq: Consent of instructor.

PO SC H490 Senior Honors Thesis Research 3(3,0)
Reading and research related to the senior honors thesis. Prereq: Senior standing, membership in Calhoun Honors College, and consent of instructor.

PO SC H491 Senior Honors Thesis 3(3,0)
Research and writing of the senior honors thesis. Prereq: Senior standing, membership in Calhoun Honors College, and consent of instructor.
POLYMER AND TEXTILE CHEMISTRY


PTC 303 Textile Chemistry 3(3,0) Study of the properties and reactions of aliphatic and aromatic organic compounds. Emphasis is placed on mechanistic interpretations and the development of synthetic schemes leading to functional compounds of the types encountered in the textile industry. Preq: CH 102. Coreq: MTHSC 206 or 207.

PTC 304 Textile Chemistry 3(3,0) Fundamental principles of physical chemistry with emphasis on areas frequently encountered in the textile industry including thermodynamics, kinetics, and solution properties. These concepts are applied to the study of organic compounds and organic reactions. Preq: MTHSC 206 or 207.

PTC 305 Textile Chemistry Laboratory 1(0,3) Introduction to techniques used in synthesis and characterization of organic compounds. Coreq: PTC 303.

PTC 306 Textile Chemistry Laboratory 1(0,3) Techniques used in the measurement of the physicochemical properties of polymers and textile chemicals. Coreq: PTC 304.

PTC 405 Principles of Textile Printing 2(2,3) Development of modern textile printing systems is studied. Also examined are colloidal requirements of colorants, thicker compositions, rheology of printing pastes, and various physical requirements necessary for a successful printing system in a modern plant. Preq: Consent of instructor.

PTC 406 Textile Finishing—Theory and Practice 3(2,3) Study of the application of chemicals to textile substrates and how they affect the substrate's physical and chemical properties. Emphasizes the theories of chemical modification of textiles as well as the technology of finishing.

PTC 415, H415, 615 Introduction to Polymer and Textile Chemistry 3(3,0) Understanding of physical, chemical, and mechanical principles behind the application of colors and finishes to textiles. Requires an appreciation of fiber chemistry and morphology, dye and finish structures and reactivity and mechanical principles behind equipment used to effect transfer of these chemicals onto the textile substrate. Coreq: PTC 415.

PTC 457, H457, 657 Dyeing and Finishing I 3(3,0) Understanding of physical, chemical, and mechanical principles behind the application of colors and finishes to textiles. Requires an appreciation of fiber chemistry and morphology, dye and finish structures and reactivity and mechanical principles behind equipment used to effect transfer of these chemicals onto the textile substrate. Coreq: PTC 457.

PTC 458, H458, 658 Dyeing and Finishing II 3(3,0) Kinetics and equilibria of dyeing processes. The use of conductivity, diffusion, and other methods useful for measuring absorption of isotherms and dyeing rates and the general thermodynamic relationships applicable to dyeing operations. Fiber properties such as sateen potential, dye sites, relative amorphous area are included. Coreq: PTC 458.

PTC 459 Dyeing and Finishing I Laboratory 1(0,3) Introduces students to common dyeing and printing methods and to some of the machinery necessary to carry out dyeing operations. Coreq: PTC 457.

PTC 460 Dyeing and Finishing II Laboratory 1(0,3) Covers finishing in addition to dyeing operations and their instrumental control. Coreq: PTC 458.

PORTUGUESE

PORT 101 Elementary Portuguese 4(3,1) Introductory course stressing speaking, listening, and writing. Attention is given to the sound system of Portuguese to develop basic communication skills. Coreq: PORT 101.

PORT 102 Elementary Portuguese 4(3,1) Continuation of PORT 101. Preq: PORT 101 or consent of instructor.

PORT 201 Intermediate Portuguese 3(3,0) Intermediate course with more emphasis on communication skills and structure. Reading and writing practice in and outside the classroom, with special attention to idiomatic usage. Introduction to perspectives through readings and cultural activities. Coreq: PORT 102 or consent of instructor.

PORT 202 Intermediate Portuguese 3(3,0) Continuation of PORT 201. Preq: PORT 201 or consent of instructor.

PSYCHOLOGY


PSYCH 202 Introductory Psychology Laboratory 1(0,2) Major phenomena and methods of psychology are illustrated and investigated in a series of laboratory modules. Students also explore career and academic development issues.

PSYCH 306 Human Sexual Behavior 3(3,0) The subject of sexual behavior is approached from the psychophysiological, behavioral, and cultural points of view. Evolutionary, historical, and cross-cultural perspectives are considered.

PSYCH 309 Introductory Experimental Psychology 4(3,2) Introduction to the analysis of data from experimental and correlational research in psychology. Emphasizes the applications and logical nature of statistical reasoning. Laboratory periods stress the techniques of data analysis using microcomputers. Preq: PSYCH 201 with a C or better or consent of instructor.

PSYCH 310 Advanced Experimental Psychology 4(3,2) Continuation of PSYCH 309. Focus is on techniques of empirical research (experiments, quasi-experiments, survey research, etc.) that are widely used in psychology. Students design and carry out their own empirical research projects. Extensive practice in the writing of reports is included. Preq: PSYCH 201 with a C or better, PSYCH 309, or consent of instructor.

PSYCH 320 Principles of Behavior 3(3,0) Study of basic learning principles including classical conditioning, operant conditioning, and modeling. Initial emphasis is on animal studies followed by human applications and techniques. Preq: PSYCH 201 with a C or better or consent of instructor.

PSYCH 324 Physiological Psychology 3(3,0) Study of human neuroanatomy with emphasis on the function of the nervous and endocrine systems. Discusses the biological basis of behavior in its normal and abnormal dimensions. Preq: PSYCH 201 with a C or better or consent of instructor.

PSYCH 325 Physiological Psychology Laboratory 1(0,3) Demonstrations and techniques of selected physiological procedures are presented to explain the principles discussed in PSYCH 324. Coreq: PSYCH 324.

PSYCH 330 Motivation 3(3,0) Various aspects of motivation are considered by studying physiological, emotional, and environmental influences on behavior. Orientation is empirical rather than theoretical with emphasis on pertinent research, applications, and measurement of motves. Preq: PSYCH 201 with a C or better or consent of instructor.

PSYCH 333 Cognitive Psychology 3(3,0) Study of higher-order mental processes in humans. Topics include memory, learning of concepts, problem solving, and the psychology of language. Preq: PSYCH 201 with a C or better or consent of instructor.

PSYCH 334 Laboratory in Cognitive Psychology 1(0,2) Selected experiments and demonstrations are conducted to reveal phenomena related to human perception, memory, reasoning, problem solving, and high-level mental processes. Preq: PSYCH 201 with a C or better and PSYCH 309, or consent of instructor. Coreq: PSYCH 333.
PSYCH 340, H340 Lifespan Developmental Psychology 3(3,0) Survey of current theory and research concerned with the psychological aspects of human growth and development across the entire lifespan. Major topics include developmental methods, physical maturation, cognition, socialization, personality, psycholinguistics, intelligence, learning, behavior problems, and exceptionalities. Prereq: PSYCH 201 with a C or better or consent of instructor.

PSYCH 344 Psychology of Adolescence 3(3,0) Study of the psychosocial processes of adolescence. Major emphasis is on personality development, growth of thinking, social and sexual maturation, and variations in adolescence. Prereq: PSYCH 201 with a C or better or consent of instructor.

PSYCH 370 Personality 3(3,0) Historical and contemporary views of individual differences in behavior, affect, health, coping, and motivation. Covers topics such as personality development and structure, personality assessment, cross-cultural issues, and applications of personality psychology. Prereq: PSYCH 201 with a C or better or consent of instructor.

PSYCH 375 Psychology of Substance Abuse 3(3,0) Study of the psychological approaches to treatment of substance abuse. Topics include behavioral, social learning, and family-systems theories as applied to treating substance abuse. Emphasis is on empirical approaches to evaluating methods of treatment and matching clients to treatments. Prereq: PSYCH 201 with a C or better or consent of instructor.

PSYCH 385 The Social Construction of Madness 3(3,0) Study of the construct of mental illness and the variety of ways in which psychosis has been explained, portrayed, and treated over time. Interdisciplinary approach to examining representations of "madness" that shape a culture's understanding of mental illness and its treatment, including popular culture, art, and literature. Prereq: PSYCH 201 with a C or better or consent of instructor.

PSYCH 390 Honors Seminar in Psychology 3(3,0) Variable topics seminar for Honors students from all majors. Topics are announced prior to registration for each semester. May be repeated once for credit, but only if different topics are covered. Prereq: PSYCH 201 with a C or better or consent of instructor.

PSYCH 408 Women and Psychology 3(3,0) Explores the wide variety of psychological issues that concern women. Emphasizes empirical research on topics such as motherhood, sex differentiation, motivation, and psychological disorders. Prereq: PSYCH 201 with a C or better or consent of instructor.

PSYCH 415 Systems and Theories of Psychology 3(3,0) Study of the development of psychology particularly during the past 100 years. Emphasis is on giving students a better perspective of present-day psychology. Focus is on the various approaches taken by influential psychologists and the conflicts among these approaches. Prereq: PSYCH 201 with a C or better and one 300-level psychology course, or consent of instructor.

PSYCH 422, H422 Sensation and Perception 3(3,0) Study of psychophysical techniques of measurement and sensory and perceptual processes related to vision, hearing, and the other senses. Prereq: PSYCH 201 with a C or better and one 300-level psychology course, or consent of instructor.

PSYCH 423 Sensation and Perception Laboratory 1(0,2) Selected experiments are conducted to demonstrate the phenomena involved in sensation and perception. Prereq: PSYCH 309 or consent of instructor.

PSYCH 426, 626 Advanced Physiological Psychology 3(3,0) Advanced studies of the biological basis of behavior with emphasis on functional neuroanatomy and endocrinology. Topics may vary. May not be repeated for credit. Prereq: PSYCH 324 or consent of instructor.

PSYCH 435 Human Factors Psychology 3(3,0) Studies of theoretical issues and research methods related to the interaction between people and machines and human performance. Topics include information processing theory, human control systems and displays, task simulation, perceptual and motor factors limiting human performance. Prereq: PSYCH 201 with a C or better and one 300-level psychology course, or consent of instructor.

PSYCH 443 Infant and Child Development 3(3,0) Cognitive, emotional, and social development from conception through childhood (up to age 12). Major theories and research findings are covered. Prereq: PSYCH 201 with a C or better and PSYCH 340, or consent of instructor.

PSYCH 447 Moral Development 3(3,0) Explores the development of moral reasoning, judgment, and character from a descriptive psychological point of view. Examines the theoretical and empirical work of Jean Piaget, Lawrence Kohlberg, and Elliot Turiel as well as prosocial, eudemonistic, and cross-cultural alternatives to these ideas. Prereq: PSYCH 201 with a C or better, PSYCH 340, 344, or 345; or consent of instructor.

PSYCH 454 Psychology of Human Relationships 3(3,0) Research, theory, and their practical applications regarding the development, maintenance, and dissolution of human relationships; understanding successful and unsuccessful relationships. Emphasis is on improving the individual's ability to relate to other persons both interpersonally and professionally. Prereq: PSYCH 201 with a C or better and one 300-level psychology course, or consent of instructor.

PSYCH 459, 659 Group Dynamics 3(3,0) Review of current theory and research on small-group processes with special emphasis given to group formation and development, group structure, the dynamic forces within a group, leadership, and group problem solving and decision making. Prereq: PSYCH 201 with a C or better and one 300-level psychology course, or consent of instructor.

PSYCH 462, 662 Psychology and Culture 3(3,0) Seminar examining the cultural context in which psychological theories and research are generated and psychological perspectives on human diversity. Topics include the philosophical positions influencing psychological theory and research; methodological issues in the study of diversity, historical and contemporary perspectives; and cross-cultural psychological research in selected content areas. Prereq: PSYCH 310 or consent of instructor.

PSYCH 471 Psychological Testing 3(3,0) Introduction to the theory of psychological testing, emphasizing the principles of measurement and psychometric characteristics of a good psychological test. Issues in test development, administration, and interpretation are reviewed. Educational, industrial, and clinical uses of tests are examined. Prereq: PSYCH 201 and 309, or consent of instructor.
PSYCH 480, 680 Health Psychology 3(3,0)
Study of the role of health-related behaviors in the prevention, development and/or exacerbation of health problems. Emphasis on the biopsychosocial model and its application in the assessment, treatment, and prevention of health problems. Prereq: PSYCH 201 with a C or better and one 300-level psychology course, or consent of instructor.

PSYCH 483, H483, 683 Abnormal Psychology 3(3,0)
Introduction to the diagnosis and treatment of mental illnesses. Uses current diagnostic standards for mental disorders as a framework for understanding the symptoms, causes, and treatments of the most commonly observed maladaptive behaviors. Prereq: PSYCH 201 with a C or better and one 300-level psychology course, or consent of instructor.

PSYCH 488 Theories of Psychotherapy 3(3,0)
Survey of alternative theories of psychological treatment for behavioral and emotional disorders. Various theoretical assumptions, techniques, and applications of each approach are examined and compared, and case examples are considered. Prereq: PSYCH 370 or 483 or consent of instructor.

PSYCH 489, 689 Selected Topics 3(3,0)
Seminar in current topics in psychology. Topics change from semester to semester and are announced prior to each semester’s registration. May be repeated once for credit, but only if different topics are covered. Prereq: PSYCH 201 with a C or better and one 300-level psychology course, or consent of instructor.

PSYCH H490 Senior Division Honors Research 1-2(2-4,0)
Preparation and defense of a research proposal. Proposed project should be empirical, historical, or theoretical in nature. Prereq: Junior standing, consent of department chair.

PSYCH H491 Senior Division Honors Research II 1-2(2-4,0)
Completion of the proposed research project resulting in a written thesis. Prereq: PSYCH H490.

PSYCH 492 Senior Laboratory in Psychology 1(0,2)
Students complete an integrative review of topics in psychology in the context of producing a reflective portfolio. Prereq: Senior standing in Psychology.

PSYCH 493 Practicum in Clinical Psychology 3(1,5)
Students apply classroom theory in solving individual and community problems through interaction with community agencies and other professional groups in the mental health area. Students have limited but well-controlled contact with actual clinical problems as they occur in the community environment. Prereq: PSYCH 483 and consent of instructor.

PSYCH 495 Practicum in Applied Psychology 3(1,5)
Students are provided practical experience in the area of applied psychology. Students usually are involved in a project designed to help solve an industrial problem through a direct application of industrial or social psychology. Prereq: PSYCH 352 or 364 or 454; consent of instructor.

PSYCH 496 Laboratory in Psychology 1-3(0,2-6)
Laboratory in a variety of topics in psychology such as human factors psychology and psychological testing. May be repeated for a maximum of three credits. Prereq: PSYCH 201 with a C or better; PSYCH 309, 310; or consent of instructor.

PSYCH 497, H497 Directed Studies in Psychology 1-4(0,2-6)
Study under the direction of a faculty member of a particular topic agreed upon by the student and faculty member. May be repeated for a maximum of 12 credits. Prereq: Six credits in psychology, a course in research methods, and consent of the instructor.

READING
Professors: L. B. Gambrell, K. S. Headley; Associate Professors: F. J. Dunston, S. K. Fullerton, V. G. Ridgeway; Assistant Professor: J. C. McNair; Lecturer: M. A. Wise; Visiting Assistant Professor: G. A. Nemeth

READ 101 Reading Strategies 2(3,0)
Primary focus is on critical reading of textbook materials and persuasive materials. Students learn how to apply and generalize newly acquired strategies to a variety of reading materials.

