Clemson
University

UNDERGRADUATE ANNOUNCEMENTS

2004-2005

2003-2004 Record
One hundred eleventh year
Volume 79
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 semesters. 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 employees 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 Access and Equity
E-103 Martin 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.

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, 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.

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 person or company 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 or 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. Photographic, video 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 catalog.

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 20220-4609.

FAMILY PERSONAL PRIVACY ACT
The South Carolina Family Personal Privacy Act (SC Code 30-2-10 et seq.) defines personal information as "...information that 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 undergraduate students during the course of their academic activities conducted as part of any undergraduate curriculum. Such any invention will be handled by the University in the same manner as set forth in the Faculty Manual of the Clemson University, the pertinent provision for which appears as Part VI E 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 2004

May 10, M
May 11, Tu
May 12, W
May 15, Sa
May 17, M
May 18, Tu
May 22, Sa
May 25, Tu
May 28, F

Late registration and first day of class
Last day to register; late enrollment fee applies
Last day to drop a class or withdraw from the University without a W grade
Classes meet
Last day for instructors to issue mid-term grades
Last day to drop a class or withdraw from the University without final grades
Classes meet
Examinations
9:00 A.M.—Deadline to submit all grades

First Summer Session 2004

May 17, M
May 18, Tu
May 19, W
May 21, F
June 2, W
June 3, Th
June 7, M
June 22, Tu
June 24, Th

Late registration
Classes begin; late enrollment fee applies
Last day to register or add a class
Last day to drop a class or withdraw from the University without a W grade
Last day for instructors to issue mid-term grades
Last day to drop a class or withdraw from the University without final grades
Last day to order diploma for August graduation
Examinations
9:00 A.M.—Deadline to submit all grades

Second Summer Session 2004

June 28, M
June 29, Tu
June 30, W
July 1, Th
July 5, M
July 6, Tu
July 10, Sa
July 15, Th
July 16, F
August 4, W
August 5, Th
August 6, F
August 7, Sa

Orientation
Late registration
Classes begin; late enrollment fee applies
Last day to register or add a class
Holiday
Last day to drop a class or withdraw from the University without a W grade
Classes meet
Last day for instructors to issue mid-term grades
Last day to drop a class or withdraw from the University without final grades
Examinations
2:00 P.M.—Deadline to submit candidate grades
9:00 A.M.—Deadline to submit other grades
Candidates for graduation may access grades
Graduation

Fall Semester 2004

August 15–16, Su–M
August 16–17, M–Tu
August 17, Tu
August 18, W
August 24, Tu
August 31, Tu
September 7, Tu
October 6, W
October 8, F
November 1–2, M–Tu
November 3, W
November 24–26, W–F
December 2–3, Th–F
December 4–11, Sa–Sa
December 15, M
December 15, W
December 16, Th

Orientation
Late registration
Convocation
Classes begin; late enrollment fee applies
Last day to register or add a class
Last day to drop a class or withdraw from the University without a W grade
Last day to order diploma for December graduation
Last day for instructors to issue mid-term grades
Last day to drop a class or withdraw from the University without final grades
Fall break
Registration for spring, Maymester, and summer terms begins
Thanksgiving holidays
Classes meet; exams permitted in labs only
Examinations
9:00 A.M.—Deadline to submit candidate grades
9:00 A.M.—Deadline to submit other grades
Candidates for graduation may access grades
Graduation

Spring Semester 2005

January 9–10, Su–M
January 10–11, M–Tu
January 12, W
January 17, M
January 19, W
January 26, W
February 2, W
March 2, W
March 4, F
March 21–25, M–F
April 4, M
April 9–16, Sa–Sa
April 28–29, Th–F
April 30–May 7, Sa–Sa
May 10, Tu
May 11, W
May 12, Th
May 13, F

Orientation
Late registration
Martin Luther King, Jr. holiday
Last day to register or add a class
Last day to drop a class or withdraw from the University without a W grade
Last day to order diploma for May commencement
Last day for instructors to issue mid-term grades
Last day to drop a class or withdraw from the University without final grades
Spring break
Registration for fall semester begins
Honors and Awards Week
Classes meet; exams permitted in labs only
Examinations
9:00 A.M.—Deadline to submit candidate grades
9:00 A.M.—Deadline to submit other grades
Candidates for graduation may access grades
Commencement
9:30 A.M. (Colleges AF&LS, AA&H, E&S)
2:30 P.M. (Colleges B&BS, HE&HD)
**Maymester 2005**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
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<tbody>
<tr>
<td>May 16, M</td>
<td>Late registration and first day of class</td>
</tr>
<tr>
<td>May 17, Tu</td>
<td>Last day to register, late enrollment fee applies</td>
</tr>
<tr>
<td>May 18, W</td>
<td>Last day to drop a class or withdraw from the University without a W grade</td>
</tr>
<tr>
<td>May 21, Sa</td>
<td>Classes meet</td>
</tr>
<tr>
<td>May 23, M</td>
<td>Last day for instructors to issue mid-term grades</td>
</tr>
<tr>
<td>May 24, Tu</td>
<td>Last day to drop a class or withdraw from the University without final grades</td>
</tr>
<tr>
<td>May 28, Sa</td>
<td>Classes meet</td>
</tr>
<tr>
<td>May 31, Tu</td>
<td>Examinations</td>
</tr>
<tr>
<td>June 3, F</td>
<td>9:00 A.M.—Deadline to submit all grades</td>
</tr>
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**First Summer Session 2005**

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

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

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
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<tbody>
<tr>
<td>August 21–22, Su-M</td>
<td>Orientation</td>
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<tr>
<td>August 22–23, M-Tu</td>
<td>Late registration</td>
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<tr>
<td>August 23, Tu</td>
<td>Convocation</td>
</tr>
<tr>
<td>August 24, W</td>
<td>Classes begin; late enrollment fee applies</td>
</tr>
<tr>
<td>August 30, Tu</td>
<td>Last day to register or add a class</td>
</tr>
<tr>
<td>September 6, Tu</td>
<td>Last day to drop a class or withdraw from the University without a W grade</td>
</tr>
<tr>
<td>September 13, Tu</td>
<td>Last day to order diploma for December graduation</td>
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<tr>
<td>October 12, W</td>
<td>Last day for instructors to issue mid-term grades</td>
</tr>
<tr>
<td>October 14, F</td>
<td>Last day to drop a class or withdraw from the University without final grades</td>
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<tr>
<td>October 17–18, M-Tu</td>
<td>Fall break</td>
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<tr>
<td>November 7, M</td>
<td>Registration for spring, Maymester, and summer terms begins</td>
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<tr>
<td>November 23–25, W-F</td>
<td>Thanksgiving holidays</td>
</tr>
<tr>
<td>December 8–9, Th-F</td>
<td>Classes meet; exams permitted in labs only</td>
</tr>
<tr>
<td>December 10–17, Sa-Sa</td>
<td>Examinations</td>
</tr>
<tr>
<td>December 19, M</td>
<td>9:00 A.M.—Deadline to submit candidate grades</td>
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<tr>
<td>December 21, W</td>
<td>9:00 A.M.—Deadline to submit other grades</td>
</tr>
<tr>
<td>December 21, W</td>
<td>Candidates for graduation may access grades</td>
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<tr>
<td>December 22, Th</td>
<td>Graduation</td>
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**Spring Semester 2006**

<table>
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<tr>
<th>Date</th>
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<tr>
<td>January 8–9, Su-M</td>
<td>Orientation</td>
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<tr>
<td>January 9–10, M-Tu</td>
<td>Late registration</td>
</tr>
<tr>
<td>January 11, W</td>
<td>Classes begin; late enrollment fee applies</td>
</tr>
<tr>
<td>January 16, M</td>
<td>Martin Luther King, Jr. holiday</td>
</tr>
<tr>
<td>January 18, W</td>
<td>Last day to register or add a class</td>
</tr>
<tr>
<td>January 25, W</td>
<td>Last day to drop a class or withdraw from the University without a W grade</td>
</tr>
<tr>
<td>February 1, W</td>
<td>Last day to order diploma for May commencement</td>
</tr>
<tr>
<td>March 1, W</td>
<td>Last day for instructors to issue mid-term grades</td>
</tr>
<tr>
<td>March 3, F</td>
<td>Last day to drop a class or withdraw from the University without final grades</td>
</tr>
<tr>
<td>March 20–24, M-F</td>
<td>Spring break</td>
</tr>
<tr>
<td>April 3, M</td>
<td>Registration for fall semester begins</td>
</tr>
<tr>
<td>April 8–15, Sa-Sa</td>
<td>Honors and Awards Week</td>
</tr>
<tr>
<td>April 27–28, Th-F</td>
<td>Classes meet; exams permitted in labs only</td>
</tr>
<tr>
<td>April 29–May 6, Sa-Sa</td>
<td>Examinations</td>
</tr>
<tr>
<td>May 9, Tu</td>
<td>9:00 A.M.—Deadline to submit candidate grades</td>
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<tr>
<td>May 10, W</td>
<td>9:00 A.M.—Deadline to submit other grades</td>
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<tr>
<td>May 11, Th</td>
<td>Candidates for graduation may access grades</td>
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<td>May 12, F</td>
<td>Commencement</td>
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<tr>
<td>May 16, F</td>
<td>9:30 A.M. (Colleges AF&amp;LS, AA&amp;H, E&amp;S)</td>
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<tr>
<td>May 23, F</td>
<td>2:30 P.M. (Colleges B&amp;BS, HE&amp;HD)</td>
</tr>
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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/r7.html](http://www.registrar.clemson.edu/html/r7.html).
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.

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George E. Bell, Jr., Irmo
Randy Bishop, Mt. Pleasant
M. Pat Black, Jr., Cameron
W. W. Bruner, Jr., Columbia
Jack W. Carter, Jr., Columbia
Norman Chapman, Spartanburg
Rhonda Collins, Columbia
Woodrow W. Culp, Fort Mill
F. Guy Darby, Jr., Chester
William E. Dukes, Clemson
Paul Dinnavant, Batesburg-Leesville
William Kelly Durham, Clemson
Harry L. Fos, Jr., Hampton
Paul Gaugh, Sumter
Austin Gore, Aiken
Harvey Graham, Jr., Longs
T. Ashby Gressette, Columbia
Doug Harper, Greenville
Rusty Harris, Gastonia, NC
Donald L. Harrison, Greenville
Frank M. Hart, Marion
J. Marc Hehn, Goose Creek
Henry E. Kodama, North Charleston
Samuel J. Konduros, Greenville
Tom B. LaRoche, North Charleston
Sallie R. Lee, Easley
Carl M. Lewis, Jr., Columbia
Frances P. Linder, Columbia
Hubert E. Long, Jr., Lee's Summit
William H. Moore, Greenville
G. D. Morgan, Greenville
Gregg F. Morton, Columbia
J. Edward Norris III, Pawleys Island
Ronnie Oliver, Greenwood
Weesie W. Poole, Simpsonville
Howard N. Rawl, Gilbert
Tim Reed, Greenville
Timothy F. Rogers, Columbia
Thomas C. Rowland III, Whiteville, NC
Goo G. Segars, Hartsville
Jay Speer, Columbia
Jim Stuckey, Charleston
John R. Sweetchunk Jr., Clinton
Henry M. Swink, Effingham
A. J. Thompson, Jr., Easley
C. David Tillison, Greenville
David R. Torris, Greenville
Bill Tumblin II, Clinton
Ann Pringle Washington, Eastover
Kelsie R. Whitaker, Atlanta, GA
R. Lynn Yeagrris, Greenville
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, 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.

In November 1889, Governor Richardson signed the bill accepting Thomas Clemson's gift. Soon after a measure was introduced to establish 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 opened 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 charge 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 17,016 for the first semester 2003-2004. Since the opening of the University, 90,583 students have been awarded Bachelor's degrees. During this same period, 426 Associate degrees, 24,866 Master's, 315 Education Specialist, 2,399 Doctor of Philosophy, and 95 Doctor of Education degrees have been awarded, a total of 118,684 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.

Clemson 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 in heritage 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 Madren 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, 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.

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 CU 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 that supports good educational practices by providing students with prompt academic feedback and supplemental advising.
- 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.

LIBRARIES
Clemson’s main library, the Robert M. Cooper Library, is located at the center of campus and provides students with a variety of services and up-to-date collections. More than 1.6 million items are available including books, periodicals, microforms, government publications, and electronic materials.

Many library resources are available both on and off campus via the online catalog and the Libraries’ Web site. The Libraries provide access to several thousand electronic journals as well as a number of electronic indexes, many of which link to full-text journal and newspaper articles.

Among the services the Libraries provide are circulation, reference, interlibrary loan, class instruction, and tours. Equipment available includes photocopiers, scanners, fax machines, and wireless laptops. Cooper Library houses two computer laboratories maintained by DCIT. There is also a Java City Cyber Café and a popular reading and audiobooks collection in the library.