READ 102 Critical Reading and Thinking 2(3,0)
Students learn critical reading skills in interpretation, analysis, inference, oral communication, and debate. Includes characteristics of debate in addition to the steps and sources of research. These skills are applied to important political and social issues of contemporary public concern.

READ 103 Learning Strategies 2(3,0)
Students learn strategies of active learning and critical thinking skills which become an integral part of their natural thinking processes. Students learn how to generalize and apply newly acquired strategies to a variety of settings and situations.

READ 458 Early Literacy: From Birth to Kindergarten 3(3,0)
Provides early childhood, elementary, and special education majors with knowledge of theory and research-based, developmentally appropriate instructional practices related to children’s literacy development within the home and school from birth to kindergarten. Factors related to assessment and communication within and between the family, school, and teacher are addressed. Prereq: Admission to the professional level.

READ 459, H459 Teaching Reading in the Early Grades: K–3 3(3,0)
Provides early childhood and Elementary Education majors an understanding of teaching reading in the elementary school setting in kindergarten through third grade. Students investigate general principles of language and literacy development and learn methods for teaching and assessing children’s literacy. Prereq: ED EC 336, ED F 301, 302; admission to the professional level. Coreq: ED EC 400 for Early Childhood majors.

READ 460, H460 Teaching Reading in the Elementary Grades: 2–6 3(3,0)
Provides preservice teachers with an understanding of teaching reading in the elementary setting in grades 2–6. Students investigate general principles of language and literacy development and learn methods for teaching and assessing children’s literacy. Prereq: ED F 301, 302, 334; admission to the professional level.

READ 461 Content Area Reading: Grades 2–6 3(2,3)
Provides preservice teachers with an understanding of teaching content area literacy in grades 2–6. Students learn methods and strategies for teaching children to learn with and make use of expository texts. Comprehension, the role of expository texts, and vocabulary learning in content areas are presented. Prereq: READ 460, admission to the professional level. Coreq: ED EL 451, 487, 488 (for Elementary Education majors).

READ 498, H498 Secondary Content Area Reading 3(2,2)
Designed for preservice teachers who are involved with field experiences prior to student teaching full time. Prepares content area teachers to teach the reading skills necessary for effective teaching of content area material. Prereq: Admission to professional level.

RELIGION
Professors: S. E. Grosby, N. A. Hardesty
REL 101 Introduction to Religion 3(3,0)
Variety of religious experience and expression in human life.

REL 102 World Religions 3(3,0)
Survey of major religious traditions of the world.

REL 301 The Old Testament 3(3,0)
Survey of the books of the Old Testament with special consideration given to the development of the concepts, institutions, and theology of the ancient Hebrews.

REL 302 Survey of New Testament Literature 3(3,0)
Study of the books of the New Testament from the standpoint of their occasion, content, literary form, and basic theology.

REL 306 Judaism 3(3,0)
Examines the development of Judaism from Biblical to modern times.

REL 307 The Christian Tradition 3(3,0)
Examination of the development of Christianity in Western civilization from the post-New Testament period to the present, stressing institutional growth and changes, theological currents, and interaction of Christianity with culture.

REL 308 Religions of the Ancient World 3(3,0)
Selected religious movements in ancient Mesopotamia, Egypt, Canaan, and the Greco-Roman world with emphasis on movements outside the Judeo-Christian tradition.

REL 310 Religion in the United States 3(3,0)
Development of religion in the U.S. from the Colonial period to the 20th century. Attention is devoted to analyzing broad currents in religious movements and religious thought which have given shape to the American pluralistic experience.

REL 311 African American Religion 3(3,0)
Study of the religious milieu in the U.S. rooted in our African heritage. Background on African tribal religion is included, along with Christian denominations and new religions such as Nation of Islam, Rastafarianism, Voudou, Santeria, and Candomble.

REL 314 Buddhism in China 3(3,0)
Study of Buddhism in Chinese history since the second century. Examination of the translation and interpretation of the texts, major Chinese Buddhist schools, monastic life, and the comprehensive influence of Buddhism on Chinese culture and society. All readings and discussions are in English.
REL 330 Contemporary Issues in Religion 3(3,0) Examination of a variety of issues of broad concern to scholars of religion today. Issues may vary. May be repeated for a maximum of six credits with departmental consent.

REL (PHIL) 393 Science and Religion 3(3,0) Exploration and analysis of the conceptual and historical relationship between science and religion. Examination and evaluation of the theoretical claims of science and the metaphysical claims of religion.

REL 401, 601 Studies in Biblical Literature and Religion 3(3,0) Critical examination of a selected topic in biblical studies. Topics vary from year to year. May be repeated once for credit. Prereq: Consent of instructor.

REL 402, 602 Studies in Religion 3(3,0) Thorough examination of a selected topic in one or more of the religious traditions of the world or of religious life in a particular region. Topics vary from year to year. May be repeated once for credit. Prereq: Consent of instructor.

REL 404, 604 History of Early Christianity 3(3,0) Study of the history, social and doctrinal, of early Christianity up to 600 A.D. Prereq: Consent of instructor.

REL 435, 635 Religious Institutions in Community Life 3(3,0) Explores the particular significance of religious organizations as core institutions in American communities and examines their involvement with community political and social structures.

RUS H497 Religion Honors Research 3(3,0) Students conduct research, clearly define the topic, and complete an annotated bibliography under the supervision of a thesis advisor. Prereq: Consent of department chair and thesis advisor.

RUS H498 Religion Honors Thesis 3(3,0) In consultation with a thesis advisor and departmental thesis committee, students write, revise, defend, and complete their theses. Prereq: REL H497 and consent of department chair and thesis advisor.

RUS 499 Independent Study 1-3(1-3,0) Study of selected problems, issues, or movements in religion under the direction of a faculty member chosen by the student. Student and faculty member develop an individualized course of study approved by the department chair prior to registration. May be repeated for a maximum of six credits. Prereq: Consent of instructor.

RURAL SOCIOLOGY
Professor: C. M. Sieverdes

R S 301 Rural Sociology 3(3,0) Study of human social relationships as influenced by life in the open country and in small towns and villages including considerations of the rural population, rural social institutions, processes of change in agricultural technology, and community area planning and development. Offered spring semester only.

R S (SOC) 303 Methods of Social Research I 4(3,3) See SOC 303.

R S (SOC) 371 Population and Society 3(3,0) See SOC 371.

R S (SOC) 401, 601 Human Ecology 3(3,0) Analysis of the interrelationships between the physical world, modifications in natural environments, human settlement patterns, and institutions that both encourage and regulate environmental modification. Emphasis is placed on conditions whereby natural resources become public policy concerns. Offered spring semester only. Prereq: Sophomore standing.

R S (SOC) 459, 659 The Community 3(3,0) Close analysis of the development of contemporary communities and their place in society. Continuous effects of industrialization, migration, and technological change on community location and structure are examined. Structural relations of social class, status, and the associations among institutions are explored.

R S (SOC) 471, H471, 671 Demography 3(3,0) See SOC 471.

R S (SOC) 495 Field Experience 3(1,8) See SOC 495.

RUSSIAN
Assistant Professor: G. L. Love; Lecturer: J. Bridgwood

RUS 101 Elementary Russian 4(3,1) Training in pronunciation, grammatical forms, and syntax with a view to giving the student the fundamentals necessary to hold simple conversations and to read simple Russian texts.


RUS 201, H201 Intermediate Russian 3(3,1) Brief review of RUS 101 and 102 with conversation, composition, and dictation, and the beginning of more serious reading of Russian prose in short stories and plays. Prereq: RUS 102.

RUS 202, H202 Intermediate Russian 3(3,1) Conversation, composition, and dictation based on readings of more difficult Russian prose than in the earlier courses. Prereq: RUS 201.

RUS 305 Russian Conversation and Composition 3(3,0) Practice in spoken Russian emphasizing vocabulary building, pronunciation, and comprehension. Written exercises promote accuracy. Prereq: RUS 202 or consent of department chair.

RUS 307 Russian Civilization 3(3,0) Introduction to significant elements of Russian civilization. Emphasis is on social, geographical, political, and artistic aspects of modern Russia. Taught in Russian. Prereq: RUS 202 or consent of department chair.

RUS 340 Russian Culture of the Nineteenth Century 3(3,0) Study of achievements in art, science, music, and literature in Russia during the nineteenth century. Taught in English.

RUS 360 Russian Literature to 1910 3(3,0) Study of key texts in the modern literary tradition in Imperial Russia from Pushkin to Chekhov. Readings and lectures are in English.

RUS 361 Russian Literature Since 1910 3(3,0) Study of key texts in modern Russian and Soviet literature with particular focus on Russian modernist movements and Socialist Realism. Readings and lectures are in English.

RUS 398 Directed Reading 1-3(1-3,0) Directed study of selected works in Russian. May be repeated for a total of six credits. Prereq: RUS 202 or equivalent and consent of department chair.

RUS 460 Tolstoy and Dostoevsky 3(3,0) Examines a selection of major works by Leo Tolstoy and Fyodor Dostoevsky with particular focus on their literary, political, and philosophical aspects as well as their importance within the modern European literary tradition. Readings and lectures are in English. Prereq: Junior standing or consent of instructor.

SECONDARY EDUCATION

EDSEC 412 Directed Student Teaching in Secondary School Subjects 12(1,3) Program of supervised observation and teaching in cooperation with selected public schools. Opportunities are provided for prospective teachers to obtain experiences in the subject area. Students are sectioned according to teaching fields, English, history, social, science, mathematical sciences, modern languages, science. Enrollment is limited.

EDSEC 417 Teaching Internship in the Secondary School 6(1,15) Full-time, supervised teaching internship for one semester in cooperation with a participating South Carolina secondary school. Reserved for students seeking certification in critical-need teaching areas. May be repeated for a maximum of 12 credits. To be taken Pass/Fail only. Prereq: ED F 301, 302, 335, READ 498, and one of the following: EDSEC 424, 425, 426, 427. Application approved by the School of Education.

EDSEC 424, H424 Teaching Secondary English 3(2,2) Development of instructional practices and materials appropriate for secondary English; familiarity with curriculum materials; includes field experiences in local schools in preparation for student teaching. Taught fall semester only. Prereq: Second semester junior standing, admission to the professional level, ED 105, ED F 301, 302, 335, at least 18 hours of English coursework, concurrent enrollment in READ 498, minimum grade-point ratio of 2.5.

EDSEC 425 Teaching Secondary Modern Languages 3(2,2) Development of instructional practices and materials appropriate for secondary modern languages; familiarity with curriculum materials; includes field experiences in local schools. Taught fall semester only. Prereq: Second semester junior standing, admission to the professional level, ED 105, ED F 301, 302, 335, 18 hours of modern language coursework, concurrent enrollment in READ 498, minimum grade-point ratio of 2.5.
EDSEC 426, H426 Teaching Secondary Mathematics 3(2,2) Development of instructional practices and materials for teaching secondary science (biological, earth, and physical sciences); familiarization with secondary science curriculum materials; includes field experiences in local schools. Taught fall semester only. Prereq: Admission to the professional level, ED 105, ED F 301, 302, 335, at least 18 hours of mathematics coursework, concurrent enrollment in READ 498, minimum grade-point ratio of 2.5.

EDSEC 427, H427 Teaching Secondary Science 3(2,2) Development of instructional practices and materials for teaching secondary science (biological, earth, and physical sciences); familiarization with secondary science curriculum materials; includes field experiences in local schools. Taught fall semester only. Prereq: Second semester Junior standing, admission to the professional level, ED 105, ED F 301, 302, 335, at least 18 hours of science coursework, concurrent enrollment in READ 498, minimum grade-point ratio of 2.5.

EDSEC 428, H428 Teaching Secondary Social Studies 3(2,2) Development of instructional practices and materials for teaching secondary social studies; familiarization with curriculum materials; includes field experiences in local schools in preparation for student teaching. Taught fall semester only. Prereq: Second semester Junior standing, admission to the professional level, ED 105, ED F 301, 302, 335, at least 18 credits of social studies coursework, passing score on South Carolina social science studies content knowledge exam, concurrent enrollment in READ 498.

EDSEC 437, 637 Technology in Secondary Mathematics 3(3,0) Students learn how to integrate calculators, data collectors, and computers in the secondary mathematics curriculum. They solve problems from middle school, Algebra I, Geometry, and Algebra II courses. Prereq: Second semester Junior standing, admission to the professional level.

EDSEC 444 Teaching Internship in Secondary English 9(0,27) Interns design, implement, and critically reflect upon instructional units and teaching practices in supervised secondary English classes. Interns must provide evidence of performance that meets national and state teaching standards for secondary English. Taught spring semester only. Prereq: EDSEC 442. Coreq: EDSEC 454.


EDSEC 454 Secondary English Capstone Seminar 3(2,3) Seminar in conjunction with EDSEC 444. Interns reflect upon and solve problems regarding teaching events, share effective teaching practices, and devise ways to document dimensions of effective teaching. Taught spring semester only. Prereq: EDSEC 428. Coreq: EDSEC 444.


EDSEC 458 Secondary Social Studies Capstone Seminar 3(2,3) Capstone seminar accompanying supervised high school social studies teaching internship. Satisfies part of requirement for South Carolina secondary certification. Offered spring semester only. Prereq: EDSEC 428. Coreq: EDSEC 448.

SOCIETY

**Sociology**

*Professors: J. M. Coggeshall, D. K. Sturkie, Chair; B. J. Vander Mey, D. A. Ward, W. M. Wentworth; Associate Professors: F. C. Moby, L. G. Peppers, J. C. Witter; Assistant Professors: E. M. Granberg, B. A. Rothenberg; Visiting Assistant Professor: W. H. Halle*  

**SOC 201, H201 Introduction to Sociology 3(3,0)**  
Sociological perspective: the study of contemporary groups, organizations, and societies in terms of social behavior, life changes, social structure, and social institutions.

**SOC 202 Social Problems 3(3,0)** Social problems involving the family, education, health care, political and legal systems, economy, population, environment, community; and special problems associated with age, economics, racial status, and gender inequality.

**SOC (C R D) 235 Introduction to Leadership 3(3,0)** Introduction to leadership in various organizational settings from a sociological perspective. Examines the concept of leadership, leadership traits, types of leadership, and the evolution of leadership behaviors in the 19th and 20th centuries.

**SOC (R S) 303, H303 Methods of Social Research 3(3,0)** Introduction to methods of social research: research design, sampling, measurement, reliability, and validity; the relationship between theory and research. Coordinating laboratory introduces students to computer literacy through research. Required of all Sociology majors. Prereq: CP SC 120, MTHSC 203 or 301 or EX ST 301, SOC 201.

**SOC 310, H310 Marriage and Intimacy 3(3,0)** Examination of mate selection, living together, marital relations, family planning, conflict resolution, divorce and remarriage, later life adjustments, and singleness as a lifestyle in the United States. Prereq: SOC 201 or consent of instructor.

**SOC 311 The Family 3(3,0)** Introduction to the family as a social institution. Primary focus is on families in the U.S. with comparisons to other cultures. Topics include history of the family, trends in family formation and dissolution, division of labor, intergenerational relationships, family violence, and policy. Analysis of race, class, and gender are incorporated. Prereq: SOC 201 or consent of instructor.

**SOC 330 Work and Careers in Society 3(3,0)** Introduces changes in the structure of work from pre-industrial to postindustrial periods. Topics include the effects of stratification on career decisions, career paths and implications for life changes, social effects of scientific management of work, unionization, globalization, the rise of multinational corporations, and cross-cultural comparisons of management styles. Prereq: SOC 201 or consent of instructor.

**SOC 331 Urban Sociology 3(3,0)** Urbanization as a social process and related conditions of work, family structure, social mobility, crime, lifestyle, technology, and development of urban areas in the Third World. Prereq: SOC 201.

**SOC 350 Self and Society 3(3,0)** Social psychology from the sociological viewpoint. Examination of the interactional and group influences on such individual conditions as childhood and life-course development, language, emotions, motives, sexuality, deviance, and self-concept. Prereq: SOC 201.

**SOC 351 Collective Behavior 3(3,0)** Spontaneous, transitory, and sporadic group behavior: crowds, panic, riots, fads, and social movements. Prereq: SOC 201.

**SOC (E L E, POSC, PSYCH) 356 Social Science of Entrepreneurship 3(3,0)** Examines those areas of the social sciences that have direct relevance for entrepreneurs. Topics include processes by which entrepreneurs are shaped by social institutions such as the family and community, public policy implications and influences on entrepreneurship, risk perception, decision making, motivation, leadership, and group dynamics. Prereq: SOC 201 or (C R D) 235 or PSYCH 201 or PO SC 101 or 102 or 104 or consent of instructor.

**SOC (R S) 371 Population and Society 3(3,0)** Social, economic, and political consequences of population structure and change, including problems of food and resources, as well as population goals and policies in developing countries and the United States. Prereq: SOC 201.

**SOC 380 Introduction to Social Services 3(3,0)** Fundamentals of casework practice, including philosophy and values, models of group work, and ethics in social services work. Prereq: SOC 201.

**SOC 390 The Criminal Justice System 3(3,0)** Social systems analysis of criminal justice agencies; primary focus on law enforcement and corrections and their interagency relationship with courts and prosecution. Prereq: SOC 201.
SOC 391 Sociology of Deviance 3(3,0) Patterns of deviant behavior: subcultures, careers, and lifestyles of deviants; deviance theory and research. Prq: SOC 201.

SOC 392 Juvenile Delinquency 3(3,0) Nature, extent, and causes of juvenile delinquency; societal attempts to control delinquent conduct and gang violence; emergence of the juvenile justice system. Prq: SOC 201.

SOC 393 Criminology 3(3,0) Nature and causes of criminal behavior; societal attempts to control crime; social responses to crime, criminals, and the criminal justice system. Prq: SOC 201.

SOC 394, H394 Sociology of Mental Illness 3(3,0) Mental illness as a social phenomenon, including cultural and social influence, organizational settings of mental health-care delivery, legal issues, patient-therapist relationships, and mental illness intervention as social control. Prq: SOC 201.

SOC 396 Alcoholism: Social Causes, Consequences and Treatment 3(3,0) Issues involved in alcoholism and alcohol abuse, assessment of sociological and social-psychological theories of alcoholism and prevention; societal problems associated with the misuse of alcohol. Prq: SOC 201 or consent of instructor.

SOC 397 Drug Abuse: Social Causes, Consequences and Treatment 3(3,0) Issues involved in drug abuse other than alcohol; assessment of sociological and social-psychological theories of drug use, abuse, and treatment; societal problems associated with the misuse of drugs other than alcohol. Prq: SOC 201 or consent of instructor.

SOC 398 Honors Thesis Research 1 3 Reading and research related to senior honors thesis. Completion of junior honors requirements and approval of department chair and thesis advisor required. Prq: SOC H303, H310, honors status.

SOC 409 Honors Thesis Research II 3 Research and writing related to the senior honors thesis. Prq: SOC H408, honors status.

SOC 414, 614 Policy and Social Change 3(3,0) Uses the sociological perspective to examine policy development, implementation, and evaluation in the public and private sectors. Specifically, focuses on values and ethics and effects of social change on the outcomes of policy formation, social planning, and implementation. Prq: SOC 201 and Junior standing or consent of instructor.

SOC 430 Sociology of Organizations 3(3,0) Analysis of administrative organizations and voluntary associations; application of analysis of their formal and informal group relations, communications, and effectiveness. Prq: SOC 201 and Junior standing or consent of instructor.

SOC 432 Sociology of Religion 3(3,0) Sociological analysis of religious systems and movements and their influence on other social institutions. Prq: SOC 201 and Junior standing or consent of instructor.

SOC 433, 633 Globalization and Social Change 3(3,0) Examination of the social and historical causes of development and underdevelopment. Various sociological theories of development are reviewed. Selected countries are examined in an international context. Prq: SOC 201 and Junior standing or consent of instructor.

SOC 435, 635 Leadership and Team Building 3(2,3) Introduction to the area of leadership and the process of building effective teams. Examines various sociological perspectives on leadership and their role in developing and maintaining various types of groups. Students are actively involved in the educational process through participation in experiential learning opportunities. Prq: SOC 201 and Junior standing or consent of instructor.

SOC 440, 640 Leisure, the Mass Media, and Culture 3(3,0) Production and consumption of leisure activities in contemporary society; popular culture and the mass media as dominant leisure forms; social effects of leisure activities; relationship between work and leisure. Prq: SOC 201 and Junior standing or consent of instructor.

SOC 441, 641 Sociology of Sport 3(3,0) Sport as a social phenomenon; emphasis on leadership, discrimination, socialization, communication, conflict, and cooperation in sport; emerging social issues in contemporary sports. Prq: SOC 201 and Junior standing or consent of instructor.

SOC 442, 642 Sociology of the Family 3(3,0) Study of the family as a social institution; family roles and functions; socialization processes; societal changes and their impact on the family. Prq: SOC 201 or consent of instructor.

SOC 443, 643 Globalization and Social Change 3(3,0) Examination of the social and historical causes of development and underdevelopment. Various sociological theories of development are reviewed. Selected countries are examined in an international context. Prq: SOC 201 and Junior standing or consent of instructor.

SOC 445, 645 Sociology of the Family 3(3,0) Study of the family as a social institution; family roles and functions; socialization processes; societal changes and their impact on the family. Prq: SOC 201 or consent of instructor.

SOC 446 Sex Roles 3(3,0) Female and male socialization; changes in statuses, roles, inequality, and opportunities in contemporary society, with cross-cultural and social class comparisons. Prq: SOC 201 and Junior standing or consent of instructor.

SOC 447 Men, Masculinity, and Society 3(3,0) Masculinity and social order: norms, roles, relationships, and activities; identity and socialization: work, family, sexuality, war, sports, including subcultural comparisons. Prq: SOC 201 and Junior standing or consent of instructor.

SOC 450, 650 Race, Ethnicity, and Class 3(3,0) History of race and ethnicity as social constructs; current social conditions and social policies. Prq: SOC 201 or consent of instructor.

SOC 451, 651 Race, Ethnicity, and Class 3(3,0) History of race and ethnicity as social constructs; current social conditions and social policies. Prq: SOC 201 or consent of instructor.

SOC 452, 652 Sociology of the Family 3(3,0) Study of the family as a social institution; family roles and functions; socialization processes; societal changes and their impact on the family. Prq: SOC 201 or consent of instructor.

SOC 453, 653 Sociology of the Family 3(3,0) Study of the family as a social institution; family roles and functions; socialization processes; societal changes and their impact on the family. Prq: SOC 201 or consent of instructor.

SOC 454, 654 Sociology of Social Institutions 3(3,0) Analysis of the role of social institutions in society, with particular emphasis on the family, education, religion, and government. Prq: SOC 201 or consent of instructor.

SOC 455, 655 Sociology of Social Institutions 3(3,0) Analysis of the role of social institutions in society, with particular emphasis on the family, education, religion, and government. Prq: SOC 201 or consent of instructor.

SOC 456, 656 Sociology of Social Institutions 3(3,0) Analysis of the role of social institutions in society, with particular emphasis on the family, education, religion, and government. Prq: SOC 201 or consent of instructor.

SOC 457, 657 Family, Society, and Social Change 3(3,0) Analysis of the role of social institutions in society, with particular emphasis on the family, education, religion, and government. Prq: SOC 201 or consent of instructor.

SOC 458, 658 Sociology of Social Institutions 3(3,0) Analysis of the role of social institutions in society, with particular emphasis on the family, education, religion, and government. Prq: SOC 201 or consent of instructor.

SOC 459, 659 Sociology of Social Institutions 3(3,0) Analysis of the role of social institutions in society, with particular emphasis on the family, education, religion, and government. Prq: SOC 201 or consent of instructor.

SOC 460, 660 Sociology of Social Institutions 3(3,0) Analysis of the role of social institutions in society, with particular emphasis on the family, education, religion, and government. Prq: SOC 201 or consent of instructor.

SOC 461 Sex Roles 3(3,0) Female and male socialization; changes in statuses, roles, inequality, and opportunities in contemporary society, with cross-cultural and social class comparisons. Prq: SOC 201 and Junior standing or consent of instructor.

SOC 462 Men, Masculinity, and Society 3(3,0) Masculinity and social order: norms, roles, relationships, and activities; identity and socialization: work, family, sexuality, war, sports, including subcultural comparisons. Prq: SOC 201 and Junior standing or consent of instructor.

SOC 463, 663 Sociology of Parenting 3(3,0) Sociology of parenting, child rearing, parenting styles and outcomes; social change and parenting; variations by sex, race, and class; cross-cultural comparisons; research-based, with applied orientation. Prq: SOC 201; Junior standing.

SOC 471, H471, 671 Demography 3(0) Demographic concepts, theory, and techniques; data analysis; vital statistics, migration, and population distribution. Prq: ANTH 201 or SOC 201 or R.S. 301.

SOC 480, 680 Medical Sociology 3(3,0) Sociocultural factors in the etiology and treatment of physical illness; medical occupations and professions; the organization of health-care delivery systems. Prq: SOC 201 and Junior standing or consent of instructor.

SOC 481, 681 Aging and Death 3(3,0) Sociological orientation to aging populations focusing on the impact of health care, welfare, and retirement systems. Includes dying as a social phenomenon, suicide, euthanasia, and funerals. Prq: SOC 201 and Junior standing or consent of instructor.

SOC 484, 684 Child Abuse and Treatment 3(3,0) Comprehensive examination of child abuse, neglect, and exploitation as major social problems; causes, effects, and prevalence of physical, sexual, and emotional maltreatment; definitions and controversies; social policy and legal considerations; therapeutic approaches for children and their caretakers; child maltreatment and the judicial system. Prq: SOC 201 and Senior standing or consent of instructor.

SOC 491 The Sociology of Policing 3(3,0) Introduction to the major issues of contemporary policing in the U.S. from a sociological perspective. Topics include the changing functions and structure of policing, the police subculture, and the role of the police in a liberal democracy. Prq: SOC 390 or consent of instructor.

SOC 493, 693 Sociology of Corrections 3(3,0) Analysis of correctional alternatives. Topics include sentencing strategies and their impact, prison populations (male, female, and juvenile), inmate social structures, treatment and custody issues, community-based alternatives (probation, parole, electronic monitoring, and work release), and correctional management issues. Prq: SOC 390 or consent of instructor.

SOC 494, 694 Sociology of Organized Crimes 3(3,0) Examines the multifarious aspects of criminal organizations, namely their structure, methods, and networks. Specific topics may include white-collar crime and traditional, nontraditional, and transnational organized crime. Prq: SOC 201 or consent of instructor.

SOC 495 Field Experience 3(1,8) Students participate in selected field placements under supervision for eight hours weekly and in a one-hour seminar per week. May be repeated once for credit. Prq: SOC 380 or 390 and consent of department chair.

SOC (R.S.) 498 Independent Study 3(1,6) Individual readings or projects in sociological areas not covered in other courses. A written proposal must be approved by the instructor directing the work and by the department chair prior to registration. May be repeated for a maximum of six credits. Prq: Consent of department chair.

SOC 499 Seminar in Selected Topics in Contemporary Sociology 3(3,0) Sociological areas of current interest are explored. May be repeated by special arrangement for a maximum of six credits. Prq: Consent of department chair.
SPANISH


SPAN 101 Elementary Spanish 4(3,1) Course for students with no previous experience in Spanish study. The fundamentals of grammar and vocabulary are taught, and a foundation is provided for building oral and written proficiency. Three hours a week of classroom instruction and one hour a week in the language laboratory.

SPAN 102 Elementary Spanish 4(3,1) Continuation of SPAN 101.

SPAN 104 Basic Spanish 4(3,1) Condensed first-year course for students who have previously studied Spanish. Upon completion, students are prepared to enter Intermediate Spanish.

SPAN 121 Accelerated Spanish I 6(6,2) Accelerated 8-credit course for students with two or more years of Spanish in high school. May be taken in lieu of SPAN 101 and 102. Through fundamental grammar, conversation, composition, and dictation, proficiency is stressed. May not be taken by students who have completed SPAN 101 or 102.

SPAN 151 Spanish for Graduate Students 3(3,0) Intensive program only for graduate students preparing for the reading examination in Spanish. A minimum grade of B on a final examination will satisfy graduate school foreign language requirement. May be repeated once. To be taken Pass/Fail only. Prereq: Graduate standing.

SPAN 201, H201 Intermediate Spanish 3(3,1) Intermediate course to practice listening, speaking, reading, and writing. Grammatical structures and basic vocabulary are reviewed systematically. Includes literary and cultural perspectives. Prereq: SPAN 102, 121, or consent of department chair.


SPAN 221 Accelerated Spanish II 6(6,0) Accelerated intermediate course that may be taken in lieu of SPAN 201 and 202. Through conversations, composition, dictation, and intensive grammar review, proficiency is stressed. Includes literary readings and cultural perspectives. May not be taken by students who have completed SPAN 201 or 202. Prereq: SPAN 102, 121, or consent of department chair.

SPAN 300 Spanish Composition for Business 3(3,0) Intensive practice of business writing skills through compositions, general review of grammatical structures, and exposure to business vocabulary and concepts. Prereq: SPAN 202 or consent of department chair.

SPAN 302 Intermediate Spanish Grammar and Composition 3(3,0) Intensive review of Spanish structure, verbs, idioms, and vocabulary with an introduction to syntax and stylistics through controlled and free composition. Prereq: SPAN 202 or consent of department chair.

SPAN 303 Survey of Spanish Literature I 3(3,0) Literary movements, influences, and authors from the beginning to the end of the 17th century; representative works, discussions. Prereq: SPAN 202 or consent of department chair.

SPAN 304 Introduction to Hispanic Literary Forms 3(3,0) Introduction to the basic structures and elements of fiction, poetry, drama, and essay, including literary and critical theory, with readings in 19th- and 20th-century Spanish and Spanish-American literature. Prereq: SPAN 302 or 305.

SPAN 305 Intermediate Spanish Conversation and Composition 1 3(3,0) Practice in spoken Spanish with emphasis on vocabulary, pronunciation, intonation, and comprehension; written work to increase accuracy; assignments in the language laboratory. Prereq: SPAN 202 or consent of department chair.

SPAN 307 The Hispanic World: Spain 3(3,0) Introduction to the significant aspects of the culture of Spain from its origins to the present. Emphasis on the artistic, social, historical, political, and contemporary issues of the Iberian peninsula. Prereq: SPAN 202 or consent of department chair.

SPAN 308 The Hispanic World: Latin America 3(3,0) Introduction to the significant aspects of the culture of Spanish-American countries. Emphasis is placed on the development of the political, economical, geographical, social, and artistic aspects of Spanish America from the indigenous period to the present. Prereq: SPAN 202 or consent of department chair.

SPAN 309 Introduction to Spanish Phonetics 3(3,0) Study of basic concepts of phonetics and phonology, fundamental principles of Spanish pronunciation and International Phonetic Alphabet. Prereq: SPAN 202 or consent of department chair.

SPAN 310 CLIP Summer Immersion Program 6(6,0) Conducted entirely in Spanish for eight hours daily. Consists of activities that combine interrelating cultural topics with language skill practice. Frequent opportunities to converse with native speakers during meals and on excursions. Students receive six credits, three of which may be taken in lieu of SPAN 202. Prereq: SPAN 201.