In addition to the Cooper Library, the University Libraries include the Emery A. Gunin Architectural Library in Lee Hall and the Special Collections Unit located in the Strom Thurmond Institute. A small reading room containing periodical literature related to chemistry is located in the Hunter Chemistry Laboratory.
Detailed information regarding facilities, hours of operation, loan privileges, policies, and times is available at the circulation and reference desks and on the Libraries' Web site at www.lib.clemson.edu.

COMPUTING FACILITIES
The Division of Computing and Information Technology (DCIT), on the Web at dci.t.clemson.edu, supports the computing activities of students and employees with an extensive network of computers. DCIT maintains many computer labs throughout the campus, ten of which are public access. The labs contain high-end PCs and laser printing equipment. Students have access to the Internet, e-mail, and Microsoft Office XP Professional, 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 MyCLE, the Clemson computer network, creating e-portfolios, and many desktop applications. MyCLE is the portal that provides managed class and word file space, Web tools, and services that facilitate the use of information technology in teaching and research. It is also a forum for collaboration among classroom and workplace participants. These Web-based tools are provided both on and off campus. Information about MyCLE is available on the Web at ets.clemson.edu.

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 2802 running the OS/390 operating system and a SUN E3000 UNIX system. A host of Novell and Solaris servers provide computing resources for client-server computing. Approximately 3,500 PCs and work stations are connected to the campus FDDI/Internet network.

Computer training is available through the ETS to all students and employees as part of regular University courses, through short courses, through special training programs, and through E-learning courses. A complete list of services is available on the Web at ets.clemson.edu. For face-to-face assistance, the Help Desk is open seven days a week and is centrally located in Marvin Hall M section. Students may also call 656-3494, send e-mail to consult@e.clemson.edu, or check on the Web at helpdesk.clemson.edu.

The campus computer network can be accessed through wired network connections found in all on-campus dorm rooms 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 the recommended Cisco AIR-PCM352 adapter. Details can be found on the Web at wireless.clemson.edu.

Laptop Program
The following students are required to have laptop computers:

- College of Agriculture, Forestry, and Life Sciences—freshmen and sophomores;
- College of Business and Behavioral Sciences—freshmen, sophomores, juniors, and all on-campus MBA students;
- College of Engineering and Science—all undergraduates;
- College of Health, Education, and Human Development—freshmen.

While students may bring any laptop that meets the minimum specifications, there is a recommended laptop posted at laptop.clemson.edu. Students using the recommended laptop will receive both software and hardware support. Students electing to purchase and bring their own laptops will be responsible for their support. See laptop.clemson.edu for more information or e-mail LAPTOP-L@clemson.edu.

CALHOUN HONORS COLLEGE
Established in 1962, Calhoun Honors College strives to enrich the educational experiences 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. Such information includes 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.

Enrolled students may join the program if they have a cumulative grade-point ratio of 3.40 or higher as full-time students at Clemson and have at least four semesters remaining to graduate. To continue membership, students must maintain a cumulative grade-point ratio of 3.40 or higher and must complete at least one honors course each semester.

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 of the courses taken for General Honors also satisfy Clemson's General Education requirements. Departmental Honors provides opportunities for in-depth study and research within the student's major. To receive honors credit, whether for General Honors 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 Honors and Departmental Honors are recognized at an awards ceremony on the eve of commencement, at which time they are presented the B.C. Imabinor 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 coop work periods are projected and included in each student's guide. 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 the Study Abroad Office, students may choose from a variety of programs offered overseas. Programs are varied to fulfill the needs of most students, such as the exchange programs at the Universities of Aberdeen in Scotland, Universidad de Santiago in Chile, University of Newcastle in Australia, and University Rovira i Virgili in Spain. There are programs for every academic major at Clemson University. Programs abroad are offered in Austria, Belgium, Chile, 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 tuition directly to Clemson while they study abroad. With the ISEP program, 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 the Study Abroad Office staff, E-306 Martin Hall, at the beginning of each semester and throughout the academic year to explore their 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 nontechnical 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. Non scholar 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.

Cadets 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 detachments possible.

HONOR ORGANIZATIONS
Clemson University has a number of academic honor 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)
- Beta Sigma Psi (Music)
- Chi Epsilon (Civil Engineering)
- Eta Kappa Nu (Electrical and Computer Engineering)
- Eta Sigma Gamma (Health Education)
- Golden Key National Honor Society (Junior and Seniors)
- Kappa Delta Pi (Education)
- Kappa Mu Epsilon (Mathematics)
- Kappa Pi (Music)
- Kappa Phi (Textiles)
- Phi Eta Sigma (Musicians)
- Phi Kappa Psi (Engineering)
- Phi Sigma Pi (Music)
- Pi Delta Phi (French)
- Pi Tau Sigma (Mechanical Engineering)
- Psi Chi (Psychology)
- Sigma Tau Delta (English)
- Tau Beta Pi (Engineering)
- Tau Delta Phi (Business)
- Upsilon Pi Epsilon (Computer Science)
- Xi Sigma Pi (Forestry)

Clemson University Experiment Station
The Clemson University Experiment Station is a 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 which solicits, manages, and administers gifts from private sources to the academic programs at Clemson University.

Originally chartered in 1933, the Foundation is a primary component of the Advancement Program at the University. There are 37 elected members of the Board of Directors. Currently, 35 of the 37 elected directors are alumni of the University. In addition, the Board is comprised of seven automatic directors as well as 16 honorary directors.

The Foundation operates through an effective committee structure that reports through an Executive Committee to the Full Board. Committees direct their attention to investments, policy and bylaws, investment strategic planning, budgets, nominations, and audits. Fund-raising is managed by the Development Committee and a Campaign Executive Committee, if applicable, and is responsible for major gifts, planned gifts, college initiatives, and corporate and foundation solicitations. Affiliated foundations are the Clemson University Continuing Education and Conference Complex Corporation, Clemson University Real Estate Foundation, Wallace F. Pate Foundation for Environmental Research and Education, and AMREC, LLC. As of June 2002, the Foundation managed over 1,000 endowments valued at $236.8 million.

Clemson Alumni Association
The Clemson Alumni Association's action phase 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 recommended. For current information, visit www.clemson.edu/welcome/viscenter or call 864-656-4789.
ADMISSION

Admission information can be found on the Web at www.clemson.edu/admission/.

APPLICATION FORMS AND DATES

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 2004. 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/attend/index.htm.

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 $40 with the application. This fee is not applicable toward tuition and/or other University fees.

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<th>Application Deadlines</th>
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<td>For Freshman Applicants</td>
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<tr>
<td>Spring semester</td>
<td>December 15</td>
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<td>Fall semester</td>
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<td>Priority deadline</td>
<td>December 1</td>
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<td>Final deadline</td>
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<td>For Transfer Applicants</td>
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</table>

FRESHMEN

Admission to the University is competitive and is based primarily on 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 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 Examination</th>
<th>Level Grade</th>
<th>Credit Allowed Toward Degree</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art/Design</td>
<td>4, 5, 6, 7</td>
<td>ART 103</td>
<td>3</td>
</tr>
<tr>
<td>Biology</td>
<td>5, 6</td>
<td>BIOL 103, 104, or BIOL 101, 102</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>BIOL 110, 111</td>
<td>10</td>
</tr>
<tr>
<td>Business and Organization</td>
<td>5, 6, 7</td>
<td>MGT 301</td>
<td>3</td>
</tr>
<tr>
<td>Chemistry</td>
<td>5, 6, 7</td>
<td>CH 101</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(for majors requiring organic chemistry)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CH 101</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(for majors not requiring organic chemistry)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6, 7</td>
<td>CH 101, 102</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(for majors not requiring organic chemistry)</td>
<td></td>
</tr>
<tr>
<td>Economics</td>
<td>5, 6, 7</td>
<td>ECON 211</td>
<td>3</td>
</tr>
<tr>
<td>English (Language A)</td>
<td>5, 6, 7</td>
<td>ENGL 208</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>5, 6, 7</td>
<td>ENGL 101</td>
<td>3</td>
</tr>
<tr>
<td>Foreign Language</td>
<td>4</td>
<td>FR 101, GER 101, ITAL 101, JAPN 101,</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5, 6, 7</td>
<td>RUSS 101, or SPAN 101</td>
<td></td>
</tr>
<tr>
<td>History-European</td>
<td>5, 6, 7</td>
<td>HIST 173</td>
<td>3</td>
</tr>
<tr>
<td>History-Americas</td>
<td>5, 6, 7</td>
<td>HIST 101 and 102</td>
<td>6</td>
</tr>
<tr>
<td>Mathematics</td>
<td>5</td>
<td>MTHSC 106</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>6, 7</td>
<td>MTHSC 106</td>
<td>4</td>
</tr>
<tr>
<td>Music</td>
<td>5, 6, 7</td>
<td>PSYCH 201</td>
<td>3</td>
</tr>
<tr>
<td>Psychology</td>
<td>5, 6, 7</td>
<td>Determined on individual basis</td>
<td></td>
</tr>
<tr>
<td>Theatre Arts</td>
<td>5, 6, 7</td>
<td>Determined on individual basis</td>
<td></td>
</tr>
</tbody>
</table>

1For students with a 5, 6, or 7 score, credit will be awarded after completing ENGL 103 with a C or better.
2For 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.

<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>3, 4, 5</td>
<td>ECON 211</td>
<td>3</td>
</tr>
<tr>
<td>Microeconomics</td>
<td>3, 4, 5</td>
<td>ECON 212</td>
<td>3</td>
</tr>
<tr>
<td>Macroeconomics</td>
<td>3, 4, 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENGLISH</td>
<td>3, 4</td>
<td>ENGL 101</td>
<td>3</td>
</tr>
<tr>
<td>Composition and Literature</td>
<td>5</td>
<td>ENGL 101, 102</td>
<td>6</td>
</tr>
<tr>
<td>Language and Composition</td>
<td>3, 4</td>
<td>ENGL 101</td>
<td>3</td>
</tr>
<tr>
<td>Both Tests</td>
<td>3, 4 on each</td>
<td>ENGL 101, 102</td>
<td>6</td>
</tr>
<tr>
<td>GOVERNMENT</td>
<td>3, 4, 5</td>
<td>POSC 101</td>
<td>3</td>
</tr>
<tr>
<td>American Government</td>
<td>3, 4, 5</td>
<td>POSC 102</td>
<td>3</td>
</tr>
<tr>
<td>Comparative Government</td>
<td>3, 4, 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HISTORY GEOGRAPHY</td>
<td>3, 4, 5</td>
<td>HIST 101, 102</td>
<td>6</td>
</tr>
<tr>
<td>American History</td>
<td>3, 4, 5</td>
<td>HIST 173</td>
<td>3</td>
</tr>
<tr>
<td>European History</td>
<td>3, 4, 5</td>
<td>GEOG 101</td>
<td>3</td>
</tr>
<tr>
<td>Human Geography</td>
<td>3, 4, 5</td>
<td>HIST 193</td>
<td>3</td>
</tr>
<tr>
<td>World History</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HUMANITIES</td>
<td>3, 4, 5</td>
<td>MUSIC 205</td>
<td>3</td>
</tr>
<tr>
<td>Music Theory</td>
<td>3, 4, 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Art History</td>
<td>3, 4, 5</td>
<td>A A H 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 Studio</td>
<td>3, 4, 5</td>
<td>ART 103</td>
<td>3</td>
</tr>
<tr>
<td>LANGUAGES</td>
<td>3, 4, 5</td>
<td>FR 101, 102</td>
<td>8</td>
</tr>
<tr>
<td>French Language</td>
<td>3</td>
<td>FR 101, 102, 201</td>
<td>11</td>
</tr>
<tr>
<td>Literature</td>
<td>4, 5</td>
<td>FR 101, 102, 201, 202</td>
<td>14</td>
</tr>
<tr>
<td>German Language</td>
<td>3, 4, 5</td>
<td>GER 101, 102</td>
<td>8</td>
</tr>
<tr>
<td>Latin (either test)</td>
<td>3</td>
<td>LATIN 101, 102, 201</td>
<td>11</td>
</tr>
<tr>
<td>Spanish Language</td>
<td>3, 4, 5</td>
<td>SPAN 101, 102</td>
<td>8</td>
</tr>
<tr>
<td>Literature</td>
<td>3</td>
<td>SPAN 101, 102, 201, 202</td>
<td>14</td>
</tr>
<tr>
<td>Spanish Literature</td>
<td>3, 4, 5</td>
<td>SPAN 101, 102</td>
<td>8</td>
</tr>
<tr>
<td>Literature</td>
<td>4</td>
<td>SPAN 101, 102, 201, 202</td>
<td>14</td>
</tr>
<tr>
<td>MATHMATICS</td>
<td>3, 4, 5</td>
<td>MTHSC 106</td>
<td>4</td>
</tr>
<tr>
<td>Calculus AB</td>
<td>3, 4, 5</td>
<td>MTHSC 106, 108</td>
<td>8</td>
</tr>
<tr>
<td>Calculus BC</td>
<td>3, 4, 5</td>
<td>MTHSC 203</td>
<td>3</td>
</tr>
<tr>
<td>Statistics</td>
<td>3, 4, 5</td>
<td>MTHSC 101, 203</td>
<td>6</td>
</tr>
<tr>
<td>PSYCHOLOGY</td>
<td>3, 4, 5</td>
<td>PSYCH 201</td>
<td>3</td>
</tr>
<tr>
<td>SCIENCE</td>
<td>3, 4, 5</td>
<td>BIOL 103, 104</td>
<td>8</td>
</tr>
<tr>
<td>Biology</td>
<td>3</td>
<td>BIOL 110, 111</td>
<td>10</td>
</tr>
<tr>
<td>4, 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemistry</td>
<td>3, 4, 5</td>
<td>CH 101, 102</td>
<td>8</td>
</tr>
<tr>
<td>Computer Science A</td>
<td>3, 4, 5</td>
<td>CP SC 101</td>
<td>4</td>
</tr>
<tr>
<td>Computer Science AB</td>
<td>3, 4, 5</td>
<td>CP SC 101</td>
<td>4</td>
</tr>
<tr>
<td>Computer Science AB</td>
<td>3, 4, 5</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, 208</td>
<td>3</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>