SPAN 311 Survey of Spanish-American Literature 3(3,0) Literary movements, influences, authors, and works from the Colonial period to the present. Prereq: SPAN 202 or consent of department chair.

SPAN 314 Hispanic Linguistics 3(3,0) Familiarizes students with the theory and practice of linguistics applied to Spanish, in order to deepen their knowledge of phonetics, morphology, syntax, semantics and linguistic change. Prereq: SPAN 302 or consent of department chair.

SPAN 316 Spanish for International Trade 3(3,0) Introduction to commercial Spanish; study of the spoken and written language, protocols, and cultural environment of the Spanish-speaking business world. Business vocabulary, basic business and cultural concepts, and situational practice. Grammatical review through business letters, professional documents and commercial reports. Reading and analysis of commercial texts. Prereq: Any 300-level Spanish language or literature class.

SPAN 318 Spanish Through Culture 3(3,0) Topic-generated conversation course in Spanish through a broad array of artistic manifestations in the Hispanic world, with emphasis in conversation and short written exercises. Focuses on one Hispanic culture topic which provides a basis for class discussion and short written compositions in Spanish. Prereq: SPAN 202 or consent of department chair.

SPAN (PO SC) 382 Spanish Foreign Language News 1(1,0) See PO SC 382.

SPAN H391 Honors Introduction to Hispanic Literary Forms 1(1,0) One-hour independent study to allow honors students to pursue supervised research on some aspect of Hispanic literature. Correq: SPAN 301, membership in Calhoun Honors College.

SPAN H392 Survey of Spanish Literature 1(1,0) Independent study allowing honors students to pursue supervised research on a topic related to Hispanic American history, politics, geography, economics, social institutions, or artistic movements. Correq: SPAN 308, membership in Calhoun Honors College.

SPAN 398 Directed Reading 1-3(1-3,0) Directed study of selected topics in Spanish literature, language, and culture. May be repeated for a maximum of six credits. Prereq: Consent of department chair.

SPAN 401 New Spanish Fiction 3(3,0) Study of selected readings by popular emerging and established authors of Spain, with emphasis on recent cultural trends. Readings include, but are not limited to, detective novels, regional fiction, and fiction from marginalized groups in Spain. Prereq: Spanish 300-level literature course or consent of department chair.

SPAN 403 Spanish American Women Writers 3(3,0) In-depth study of selected literary works by Spanish American women. Representative authors are studied within their philosophical and sociopolitical contexts. Prereq: Spanish 300-level literature course or consent of department chair.

SPAN 404 Nineteenth and Twentieth Century Spanish Literature 3(3,0) Selected readings from major authors in Spain. Emphasis is on readings in poetry, theatre, short story, and novels from the 19th to the early 20th century. Prereq: Spanish 300-level literature course or consent of department chair.

SPAN 405 International Trade and Literature 3(3,0) Readings in the social, economic, and political changes of the Hispanic world in fiction and nonfiction. Study of the importance of social changes that have shaped the economies of Hispanic countries. Prereq: Spanish 300-level literature or culture course or consent of department chair.
SPAN 406 Hispanic Narrative Fiction (3,0)
Topic-generated readings from Spanish America and/or Spain. Readings consider gender issues, the family, ethnicity, religion, politics, history or socioeconomic issues in the Hispanic world. Prereq: Spanish 300-level literature or culture course or consent of department chair.

SPAN 407 Spanish Film (3,0) Films are “read” as texts that mirror Hispanic society. Beside learning about cinematographic techniques in Spanish, topics include comparative analysis of film and literature, films as propaganda, film as “blockbuster,” and the cinematic depiction of social, cultural, and historical realities of Hispanic nations. Prereq: Spanish 300-level language, literature, or culture course or consent of department chair.

SPAN 409 Comprehensive Writing in Spanish (3,0) Study of stylistics in addition to grammar review; writing paragraphs, short compositions, and creative papers in Spanish on both fiction and non-fiction topics. Prereq: Any 300-level Spanish course or consent of department chair.

SPAN 411 Advanced Spanish Conversation and Composition (3,0) Continuation of SPAN 305 with emphasis on greater fluency and sophistication in oral and written expression. Prereq: SPAN 305 or consent of department chair.

SPAN 415 Spanish for Health Professionals (3,0) Medical concepts and terminology in Spanish, designed for students who plan to work in professions related to public health care. Prereq: Six credits in Spanish at the 300-400 level.

SPAN 416 Spanish for International Trade II (3,0) Study of more complex business vocabulary, cultural concepts, and environment of Hispanic markets. Social, political, and economic issues related to Spanish-speaking countries and their current economies in global marketing. Economic geography of Hispanic countries, company organization, management, banking, investment, goods and services, and marketing. Prereq: SPAN 316.

SPAN 417 Professional Communication (3,0) Skill-oriented course, taught in a seminar format. Students learn established “protocol” for addressing various Spanish-speaking audiences and learn to give professional presentations in Spanish. Prereq: Spanish 300-level course or consent of department chair.

SPAN 418 Technical Spanish for Health Management Professionals (3,0) Technical health communication course in Spanish with emphasis on managerial and business aspects of the international health industry. Prereq: SPAN 415 and six additional credits in Spanish at the 300-400 level.

SPAN 419 Health and the Hispanic Community (3,0) Study of cultural aspects of health and health services in Hispanic populations. Taught in Spanish. Prereq: SPAN 415 and six additional credits in Spanish at the 300-400 level.

SPAN 420 Hispanic Drama (3,0) Exploration of contemporary Hispanic theatre. The production and reception of the plays are analyzed paying particular attention to notions of dramatic genre. Focus is on the change and continuity of the plays as well as their historical, cultural, and ideological backgrounds. Prereq: Two 300-level Spanish literature or culture classes.

SPAN 422 The Contemporary Spanish-American Novel (3,0) New trends in the development of the Spanish-American novel from the 1940s to the present. Prereq: Spanish 300-level literature course or consent of department chair.

SPAN 435 Contemporary Hispanic Culture (3,0) Study of social, political, economic, and artistic manifestations of contemporary Hispanic culture. Prereq: Spanish 300-level civilization or culture course or consent of department chair.

SPAN H438 Spanish Honors Research (3,0) Individual honors research conducted under the direction of Language Department faculty. May not be used to satisfy requirements for the major in Modern Languages–Spanish or Language and International Trade or the minor in Modern Languages. Prereq: Junior standing; SPAN H438, membership in Calhoun Honors College.

SPAN H439 Spanish Honors Thesis (3,0) Individual honors research conducted and thesis completed under the direction of Language Department faculty. May not be used to satisfy requirements for the major in Modern Languages–Spanish or Language and International Trade or the minor in Modern Languages. Prereq: membership in Calhoun Honors College.

SPAN H491 Hispanic Narrative Fiction I (1,0) One-hour independent study to allow honors students to pursue supervised research on the socio-political climate under Franco’s dictatorship, with emphasis on contemporary literary theory. Coreq: SPAN 406, membership in Calhoun Honors College.

SPAN H492 Contemporary Latin American Novel I (1,0) One-hour independent study to allow honors students to pursue supervised research on the socio-political climate under Franco’s dictatorship, with emphasis on contemporary literary theory. Coreq: SPAN 422, membership in Calhoun Honors College.

SPAN 498 Independent Study 1-3 (1-3,0-3) Directed study of selected topics in Spanish language, literature, and culture. May be repeated for a maximum of six credits. Prereq: Consent of department chair.

SPAN 499, 699 Special Topics 3 (3,0) Study of timely or special topics in Spanish. May be repeated for a maximum of six credits, but only if different topics are covered. Prereq: Consent of department chair.

SPECIAL EDUCATION
Professor: A. Katsiyannis; Associate Professors: M. J. Hodge, P. M. Stecker, D. Zhang; Assistant Professor: P. J. Riccomini; Lecturer: R. E. Fish

ED SP 370, H370 Introduction to Special Education 3 (3,0) Survey of students with disabilities and with gifts/talents. Individuals with Disabilities Education Act is emphasized, including general educator’s role in serving students with special needs. Characteristics, assessment, and effective instructional procedures for students of varying exceptionalities are addressed. Prereq: Minimum grade-point ratio of 2.0.

ED SP 371 Characteristics of the Mildly Handicapped 3,0 Surveys the characteristics which distinguish the mildly/moderately handicapped from the more severely handicapped. Prereq: Minimum 2.0 grade-point ratio.

ED SP 372 Characteristics and Identification of and Strategies for Individuals with Learning Disabilities 3,0 In-depth coverage of characteristics and identification procedures for individuals with learning disabilities. Effective instructional strategies are addressed. Students participate in field experiences throughout the semester. Offered fall semester only. Prereq: ED SP 370; admission to professional level.

ED SP 373 Characteristics and Instruction of Individuals with Mental Retardation 3,0 In-depth coverage of characteristics and identification procedures for individuals with mental retardation. Effective instructional strategies are addressed. Students participate in field experiences throughout the semester. Prereq: ED SP 370; admission to professional level.

ED SP 374 Characteristics and Strategies for Individuals with Emotional/Behavioral Disorders 3,0 In-depth coverage of characteristics and identification procedures for individuals with emotional or behavioral disorders. Effective instructional strategies and behavior management are addressed. Students participate in field experiences throughout the semester. Prereq: ED SP 370; admission to professional level.

ED SP 416 Teaching Internship in Special Education 6 (1,15) Full-time, supervised teaching internship in K–12 special education for one semester in cooperation with a participating South Carolina school. Reserved for students seeking certification in critical need teaching areas. May be repeated for a maximum of 12 credits. To be taken Pass/Fail only. Prereq: ED SP 371, 491, 493, 494, 496; application approved by department.

ED SP 468 Early Intervention for Infants and Children with Special Needs 3,0 Provides students with a working knowledge of the history of early intervention, legal precedence for providing early intervention services, and effective instructional techniques for working with infants and young children with disabilities and their families. Prereq: ED SP 370.

ED SP 469, 669 Characteristics of Individuals with Emotional and Behavioral Disorders 3,0 Addresses the characteristics of individuals with emotional and behavioral disorders. Consideration is given to historical and legal aspects, definitions, comprehensive assessment, and the impact of school, home, culture, and society on individuals with behavioral disorders. Research findings in the field of behavior disorders are emphasized. Prereq: ED SP 370.

ED SP 470, 670 Characteristics of Individuals with Learning Disabilities 3,0 Provides specific knowledge of definitions, evaluation procedures, cognitive, social, academic, and functional skills of individuals with learning disabilities across the lifespan. Prereq: ED SP 370.
ED SP 472, 672 Characteristics of Individuals with Mental Retardation 3(3,0) Characteristics of mental retardation across the lifespan: learning, behavioral, and developmental aspects are examined. Preq: ED SP 370.

ED SP 473, 673 Educational Procedures for Individuals with Mental Retardation 3(3,0) Identification, selection, and preparation of functional curriculum materials and pedagogy for teaching students with mental retardation. A multidisciplinary, student-centered approach to program planning provides the framework. Preq: ED SP 472.

ED SP 474, 674 Procedures for Individuals with Emotional and Behavioral Disorders 3(3,0) Assists students in developing specific strategies for teaching individuals with emotional and behavioral disorders, utilizing preventive measures, expanding skills in behavior analysis, and implementing the least restrictive intervention warranted. Includes programmatic considerations, social skill instruction, curriculum selection, IEP development, and effective transition. Preq: ED SP 469.

ED SP 475, 675 Educational Procedures for Individuals with Learning Disabilities 3(3,0) Provides knowledge of educational evaluation and instructional procedures to improve outcomes for individuals with learning disabilities. Preq: ED F 302, ED SP 370, PSYCH 201; or consent of instructor.

ED SP 476, 676 Practicum in Learning Disabilities 3(2,3) Addresses content knowledge, skills, and professional values for successful teaching of students with learning disabilities. Focuses on teacher-directed instruction and the use of critical instructional factors, the use of recommended practices for individuals with learning disabilities, and the measurement and analysis of student performance data. Preq: ED SP 470, 475; completion of student teaching.

ED SP 478, 678 Practicum in Emotional and Behavioral Disorders 3(2,3) Addresses content knowledge, performance skills, and professional values for successful teaching of students with emotional and behavioral disorders. Focuses on teacher-directed instruction and the use of critical instructional factors, the use of recommended practice for students with disabilities, and the measurement and analysis of student performance data. Preq: ED SP 474; completion of student teaching.

ED SP 479, 679 Practicum in Mental Retardation 3(2,3) Addresses content knowledge, performance skills, and professional values for successful teaching of students with mental retardation. Focuses on teacher-directed instruction and the use of critical instructional factors, the use of recommended practices for students with disabilities, and the measurement and analysis of student performance data. Preq: ED SP 473; completion of student teaching.

ED SP 491 Educational Assessment of Individuals with Disabilities 3(2,2) Introduction to assessment process (verification) in special education. Includes procedural safeguards; data collections via informal and standardized procedures; issues in assessment; psychometric properties of standardized tests; and administration, scoring, and interpretation of selected instruments. Offered spring semester only. Preq: ED SP 372, 373.

ED SP 492 Mathematics Instruction for Individuals with Mild Disabilities 3(3,0) Prepares students to provide explicit instructions in mathematics for individuals with mild disabilities. Students learn to assess, analyze, and teach math skills systematically. Offered fall semester only. Preq: ED SP 374, 491; concurrent enrollment in ED SP 493, 494, 496, 497.

ED SP 493 Classroom and Behavior Management for Special Educators 3(3,0) Students describe various intervention strategies for increasing and maintaining appropriate behaviors and for decreasing or eliminating inappropriate behaviors. Students accurately recognize, record, and chart inappropriate behaviors; employ the least restrictive intervention; foster self-management skills; and develop preventive strategies and classwide systems for managing academic and social behavior. Offered fall semester only. Preq: ED SP 374, 491; concurrent enrollment in ED SP 492, 494, 496, 497.

ED SP 494 Teaching Reading to Students with Mild Disabilities 3(3,0) Emphasizes the knowledge and skills necessary for teaching reading to students with mild disabilities. Offered fall semester only. Preq: ED SP 374, 491; concurrent enrollment in ED SP 492, 493, 496, 497.

ED SP 495 Written Communication and Collaboration for the Resource Teacher 3(3,0) Focuses on the development of written communication skills to enhance special education teachers' collaboration with parents, regular educators, public and private agencies. Offered spring semester only. Preq: ED SP 492, 493, 494, 496; concurrent enrollment in ED SP 416 or 498.

ED SP 496 Special Education Field Experience 3(0,9) Supervised practical experience prior to Directed Teaching for preservice special education teachers preparing to teach individuals with mild/moderate disabilities. Offered fall semester only. Preq: ED SP 374, 491; concurrent enrollment in ED SP 492, 493, 494, 497.

ED SP 497 Secondary Methods for Individuals with Disabilities 3(3,0) Preparation for working with students with mild/moderate disabilities in secondary schools. Focus is on literature, methods, and materials for providing instruction in transition, self-determination, knowledge within content areas, functional skills, and integration into the community. Offered fall semester only. Preq: ED SP 374, 491; concurrent enrollment in ED SP 492, 493, 494, 496.

ED SP 498 Directed Teaching in Special Education 12(1,33) Comprehensive course providing a full-time, semester-long experience for preservice special education teachers who plan to teach individuals with mild/moderate disabilities. Generally the last course in the program; provides teaching experience under the supervision of University and school personnel. Offered spring semester only. Preq: ED SP 492, 493, 494, 496, 497; concurrent enrollment in ED SP 495.