1. Students who earn a score of 3 or 4 should register for ENGL 103.
2. Students who earn a score of 2 on the Calculus BC examination, but have earned a score of 3 (or better) on the AB subscore of the BC examination, may receive credit for MTHSC 106.
3. Students who earn a score of 4 or 5 on Computer Science may request a personal interview with a departmental representative to determine whether credit will be given for CP SC 102.
4. Students enrolling in curricula requiring calculus-based physics (PHYS 122, 221, 222, 223, 224), but who earn a grade of 5 on Physics B, will be asked to meet with a departmental representative for further evaluation and placement counseling.

### 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
Applicants desiring advanced placement in a foreign language may take the College Board's SAT II Subject Tests, Advanced Placement (AP) Examinations, or the International Baccalaureate (IB) Higher Level Examination. The Department of Languages also offers placement exams which students may take during summer orientation. 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),
- freshman level math, science, and English requirements for the intended major at Clemson.

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 24.

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 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.

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 maximums of course credits allowable in transfer.
   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 intervening 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, course 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 four-year 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, course 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 examini
nation," "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 text 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 Science/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 July 6, 1996) 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 accepted 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 post 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 a satisfactory format a copy of their entire transfer guide for placement on the Commission's home page on the Internet.

13. By September 1 of each year, the staff of the State Board of Technical and Comprehensive Education shall post 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 placement on the Commission's home page on the Internet 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. Each 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 Officers (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 pages 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
Sue Wharton, Assistant Director of Admissions
Kathryn Rice, 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.cha400.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, English (composition only), and Mathematics (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 2004-2005 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 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.

The 2004 summer orientation dates for freshmen are June 14-15, 17-18, 21-22, 24-25, 28-29, July 1-2, and 8-9. New transfer students may attend either the June 16 or July 7 program. Although students are strongly encouraged to attend summer orientation, abbreviated make-up sessions are held on August 15 for freshmen and their parents and on August 16 for transfer students and their parents. International students are expected to attend the session held on August 16 after attending the mandatory orientation for all international students which is conducted by International Studies, 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 I 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 financial assessment and bank statements verifying adequate funding. Student visa services are provided by the Office of International Studies, 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 reenrollment 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 curriculum requirements. Any variations in curriculum 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 procedures 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 undergraduate credit prior to enrolling in graduate credits will be classified as postbaccalaureate. The postbaccalaureate status will remain in effect until the number of required undergraduate 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 may enroll in the same number of credits per semester as undergraduate students but cannot enroll in graduate courses or receive graduate assistantships. No degree certificate will 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.

15
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, infirmity, 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 required 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 rent and $450 for 5- or 7-day meal plans may be included in the note. In such cases, a note for the full 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 plan 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 of offering of 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>1,035.00</td>
<td>1,555.00</td>
</tr>
<tr>
<td>Benet, Bowen, Bradley, Copeland, Donaldson, Geer</td>
<td>1,185.00</td>
<td>1,780.00</td>
</tr>
<tr>
<td>Johnstone Annex, Norris, Sanders, Wannamaker, Young</td>
<td>1,310.00</td>
<td>1,965.00</td>
</tr>
<tr>
<td>Barnett, Byrnes, Lever, Manning, Mauldin, Smith</td>
<td>1,315.00</td>
<td>2,020.00</td>
</tr>
<tr>
<td>Clemson House (room)</td>
<td>1,345.00</td>
<td>2,020.00</td>
</tr>
<tr>
<td>Holmes and McCabe</td>
<td>1,510.00</td>
<td></td>
</tr>
<tr>
<td>Stadium Suites</td>
<td>1,725.00</td>
<td></td>
</tr>
<tr>
<td>Temporary Housing</td>
<td>1,000.00</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Apartments (per semester)</th>
<th>Per Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calhoun Courts (four occupants)</td>
<td>1,590.00</td>
</tr>
<tr>
<td>Clemson House</td>
<td>1,390.00</td>
</tr>
<tr>
<td>Fraternity Area Village</td>
<td>2,095.00</td>
</tr>
<tr>
<td>Lightsey Bridge</td>
<td>1,665.00</td>
</tr>
<tr>
<td>Lightsey Bridge II</td>
<td>2,115.00</td>
</tr>
<tr>
<td>Thornhill Village (two occupants)</td>
<td>1,800.00</td>
</tr>
<tr>
<td>Thornhill Village (four occupants)</td>
<td>1,420.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Family Housing</th>
<th>Per Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Townhouses</td>
<td>375.00</td>
</tr>
<tr>
<td>Duplex-2 Bedroom</td>
<td>390.00</td>
</tr>
<tr>
<td>Duplex-3 Bedroom</td>
<td>455.00</td>
</tr>
<tr>
<td>Faculty Houses</td>
<td>500.00</td>
</tr>
<tr>
<td>Faculty Houses (Renovated)</td>
<td>605.00</td>
</tr>
<tr>
<td>Thornhill Graduate Apartments</td>
<td>385.00</td>
</tr>
<tr>
<td>9 month</td>
<td>385.00</td>
</tr>
<tr>
<td>12 month</td>
<td>355.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Board Plans</th>
<th>Per Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any Ten (10 meals), Monday-Sunday</td>
<td>901.00</td>
</tr>
<tr>
<td>Plus Any Ten (includes $175 in Paw points)</td>
<td>1,072.00</td>
</tr>
<tr>
<td>Any 15 (15 meals), Monday-Sunday</td>
<td>966.00</td>
</tr>
<tr>
<td>Plus Any 15 (includes $100 in Paw points)</td>
<td>1,072.00</td>
</tr>
<tr>
<td>Seven-day (unlimited access)</td>
<td>1,072.00</td>
</tr>
<tr>
<td>Plus Commuter 50 (any 50 meals per semester plus $250 in Paw points)</td>
<td>538.00</td>
</tr>
</tbody>
</table>

Tiger Stripe Account minimum (excluding balance) | 50.00

1All first-year freshmen who live in University housing (excluding apartments with kitchens) are required to subscribe to one of the five meal plan options 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.

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.

Returned Checks
A check or charge card given in payment of University expenses that is returned unpaid by the bank immediately creates an indebtedness to the University. University Revenue and Receivables, G-12 Sikes Hall, administers matters related to the collection of all returned checks for students and nonstudents. University Revenue and Receivables will redepot returned checks in payment of academic fees for the fall and spring semesters. A $25 returned check charge will be assessed for each returned item in accordance with state laws. 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 day after the last day of late registration. If the note was returned to the University in a timely manner with no response by the student or drawer, a written request to disenroll the student may be made to the Registrar. If the request is approved, the percentage of refund will be applied to the debt. If the check is returned

University Revenue and Receivables
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 effects of disenrollment. At this point, the student will owe 100% of tuition and fees, even if he/she has been disenrolled. The University may restrict subsequent payment for academic and other fees by accepting only cash, certified checks, cashier’s 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. Checks 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 check not collected by the above procedures may be turned over to a collection agency and the indebtedness reported to a credit bureau. 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.

Refund of Dining Hall Fees
See the section on Dining Services on page 21.

Refund of Housing Fees
Cancellation of 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, 2004, the contract is cancelled with no additional charge. After July 25, 2004, 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, 2004, 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, 2004, 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, 2004, 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.

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 transfers 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 pro-rated 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 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, grants, 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 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 domicile 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 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 therein, 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 of the parent, 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 upon whom a student is financially dependent changes after enrollment at a State Institution, tuition charges shall be adjusted as follows:

A. Except as provided in Section 59-112-20B above, when domicile is taken in South Carolina, a student shall not become eligible for in-state rates until the beginning of the next academic session after expiration of twelve months from date of domicile in this State.

B. When South Carolina domicile is lost, eligibility for in-state rates shall extend on the last day of the academic session in which the loss occurs; however, application of this subsection shall be at the discretion of the institution involved.
C. Notwithstanding the other provisions of this section, any dependent person who has been domiciled with his family in South Carolina for a period of not less than three years immediately prior to his enrollment may enroll in a state-supported institution of higher learning at the in-state rate and may continue to be enrolled at such rate even if the parent, spouse, or guardian upon whom he is dependent moves his domicile from this State.

59-112-40—Effect of Marriage. Except as provided in Section 59-112.20 above, marriage shall affect determinations of domicile for tuition and fee purposes only insofar as it operates to evince an intention by the parties to make a permanent home in South Carolina.

59-112-50—Military Personnel and Their Dependents. Notwithstanding other provisions of this act, during the period of their assignment to duty in South Carolina members of the armed services of the United States stationed in South Carolina and their dependents may be considered eligible for in-state rates. When such armed service personnel are ordered away from the State, their dependents may continue for an additional twelve months to have this eligibility at the State Institutions where they are enrolled at the time such assignment ends. Such persons and their dependents may be considered eligible for in-state rates for a period of twelve months after their discharge from the armed services even though they were not enrolled at a State Institution at the time of their discharge, if they have evinced an intent to establish domicile in South Carolina and if they have resided in South Carolina for a period of at least twelve months immediately preceding their discharge.

59-112-60—Faculty, Administrative Employees and Dependents Thereof. Full-time faculty and administrative employees of State Institutions, and the spouses and children of such persons, shall be excluded from the provisions of this act.

59-112-70—Abatement of Rates for Nonresidents on Scholarship. Notwithstanding other provisions of this act, the governing boards listed in Section 59-112.10A above, are authorized to adopt policies for the abatement of any part or all of the out-of-state rates for students who are recipients of scholarship aid.

59-112-80—Administration of Chapter; Burden of Proving Eligibility of Students. Each State Institution shall designate an official to administer the provisions of this act. Students making application to pay tuition and fees at in-state rates shall have the burden of proving to the satisfaction of the aforesaid officials of State Institutions that they have fulfilled the requirements of this act before they shall be permitted to pay tuition and fees at such rate.

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 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 to 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.

[SC ADC 62-601]
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 ADC 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 or support is 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 one also 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 upon 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 habituation. It shall indicate the place where a person intends to remain, or to where one expects to return upon leaving with out 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.
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. (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 persons' law upon the death of a dependent person or 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.D) (62-603.B) (62-605.C)
H. "Imminently 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, grants, scholarships, commercial loans, or payments made in accordance with court order. An independent 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.A) (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)


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)


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(1))

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 for 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 resident 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-Resident Aliens, 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 paroles may be entitled to resident, in-state classification once they have been awarded permanent resident status by the U.S. Department of Justice and meets 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 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 indicia:

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 inconsistently 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.

B. 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 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.

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 reason for precluding a person from establishing or maintaining domicile in South Carolina and subsequently becoming eligible or continuing to be eligible for residency. 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. The University provides a variety of meal plans to meet student needs. The meal plan dining halls, Harcombe and Schill, 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.

62-609—Exceptions. [SC A.D. 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 Required 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 shall show beginning and ending dates for the terminal leave period and that the person will receive a pension or annuity when he/she retires.

B. South Carolina residents who wish to participate in the Contract for Services Program sponsored by the Southern Regional Education Board must have continuously resided in the State for other than educational purposes for at least two years immediately preceding application for consideration and must meet all residency requirements during this two-year period.

62-610—Application for Change of Resident Status. [SC A.D. 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 A.D. 62-611]
A. Persons incorrectly classified as residents are subject to reclassification and to payment of all nonresident 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 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 A.D. 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 fees purposes.