**TECHNOLOGY AND HUMAN RESOURCE DEVELOPMENT**

Professors: W. L. Havice, C. H. Isbell, W. D. Paige; Associate Professor: C. E. Poston; Assistant Professor: P. H. McGee; Visiting Instructor: W. B. Doty

THRD 110 Introduction to Career and Technology Education 3(2,3) Examines the philosophy of technology education in the public school system and the philosophy and organization of training and development. Students are given an orientation to the major in Technology and Human Resource Development and an overview of the principles of technology.

THRD 115 Contemporary Technological Problems 3(3,0) Provides students with an understanding of the problems and contributions of technology. Examples are taken from historical accounts and from analyses of contemporary technological intervention both in industrialized and nonindustrialized countries.

THRD 160 Training Programs in Industry 3(3,0) Introduction and first-hand experience in industrial training programs. Emphasis is on observing and participating in actual training situations as well as communications and media usage in industry. Preq: THRD 110.

THRD 180 Introduction to Technical Drawing and Computer-Aided Drafting 3(1,6) Introductory drafting course utilizing traditional drafting techniques and computer software to explore technical drawing and orthographic projection through construction of multiview and isometric projections, sectional and auxiliary views, dimensioned working drawings, developments, and intersections. Freehand sketching is a means of problem solving and analysis.

THRD 181 Advanced Technical Drawing and Computer-Aided Drafting 3(1,6) Students expand the application of computer-aided drafting in the areas of mechanical and architectural drawing. Emphasis is on development of complete working drawings incorporating instruction in the areas of production, manufacturing, and construction. Preq: THRD 110, 180 or equivalent; consent of instructor.

THRD 220 Manufacturing Technology I: Systems 3(2,3) Introduction to management, personnel, and production systems through the creation of a corporation. Includes product identification, product research and design, selection of processes, plant design, production systems, and system enhancement. Preq: THRD 110 and 180 or consent of instructor.

THRD 221 Exploring Technology 3(3,0) Covers a wide range of technological concepts along with familiar examples of how technology impacts our lives as individuals, a society, and a global community.

THRD 224 Machine Tool Processes 3(2,3) Basic practical shop experiences on the lathe, drill press, milling machine, and shaper. Benchwork, measuring tools, theory, and demonstrations related to a survey of fundamental machining practices.
THRD 230 Construction Technology I: Materials 3(2,3) Introduction to the commonly used building materials and methods of combining them in present day construction. Preq: THRD 110 or consent of instructor.

THRD 240 Power Technology I: Production 3(2,3) Study of power in terms of energy sources and the generation of power. Emphasis is on the development of insights and understandings of the scientific and operational principles involved in the production and utilization of power. Preq: THRD 110 or consent of instructor.

THRD 250 Electricity 3(2,3) Theory and application of DC and AC fundamentals, including instrumentation, power sources, circuit analysis, motors, construction wiring, and electronic principles and components.

THRD 280 Communications Technology I: Processes and Materials 3(2,3) Topics include graphic communications, photography, computer application and use as a visual communication medium, and audio/video production and application.

THRD 310 Arts and Creativity for the Elementary Child 3(2,3) Provides elementary and early childhood teachers an opportunity to develop technological literacy, art/craft skills in a variety of media, and an understanding of their applications to the curriculum in a classroom environment. Preq: Junior standing in Elementary Education or consent of instructor.

THRD (ED F) 315 Technology Skills for Learning 1(0,2) See ED F 315.

THRD 360 Safety 3(3,0) Study of the relationship of training and safety personnel to the kinds of tasks they are asked to perform. Emphasis is on safety knowledge development and on techniques which may be used in safety training.

THRD 370 Motivation and Discipline in Career and Technology Education 3(3,0) Provides classroom teachers and prospective teachers with knowledge and skills in techniques of student discipline and motivation with application to the technology education setting.

THRD 371 Management of Career and Technology Education Laboratories 3(2,2) Management and operation of unit and multiple-activity laboratories, including laboratory design, selection and procurement of tools and equipment, budgeting management, and coordination of activities in laboratory courses.

THRD 390 Cooperative Experience I 6(0,18) Full-time work experience in industry. Students are requested to register with the instructor one semester prior to the summer in which they plan to enroll. Offered summer session only.

THRD 410, 610 Selected Topics 1-3(1-3,0) Subject areas organized according to program needs. Content is planned cooperatively by the University and the school system or agency requesting the course. May be repeated for a maximum of 18 credits, but only if different topics are covered. Preq: Consent of instructor.

THRD 415, 615 History and Philosophy of Career and Technology Education 3(3,0) Study of career and technology education programs with the intent of developing a sound individual philosophy. General topics covered are history, local, state, and federal legislation; types of career and technology programs; professional organizations and career guidance.

THRD 420, 620 Manufacturing II: Computer-Integrated Manufacturing 3(2,3) Study of computer-integrated manufacturing and its related concepts, including robotics, computer numeric control, electronic pneumatic and sensor systems, programmable logic controllers, and ancillary devices. Preq: THRD 220 or consent of instructor.

THRD 430, 630 Construction Technology II: Practices and Systems 3(2,3) Study of industrial practices and systems affecting man, materials, and equipment associated with construction industries. Activities are directed toward developing a working knowledge of construction technology and a framework for incorporating this instruction into programs in the public and private sectors. Preq: THRD 230.

THRD 440, 640 Power Technology II: Transmission and Control Systems 3(2,3) Continuation of THRD 240. Emphasis in transmitting and controlling power for utilization in such areas as manufacturing, communications, construction, and transportation. Introduces concepts of automation and robotics to enable the classroom teachers and industry personnel to gain necessary insights into this important area of technology. Preq: THRD 240.

THRD 450 Electronics for Educators 3(1,6) Principles of electronics as applied in communications and automatic controls involving transistors, integrated circuits, and other electronic devices and materials for the preparation of teachers of industrial arts and vocational-technical electrical and electronics. Preq: THRD 250 or equivalent.

THRD 460, 660 Developing Training Programs for Industry 3(3,0) Identification, selection, and organization of subject matter for industrial training programs. Emphasizes analysis techniques, session and demonstration planning, written instructional materials development, trainee evaluation, and planning instructional schedules. Preq: Senior standing in Workforce Training Concentration or consent of instructor.

THRD 461 Workplace Safety 3(3,0) Consideration of safety-related problems in the workplace. Emphasis is placed on OSHA regulations and procedures. Preq: THRD 360.

THRD 465, 665 Conducting and Evaluating Training Programs 3(3,0) Basic concepts of supervision, administration, and management of training programs. Emphasis is on determining training requirements, planning, directing, and evaluating training programs. Preq: THRD 160, 460 or consent of instructor.

THRD 468, 6468, 668 Public Relations 3(3,0) Emphasizes techniques and methods of effective public and industrial relations which contribute to understanding and cooperation of labor, business, professional, educational, and industrial groups.

THRD 470, 670 Course Organization and Evaluation 3(3,0) Problems, techniques, and procedures in the preparation, selection, and organization of subject matter for instructional purposes. Methods, techniques, and preparation of materials used in the evaluation of student achievement in industrial education subjects.

THRD 471, 671 Teaching Career and Technology Education 3(3,0) Effective methods of teaching and training in career and technology education. Emphasis is given to class organization, preparation of lesson outlines, and audio-visual aids.

THRD 472 Advanced Instructional Methods 3(3,0) Familiarizes students with the various equipment, materials, and techniques associated with the delivery of instruction. Students design, produce, and present materials to meet specific educational objectives. Preq: THRD 471 or one year of teaching experience.

THRD 473, 673 Assessment in Career and Technology Education 3(3,0) Study of competency testing in career and technology education which includes educational objectives and measurement; construction and use of oral, objective, short answer, matching, essay, and performance tests; and treatment of test data for grade assignments and statistical analysis.

THRD 477 Directed Teaching 12(0,36) Supervised observation and teaching in cooperation with selected public schools in which opportunities are provided for securing experience in teaching industrial subjects. Preq: THRD 371, 471, 2.0 cumulative grade-point ratio.

THRD 478 Internship in Career and Technology Education 16(0,18) Supervised observation and teaching in cooperation with selected area career centers, high schools, and technical colleges to provide experience in teaching specified subjects. Preq: THRD 371, consent of instructor.

THRD 479 Internship in Career and Technology Education II 6(0,18) Continuation of THRD 478. Preq: THRD 478, consent of instructor.

THRD (AG ED, ED F) 480, 680 Educational Applications of Microcomputers 3(2,2) See ED F 480.

THRD (AG ED, ED F) 482, 682 Advanced Educational Applications of Microcomputers 3(2,2) See ED F 482.

THRD 483, 683 Architectural Drafting for Career and Technology Education 3(1,6) Study of the major aspects of architectural drawing, such as plot, floor, and foundation plans; wall sections; and elevations. Preq: THRD 180.

THRD 484, 684 Communications Technology II: Systems 3(2,2) Continuation of THRD 280. Includes theory and operation of communications systems: telegraph, telephone, radio, television, satellites, sound/video recorders, lasers, and computers. Instruction on strategies for interpreting this area of technology to trainees and students is emphasized. Preq: THRD 280.

THRD 486, 686 Instructional Media Development 3(1,4) Basic instructional media development techniques are presented. Students develop material using authoring software such as HyperCard, transparencies using Persuasion and/or PowerPoint, and fully storyboarded, scripted, and edited digital as well as analog video.
THRD 490 Cooperative Experience II 6(0,18)
Continuation of THRD 390.

THRD 491 Special Projects 3(3,0) Students are assigned projects in accordance with their needs and capabilities. Projects are either experimental, theoretical, or developmental and cover subjects not thoroughly covered in other courses. Written project approval is required before registering. Preq: Consent of instructor.

THRD 492, 692 Advanced Projects 1-6 Students gain depth in content by completing projects under the supervision of an instructor in career and technology education. Written approval is required before registering. May be repeated twice for a maximum of six credits. Preq: Consent of instructor.

TEXTILES

TEXT 175 Introduction to Textile Manufacturing 3(3,0) Introduction to the broad fields of textile, fiber, and polymer science and engineering with emphasis on the scientific, technological, and business principles utilized in producing fibers, yarns, and fabrics; enhancing fabric functionality by dyeing, finishing, and printing; and establishing end-use products.

TEXT 176 Natural and Man-made Fibers 4(3,3)
Concept of natural and synthetic polymers as the raw materials of the textile industry is introduced. Survey of the origin, characteristics, and processing properties of various natural fibers and fiber-forming synthetic polymers. Formation of textile fibers from polymeric materials is presented with specific emphasis on the polymer science and engineering principles.

TEXT 201 Yarn Structures and Formation 4(3,3)
Study of fiber processing systems required to transform various fibrous materials into yarn. Involves the machine principles and theories, relationship of the fibers to the process and the resultant yarn structures, and subsequent analysis of the yarn structure to define quality and to determine suitable manufacturing practices. Preq: TEXT 175 and 176 or consent of instructor.

TEXT 202 Fabric Structures, Design, and Analysis 4(3,3)
Study of fabric formation techniques designed to explore the principles and theories of modern technology. Evaluation and analysis of weaving, knitting, and nonwoven fabrication of textile structures. Preq: TEXT 201 or consent of instructor.

TEXT 308 Apparel 4(3,3) Introduction to apparel construction techniques and analysis of problems commonly encountered in the apparel industry. Evaluation of fabric design and properties. Preq: TEXT 202 or consent of instructor.

TEXT 314 Chemical Processing of Textiles 4(3,2) Concepts of current procedures in the chemical, mechanical, and physical preparation and in bleaching, dyeing, printing, and finishing of fabrics are presented; colorimetric and spectrophotometric methods of color control and test methods for the evaluation of the effectiveness of the treatments are emphasized. Not open to Polymer and Textile Chemistry or Textile Management (Chemical) majors.

TEXT 324 Textile Statistics 3(3,0) Introduction to statistics with particular application to the textile industry. Measures of central value and variation, probability, the normal curve, tests of hypotheses, elementary correlation, and regression. Preq: Sophomore standing or consent of instructor.

TEXT 333 The Textile Arts 3(2,3) Surveys development of the hand loom from prehistoric times to the present. Studio work in the elements of hand-loom weaving, their design, analysis, and production of four-harness counterbalance and jack looms. Preq: Junior standing or consent of instructor.

TEXT 403 Fiber Processing III 3(2,2)
Concepts of current fiber processing machines, techniques, practices, and their validity are investigated. Problems are assigned that require use of acquired knowledge, textile testing equipment, and processing machines. The relation of fiber material properties and processing dynamics to the fiber assemblies produced is studied. Preq: TEXT 201.

TEXT 411 Fabric Development III 3(2,2)
Study of specifications and loom details for the production of fabrics woven to the customer's order, including multicolor layouts. Warp and filling preparation are covered as well as size formulations and their methods of application. Warping and dressing plans are developed for the warper and the slasher. Preq: TEXT 202.

TEXT 414 Knitted Structures 3(3,0)
Survey of knitted structures dealing with the principles and mechanisms involved. Various systems are covered with emphasis on fiber and yarn requirements and fabric properties.

TEXT 416 Nonwoven Structures 3(2,2)
Non-woven fabric structures, their manufacture, properties, and applications. Methods of nonwoven fabric formation, resultant material characteristics and end-use applications are examined. Preq: TEXT 201.

TEXT 421, 422 Fiber Science 3(2,2) Familiarizes students with the physical properties of textile and high performance fibers and how these properties influence process and end-use performance; method of measuring these properties; and how those properties are related to structural features of the fiber.

TEXT 422, 622 Properties of Textile Structures 3(2,2)
Yarn and fabric properties, their scientific significance and analysis. Dimensional, structural, and mechanical interrelationships are established and evaluated.

TEXT 426, 626 Instrumentation 3(3,0)
Principles of industrial and process instrumentation and control as applied in the textile industry static and dynamic characteristics of measurement devices; transducer principles and techniques of their application for measurement of physical properties such as pressure, temperature, flow, weight, etc.; principles of process controllers; applications of computers in textile process control.

TEXT 428 Textile Research 1-3 Investigation of a problem in textile, fiber, or polymer science under the direct supervision of a faculty member. After completing the research, student prepares a formal written report which is presented orally. Preq: Senior standing or consent of instructor.

TEXT 429 Textile Research 1-3 Continuation of TEXT 428.

TEXT 440 Color Science 3(2,3) Application of the science of color to industrial practice in textiles, plastics, paints, lighting, and ceramics. Laboratory work is performed on modern instruments and computers.

TEXT 445, 645 Special Topics in Textile, Fiber, and Polymer Science 3-1(3,0) Special topics in textile, fiber, and polymer sciences. A co-enrollment course for similar courses in other departments such as for those students involved in CAE/E 447. There may be different sections in a term to cover different topics. May be repeated for a maximum of nine credits, but only if different topics are covered. Preq: Consent of instructor.

TEXT 460, 660 Textile Processes 3(3,0) Survey of machinery and processes of textile manufacturing from fiber formation through fabric finishing. For students with a nontextile background.

TEXT 470 Textile Costing and Inventory Control 3(3,0) Study of the principles of costing as they specifically apply to the manufacture of textiles. Allocation of cost of material, labor, and overhead: determining the unit cost of yarns, fabrics, and finishes. Inventory systems, storage, materials handling, and profiles. Preq: TEXT 202 or consent of instructor.

TEXT 471 Plant Layout and Processing Design 3(3,0) Survey of the essentials necessary for textile process implementation from the pilot plant concept to a functioning textile process facility. Material flow requirements, power requirements, machinery layout, environmental controls, and facility design are considered. Preq: TEXT 202.