Appeals should be sent to the Student Financial Aid Office, 301 Sikes Hall.

DINING SERVICES

The University provides a variety of meal plans to meet student needs. The meal plan dining halls, Harcombe and Schill, 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 a la carte, cash basis. Nationally branded food concepts are available in cash 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 dining services facilities accept cash or the Tiger I 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, or 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.
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 Financial Aid and Placement Committee and 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, and Federal PLUS Loan, which requires a separate application completed by a parent.

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.

Browers detailing financial aid programs at Clemson University are available from the Student Financial Aid Office, G-01 Sikes Hall, Box 345123, Clemson, SC 29634-5123.

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, ½ time, or ¾ time) as of the last day to add a class. Students have a maximum of 12 full-time semesters in which to finish their degree, or the equivalent in part-time enrollment. Duplicate credits taken at Clemson University 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 appeal 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.
STUDENT SERVICES

HOUSING
Single Student Housing
University Housing provides a "home away from home" for approximately 6,500 single students in 21 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 (who are at least 18 years old), the standard way to apply for on-campus housing is on the Web at www.housing.clemson.eduapply. 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 injury, pharmacy, lab, x-ray, and specialty clinics including women's health, allergy/immunization, and massage therapy.

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 within the year prior to admission. Students with a history of a positive skin test are required to have a chest x-ray within the past year. 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 Nursewise Line 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), Ocone 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 the next business day for follow-up care.

The University ambulance transports 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 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, during violence, healthy sleep lifestyles, nutrition, stress management, and tobacco cessation efforts, among other topics.

Financial Considerations
Health Fee—University policy requires that all students register for seven or more credit hours on campus during the fall or spring semester or four 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 cover hospitalization and to provide limited coverage for non-emergency medical expenses. Information is available on the Web at www.studentinsurance.com. Students are encouraged to take advantage of the University's insurance plan for all necessary coverage during their tenure at the University.

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, networking for part-time jobs, internships, or permanent 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 credit by their department. 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, University Placement/Recruitment for Educators Program (UPREP) Teacher Fair, and a Majors Fair.

Information is available from the Career Center in 316 Hendrix Center, on the Web at career.clemson.edu, or by calling 656-6200.

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/disab.
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 ENGL 101 Composition I (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) 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 full 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 examinations, 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. (Note: Only grades earned at Clemson are used in computing the student's grade-point ratio.)

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.

Approval of each course should be obtained by the student 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 comes.

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 may 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. 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 re- duction 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 determined 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 Financing 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—Withdrawn. 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 a final grade, instructors of every undergraduate course shall make available for each student (a) a 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 the final examinations. Faculty members may excuse the final examinations of all students having the grade of A on the coursework 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.

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The values in this table are based on the following formula: MCGPR = 2.25 x (CL/(CL + 121))

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 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 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, based on all credits taken at Clemson, plus any advanced standing received from transfer credits and credits based on approved examination programs.
Students have several options to avoid suspension or dismissal after the spring semester. One option is to pass at least 12 semester credit hours and earn a 2.2 or higher semester grade-point ratio in the spring semester. Another option is to enroll in summer school and have regular enrollment reinstated immediately if the summer school work brings the cumulative grade-point ratio above the MCGPR or if the student passes a maximum of 12 semester credit hours and earns a 2.2 or higher grade-point ratio during Maymester, first, and/or second summer sessions. The final option to avoid suspension or dismissal is to appeal to the Appeals Committee on Continuing Enrollment at the end of the spring term or second summer session. This committee meets approximately one week after final examinations in the fall, spring, and second summer session. Students should contact the Office of Undergraduate Academic Services for a schedule of meeting dates. Appeals must be in the Office of Undergraduate Academic Services no later than three days prior to the Appeals Committee meeting. An appeal must include a letter from the student giving a complete explanation of his/her academic performance. To the extent possible, verifiable documentation should also be included. Students are strongly encouraged to submit a letter directly to the chair of the Appeals Committee on Continuing Enrollment from the appropriate department chair (or designee) or academic advisor stating support of the student for continued enrollment in that department. Appeals will be granted only in the most exceptional cases, and a student will be allowed to continue on an appeal only once prior to dismissal. Students who return on a successful appeal must meet the conditions specified by the Appeals Committee on Continuing Enrollment.

When a student is suspended or dismissed for academic reasons, eligibility to continue officially commences on the first day of classes of the very next semester (fall or spring, as appropriate) immediately following the decision of ineligibility. Suspension is for one semester only and the student is guaranteed readmission the following term.

A student who has been dismissed may file a petition for readmission with the Appeals Committee on Continuing Enrollment after one calendar year. If this petition is denied, the student may file subsequent petitions for readmission after any intervening term of enrollment. Dismissed students who are readmitted and again fail to meet the requirements for continuing enrollment will be permanently dismissed and may not appeal to continue.

This continuing enrollment appeals process is separate from the unsatisfactory academic progress appeal with Student Financial Aid. Students subject to suspension or dismissal must be allowed to continue enrollment before submitting a satisfactory academic progress appeal for financial aid eligibility. Further information on satisfactory academic progress is available in the Financial Information section of this catalog and in the publication Financing Your Clemson University Education.

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 under each course 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 student 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 the 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. To apply, students submit to the Graduate School an Application for Admission to a Combined Bachelor's/Master's Plan with endorsements by the program coordinator or department chair of both bachelor's and master's programs. If accepted, the student will be given conditional admission to the master's program pending completion of his or her bachelor's degree 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 degree has 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 program will 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/grad_form.html. The total course workload for the semester must not exceed 18 hours, and the cumulative graduate credits 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 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 degree 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 the Graduate School. 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 completed 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 the course of study and degree program at Clemson University. To qualify for the graduate degree in Landscape Architecture, a student must complete the coursework and degree requirements at Clemson University.

Make-up of Incompletes Received in Last Semester
A candidate for a degree who receives an incomplete in the semester immediately prior to graduation shall have an opportunity to remove the unsatisfactory grades provided the final grade is reported 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 final term of the academic year 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 meeting the following minimum requirements may be awarded a degree posthumously on the recommendation of the faculty of the college concerned:

- 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 to 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

Honors 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

Change of Major
Any undergraduate student who meets the Continuing Enrollment policy after attempting 12 credit hours at Clemson University (or who is allowed to continue by virtue of a semester 2.2 grade-point ratio on 12 earned credits or who is allowed to continue through appeal to the Continuing Enrollment Appeals Committee or by other authorization of this committee) may transfer from one major to another. Any college or department which seeks an exception to this policy must have the approval of the collegiate dean and the provost.

Withdrawal from the University
A student may withdraw from the University subject to the restrictions in the section on W—Withdraw. Students who exceed these restrictions shall have final grades recorded. Any variance from the restrictions must be approved by the provost or the program’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 academic renewal 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 enrolled 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 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;
4. 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.
5. 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 Associate Dean of Undergraduate Academic Services 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.

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 also 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 Associate Dean of Undergraduate Academic Services of the academic penalty for a student found guilty by a hearing board.

8. The Associate Dean of Undergraduate Academic Services is responsible for notifying the registrar and all other appropriate University personnel of the finding of guilt and the academic penalty. The Associate Dean of Undergraduate Academic Services 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, temporarily 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 paragraph 1. The President will then render a decision within five working days after receipt of written notification of the suspension or dismissal. However, as stated in paragraph 7, students cannot appeal a decision of guilt rendered by the hearing board.

The Academic Grievance Committee is composed of 28 members as follows:

A. Fifteen members of the faculty, three members from each college. Members are appointed on a staggered basis by the respective college deans and serve for a period of three years. Term commences with fall semester registration.

B. Twelve undergraduate students, nominated by the student body president, approved by the Student Senate and appointed by the Provost for one-year terms. Nominations should be made in the spring semester. Term of service commences with fall semester late registration. At least one and no more than three students shall be appointed from any one college.

C. Dean of Student Life (or designee).

D. The Senior Vice Provost and Dean of Undergraduate Studies shall appoint the chairperson from those faculty members who have previously served.

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. The Ombudsman, dean, department chair or immediate staff superior, faculty or staff member and student shall make every effort to reach a solution.

2. If the grievance remains unresolved, the student may bring a written statement detailing the grievance before the Academic Grievance Com-
The student must report to the Office of Undergraduate Academic Services and secure a checklist form which the student will use to document the following: (a) the dates of those consultations described in Procedure 1, above, (b) the names of those persons consulted, and (c) the signature of the collegiate dean attesting that no resolution could be reached. (Note: If all parties agree, the checklist may be signed and dated during the initial consultation.) Both the written statement and the checklist form must be delivered to the Office of Undergraduate Academic Services within 90 calendar days (exclusive of summer vacation) of the date of the last exam for the term in which the student alleges to have been aggrieved; or, in a case involving a protest of a final grade, the 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 a 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 will investigate the grievance and 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 expedient 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 that 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 seek to obtain from 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 receipted 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 arrived at by 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 the staff member, the involved college 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 chairperson cannot obtain acceptance of the posed solution, the grievance shall be referred to the Provost via the provost with the committee's recommended solution to the grievance along with 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 college 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, admission 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 Procedures 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 Policy on Academic Misconduct for Enrolled Students, 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 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 Procedures 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 Procedures 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 Misconduct 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 Procedures on Revocation of Academic Degrees.
REVOCATION 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 Standing Enrollments Committee. 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 also 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 the 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 meritorious, 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 of the President of the Student Body, if 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 additional member.

Notification to Degree Holder
The dean shall issue in writing, 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 appeal 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 his/her designee shall present the accusation against the degree holder at the hearing and may have one additional representative present during the hearing. Under this section the term “dean” 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 Investigation unless the degree holder and the dean agree to a different date. All matters pertaining to the hearing shall be kept as confidential as possible and the hearing shall be closed to the public. A verbatim record of the hearing will be taken and a 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 ask questions 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. Member 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 Committee of Investigation and Recommendation must find clear and convincing evidence that serious academic misconduct has been committed in order to recommend the revocation of the degree holder’s degree. If the Committee of Investigation and Recommendation does not find clear and convincing evidence of serious academic misconduct, the Committee of Investigation and Recommendation cannot recommend revocation of the degree holder’s degree and the matter shall be closed. Note: A majority vote of the Committee of Investigation and Recommendation is necessary to recommend the revocation of a degree holder’s degree. This means that a tie vote will result in the matter being closed.

At the same time that the report is sent to the Vice President for Academic Affairs and Provost, the chair of the Committee of Investigation and Recommendation shall send a copy of the report to the degree holder, the Dean, and other appropriate persons involved in the process.

If the Committee of Investigation and Recommendation recommends that the degree holder’s degree be revoked, the chair shall also send a complete copy of the hearing record to the Vice President for Academic Affairs and Provost. The hearing record shall consist 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 transcript of the hearing to the degree holder and the Dean at the same time that it is sent to 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 as 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. Students whose degrees have been revoked may be eligible to reapply for admission according to normal University procedures and policies.
GENERAL EDUCATION

An undergraduate student whose enrollment in a curriculum occurs after May 15, 1996, 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, 1996, 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.

Courses approved for Oral Communication, Writing Intensive, or Computer Skills credit are indicated in the Courses of Instruction section of this catalog in brackets (e.g. ENGL 314 3(3.0) [W.3]).

A. Communication and Speaking Skills................. 12 hours

1. ENGL 101 and ENGL 102 or ENGL 101 and ENGL 103 ........ 6 hours
   ARCH 151 ........................................... O.1
   ARCH 152 ........................................... O.1
   ARCH 251 ........................................... O.1
   C E 135 ........................................... O.1
   C M E 242 ........................................... O.1
   C M E 341 ........................................... O.1
   C M E 407 ........................................... O.1
   CH E 307 ........................................... O.1
   CH E 307 ........................................... O.1
   CH E 432 ........................................... O.1
   CH E 444 ........................................... O.1
   COMM 150 ........................................... O.3
   COMM 250 ........................................... O.3
   COMM 251 ........................................... O.3
   E C E 320 ........................................... O.1
   E C E 495 ........................................... O.1
   E C E 496 ........................................... O.1
   ENT 305 ........................................... O.1
   ENT 462 ........................................... O.1
   M E 401 ........................................... O.2
   M E 402 ........................................... O.2

B. Computer Skills ................. 3 hours

   AG ED 200 ........................................... C.3
   ARCH 151 ........................................... C.1
   ARCH 251 ........................................... C.1
   ARCH 252 ........................................... C.1
   B E 450 ........................................... C.1
   C E 251 ........................................... C.1
   C M E 407 ........................................... C.1
   C H E 411 ........................................... C.3
   CS 101 ........................................... C.3
   CS 110 ........................................... C.3
   CS 111 ........................................... C.3
   CS 120 ........................................... C.3
   CS 210 ........................................... C.3
   CS 250 ........................................... C.1
   CS 450 ........................................... C.3
   CS 451 ........................................... C.3
   ENGR 120 ........................................... C.1
   E I 220 ........................................... C.2
   E C 205 ........................................... C.3
   M E 205 ........................................... C.3
   MUSIC 180 ........................................... C.3
   NURS 140 ........................................... C.3
   PRMT (FOR) 209 ................................... C.3

C. Mathematical Sciences .... 6 hours

   EX ST 301
   *May be used by students graduating in Early Childhood, Elementary, and Special Education only

D. Physical or Biological Science .................. 8 hours

   A two semester sequence in the same physical or biological science, each including a laboratory
   ASTR 101/103, 102/104
   BIOL 101, 102, 103, 104, 110, 111
   CHE 101, 102, 105, 106
   CHEM 101/103, 102/112/114
   PHYS 107, 108
   PHYS 122/124, 207, 208, 221/223, 222/224

E. Humanities .................. 6 hours

   1. Three hours selected from sophomore literature courses (200 level only) or foreign language literature (300 level or higher)
   ENGL 202, 203, 204, 205, 206, 207, 208, 209, H210
   FR 100, 400, 490
   GER 301, 302, 401, 402, 403
   ITAL 301, 302, 400
   JAPN 406
   SPAN 301, 303, 311, 401, 403, 404, 405, 406, 422, 499
   2. Three hours selected from the following:
      A A H 101, 210
      CH S H 203
      CHIN 201, 202, 499
      COMM 369, 402
      ENGL 202, 203, 204, 205, 206, 207, 208, 209, H210
      350, 351, 353, 355, 356, 357, 380, 385, 386
      FR 201, 202
      G W (ENGL) 301
      GER 201, 202
      HUM 301, 302, 306, 309
      ITAL 201, 202
      JAPN 201, 202
      MUSIC 210, 311, 312, 313, 314
      PHIL 101, 102, 103, 303, 304, 315, 316, 317, 318
      320, 323, 324, 325, 326, 327, 330, 343, 344, 345
      PORT 201, 202
      REL 101, 201, 302, 302, 306, 307
      RUSS 201, 202
      SPAN 201, 202, 221
      THEA 210, 315, 316, 317
      W S 301

F. Social Science .................. 6 hours

   A A S 301
   AGRIC 105
   ANTH 201, 301, 320
   AP ECC 205, 257, 302, 309, 319, 490
   AVS 315
   CS H 201, 202
   C R D 357, (AP EC, HLTH) 361
   ECON 200, 211, 212, 301, 302, (MGIT) 306, 307, 308, 309, 310, 314, 324, 404
   GEOG 101, 103, 301, 302, 303, 305, 306, 330, 340
   HIST 101, 102, 122, 173, 173, 300, 301, 302, 303
   POL 304, 305, 371, 312, 313, 314, 316, 318, 321
   340, 341, 342, 351, 354, 355, 361, 363, 365, 370
   372, 373, 374, 375, 377, 378, 380, 381, 384, 385
   386, 387, 390, 391, (F&R) 392, 391, 416
   PSYCH 101, 302, 302, 361, 381, 480
   PRMT 201, 301
   PSYCH 201, 306, 308, 320, 324, 330, 333, 340
   344, 345, 352, 355, 364, 368, 370, 375, H385
   R S 301, (SOC) 401, (SOC) 459
   SOC 201, 202, (CPR) 235, 310, 311, 330, 331
   350, 351, (E L E, PO SC, PSYCH) 356, (R S) 397, 390, 390, 391, 391, 392, 393, 394, 396, 397, 494

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COMPETENCY GOALS
A. Communication and Speaking Skills

A.1. English 101 and 102 or 103
Students completing English 102 or 103 with a passing grade should be able to demonstrate the following knowledge and skills:
1. An understanding of and ability to use the full range of the writing process including invention, drafting, revising, and editing.
2. The capacity to write a unified, coherent short essay with a suitable introduction and conclusion, well-organized and sufficiently developed paragraphs, and enough detail to support generalizations.
3. The capacity to summarize, analyze, and evaluate college-level fictional and non-fictional texts, including argumentative pieces expressing opinions different from their own.
4. The ability to use and evaluate basic library sources, including available databases.
5. The ability to effectively integrate and appropriately cite existing research in their own writing.
6. The ability to organize and sustain an argumentative essay that marshals sufficient and relevant evidence, avoids major logical fallacies, recognizes and responds to counter-arguments, and shows a rhetorical awareness of audience.
7. Skill at using varied sentence structure and length and appropriate sentence style and diction.
8. Ability to edit for grammar, punctuation, spelling, and other mechanics.

A.2. Oral Communication
Students prepared in oral communication classes will demonstrate effectiveness in the following knowledge and skills identified by the National Communication Association (NCA):

Competency One—Ability to choose and narrow a topic appropriately for the audience and occasion.
Competency Two—Ability to develop a clear thesis statement and organizational pattern appropriate for the topic, audience, and occasion.
Competency Three—Ability to assemble and use effective and sufficient supporting materials, including visual support, appropriate for the audience and occasion.
Competency Four—Ability to use nonverbal behaviors, including eye contact, gestures, posture and movement, as well as verbal behaviors, including vocal variety in rate, pitch, and intensity to support the message.
Competency Five—Ability to choose, pronounce, and articulate grammatically correct language that is appropriate for the topic, audience, and occasion.

1. Course faculty will report at least 70% of students’ presentations rated 6 or higher on each competency using a performance rating scale of Unsatisfactory (0–3), Satisfactory (4–7), and Excellent (8–10).

A.3. Writing Intensive Courses
1. Faculty evaluators of student portfolios from W courses will report that at least 90% of students’ writing samples meet or exceed the criteria for acceptable writing endorsed by teachers of those courses.
2. Students who have taken W courses will report the following:
   2. That the writing assignments improved their learning of course material.
   3. That receiving constructive feedback and being given the opportunity to revise their writing enabled them to improve their writing.
   4. That they believe effective writing is important to success in their respective fields.
   5. Increased confidence in their ability to meet the professional demands of writing in the workplace.
Teachers will report the following:
6. That writing assignments in W courses improved student learning of course material.
7. That student writing in W courses improved in response to constructive feedback.

B. Computer Skills
The Computer Skills requirement is intended to achieve two goals. The first goal is to prepare students for the use of computer technology in their personal and professional lives. The second goal is to assist students in developing a set of skills in using the computer in the areas of management and organization of data and the communication of ideas.

Following completion of the Computer Skills general education requirement, students will be competent in the operation of a number of standard computer tools, including word processors, spreadsheets, and communication tools (for example, electronic mail and remote file access). Students will be able to utilize these tools to present information in an organized and effective manner. Students will also be able to interpret and accommodate current capabilities and future advances in computer technology to support their decision making.

C. Mathematical Sciences
An education that reflects only the restricted mathematical needs of the distant past is not adequate for students who will live their professional lives in the twenty-first century. Therefore, the mathematical sciences requirement is designed to achieve the following competency goals:
1. To develop in students a high level of mathematical literacy in order that they be able to adequately cope with the demands of an information-based age. This basic literacy may assume different forms, depending upon students’ academic curricula. For example, developing skills in applying the methods of modern data analysis and statistical inference, mastering the more classical deterministic methods of calculus, or (for future teachers of elementary school children) to actively engage fundamental mathematical concepts in the ways that we would have them to teach: to explore, investigate, validate, discuss, represent and construct.
2. To enable students to become confident in their ability to do mathematics and to grasp the implications of the many mathematical concepts that permeate our lives—concepts such as chance, rates of change, logic, and graphs.
3. To develop in students the ability to communicate and to reason mathematically because mathematics today involves much more than calculation. Clarification of the problem, formulating alternatives, developing appropriate tools, and analyzing the consequences are all part of mathematical communication and reasoning.

D. Physical or Biological Science
Science is required of Clemson undergraduates to achieve two goals. The first goal is to expose students to the scientific philosophy that the natural world is mechanistic and largely predictable and can be systematically studied using empirical methods. Mastery of these methods requires particular reasoning skills. Following successful completion of the physical/biological science requirement, students should have an understanding of the relationship among hypotheses, experiments, and theories. They should be able to use the methods of scientific inquiry such as framing a question precisely, developing hypotheses, designing experiments, collecting and analyzing data, drawing conclusions, and making a defensible claim.

The second goal is to familiarize the students with the major principles and theories of a particular science, its historical development, and its significance for a broader world. This knowledge will give students the factual basis needed to practice the scientific method successfully in a particular discipline.

E. Humanities
The humanities is a broad category of study concerned with human nature, thought, emotion, values, interrelations, and culture. Unlike the sciences and the social sciences, the field of humanities is designed principally to insure that all students receive a balance of courses which generally are not applied or performance based. Specifically, the courses which fulfill the humanities general education requirement should build the following competencies: a reflective habit of mind, self and social awareness, a knowledge and appreciation of the development of our culture and those foreign to ours, a heightened aesthetic and ethical sensibility, an understanding of the diverse forms of expression, the ability to think critically, and good communication skills. Humanities courses should develop as many of these competencies as possible.

F. Social Science
The general education social science requirement will introduce students to human social and cultural diversity. The courses will provide students with a deeper understanding of the causes and consequences of human actions. The social science courses will also reinforce communication skills and challenge students to enhance their critical thinking and intellectual development.
MINORS, PROGRAMS, AND DEGREES

Clemson University offers 73 undergraduate 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.

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 401, 440, 445, and six additional credits selected from the following: AG ED 407, 428, 450, (ED F, THRD) 482, PRTM 308.

Aerospace Studies

A minor in Aerospace Studies requires A S 109, 110, 209, 210, 309, 310, 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. (A S 100 and 200 levels may be taken concurrently in the sophomore year.)

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 APEC 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 401, 402, 403, 406, 452, 460.

Anthropology

A minor in Anthropology requires ANTH 201 and 15 hours from the following courses: ANTH 301, 320, 351, 403, (JAPN) 417, 495, 498, SOC 433. At least one course must be at the 400 level.

Athletic Leadership

A minor in Athletic Leadership requires 17 credit hours as follows: A L 349, 350, 353, 361, 362, 376, and one of the following: A L 371, 372, 373, 374, 375, 377. Students must complete a internship or athletic administrative internship under the direction of the Athletic Leadership Minor Coordinator.

Beef Cattle Production

A minor in Beef Cattle Production requires AVS 108, 202, 210, 370, 401; and three credits from AVS 305, 353/354, 375, 453, 455, 470.

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, BIOCH 416, or a section of BIOCH 493 designated as oriented towards biochemistry or molecular biology.

Biotechnology

A minor in Biotechnology requires at least 15 credits and must include BIO E 302, 320, 401. The remaining six credits may be chosen from B E 430, BIO E 201, 420, 450, BIOCH 222, 231, 423, 458, 459, CM E 210, or E M 304, 320, or M E 301.

Biological Sciences

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

Business Administration

A minor in Business Administration requires ACCT 201, ECON 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 360 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 360 or 361, ENGL 231 or 304, MGT 301, and six elective credits.

Politics Option—ENGL 312 and either COMM 360 or 361, P O SC 341, 343, and six elective credits.

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

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.

Early Intervention

The following coursework is required toward meeting the credentialing standard for Early Intervention: ED EC 336, ED F 334 or PSYCH 340, ED SP 370, 468, HLTH 410, 411, SOC 311. In addition to coursework, students must complete an internship/practicum experience. This internship/practicum will be arranged by the student's home department and must involve work with special needs children ages 0-3. All coursework must be completed before the internship/practicum experience.
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 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—EAS 123, JAPN 401, 499, 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 405, 406, 407, 408, 409, 410, 412, 413, 414, 415, 416, 417, 418.
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 major concentration in English.)

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 L E) 314, MGT (E L E) 315
Entrepreneurial—E L E 301, 401

Experiential—E L E 301, 401

Foundations—ECON (E L E) 321, SOC (E L E) 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 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.
Group I—EES 402, 410, 411, 430, 484, 485, 486
Group II—B E 322, C E 342, 447, CH 223, 411, 413, CH E 401, 450, EN SP 400, ENTOX 400, (BIOSC, ENT) 430, GEOI 408, MICRO 305, 410

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, (B E) 408, 475, 490, EES 401, 402, 430, 485, ENT 300, ENTOX 400, 421, (BIOSC, ENT) 430, FOR 206, W F B 414.
Group III—Environmental Policy and Social Impacts: at least two credits: AP EC 433, EN SP 471, 472, HIST (F&R) 392, HLTH 431, PHIL 345, PSYC 355, R S (SOC) 401, W F B 430.