TEXT 472, 672 Textile International Trade 3(3,0) Analyzes the current structure of the international textile trade including imports, exports, tariffs, and trade requirements. Field experience with local firms is used to enhance students understanding. Preq: Senior standing or consent of instructor.

TEXT 475, 675 Textile Marketing 3(3,0) Examination of the activities involved in the distribution of textile products in today's market. Emphasis is placed on the role of consumer research and the analysis of fashion in the design and promotion of textile products.
TEXT 476, 676 Carpet Manufacturing 3(3,0)
Study of the materials, manufacturing technologies, products, and practices associated with the carpet manufacturing sector of the textile industry. Raw materials, product design, and finishing methods, evaluation methods, distribution, and end-use applications are examined. Preq: TEXT 201, 202, or consent of instructor.

THEATRE

Professors: D. J. Hartmann, R. C. Sawyer; Assistant Professors: C. A. Collins, K. Johnson, A. M. Penna; Lecturer: C. Collins

THEA 210, H210 Theatre Appreciation 3(3,0)
Examination of the theatre event approached through historical context, play reading, analysis of production practices, and field trips to live dramatic performances.

THEA 267 Stage Makeup Techniques 3(2,1)
Practical study of basic stage makeup techniques for the acting student including corrective makeup, modeling with paint, three-dimensional makeup, prosthesis with latex, and makeup for other media.

THEA 277 Production Studies in Theatre 3(3,0)
Study of technical production and design including scenery, costume, and lighting through the examination of plays in production.

THEA 278 Acting I 3(2,3) Fundamentals of acting: basic stage techniques; exercises in interpretation, improvisation, characterization; experience in supervised scene study.

THEA 279 Theatre Practicum 1(0,3) Practical work in theatre on a production designed for public presentation. May be repeated for a maximum of four credits.

THEA 315 Theatre History I 3(3,0) Historical survey of Western theatre; emphasis is placed on the changing roles of the playwright, director, actor, technician, and spectator from antiquity to the Renaissance. Preq: Sophomore standing.

THEA 316 Theatre History II 3(3,0) Historical survey of Western theatre; emphasis is placed on the changing roles of the playwright, director, actor, technician, and spectator from the Renaissance to the present. Preq: Sophomore standing.

THEA 317 African American Theatre 3(3,0)
Acquaints students with the origin and development of African American playwrights, plays, players, and their contributions to the American theatre from the 19th century to the present.

THEA (ENGL) 347 The Structure of Drama 3(3,0) Introduction to the critical writing and analytical skills, and composition based on readings and drama experiences. Preq: Senior standing or consent of instructor.

THEA 367 Costume Technology 3(2,3) Theory and practice of costume technology including equipment, patterning, fabric identification, cutting, construction, and fitting.

THEA 368 Voice for the Stage 3(2,3) Study of the principles of vocal production and standard American speech for the stage; exercises in breath support and projection, improving tonal quality, and elimination of regional dialects through the study of the International Phonetic Alphabet. Preq: Sophomore standing.

THEA 372 Creative Drama 3(3,0) Practical applications using creative drama as a learning tool to strengthen curriculum goals and heighten student participation in the classroom. Students develop classroom teaching strategies based on drama education. Appropriate for elementary and secondary teachers, artists, and workshop leaders.

THEA 374 Stage Movement for Actors 3(1,2) Study of the psychological and physical sources of movement in the human body, with emphasis on the attainment of psychological and physical control and the application of the skills to the development of a role.

THEA 376 Stage Directing I 3(2,3) Directing and staging techniques for the preoccupant stage; exercises in composition, movement, picturization; experience in direction of scenes. Preq: Sophomore standing.

THEA 377 Stagecraft 3(2,3) Theory and practice of stage design and technology. Preq: Sophomore standing.

THEA 379 Acting Ensemble I 10(0,3) Performance opportunities in the area of theatre for young audiences. Students are members of a theatrical touring group and perform in a variety of spaces and locations. May be repeated for a maximum of four credits. By audition only.

THEA 398 Special Topics in Theatre 3(3,0) Selected areas of study in theatre not addressed by other theatre course offerings. May be repeated once. Preq: Consent of instructor.

THEA (ENGL) 430, 630 Dramatic Literature II 3(3,0) See ENGL 430.

THEA (ENGL) 447, 647 Playwriting Workshop 3(0,3) Workshop in the creative writing of plays. May be repeated once. Preq: THEA (ENGL) 347 or consent of instructor.

THEA 467 Costume Design 3(3,0) Theory and practice of costume design for the theatre including the study of production concept and styles, sketching, and rendering. Preq: THEA 367 or consent of instructor.

THEA 472, 672 Improvisation: Interpreting and Developing Texts 3(3,0) Practical applications using drama as a learning tool to strengthen writing skills, motivate collaboration, heighten analytical skills. Students use improvisation to analyze texts and to devise original works, consider theory and research of contemporary scholars, and develop approaches to literary composition based on readings and drama experiences. Preq: Senior standing or consent of instructor.

THEA 476 Stage Directing II 3(2,3) Continued study in the art of stage directing, emphasizing leading contemporary theory and methodology. Culminates in the production of a one-act play for public presentation. Preq: THEA 376 or consent of instructor.

THEA 477 Stage Design 3(2,3) Study and practice in stage design, including drafting, graphics, drawing, rendering, scene painting, and light plotting. Preq: THEA 377 or consent of instructor.

THEA 479 Acting II 3(2,3) Continued study in the craft of acting for contemporary Western theatre. Students focus on monologue and scene study in a variety of performance settings. Preq: THEA 278 or consent of instructor.

THEA 487, 687 Stage Lighting 3(2,1) Theory and practice of stage lighting through an understanding of various lighting instruments, lighting control systems, and execution of lighting designs.

THEA 497, 697 Scene Painting 3(2,1) Practical study of basic painting techniques for the theatre including layout, proper use of materials, painting styles, and texturing techniques.

THEA 499, 699 Independent Studies 1-3(1-3,0) Tutorial work for students with special interests outside the scope of existing courses. May be repeated for a maximum of six credits. Preq: Consent of department chair.

WILDLIFE AND FISHERIES

BIOLOGY


W F B 101 Introduction to Wildlife and Fisheries Biology 1(1,0) Informative sketch of aquatic, fisheries science, and wildlife management. Introduces principles, resources, professional organizations, and careers in these fields. Offered fall semester only. Preq: Wildlife and Fisheries Biology major or consent of instructor.

W F B 102 Methods of Wildlife and Fisheries Biology 1(2) Introduction to methodology used in aquatic, fisheries science, and wildlife management. Students are introduced to terminology, techniques, and legislation. Skills with dimensions, units, computations, and technical communications as applied to aquatic, fisheries, and wildlife. Preq: Wildlife and Fisheries Biology major. Coreq: W F B 101.

W F B 300 Wildlife Biology 3(3,0) Natural history, biology, and conservation of wildlife managed by natural resource agencies. Attention is given to those factors important in the management and conservation including species distribution and abundance, habitat requirements, and life-history characteristics. Principles and problems associated with conservation of selected wildlife species are covered. Preq: Two semesters of introductory biology.

W F B 301 Wildlife Biology Laboratory 1(0,3) Identification of wildlife species with emphasis on game and non-game wildlife species managed or protected by state and federal agencies. One or more required weekend field trips will be scheduled. Preq: Wildlife and Fisheries Biology major. Coreq: W F B 300.

W F B 306 Introduction to Wildlife Conservation 2(2,0) Examines the fundamental thinking upon which modern conservation programs have been built.

W F B 307 Hunting and Wildlife Management 1(1,0) Hunting techniques used to harvest renewable wildlife resources are examined with respect to their roles in sound management practices. The effects of selected hunting regulations on wildlife populations, safety, and ethics are discussed. Preq: Junior standing or consent of instructor.
W F B 350 Principles of Fish and Wildlife Biology 3(3,0) Introduction to principles of fisheries and wildlife biology on which sound management practices are based. Interrelationships of vertebrate and invertebrate biology, habitat, and population dynamics are covered. Prereq: One year of general biology.

W F B 410, 610 Wildlife Management Techniques 3(1,6) Covers field and laboratory methods commonly used in wildlife management and research. Students interact with wildlife professionals. Topics include research methodology, estimating wildlife population characteristics, condition measures, and food habits; species determination, sex, and age; capture; population monitoring methods; GIS and mapping techniques, habitat evaluation and improvement. Prereq: Junior standing, one year of general biology.

W F B 412, 612 Wildlife Damage Management 3(2,3) Basic principles and general practices of wildlife management and conservation are covered. Major problems concerning the management of wildlife resources, with emphasis on upland game species. Laboratory work includes practical work on the Clemson University woodlands and field trips to several areas where wildlife management is being practiced.

W F B 414, 614 Wildlife Nutritional Ecology 3(3,0) Concepts of how terrestrial wildlife obtains and utilizes energy and nutrients in wild ecosystems are taught. Energy and nutrient availability are discussed in the ecological context of distribution, flow, and cycling in natural and modified foraging areas. Physiology of digestion is discussed for major homeotherms. Prereq: W F B 412 or W F B 414.

W F B 416, 616 Fishery Biology 3(2,3) Principles underlying freshwater fish production. Introduction to major groups of freshwater fishes and their habitats. Topics include identification, age and growth, fecundity, food habits, populations estimation, environmental evaluation, management practices, and fish culture. Prereq: One year of introductory biology, Junior standing.

W F B 418 Fishery Conservation 3(3,0) Survey of conservation efforts directed toward freshwater and marine fisheries resources. Topics include threatened, endangered, over-exploited species and introductions of exotic species. Prereq: Two semesters of introductory biology.

W F B 430, 630 Wildlife Conservation Policy 3(3,0) Deals with the ecological rationale and management implications of public policy designed for the conservation of American wildlife resources. Emphasis is on managed-land issues. Prereq: W F B 350 or consent of the instructor.

W F B 440 Non-game Wildlife Management 3(3,0) Basic principles and general practices of non-game wildlife management are covered. Emphasis is placed on those principles and practices most appropriately used by state agencies in their management programs for non-game species, along with real-world problems associated with implementation of such programs. Prereq: Two semesters of introductory biology.

W F B 444, 644 Wildlife Damage Management 3(2,3) Covers the philosophical, sociological, ecological, and economical basis for controlling damage caused by animals problem wildlife populations. Emphasis is placed on fundamentals of prevention and control of damage caused by vertebrate species, especially mammals and birds. Includes interaction with federal and state agencies and private consultants. Prereq: One year introductory biology.

W F B 450, 650 Aquaculture 3(3,0) Basic aquacultural techniques applied to freshwater and marine organisms; past and present culture of finfishes and shellfishes around the world; principles underlying fish production; water quality, feeding, and nutrition as they influence production of cultured aquatic organisms. Prereq: One year of general biology, Junior standing.

W F B 460, 660 Warmwater Fish Diseases 2(2,0) Study of diseases in warmwater fish including infectious and noninfectious processes. Prereq: One year of general biology, Junior standing, consent of instructor.

W F B 462, 662, 664 Wetland Wildlife Biology 3(3,0) Study of wetland wildlife habitats, emphasizing classification by physical, chemical, and biological characteristics; importance of wetland habitat for management and production of wetland wildlife species. Offered fall semester only. Prereq: W PS 103/104 or 110/111.

W F B 463 Directed Research in Aquaculture, Fisheries, and Wildlife Biology 1(0,3) Research problems in selected areas of aquacultural, fisheries, or wildlife science to introduce students to experimental design, research techniques, and presentation of research results. May be repeated for a maximum of three credits. Prereq: Junior standing, consent of instructor.

W F B (BIOC, ENT) 469, H669, 669 Aquatic Insects 3(1,6) See ENT 469.

W F B 490 Field Training in Aquaculture, Fisheries, and Wildlife 3(0,9) Four-week program in which students observe aquaculture, fisheries, or wildlife management. Students have supervised management responsibility. Total of 135 hours required. Must be taken at least two weeks in advance. To be taken Pass/Fail only. Prereq: Senior standing in Wildlife and Fisheries Biology or consent of instructor.

W F B 493 Selected Topics 1-4(0-4,0-12) Specialized topics which explore current areas of research and management in aquaculture, fisheries, or wildlife management are examined in lecture/ laboratory format. May be repeated for a maximum of 10 credits, but only if different topics are covered. Prereq: Junior standing, consent of instructor.

Edson, Gene W., Adjunct Assistant Professor, Biological Sciences. BS, University of South Carolina, 1972; MS, 1975, PhD, 1997, Clemson University.

Eiseminger, Sterling K., Professor, English. BS, 1967, MA, 1968, Auburn University, PhD, University of South Carolina, 1974.

Elliot, Ralph Delano, Vice Provost, Off-Campus, Distance, and Continuing Education; Professor, Economics. BS, 1967, MS, 1968, PhD, 1972, North Carolina State University.

Ellis, Steven E., Assistant Professor, Animal and Veterinary Sciences. BSc, University of Connecticut, 1992; MSc, 1994, PhD, 1998, Virginia Polytechnic Institute and State University.


Elsner, Alan W., Director, School of Environment. BA, Williams College, 1971; PhD, University of Wisconsin, 1976.


English, William Rockford, Associate Professor, Forestry and Natural Resources. BS, Oregon State University, 1983; MS, University of Missouri-Columbia, 1983, PhD, Clemson University, 1991.


Erdman, Jori A., Associate Professor, School of Architecture. BS, University of Virginia, 1989; MArch, Columbia University, 1995.

Ervin, Vincent J., Professor, Mathematical Sciences. BSc, Royal Melbourne Institute of Technology (Australia), 1978; MS, 1981, PhD, 1984, Georgia Institute of Technology.

Eskridge, W. Frank, Sr., Director, Construction Industry Cooperative Alliance; Lecturer, Civil Engineering. BS, Clemson University, 1960; PE.

Espey, Molly, Associate Professor, Applied Economics and Statistics. BS, 1988, MS, 1990, PhD, 1994, University of California-Davis.

Eubanks, Francis M., Professor, Construction Science and Management. BS, 1967, MS, 1968, Georgia Institute of Technology.

Eubanks, Lucy T., Lecturer, Chemistry. BA, Mount Holyoke College, 1960; MS, Seattle University, 1967.

Everman, David B., Adjunct Assistant Professor, Genetics, Biochemistry, and Life Sciences. BS, Wake Forest University, 1989; MD, Emory University, 1993.

Eversole, Arnold G., Professor, Forestry and Natural Resources. BS, 1963, MS, 1969, PhD, 1974, Syracuse University.

Fadel, Georges M., Professor, Mechanical Engineering; Diploma, Swiss Federal Institute of Technology (Switzerland), 1976; MSc, 1976, PhD, 1988, Georgia Institute of Technology.

Fairbairn, Donald M., Visiting Associate Professor, Mathematical Sciences. BS, 1963, MA, 1968, PhD, 1975, Vanderbilt University.

Falta, Ronald W., Jr., Professor, School of the Environment. BS, 1982, MS, 1984, Auburn University, PhD, University of California-Berkeley, 1990.

Farnham, Mark William, Associate Professor, Horticulture. BS, Ohio State University, 1977; MS, North Carolina State University, 1984; PhD, University of Minnesota, 1988.

Farriss, John T., Associate Professor, Planning and Landscape Architecture. BA, Saint Louis University, 1972; MUP, 1974, PhD, 1996, Michigan State University; AICP, CRE.

Federico, Lienne C., Assistant Professor, Teacher Education. Hamilton College, 1981; MA, University of North Carolina, 1982; PhD, East Carolina University, 1996.

Feeseer, Andrea V., Associate Professor, Art. BA, Williams College, 1984; MPhil, 1992, PhD, 1996, City University of New York.