Film Studies
A minor in Film Studies requires 15 credits in ENGL above the sophomore level, arranged as follows: ENGL 357, 450, 451, 452; and one of the following: ART 313, ENGL 348, 430, 453, 459, 483, or other course as approved by the departmental Director of Undergraduate Studies.

Financial Management
A minor in Financial Management requires FIN 305, 306 or 311, 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: AA H (all courses), ART (all courses), COMM 363, 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, PKGSC 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 GEOL 101, 102, 103, and 12 additional credits from 300- and 400-level geology courses. At least one 400-level course must be included.

Great Works
The Great Works minor requires G W (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, 404, (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, GER 400, SPAN 303, 401.
Group IV—The Arts: Three credits from AA 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 the 300- and 400-level health courses; at least one 400-level course must be included.

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.

Horse Production
A minor in Horse Production requires AVS 202, 204, 370, 412, and six credits selected from AVS 205, 309, 310, 385, 405, 407.

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 during an approved study-abroad program of at least three months, or
   (b) an approved international internship or research program in engineering or science at least three months duration, plus nine credits chosen from 300 level or higher foreign language courses. ECON 310, 412, 413, and PO SC 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.

International Politics
A minor in International 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:


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 International Politics minor. Students majoring in Political Science may not minor in International Politics.

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, PO SC 432, 433, SOC 390.

   Group II—ECON 402, LAW 312, 313, 322, 333, 405, 420, 499.

Additional courses may be approved by a committee composed of a representative of each of the departments of the College of Business, Arts, and Humanities and the Dean of the College of Business and Behavioral Science.

Management
A minor in Management requires 18 credits as follows: MGT 301, 307, 310, 390, 418, 422.

Mathematical Sciences
A minor in Mathematical Sciences requires MTHSC 208 and 12 additional credits in mathematical sciences courses numbered 300 or higher.

Microbiology
A minor in Microbiology requires MICRO 305 and eleven additional credits drawn from 400-level microbiology courses.

Military Leadership
A minor in Military Leadership requires at least 15 credits including MIL 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. (MIL 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 may not be used to satisfy requirements for the French or Spanish minor.

Music
A minor in Music requires MUSIC 151, 152, 205, 206, 251, 252, 415 or 416; four semesters of ensemble, totaling four credits, selected from MUSIC 344, 361, 362, 363, 364, 369, 370, 373; and one three-hour 300/400-level music course.

Natural Resource Economics
A minor in Natural Resource Economics requires AP EC 403 and C R D 357 and three courses selected from the following: AP EC 358, 352, 402, (C R D) 412, 433, 452, R S (SOC) 411.

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 PFGS 102, 202, 204, and 206. The remaining nine credits may be selected from FD SC 401, 402, FOR 441, 442, 443, G C 405, 406, PFGS 368, 401, 404, 454, 464, 466.

Parks, Recreation, and Tourism Management
A minor in Parks, Recreation, and Tourism Management requires one of the following options: Community Leisure Services—PRTM 301 (preferred) or 101; PRTM 205, 321, and nine additional credits from PRTM 307, 401, 421, 441.

Non-profit Leadership—CO-OP 101 (PRTM 405 may be substituted.); NPL 300, and one course selected from the following:

   I—COMM 348, 480, PRTM 308
   II—ED F 334, 335, PSYCH 340, SOC 350
   III—HLTH 401, M KT 428, 429, PRTM 421
   IV—MG T 307, PO SC 427, PSYCH 368
   V—HLTH 440, PHIL 344, PO SC 321, PRTM 305, 321

Recreation Resource Management—PRTM 301 (preferred) or 101; PRTM 270, 310, 474, and six additional credits from PRTM 320, 403, 430, 431.

Sport Management—PRTM 301 (preferred) or 101, PRTM 205, 254, 454, and six credits from PRTM 305, 307, 441, 452, 453.

Therapeutic Recreation—PRTM 301 (preferred) or 101; PRTM 311 and 12 additional credits in PRTM, nine of which must be taken from PRTM 318, 412, 413, 417.

Travel and Tourism—PRTM 301 (preferred) or 101; PRTM 342; 12 additional credits from PRTM 343, 344, 349, 445, 446; either (EGOC) 430 or 447.

Philosophy
A minor in Philosophy requires 15 credits in philosophy. These may include one 100-level philosophy course (PHIL 101, 102, or 103). PHIL 401 or 402 must be included.

Physics
A minor in Physics requires 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, I P 401, MICRO 305.

Political Science

At least one 400-level course must be included. No more than a total of three credits from PO SC 110, 311, and 312 may be applied to the requirements for a Political Science minor.

Poultry Science

Psychology
A minor in Psychology requires PSYCH 201 and 15 credits from 300- and 400-level psychology courses. At least one 400-level course must be included.

Public Policy
A minor in Public Policy requires PO SC 321, 421, 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. REL 101 or 102 must be included. (Both may be included.) Nine credits must be at the 300-level or above. REL 401 or 402 must be included. PHIL 303 and PO SC 407 may be included.
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 348, 357, 448 (six credits); and one of the following: ENGL 450, 451, 452, 453, THEA 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 SC) 382, 403, 422, 435; and ECON 410.

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, 346, 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 404, 410, 411, 412, 430, THEA 347), three credits of theatre history (THEA 315, 316, 317); six credits in a sequence (THEA 278/479, 315/316, 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.

Turfgrass
A minor in Turfgrass requires CSENV 202, HORT 212, 412, and two of the following: AG M 402, HORT 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 F B 300, 350; six additional hours selected from 300-level or higher W F B courses, except 463 and 490; and three credits selected from AP EC 475, BIOSCI 464, 465, 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 and 459 or 498.
Group II—Six credits chosen 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 GC 104, CP SC 120, ENGL 304 or 314, 490, 495.
Journalism Option—ENGL 231, 333, 334, 335, one of the following: AP EC 351, COMM 250, CP SC 120, GC 104, ENGL 217, 304, 312, 314, PHIL 102, THRD 468; and any course approved by the Chair of the English Department.
Writing Pedagogy Option—ENGL 312, 400, 401, 485; elective (three credits), any 300- or 400-level writing course offered by the Department of English.

Creative Writing Options
Drama—THEA (ENGL) 347, 447 (six credits), ENGL 430, and one of the following: ENGL 312, 410, 411.
Fiction—ENGL 345, 432, 445 (six credits), and one of the following: ENGL 312, 418, 425, 426.
Poetry—ENGL 346, 446 (six credits), 431, and one of the following: ENGL 312, 413, 416, 417.

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 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 preprofessional 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 103 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, and Master of Public Administration are awarded to students who satisfactorily complete prescribed graduate programs.

For further information concerning advanced degrees, see the Graduate Announcements.
AGRICULTURAL AND APPLIED ECONOMICS
Bachelor of Science

AGRICULTURAL ECONOMICS CONCENTRATION
The Agricultural Economics curriculum emphasizes a strong background in economics with applications to production agriculture, agribusiness, 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 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 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 - AGRIC 103 Intro. to Animal Industries
3 - AGRIC 105 Agriculture and Society
3 - ENGL 101 Composition I
3 - MTHSC 102 Intro. to Mathematical Analysis
4 - Science Requirement
16

Second Semester
3 - AGRIC 104 Introduction to Plant Sciences
3 - AP EC 202 Agricultural Economics
3 - CP SC 120 Intro. to Information Technology
3 - ENGL 102 Composition II
4 - Science Requirement
16

Sophomore Year
First Semester
3 - AP EC 302 Economics of Farm Management
3 - ECON 212 Principles of Macroeconomics
3 - Accounting Requirement
6 - Humanities Requirement E.1 and E.2
3 - Elective
18

Second Semester
3 - AP EC 308 Quantitative Applied Economics
3 - AP EC 309 Econ. of Agricultural Marketing
3 - EX ST 301 Introductory Statistics
3 - Accounting Requirement
3 - Oral Communication Requirement

Total Semester Hours
15

Junior Year
First Semester
3 - ECON 314 Intermediate Microeconomics
3 - EX ST 462 Statistics Applied to Economics
3 - R S 301 Rural Sociology or
3 - R S (SOC) 459 The Community
3 - Emphasis Area
3 - Writing Intensive Requirement
15

Second Semester
3 - AP EC 420 World Agricultural Trade or
3 - AP EC 460 Agricultural Finance
3 - ECON 302 Money and Banking or
3 - ECON 315 Intermediate Macroeconomics
3 - LAW 312 Commercial Law or
3 - LAW 322 Legal Environment of Business
6 - Emphasis Area
3 - Elective
18

Senior Year
First Semester
3 - AP EC 402 Production Economics
3 - AP EC (CSENV) 426 Crop, Systems Analysis
3 - AP EC 452 Agricultural Policy
3 - Emphasis Area
3 - Elective
15

Second Semester
3 - AP EC 456 Prices
6 - Emphasis Area
6 - Elective
15

131 Total Semester Hours

Minors
Minors are available to students who wish to broaden their educational background and enhance their expertise. (See page 54 for acceptable minors.)

Scholarships
A range of scholarships is available to students who excel in their academic performance. Information on scholarships and financial aid can be obtained from specific departments in the College or from the Student Financial Aid Office in Sikes Hall.

Student Services
The college has a comprehensive Student Service Center offering a career library, company literature, career search technology, and video/audio resources.
COMMUNITY AND ECONOMIC DEVELOPMENT
CONCENTRATION
The Bachelor of Science 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 curriculum provides the conceptual, analytical, and pragmatic qualifications to succeed as an economic development specialist. Students receive practical training, and internships are available to complement coursework.

Freshman Year
First Semester
3 - AGRIC 105 Agriculture and Society
3 - ENGL 101 Composition I
3 - MTHSC 102 Intro. to Mathematical Analysis
3 - PO SC 102 Intro. to International Relations
4 - Science Requirement

Second Semester
3 - ENGL 102 Composition II
3 - GEOG 103 World Regional Geography
3 - Computer Skills Requirement
3 - Humanities Requirement E.2
4 - Science Requirement

Sophomore Year
First Semester
3 - ACCT 201 Financial Accounting Concepts
3 - AP EC 202 Agricultural Economics or
3 - ECON 211 Principles of Microeconomics
3 - EX ST 301 Introductory Statistics
3 - Humanities Requirement E.1
3 - Oral Communication Requirement

Second Semester
3 - AP EC 257 Natural Resources, Environment, and Economics
3 - ECON 212 Principles of Macroeconomics
3 - R S 301 Rural Sociology
3 - Writing Intensive Requirement
4 - Elective

Junior Year
First Semester
3 - AP EC 352 Public Finance
3 - CRD (AP EC, HLTH) 361 Introduction to Health-Care Economics
3 - EX ST 462 Statistics Applied to Economics
5 - Emphasis Area
3 - Social Science Requirement* 17

Second Semester
3 - CRD 357 Natural Resources Economics
3 - MKT 301 Principles of Marketing
3 - Advanced Social Science Requirement
3 - Emphasis Area
4 - Elective

Senior Year
First Semester
3 - CRD (AP EC) 411 Regional Impact Analysis
3 - CRD (AP EC) 491 Internship, Agribusiness, and Community and Rural Development
3 - R S (SOC) 401 Human Ecology or
3 - R S (SOC) 459 The Community
6 - Emphasis Area

128 Total Semester Hours
* See General Education Requirements.

Sophomore Year
First Semester
3 - AG ED 201 Intro. to Agricultural Education
3 - AP EC 202 Agricultural Economics
4 - CH 101 General Chemistry or
4 - CH 105 Beg. Gen. and Organic Chemistry
3 - Oral Communication Requirement

Second Semester
1 - AG ED 202 Agric. Ed. Sophomore Seminar
4 - AG ED 203 Teaching Agriscience
3 - AG M 205 Principles of Farm Shop
4 - CH 102 General Chemistry or
4 - CH 106 Beg. Gen. and Organic Chemistry
4 - CSENV 202 Soils
3 - HORT 212 Introduction to Turfgrass Culture

Junior Year
First Semester
3 - AG ED 303 Mech. Technology for Agric. Ed.
3 - AG ED 403 Prin. of Adult/Ext. Education or
3 - AG ED 460 Program Dev. in Adult/Ext. Ed.
3 - AP EC 302 Economics of Farm Management
4 - AVS 202 Introductory Animal Sciences or
3 - PIKM 301 Recreation and Society or
3 - WFB 412 Wildlife Management
3 - HORT 303 Plant Materials

15-16
### Second Semester
1. AG ED 302 Agric. Education Junior Seminar
2. ED F 302 Educational Psychology
3. FOR 305 Woodland Management or FOR 315 Woodland Ecology
4. Hort 208 Landscape Appreciation
5. Humanities Requirement E 1
6. Mathematical Sciences Requirement
7. Elective

### Senior Year
**First Semester**
1. AG ED 400 Supervised Field Experience II
2. AG ED 401 Methods in Agricornal Ed. or AG ED 404 Biotechnology in Agric. Educ.
3. AG ED 425 Teaching Agricultural Mechanics
4. Writing Intensive Requirement 1
5. Elective

### Second Semester
12 - AG ED 430 Directed Teaching or 12 - AG ED 407 Internship in Extension and Leadership Education 2
2. AG ED 423 Curriculum 14

129-130 Total Semester Hours

1. Select from MTHSC 101, 102, 106, 108, 201, 207, EX ST 301, MTHSC 101 and EX ST 301 are recommended.
2. See General Education Requirements.

### 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 enterprise. 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. Contact the Enrolled Student Services Office to have the minor recorded.

### Freshman Year

<table>
<thead>
<tr>
<th><strong>First Semester</strong></th>
<th><strong>Second Semester</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. AG M 101 Introduction to Ag Mechanization or AGRIC 103 Intro. to Animal Industries</td>
<td>1. AG M 401 Environmental Control for Plants and Animals</td>
</tr>
<tr>
<td>4. BIOIL 103 General Biology I or CH 101 General Chemistry</td>
<td>2. AG M 403 Structures for Plants and Animals</td>
</tr>
<tr>
<td>4. CH 102 General Chemistry or ENGL 101 Composition I</td>
<td>3. AG M 408 Equipment Sales and Service</td>
</tr>
<tr>
<td></td>
<td>16</td>
</tr>
</tbody>
</table>

135 Total Semester Hours

1. A minimum of six credits selected from EX ST 301 or MTHSC 101, MTHSC 102, MTHSC 106.
2. See General Education Requirements.
3. MTHSC 101, 102, 201, 204, 205, 206, 207, 209, or H210
4. Select from ED F 102, GEOX 101, 103, 102, H101, 102, 172, 173, PSYCH 201, SOC 201, (R S) 401, or any AP EC or R S courses.
5. Select from Agricultural Business Management minor list.
6. See advisor.

### 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. Completion of general education requirements, basic sciences, applied sciences, and student-selected courses of personal interest prepares graduates well for successful careers. All students complete a common freshman year, the curriculum is divided into five concentrations: Dairy Business, Equine Business, Food Animal Business, Poultry Business, and Pre-veterinary and Science. Each concentration includes specialized courses unique to students pursuing careers in those fields.

Many opportunities are available to Animal and Veterinary Sciences graduates, including production, sales and marketing, business management, advertising, extension, meat and dairy industry, and teaching. Graduates in the Pre-veterinary and Science Concentration also meet all requirements for graduation and professional schools including the veterinary medicine programs for the University of Georgia and Tuskegee University.

### Freshman Year Program

<table>
<thead>
<tr>
<th><strong>First Semester</strong></th>
<th><strong>Second Semester</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. AVS 101 Orientation to AVS</td>
<td>1. AVS 108 Animal and Dairy Sci. Techniques</td>
</tr>
<tr>
<td>4. AVS 202 Introductory Animal Sciences</td>
<td>4. BIOIL 104 General Biology I or 5. BIOIL 111 Principles of Biology I</td>
</tr>
<tr>
<td>4. BIO 103 General Biology I or 5. BIO 110 Principles of Biology I</td>
<td>4. CH 102 General Chemistry</td>
</tr>
<tr>
<td>4. ENGL 101 Composition I</td>
<td>3. ENGL 102 Composition II</td>
</tr>
<tr>
<td>16-17</td>
<td>MTHSC 102 Intro. to Math. Analysis or</td>
</tr>
<tr>
<td></td>
<td>4. MTHSC 106 Calculus of One Variable I</td>
</tr>
<tr>
<td></td>
<td>15-17</td>
</tr>
</tbody>
</table>

16-17
### DAIRY BUSINESS CONCENTRATION

#### Sophomore Year

**First Semester**
- 3 - ACCT 201 Financial Accounting Concepts
- 4 - CSENV 202 Soils
- 4 - SPAN 101 Elementary Spanish
- 3 - Computer Skills Requirement
- 3 - Humanities Requirement E.1
- 18

**Second Semester**
- 3 - AP EC 202 Agricultural Economics
- 3 - AVS 310 Animal Disease and Sanitation
- 3 - COMM 250 Public Speaking
- 4 - SPAN 102 Elementary Spanish
- 1 - Animal Techniques Requirement
- 3 - Elective
- 17

#### Junior Year

**First Semester**
- 4 - AN PH 301 Physiology and Anatomy of Domestic Animals
- 3 - AP EC 302 Econ. of Farm Management
- 3 - AVS 370 Principles of Animal Nutrition
- 4 - AVS 404 Dairy Cattle Feeding and Mgt.
- 4 - MICRO 305 General Microbiology
- 18

**Second Semester**
- 2 - AVS 302 Principles of Livestock Selection
- 3 - AVS 375 Applied Animal Nutrition
- 2 - AVS 461 Physiology of Lactation
- 3 - CSENV 423 Field Crop—Forages
- 1 - Animal Techniques Requirement
- 3 - Business Requirement
- 3 - Humanities Requirement E.2
- 1 - Elective
- 18

#### Senior Year

**First Semester**
- 4 - AVS 406 Seminars and Related Topics
- 4 - AVS 430 Dairy Processing I
- 3 - EX ST 301 Introductory Statistics
- 4 - Animal Production Requirement
- 3 - Writing Intensive Requirement
- 16

**Second Semester**
- 3 - AVS 453 Animal Reproduction
- 3 - AVS 470 Animal Breeding
- 3 - Business Requirement
- 7 - Elective
- 16

**Total Semester Hours:** 134-137

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1. See General Education Requirements.
2. See advisor. Select from AVS 120, 204, 210.
3. Taught fall semester of even-numbered years; may be taken in the senior year. See advisor for scheduling alternatives.
4. See advisor. Select from AG M 205, 401, 402, 403, 460, CSENV (EN SP) 315, AP EC 309, 319, 351, 409, 433, 460, CSENV (B) 408, ECON 211, 212, LAW 312, 313, MGT 301, 307.
5. Electives may be taken in the first semester of the senior year if necessary.

### EQUINE BUSINESS CONCENTRATION

#### Sophomore Year

**First Semester**
- 3 - ACCT 201 Financial Accounting Concepts
- 3 - AP EC 202 Agricultural Economics
- 1 - AVS 204 Horse Care Techniques
- 4 - SPAN 101 Elementary Spanish
- 3 - Computer Skills Requirement
- 3 - Humanities Requirement E.1
- 17

**Second Semester**
- 3 - AGRIC 104 Intro. to Plant Sciences or
- 4 - CSENV 202 Soils
- 2 - AVS 205 Light Horse Management
- 3 - AVS 310 Animal Disease and Sanitation
- 4 - SPAN 102 Elementary Spanish
- 1 - Animal Techniques Requirement
- 3 - Humanities Requirement E.2
- 1 - Elective
- 17-18

#### Junior Year

**First Semester**
- 4 - AN PH 301 Physiology and Anatomy of Domestic Animals
- 3 - AP EC 302 Econ. of Farm Management
- 3 - AVS 370 Principles of Animal Nutrition
- 3 - EX ST 301 Introductory Statistics
- 1 - Animal Techniques Requirement
- 3 - Elective
- 17

**Second Semester**
- 2 - AVS 302 Principles of Livestock Selection
- 2 - AVS 309 Principles of Equine Evaluation
- 3 - AVS 375 Applied Animal Nutrition
- 2 - AVS 385 Equine Behavior and Training
- 3 - AVS 453 Animal Reproduction
- 3 - COMM 250 Public Speaking
- 3 - CSENV 423 Field Crop—Forages
- 18

#### Senior Year

**First Semester**
- 2 - AVS 406 Seminars and Related Topics
- 3 - AVS 407 Equine Theriogenology
- 4 - Animal Production Requirement
- 3 - Business Requirement
- 3 - Writing Intensive Requirement
- 2 - Elective
- 17

**Second Semester**
- 4 - AVS 412 Horse Production
- 3 - AVS 470 Animal Breeding
- 3 - MGT 307 Personnel Management
- 3 - Business Requirement
- 4 - Elective
- 17

**Total Semester Hours:** 134-138

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1. See General Education Requirements.
3. See advisor. Select from AVS 401, 402, 404, 408.
4. See advisor. Select from AG M 205, 401, 402, 403, 460, AGRIC (EN SP) 315, AP EC 309, 319, 351, 409, 433, 460, CSENV (B) 408, ECON 211, 212, LAW 312, 313, MGT 301.
5. Electives may be taken in the first semester of the senior year if necessary.

### FOOD ANIMAL BUSINESS CONCENTRATION

#### Sophomore Year

**First Semester**
- 3 - ACCT 201 Financial Accounting Concepts
- 3 - AP EC 202 Agricultural Economics
- 4 - SPAN 101 Elementary Spanish
- 3 - Computer Skills Requirement
- 3 - Humanities Requirement E.1
- 17

**Second Semester**
- 3 - AVS 310 Animal Disease and Sanitation
- 4 - CSENV 202 Soils
- 3 - EX ST 301 Introductory Statistics
- 4 - SPAN 102 Elementary Spanish
- 1 - Animal Techniques Requirement
- 3 - Elective
- 18

#### Junior Year

**First Semester**
- 4 - AN PH 301 Physiology and Anatomy of Domestic Animals
- 3 - AP EC 302 Econ. of Farm Management
- 3 - AVS 370 Principles of Animal Nutrition
- 3 - COMM 250 Public Speaking
- 1 - Animal Techniques Requirement
- 3 - Elective
- 17

**Second Semester**
- 2 - AVS 302 Principles of Livestock Selection
- 2 - AVS 309 Principles of Equine Evaluation
- 3 - AVS 375 Applied Animal Nutrition
- 2 - AVS 385 Equine Behavior and Training
- 3 - AVS 453 Animal Reproduction
- 3 - COMM 250 Public Speaking
- 3 - CSENV 423 Field Crop—Forages
- 18

**Senior Year**

**First Semester**
- 2 - AVS 406 Seminars and Related Topics
- 4 - Animal Production Requirement
- 6 - Business Requirement
- 3 - Humanities Requirement E.2
- 3 - Elective
- 18

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1. See advisor. Select from AVS 120, 204, 210.
2. Taught fall semester of even-numbered years; may be taken in the senior year. See advisor for scheduling alternatives.
3. See advisor. Select from AG M 205, 401, 402, 403, 460, AGRIC (EN SP) 315, AP EC 309, 319, 351, 409, 433, 460, CSENV (B) 408, ECON 211, 212, LAW 312, 313, MGT 301, 307.
4. See advisor. Select from AVS 401, 402, 404, 408.
Second Semester

3 - AVS 470 Animal Breeding
3 - MGT 307 Personnel Management
4 - Animal Production Requirement*2
3 - Business Requirement
3 - Elective
16

134-137 Total Semester Hours

*See General Education Requirements.
*Students opting to use elective hours to pursue a minor should inform their advisors early in their academic careers.
*Students opting to use elective hours to pursue a minor should inform their advisors early in their academic careers.
*See advisor. Select from AVS 120, 203, 204.

POULTRY BUSINESS
CONCENTRATION

Sophomore Year

First Semester

3 - ACCT 201 Financial Accounting Concepts
3 - AP EC 202 Agricultural Economics
1 - AVS 120 Poultry Techniques
4 - SPAN 101 Elementary Spanish
3 - Computer Skills Requirement
3 - Humanities Requirement E.1
17

Second Semester

3 - AVS 310 Animal Disease and Sanitation
2 - AVS 323 Poultry and Poultry Products Eval.
3 - EX ST 301 Introductory Statistics
4 - SPAN 102 Elementary Spanish
1 - Animal Techniques Requirement
3 - Humanities Requirement E.2
1 Elective
17

Junior Year

First Semester

4 - AN PH 301 Physiology and Anatomy of Domestic Animals
3 - AP EC 302 Econ. of Farm Management
3 - AVS 370 Principles of Animal Nutrition
2 - AVS 400 Avian Physiology
3 - COMM 250 Public Speaking
3 - Business Requirement
18

Second Semester

2 - AVS 302 Principles of Livestock Selection
3 - AVS 375 Applied Animal Nutrition
3 - AVS 425 Poul. Products Grading and Tech.
3 - AVS 453 Animal Reproduction
1 - Animal Techniques Requirement
3 - Business Requirement
3 - Elective
18

Senior Year

First Semester

2 - AVS 406 Seminars and Related Topics
3 - AVS 458 Avian Microbiol. and Parasitology
4 - Animal Production Requirement*2
3 - Business Requirement
3 - Writing Intensive Requirement
1 - Elective
16

Second Semester

4 - AVS 402 Poultry Management
3 - MGT 307 Personnel Management
3 - Business Requirement
7 - Elective
17

134-137 Total Semester Hours

*See General Education Requirements.
*See advisor. Select from AVS 203, 204, 210.