Feger, Christopher R., Adjunct Assistant Professor, Chemistry. BS, Massachusetts Institute of Technology, 1991; PhD, Ohio State University, 1996.

Feldman, Lawrence D., Associate Professor, Management. BS, Central Michigan University, 1972; MBA, 1986; PhD, 1990, Michigan State University.

Fennell, Robert E., Professor, Mathematical Sciences. BA, Bradley University, 1964; MS, 1966, PhD, 1969, University of Iowa.

Ferrell, J. Lee, BMW Lecturer, Languages. BS, University of South Carolina-Spartanburg, 1986; MA, University of South Carolina, 2000.

Ferrell, William G., Jr., Associate Professor, Industrial Engineering. BA, Wake Forest University, 1971; MS, Virginia Polytechnic Institute and State University, 1979; PhD, North Carolina State University, 1989; PE.

Fery, Richard L., Adjunct Professor, Horticulture, U.S. Vegetable Laboratory. BS, Oregon State University, 1966; PhD, Purdue University, 1970.


Figliola, Richard S., Professor, Mechanical Engineering. BS, 1974, MS, 1976, PhD, 1979, University of Notre Dame; PE.

Fish, Robin Edwards, Lecturer, Teacher Education. BA, 1995, MEd, 2000, Clemson University.

Fishman, Teresa Anne, Assistant Professor, English. BA, Auburn University, 1992; MA, 1995, MA, 1996, Clemson University, PhD, Purdue University, 2002.

Fisk, William R., Department Chair and Professor, Teacher Education. BS, 1973, MS, 1976, PhD, 1979, Florida State University.

Fjeld, Robert A., Jerry E. and Harriet Caltvet: Dempsey Professor, Waste Management. BS, North Carolina State University, 1970; MS, 1973, PhD, 1976, Pennsylvania State University; PE.

Flanagan, Jackson L., Professor, Leadership, Technology, and Counselor Education. BA, Salem College, 1959; MA, West Virginia University, 1964; EdD, Virginia Polytechnic Institute and State University, 1986.

Flatt, Janice M., Lecturer, Mathematical Sciences. BS, 1979, MS, 1981, Clemson University.

Flower, Phillip J., Associate Professor, Physics and Astronomy. BS, University of Toledo, 1970, PhD, University of Washington, 1976.

Foltz, Jeffrey W., Professor, Forestry and Natural Resources. BS, Ohio State University, 1972; MS, University of Wisconsin, 1974; PhD, University of Colorado, 1978.

Forkner, Cheryl B. W., Associate Professor, Leadership, Technology, and Counselor Education. BS, De Paul University, 1982, MEd, 1995, PhD, 2000, University of Georgia.

Fortnum, Bruce A., Professor, Entomology, Soils, and Plant Sciences, Peet Dee Research and Education Center. BA, La Salle University, 1972; MS, University of Delaware, 1975, PhD, Clemson University, 1978.

Fouquet, Stephen H., Associate Professor, Materials Science and Engineering. BS, University of California-Santa Barbara, 1990; Ph.D, Massachusetts Institute of Technology, 1996.


Fox, Richard S., Adjunct Professor, Biological Sciences. PhD, University of North Carolina, 1980.

Frederich, Bruce Robert, Adjunct Associate Professor, Foresty and Natural Resources. BS, Newberry College, 1974; ME, Duke University, 1976; PhD, Clemson University, 1979.


Fredendall, Lawrence D., Associate Professor, Management. BS, Central Michigan University, 1972; MBA, 1986; PhD, 1990, Michigan State University.
Hyden, Paul D., Assistant Professor, Mathematical Sciences. BS, 1996, MS, 1999, PhD, 2003, Cornell University.

Igo, Larry Brent, Lecturer, Teacher Education. BS, 1993, MA, 1995, PhD, 2004, University of Nebraska-Lincoln.

Ingram, Samuel T., Department Chair and Professor, Mathematical Sciences. BS, 1994, MS, 1995, PhD, 2004, Clemson University.

Isbell, Clinton H., Professor, Leadership, Technology, and Counseling Education. BA, 1969, MEd, 1974, Sam Houston State University; EdD, Texas A&M University, 1980.

Isely, John J., Assistant Unit Leader, South Carolina Cooperative Fish and Wildlife Research Unit, Professor, Forest and Natural Resources. BS, University of Michigan, 1979; MS, 1981, Wageningen University, 1982, PhD, Texas A&M University, 1984.


Jackson, Debra B., Assistant to the President and Associate Provost for Institutional Effectiveness and Assessment. Professor, Public Health Sciences. BSN, Medical University of South Carolina, 1971; MN, Emory University, 1975; PhD, Georgia State University, 1983.


Jacobi, Martin J., Professor, English. BA, Canisius College, 1971; MA, 1979, PhD, 1984, University of Oregon.

Jacobs, David P., Professor, Computer Science. BA, DePauw University, 1971; MA, 1972, PhD, 1976, University of Missouri, MS, Georgia Institute of Technology, 1981.

Jacques, Anne Marie, Lecturer, School of Architecture. BA, 1976, MArch, 1981, Clemson University.

Jahn, Judson R., Lecturer, School of Accountancy and Legal Studies. BS, Limestone College, 1991; MBA, Clemson University, 1998; JD, Mercer University, 1994.

Jalili, Nader, Assistant Professor, Mechanical Engineering. BS, 1992, MS, 1995, Sharif University of Technology (Iran); PhD, University of Connecticut, 1998.

James, Kevin L., Assistant Professor, Mathematical Sciences. BS, 1991, PhD, 1997, University of Georgia.

Jamison, Robert E., Professor, Mathematical Sciences. BS, Clemson University, 1970; MS, 1973, PhD, 1974, University of Washington.

Jarvis, Christine W., J. E. Strine Professor. Textiles. BS, University of North Carolina, 1971; PhD, Massachusett Institute of Technology, 1975.

Jarvis, James R., Professor, Mathematical Sciences. BS, University of North Carolina, 1971; MS, 1973, PhD, 1975, Massachusetts Institute of Technology.

Jeffers, Steven Nye, Associate Professor, Entomology, Soils, and Plant Sciences. BS, University of California-Davis, 1976; MS, 1980, PhD, 1985, Cornell University.

Jenkins, Eleanor W., Assistant Professor, Mathematical Sciences. BS, Wofford College, 1988; MS, Clemson University, 1990, PhD, North Carolina State University, 2000.

Jenkins, Thomas C., Professor, Animal and Veterinary Sciences. BS, 1973, MS, 1975, Pennsylvania State University; PhD, Cornell University, 1979.

Jennings, Ashley K., Lecturer, School of Architecture. BA, 1988, MArch, 1991, Clemson University.

Jennings, Gregory Donald, Adjunct Professor, Forestry and Natural Resources. BS, 1984, MS, 1986, Pennsylvania State University; PhD, University of Nebraska, 1990.

Jensen, Heidi J., Assistant Professor, Art. BFA, University of Minnesota-Duluth, 1997; MFA, University of North Carolina, 1999.

Jerzmanowski, Michal Maria, Assistant Professor, Economics. MA, Warsaw University (Poland), 1998; MA, 2000, PhD, 2003, Brown University.

Jiang, Huabei, Professor, Physics and Astronomy. BS, 1984, PhD, 1988, University of Electronic Science and Technology of China (China); PhD, Dartmouth College, 1995.

Jiang, Xiaoping, Assistant Professor, Food Science and Human Nutrition. BS, 1984, MS, 1987, Ocean University of Qingdao (China); PhD, University of Maryland, 1996.

Johnson, Alan R., Assistant Professor, Forestry and Natural Resources. BS, Colorado State University, 1980; PhD, University of Tennessee, 1988.

Johnson, Albert W., Professor, Entomology, Soils, and Plant Sciences. Bee Dee Research and Education Center. BS, 1966, MS, 1968, Clemson University; PhD, Auburn University, 1971.

Johnson, James, Adjunct Professor, Public Health Sciences. BS, University of Maryland, 1978; MS, 1980, University of South Alabama, 1980; MPA, Auburn University, 1982; PhD, Florida State University, 1987.

Johnson, Kendra Lynette, Assistant Professor, Performing Arts. BA, James Madison University, 1987; MFA, University of Tennessee, 1994.

Johnson, Steven D., Associate Librarian, College Library. BSFS, Georgetown University, 1968; MLS, Rutgers University, 1973.

Johnson, Terri A., Lecturer, Mathematical Sciences. BS, Ball State University, 1974; MS, University of South Carolina, 1982; PhD, Clemson University, 1992.

Jones, Carol D., Lecturer, Graphic Communications. BS, 1988, MS, 1996, Clemson University.

Jones, George L., Visiting Assistant Professor, Leadership, Technology, and Counseling Education.辅导员, Counseling Center, PhD, Florida Institute of Technology, 1986.

Jones, James H., Lecturer, Computer Science. BS, Clemson University, 1957.

Jones, Karyn O., Assistant Professor, Communication Studies. BS, Georgia Southern University, 1992; MA, 1994, PhD, 2003, University of Georgia.


Jones, Roy L., Lecturer, Teacher Education. BA, University of Massachusetts-Amherst, 1972; MA, Atlanta University, 1977; EdD, University of Georgia, 1981.

Jones, Scott A., Assistant Professor, Marketing. BS, 1993, Florida State University; MBA, University of Tampa, 1999, PhD, University of Oregon, 2004.

Jones, Walker A., Adjunct Professor, Entomology, Soils, and Plant Sciences. BS, University of Mississippi, 1973; MS, 1976, PhD, 1979, Clemson University.


Joseph, Paul F., Associate Professor, Mechanical Engineering. BA, Franklin and Marshall College, 1979; MS, 1982, PhD, 1987, Lehigh University.

Jung, Chang-Hsien, Professor, Civil Engineering. BS, 1974, MS, 1976, National Cheng Kung University (Taiwan); PhD, Purdue University, 1981.

Julian, Dinah Gail, Associate Librarian, College Library. BS, Tennessee Technological University, 1979; MBA, Middle Tennessee State University, 1980, MS, University of Tennessee, 1989.

Kang, Gerald Alvin, Adjunct Professor, Entomology, Soils, and Plant Sciences. BS, 1952, MS, 1954, PhD, 1959, University of Wisconsin-Madison.


<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Institution</th>
<th>Location</th>
<th>Year(s)</th>
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<tbody>
<tr>
<td>Tompkins, Jeffrey P.</td>
<td>Assistant Professor</td>
<td>University of California-Santa Cruz</td>
<td>California</td>
<td>1983</td>
</tr>
<tr>
<td>Toler, Joe E.</td>
<td>Professor, Applied Economics and Statistics</td>
<td>University of Georgia</td>
<td>Georgia</td>
<td>1986</td>
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<tr>
<td>Thompson, Deborah J.</td>
<td>Professor, Family and Community Studies</td>
<td>State University of Kentucky</td>
<td>Kentucky</td>
<td>1977</td>
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<tr>
<td>Thompson, C. Stassen</td>
<td>Director, Office of Land Management</td>
<td>Mississippi State University at College Station</td>
<td>Mississippi</td>
<td>1988</td>
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<tr>
<td>Thompson, G. Richard</td>
<td>Professor, Economics</td>
<td>University of South Florida</td>
<td>Florida</td>
<td>1966</td>
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<tr>
<td>Thompson, Lonny L.</td>
<td>Associate Professor, Mechanical Engineering</td>
<td>University of California</td>
<td>California</td>
<td>1985</td>
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<td>Tollier, Alan</td>
<td>Professor</td>
<td>University of Florida</td>
<td>Florida</td>
<td>1986</td>
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<tr>
<td>Tollison, Robert Dewitt</td>
<td>Professor, Economics</td>
<td>Wofford College</td>
<td>South Carolina</td>
<td>1964</td>
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<tr>
<td>Tomasso, Joseph R., Jr.</td>
<td>Professor, Biological Sciences</td>
<td>University of Tennessee</td>
<td>Tennessee</td>
<td>1974</td>
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<tr>
<td>Tomkins, Jeffrey P.</td>
<td>Assistant Professor, Genetics, Biochemistry</td>
<td>Washington State University</td>
<td>Washington</td>
<td>1985</td>
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<td>Tong, Chennings</td>
<td>Assistant Professor, Mechanical Engineering</td>
<td>Beijing Institute of Aeronautics and Astronautics</td>
<td>China</td>
<td>1985</td>
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<td>Torksey, David G.</td>
<td>Professor, Entomology, Soils, and Plant Sciences</td>
<td>Edisto Research and Education Center</td>
<td>South Carolina</td>
<td>1956</td>
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<tr>
<td>Tyler, Peggy J.</td>
<td>Assistant Librarian, Cooper Library</td>
<td>Johnson State College</td>
<td>South Carolina</td>
<td>1983</td>
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<tr>
<td>Tyrell, Richard A.</td>
<td>Professor, Psychology</td>
<td>Hartwick College</td>
<td>New York-Albany</td>
<td>1988</td>
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<td>Tseng, Tuen-Rong J.</td>
<td>Lecturer, Biological Sciences</td>
<td>Tunghai University (China)</td>
<td>Taiwan</td>
<td>1985</td>
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<td>Tsushima, Toshi</td>
<td>Assistant Professor, Art.</td>
<td>San Francisco Art Institute</td>
<td>California</td>
<td>1984</td>
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<tr>
<td>Ulloa, Mauricio</td>
<td>Adjunct Associate Professor, Genetics, Biochemistry, and Life Science Studies</td>
<td>College of Agriculture, Hermosillo Escobar</td>
<td>Mexico</td>
<td>1984, 1990</td>
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<tr>
<td>Van Cleave, Ryan Gene</td>
<td>Professor, English</td>
<td>Northern Illinois University</td>
<td>Illinois</td>
<td>1994</td>
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<tr>
<td>Van den Hurk, Peter</td>
<td>Assistant Professor, Biological Sciences</td>
<td>State University of Groningen</td>
<td>Netherlands</td>
<td>1983</td>
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<tr>
<td>Van Lear, David H.</td>
<td>Robert Adger Bowen Professor, Forest Resources</td>
<td>Forest Service</td>
<td>United States</td>
<td>1965</td>
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<tr>
<td>Vander Mey, Brenda J.</td>
<td>Professor, Sociology</td>
<td>Trinity Christian College</td>
<td>Pennsylvania</td>
<td>1978, 1984</td>
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<tr>
<td>Vander Mey, Gerald A.</td>
<td>Adjunct Professor, Planning and Landscape Architecture</td>
<td>Washington State University</td>
<td>Washington</td>
<td>1982, 1984</td>
</tr>
<tr>
<td>VanDerwee, Donald G.</td>
<td>Lecturer, Chemistry</td>
<td>Middlebury College</td>
<td>Vermont</td>
<td>1969</td>
</tr>
<tr>
<td>Varghese, David</td>
<td>Assistant Professor, Bioengineering</td>
<td>Crawley College of Technology</td>
<td>England</td>
<td>1999</td>
</tr>
<tr>
<td>Vatalaro, Michael V.</td>
<td>Acting Department Chair and Professor</td>
<td>University of Akron</td>
<td>New York</td>
<td>1972, 1987</td>
</tr>
<tr>
<td>Vaughan, Edward A.</td>
<td>Professor, Materials Science and Engineering</td>
<td>Lynchburg College</td>
<td>Florida</td>
<td>1964</td>
</tr>
<tr>
<td>Vernon, Kristine Lang</td>
<td>Instructor, Animal and Veterinary Sciences</td>
<td>North Carolina State University</td>
<td>North Carolina</td>
<td>1998</td>
</tr>
<tr>
<td>Vyavahare, Narendra R.</td>
<td>Associate Professor, Bioengineering</td>
<td>BS, 1983; MS, 1985</td>
<td>India</td>
<td>1990</td>
</tr>
<tr>
<td>Wagoner, Earl H.</td>
<td>Adjunct Assistant Professor, Chemistry</td>
<td>BS, 1962; Ph.D., 1967</td>
<td>Pennsylvania</td>
<td>1982</td>
</tr>
<tr>
<td>Wagner, John R.</td>
<td>Associate Professor, Mechanical Engineering</td>
<td>BS, 1983; MS, 1985</td>
<td>Pennsylvania</td>
<td>1989</td>
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<tr>
<td>Wagnett, Matthew W.</td>
<td>Assistant Professor, Entomology, Soils, and Plant Sciences</td>
<td>BS, 1994, MA, 1999; College of William and Mary</td>
<td>Kentucky</td>
<td>2002</td>
</tr>
<tr>
<td>Wagner, Thomas E.</td>
<td>Professor, Biological Sciences</td>
<td>BS, 1978; Ph.D., 1981</td>
<td>Germany</td>
<td>1981</td>
</tr>
<tr>
<td>Wakefield, Jennie E.</td>
<td>Lecturer, English</td>
<td>BFA, Boston Conservatory</td>
<td>Massachusetts</td>
<td>1977, 2001</td>
</tr>
<tr>
<td>Walker, Gerald J.</td>
<td>Assistant Professor, Military Leadership</td>
<td>Major U.S. Army</td>
<td>Maryland</td>
<td>1983, 1992</td>
</tr>
<tr>
<td>Walker, Ian D.</td>
<td>Professor, Electrical and Computer Engineering</td>
<td>BS, University of Hull</td>
<td>England</td>
<td>1983, 1985</td>
</tr>
<tr>
<td>Walker, John L.</td>
<td>Adjunct Assistant Professor, Forestry and Natural Resources</td>
<td>BS, Lebanon Valley College</td>
<td>Wyoming</td>
<td>1975, 1980</td>
</tr>
<tr>
<td>Walker, Joseph T.</td>
<td>Lecturer, Parks, Recreation, and Tourism Management</td>
<td>BFA, 1991; MA, 1996, 2001; University of Mississippi, BS, Ph.D., 2002</td>
<td></td>
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<tr>
<td>Walker, Meredith L.</td>
<td>Lecturer, English</td>
<td>BA, University of South Carolina</td>
<td>South Carolina</td>
<td>1984, MA, 1987</td>
</tr>
<tr>
<td>Walker, Miranda Letitia</td>
<td>Lecturer, School of Accountancy and Legal Studies</td>
<td>BS, 1990, MPAcc, 1993; Clemson University, CPA</td>
<td>South Carolina</td>
<td>1999, 1999</td>
</tr>
<tr>
<td>Walker, Terry H.</td>
<td>Associate Professor, Agricultural and Biological Engineering</td>
<td>BS, 1989, MS, 1992, PhD, 1997</td>
<td>Tennessee</td>
<td>1998</td>
</tr>
<tr>
<td>Wang, Gaofeng G.</td>
<td>Assistant Professor, Forestry and Natural Resources</td>
<td>BSc, 1983, MSc, 1986, Nanjing Forestry University, China</td>
<td>Beijing, China</td>
<td>1993</td>
</tr>
</tbody>
</table>
Wood, Gene W., Professor, Forestry and Natural Resources. BS, Virginia Polytechnic Institute and State University, 1963; MS, 1966, PhD, 1971, Pennsylvania State University

Wood, Judy D., Assistant Professor, Mechanical Engineering. BS, 1981, MS, 1983, PhD, 1992, Virginia Polytechnic Institute and State University

Woodard, James D., Named Professor, Political Science. BS, Abilene Christian University, 1970; MA, American University, 1973; PhD, Vanderbilt University, 1978

Woodward, Steven Paul, Assistant Professor, English. BA, Queen's University-Kingston (Canada), 1985; BAA, Ryerson Polytechnical University (Canada), 1990; MA, 1992, PhD, 2001, University of Toronto (Canada)

Woodward-Detrich, Denise C., Director, Rudolph E. Lee Gallery, Lecturer, Art. BFA, Wichita State University, 1990; MFA, Alfred University, 1992

Woolbright, Nona L., Assistant Professor, Graphic Communications. BA, California University-State Chico, 1983; MS, Central Missouri State University, 1986; EdD, Clemson University, 1995

Wooten, Thomas E., Alumni Professor, Forestry and Natural Resources. BA, Catawba College, 1962; MD, Duke University, 1965, PhD, North Carolina State University, 1967

Worthen, Wade B., Associate Professor, Biological Sciences. BS, Bucknell University, 1982; MS, 1985, PhD, 1988, Rutgers University

Wourms, John P., Professor, Biological Sciences. BS, 1958, MS, 1962, Fordham University; PhD, Stanford University, 1966

Wright, Brett A., Department Chair and Professor, Parks, Recreation, and Tourism Management. BA, 1975, MA, 1976, Morehead State University; PhD, Texas A&M University, 1985

Wright, Julia S., Lecturer, Teacher Education. BA, 1975, MA, 1976, Morehead State University

Wu, Yonnie, Adjunct Assistant Professor, Genetics, Biochemistry, and Life Sciences. BS, Fu-Dan University (China), 1982; MS, University of Maine, 1989; PhD, University of Illinois-Urbana-Champaign, 1993

Wueste, Daniel E., Director, Rutland Center for Ethics; Associate Professor, Philosophy and Religion. BA, 1976, MA, 1979, University of Wisconsin; PhD, Washington University, 1985

Wyatt, Douglas E., Adjunct Assistant Professor, School of the Environment. BA, University of Tennessee, 1980; MS, Vanderbilt University, 1985; PhD, University of South Carolina, 1995

Wyffels, Jennifer T., Adjunct Assistant Professor, Biological Sciences, and Animal and Veterinary Sciences. BS, Bradley University, 1991; PhD, Clemson University, 2001

Xu, Xiao-bang, Associate Professor, Electrical and Computer Engineering. BS, Tsinghua University (China), 1968; PhD, University of Mississippi, 1985

Yancey, Kathleen B., Director, Pearce Center; Roy Pearce Professor, Professional Communications. BA, 1972, MA, 1977, Virginia Polytechnic Institute and State University; PhD, Purdue University, 1983

Yang, Yanru, Assistant Professor, School of the Environment. BS, 1992, MS, 1993, PhD, 1996, Tsinghua University (China)

Yarrow, Greg K., Professor, Forestry and Natural Resources. BS, University of Southern Mississippi, 1977; MS, Mississippi State University, 1979; DF, Stephen F. Austin State University, 1987

Yilmaz, Unitt, Associate Professor, Planning and Landscape Architecture. BArch, 1979, MA, 1981, PhD, 1988, Istanbul Technical University (Turkey)

Yin, Jing, Assistant Professor, Communication Studies. BA, Beijing Broadcasting Institute (China), 1997; MA, University of New Mexico, 2000; PhD, Pennsylvania State University, 2003
Friedlob, George Thomas, PhD, Professor Emeritus of Accounting
Fuhr, Donald Lee, EdD, Professor Emeritus of Counseling and Educational Leadership
Fulmer, John Patrick, MS, Professor Emeritus of Horticulture
Gable, Paul Kistler, Jr., BA, Assistant Director of Extension Emeritus
Gadson, Tyron, BS, County Extension Agent Emeritus
Galloway, Elizabeth Boyce, EdD, Alumni Distinguished Professor Emerita of Education
Galluscio, Eugene Hugo, PhD, Professor Emeritus of Psychology
Garner, Thomas Harold, PhD, Professor Emeritus of Agricultural and Biological Engineering
Garrett, Thomas R., M.E., Instructor Emeritus of Agricultural and Biological Engineering
Garrison, Olen Branford, PhD, Director Emeritus of Agricultural Experiment Station and Research in Agriculture; Professor Emeritus of Horticulture
Gaskins, Judith Collins, MS, County Extension Agent Emeritus
Geldard, John Francis, PhD, Professor Emeritus of Chemistry
Gettys, William Edward, PhD, Professor Emeritus of Physics
Gilchrist, Ralph Wayne, PhD, Professor Emeritus of Electrical and Computer Engineering
Gilliland, Bobby Eugene, PhD, Special Assistant Emeritus to the President; Professor Emeritus of Electrical and Computer Engineering
Gileath, John Atkins, MS, Professor Emeritus of Physics
Glick, Bruce, PhD, and Professor Emeritus of Forestry Science
Glover, Judith Lyles, BA, County Extension Agent Emeritus
Godley, Willie Ceci, PhD, Associate Dean Emeritus, College of Agricultural Sciences; Director Emeritus, Agricultural Experiment Station; Professor Emeritus of Animal Science
Goree, James Gleason, PhD, Centennial Professor Emeritus; Professor Emeritus of Mechanical Engineering and Engineering Mechanics
Gossett, Billy Joe, PhD, Professor Emeritus of Crop and Soil Environmental Science
Goswami, Dixie Gooch, MA, Professor Emeritus of English
Graben, Henry Willingham, PhD, Professor Emeritus of Physics
Grady, C. P. Leslie, Jr., PhD, R. A. Bowen Professor Emeritus of Environmental Engineering and Science
Graham, W. Doyle, Jr., PhD, Professor Emeritus of Crop and Soil Environmental Science
Gray, Charles Harmon, BA, County Extension Agent Emeritus
Gray, Furman Ray, MS, Associate Professor Emeritus of Accounting
Gray, Gordon Walter, EdD, Dean Emeritus, College of Education
Gray, Hugh Brunson, BS, County Extension Agent Emeritus
Gregory, Kay Rish, County Extension Agent Emeritus
Griffin, Barbara Jean, MA, Professor Emeritus of Agricultural and Biological Engineering
Griffin, Deuel Norton, MAT, Professor Emeritus of English
Griffin, Randall Parrish, MS, Professor Emeritus of Entomology
Griffin, Villard Stuart, Jr., PhD, Professor Emeritus of Geology
Haerfling, Gene Henry, PhD, Bishop Distinguished Professor Emeritus of Ceramic Engineering
Hall, Basil Edwin, MMinEd, Professor Emeritus of Art
Ham, Donald L., PhD, Professor Emeritus of Forest and Natural Resources
Hambly, John Vernon, PhD, Professor Emeritus of Education
Hamilton, Max Greene, PhD, Professor Emeritus of Horticulture, Edisto Research and Education Center
Hammond, Alexander Francis, MS, Professor Emeritus of Engineering Technology
Hammond, Joseph Langhorne, PhD, Professor Emeritus of Electrical and Computer Engineering
Handlin, Dale Lee, MS, Professor Emeritus of Animal Science
Hare, Eleanor O., PhD, Associate Professor Emerita of Computer Science
Hare, William R., Jr., PhD, Professor Emeritus of Mathematical Sciences
Harris, Carolyn Martin, MS, County Extension Agent Emeritus
Harris, Harold M., Jr., PhD, Professor Emeritus of Agricultural Economics and Statistics
Harris, Maureen, MLS, Professor Emerita of Libraries
Harrison, James William, Jr., PhD, Professor Emeritus of Electrical and Computer Engineering
Hart, Lillian Blake, PhD, Professor Emerita of Curriculum and Instruction
Harvey, Lawrence Harmon, PhD, Professor Emeritus of Agronomy and Soils
Harwell, Richard Lynn, PhD, Professor Emeritus of Agricultural and Applied Economics
Haselton, George Montgomery, PhD, Professor Emeritus of Geology
Hash, John Alex, EdD, Professor Emeritus of Agricultural Education
Haun, Joseph Rhodes, PhD, Professor Emeritus of Horticulture
Haymond, Jacqueline Landis, PhD, Professor Emerita of Forest Resources
Haymond, Robert Edward, PhD, Professor Emeritus of Mathematical Sciences
Hays, Ruth Lanier, PhD, Professor Emerita of Biological Sciences
Hays, Sidney Brooks, PhD, Head and Professor Emeritus of Entomology
Hegg, Richard Olaf, PhD, Professor Emeritus of Agricultural and Biological Engineering
Helms, Carl Wilbert, PhD, Professor Emeritus of Zoology
Hendrix, William Herlie, PhD, Head and Professor Emeriti of Management
Hendrix, William Judson, MS, County Extension Agent Emeritus
Hentlicks, Donald Maurice, PhD, Chair and Professor Emeriti of Animal and Veterinary Sciences
Henry, Louis Lee, PhD, Professor Emeritus of English
Hill, James Riley, Jr., PhD, Professor Emeritus of Animal, Dairy, and Veterinary Sciences
Hiller, Howard Hugh, MS, County Extension Agent Emeritus
Hillman, Dannella Valentine, County Extension Agent Emeritus
Hiot, Floyd Berry, Jr., BS, County Extension Agent Emeritus
Hipp, Opal Shepard, EdD, Professor Emerita in School of Nursing
Hite, James Cleveland, PhD, Alumni Professor Emeritus of Agricultural and Applied Economics
Hobson, James Harvey, PhD, Alumni Professor Emeritus of Chemistry
Hochheimer, Laura, PhD, Professor Emerita of Music
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<th>Name</th>
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<tr>
<td>Johnson, John</td>
<td>PhD, Professor Emeritus of Agricultural Economics</td>
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<td>Jones, W. A., Jr.</td>
<td>MA, County Extension Director Emeritus</td>
</tr>
<tr>
<td>Jordan, Johnny Wayne</td>
<td>PhD, Professor Emeritus of Agricultural and Applied Economics</td>
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<td>James Larry</td>
<td>PhD, Professor Emeritus of Civil Engineering</td>
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<td>Keller, Deloris Olavia</td>
<td>Distinguished County Agent Emerita</td>
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<td>Keller, Frederick Jacob</td>
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<td>Kelly, Mary Ann</td>
<td>EdD, Professor Emerita of Nursing Science</td>
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<td>Kenelly, John Willis</td>
<td>PhD, Alumni Professor Emeritus of Mathematical Sciences</td>
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<td>Kennedy, William Joseph</td>
<td>PhD, Professor Emeritus of Industrial Engineering</td>
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<td>Kessler, George D.</td>
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<td>Kinner, Andrew Jackson</td>
<td>BA, County Extension Agent Emeritus</td>
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<td>King, Grady Ansel, Jr.</td>
<td>PhD, Professor Emeritus of Horticulture</td>
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<td>Kingman, Alta Randall</td>
<td>PhD, Professor Emeritus of Horticulture</td>
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<td>Kingsland, Graydon</td>
<td>Chapman, Sr., PhD, Professor Emeritus of Plant Pathology and Physiology</td>
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<td>Kirkwood, Charles</td>
<td>Edward, Jr., MS, Professor Emeritus of Mathematical Sciences</td>
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<td>PhD, Professor Emeritus of Entomology</td>
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<td>Kline, Ellis Lee</td>
<td>PhD, Professor Emeritus of Microbiology and Molecular Medicine</td>
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<td>Kline, Judith Spiers</td>
<td>MS, Professor Emerita of Family and Youth Development</td>
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<td>Kline, Priscilla</td>
<td>Mackenzie, EdD, Professor Emerita of Nursing Science</td>
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<td>Knapp, Ronald James</td>
<td>PhD, Alumni Professor Emeritus of Sociology</td>
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<td>Knox, Sarah Stewart</td>
<td>BS, Associate District Extension Leader Emerita</td>
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<td>Kopczyk, Ronald James</td>
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<td>PhD, Assistant Director and Professor Emeritus of Family and Youth Development</td>
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<td>EdD, Dean Emerita, College of NursingEmerita of Nursing</td>
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<td>PhD, Professor Emeritus of Agronomy and Soils</td>
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<td>Lambert, Barbara</td>
<td>Sherrill, BS, County Extension Agent Emerita</td>
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