PREVETERINARY AND
SCIENCE CONCENTRATION

Sophomore Year

First Semester

3 - CH 223 Organic Chemistry
1 - CH 227 Organic Chemistry Lab.
4 - PHYS 207 General Physics I
1 - Animal Techniques Requirement
6 - Humanities Requirement E.1 and E.2
3 - Elective
18

Second Semester

3 - CH 224 Organic Chemistry
1 - CH 228 Organic Chemistry Lab.
1 - EX ST 301 Introductory Statistics
4 - PHYS 208 General Physics II
3 - Computer Skills Requirement
3 - Social Science Requirement
17

Junior Year

First Semester

4 - AN PH 301 Physiology and Anatomy of Domestic Animals
3 - AP EC 202 Agricultural Economics
3 - AVS 370 Principles of Animal Nutrition
2 - BIOCH 301 Molecular Biochemistry
3 - GEN 302 Molecular and General Genetics
1 - GEN 303 Introductory Genetics Lab.
1 - Animal Techniques Requirement
18

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

5 - BIOL 110 Principles of Biology I
4 - CH 101 General Chemistry
3 - ENGL 101 Composition I
4 - MATH 106 Calculus of One Variable I
16
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 Introductory Genetics Lab.
3 - PHYS 122 Physics with Calculus I
1 - PHYS 124 Physics Lab. I
3-4 Advanced Mathematics Requirement 2

Second Semester
3 - BIOL 301 Molecular Biochemistry
3 - CH 224 Organic Chemistry
1 - CH 228 Organic Chemistry Lab. 1
3 - PHYS 221 Physics with Calculus II
1 - PHYS 223 Physics Lab. II
3 - Humanities Requirement E 1
3 - Social Science Requirement 1

Junior Year

First Semester
3 - BIOL 431 Physical Approach to Biochem.
2 - BIOL 433 General Biochemistry Lab. I
3 - CH 330 Introduction to Physical Chemistry 4
3 - ENGL 314 Technical Writing
3 - Approved Requirement 2
3 - Computer Skills Requirement 1

Second Semester
3 - BIOL 432 Biochemistry of Metabolism
2 - BIOL 434 General Biochemistry Lab. II
2 - BIOL 436 Nucleic Acid and Protein Biosyn.
3 - Approved Requirement 2
3 - Humanities Requirement E 1
3 - Social Science Requirement 1

Senior Year

First Semester
2 - BIOL 491 Special Problems in Biochemistry 6
3 - BIOL 461 Cell Biology
3 - CH 313 Quantitative Analysis
3 - COMM 250 Public Speaking
1-2 - Advanced Laboratory Requirement 5
4 - Elective

Second Semester
3 - BIOL 491 Special Problems in Biochemistry 6
2 - BIOL (GEN) 493 Senior Seminar
4 - Science Requirement 7
7 - Elective
16

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.

Entomology Emphasis Area
Bachelor of Science students who wish to specialize in entomology may elect this emphasis area. Requirements are as follows: ENT (BIOSC) 400, ENT (BIOSC) 415, and seven additional credits selected from ENT 300, 308, 401, 404, 407, ENT (BIOSC) 436, ENT (BIOSC) 455, ENT (BIOSC, W F 6) 469, 490, ENT (GEN) 495, PL PA (ENT) 406.

Freshman Year

First Semester
5 - BIOL 110 Principles of Biology 11
1 - BIOL 101 Frontiers in Biology 11
4 - CH 101 General Chemistry
3 - ENGL 101 Composition I
4 - MTHSC 106 Calculus of One Variable I

Second Semester
5 - BIOL 111 Principles of Biology II
1 - BIOL 102 Frontiers in Biology II
4 - CH 102 General Chemistry
3 - ENGL 102 Composition II
4 - MTHSC 108 Calculus of One Variable II

Sophomore Year

First Semester
3 - CH 223 Organic Chemistry
1 - CH 227 Organic Chemistry Lab.
3 - CP SC 120 Intro. to Information Technology
4 - Animal Diversity Requirement 3
3 - Humanities Requirement E 1
3 - Elective

Second Semester
3 - CH 224 Organic Chemistry 5
3 - GEN 302 Molecular and General Genetics
1 - GEN 303 Introductory Genetics Lab.
4 - Plant Diversity Requirement 6
3 - Social Science Requirement 4
3 - Elective

Junior Year

First Semester
3 - BIOL 301 Molecular Biochemistry
1 - BIOL 302 Molecular Biochemistry Lab. 1
3 - BIOSC 335 Evolutionary Biology
3 - ENGL 314 Technical Writing
4 - PHYS 207 General Physics I or
3 - PHYS 221 Physics with Calculus II and
1 - PHYS 124 Physics Lab. I
3 - Social Science Requirement 4
3 - Elective

Second Semester
3 - COMM 250 Public Speaking
3 - PHIL 305 Philosophy of Science or
3 - PHIL 306 Science and Values
4 - PHYS 208 General Physics II or
3 - PHYS 221 Physics with Calculus II and
1 - PHYS 223 Physics Lab. II
3 - Major Requirement 6
3 - Elective

Senior Year

First Semester
2 - BIOL 493 Senior Seminar 9
12 - Major Requirement 8
3 - Elective

Second Semester
14 - Major Requirement 8
3 - Elective

135 Total Semester Hours

1BIOL 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.

2If not completed in the freshman year, the required 1-2 credits must be satisfied by completing 1-2 extra credits from departmental course offerings at the 300 level or above; see advisor.

3Select from BIOSC 302/306, 303/307, or ENT (BIOSC) 301. Entomology Emphasis Area students must satisfy the Animal Diversity Requirement with ENT (BIOSC) 301.

4See General Education Requirements.
**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**
1. BIOL 101 Principles of Biology I
2. MTHSC 101 Calculus of One Variable I
3. CH 101 General Chemistry
4. ENGL 101 Composition I
5. Foreign Language Requirement

**Second Semester**
1. BIOL 102 Principles of Biology II
2. MTHSC 102 Calculus of One Variable I
3. CH 102 General Chemistry
4. ENGL 102 Composition I
5. Foreign Language Requirement

**Sophomore Year**

**First Semester**
1. HIST 172 Western Civilization
2. MTHSC 106 Calculus of One Variable I
3. Animal or Plant Diversity Requirement
4. Foreign Language Requirement
5. Literature Requirement

**Second Semester**
1. CP SC 120 Intro. to Information Technology
2. GEN 302 Molecular and General Genetics
3. GEN 303 Introductory Genetics Lab.
4. MTHSC 108 Calculus of One Variable II or
5. MTHSC 301 Stat. Theory and Meth. I
6. Foreign Language Requirement
7. Literature Requirement

**Junior Year**

**First Semester**
1. BIOL 300 Essential Elements of Biochemistry
2. BIOL 306 Evolutionary Biology
3. BIOL 335 Evolutionary Biology
4. ENGL 314 Technical Writing
5. PHYS 207 General Physics I
6. Minor

**Second Semester**
1. COMM 250 Public Speaking
2. HIST 173 Western Civilization
3. PHIL 325 Philosophy of Science or
4. PHIL 326 Science and Values
5. PHYS 208 General Physics II
6. Animal or Plant Diversity Requirement

**Senior Year**

**First Semester**
1. BIOSC 493 Senior Seminar
2. Major Requirement
3. Minor
4. Elective
5. 16-17

**Second Semester**
1. Major Requirement
2. Minor
3. Elective
4. 16-17

**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 completed by 1-2 credits from departmental course offerings at the 300 level or above; see advisor.

**BIOSYSTEMS ENGINEERING**

**Bachelor of Science**
The Biosystems Engineering program is administered jointly by the College of Agriculture, Forestry, and Life Sciences and the College of Engineering and Science. See page 78 for the curriculum.

**ENVIRONMENTAL AND NATURAL RESOURCES**

**Bachelor of Science**
The Environmental and Natural Resources curriculum produces professionals who have the 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 exotics, 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. The Conservation Biology concentration is oriented toward students who desire a greater exposure to taxa, their habitats and their interrelationships. The Natural Resource and Economic Policy concentration provides more in-depth study in economics and policy applications. The Natural Resources Management concentration emphasizes both resource management and negotiation skills.

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**
1. BIOL 103 General Biology I
2. CH 101 General Chemistry
3. ENR 101 Introduction to Environmental and Natural Resources I
4. ENGL 101 Composition I
5. MTHSC 201 Intro. to Mathematical Analysis

**Second Semester**
1. BIOL 104 General Biology II
2. CH 102 General Chemistry
3. ENR 102 Introduction to Environmental and Natural Resources II
4. ENGL 102 Composition II
5. Elective
CONSERVATION BIOLOGY
CONCENTRATION

Sophomore Year
First Semester
3 - AP EC 257 Natural Resources, Environment, and Economics
3 - COMM 250 Public Speaking
3 - W F B (BIOSC) 313 Conservation Biology
3 - Computer Skills Requirement^1
3 - Humanities Requirement E.1^1
3 - Elective
18

Second Semester
3 - EX ST 301 Introductory Statistics
3 - GEN 302 Molecular and General Genetics
1 - GEN 303 Introductory Genetics Lab.
3 - Physical Environment Requirement^1
3 - Taxonomy/Habitat Requirement^1
3 - Elective
16-18

Junior Year
First Semester
3 - ENGL 314 Technical Writing
3 - Ecology Requirement^1
3 - Humanities Requirement E.2^1
3 - Physiology Requirement^1
3 - Taxonomy/Habitat Requirement^1
15-17

Second Semester
3 - BIOSC 335 Evolutionary Biology
3 - E N R 302 Natural Resources Measurements
3 - Ecology Requirement^1
3 - Natural Resource Economics Requirement^1
3 - Taxonomy/Habitat Requirement^1
15-16

Senior Year
First Semester
3 - C R P (E N R) 434 Geographic Information Systems for Landscape Planning
3 - E N R (BIOSC) 413 Restoration Ecology
3 - Conservation Colloquium^1
2 - Conservation Policy/Law Requirement^1
3 - Taxonomy/Habitat Requirement^1
14-16

Second Semester
3 - E N R 450 Conservation Issues
6 - Taxonomy/Habitat Requirement^1
3 - Social Sciences Requirement^1
3 - Elective
15-17
125-132 Total Semester Hours

^See General Education Requirements.
^1GEOG 106, GEOG 101, CSENV 202, or PHYS 240.
^2Select from AG M 301, BIOSC 302/306, 303/307, 304/308, 305/309, 320, 406/407, 410/411, 442, 464, 468, 472, 477, CSENV 404, ENT (BIOSC) 301, ENT (BIOSC) 415, (W F B) 409, FOR 203, 251, 406, GEOI 112, 210, 403, MICRO 403, W F B 418, 440, 462. At least four of the courses must be laboratories or courses with a required laboratory component.

NATURAL RESOURCE AND ECONOMIC POLICY
CONCENTRATION
Sophomore Year
First Semester
3 - AP EC 257 Natural Resources, Environment, and Economics
3 - ECON 212 Principles of Macroeconomics
3 - W F B (BIOSC) 313 Conservation Biology or
3 - Minor^2
3 - Computer Skills Requirement^1
3 - Humanities Requirement E.1^1
3 - Oral Communication Requirement^1
18

Second Semester
3 - C R D 357 Natural Resources Economics
3 - ECON 314 Intermediate Microeconomics
3 - EX ST 301 Introductory Statistics
3 - GEOG 103 World Regional Geography
3 - Ecology Requirement^1 or
3 - Minor^1
3 - Elective
18

Junior Year
First Semester
3 - ECON 319 Environmental Economics
3 - GEOL 300 Environmental Geology
2 - Ecology Requirement^1 or
3 - Minor^1
3 - Humanities Requirement E.2^1
3 - Political Science Requirement^1
14-17

Second Semester
3 - AP EC 403 Land Economics or
3 - AP EC 420 World Agricultural Trade
3 - AP EC 456 Prices
3 - AP EC 475 Econ. of Wildlife Mgt. and Policy
3 - C R D (AP EC) 412 Spatial Competition and Rural Development
3 - Writing Intensive Requirement^1
15

Senior Year
First Semester
3 - AP EC 402 Production Economics
3 - C R D (AP EC) 411 Regional Impact Analysis
3 - ECON 315 Intermediate Macroeconomics
3 - H S (SOO) 401 Human Ecology
3 - Conservation Colloquium^1
15

Second Semester
3 - AP EC 452 Agricultural Policy
3 - C R P (E N R) 434 Geographic Information Systems for Landscape Planning or
3 - Minor^1
3 - E N R 450 Conservation Issues
7 - Elective or
4 - Elective and
3 - Minor^1
16
126-129 Total Semester Hours

^Minor is optional but must be selected from the following: Biochemistry, Biological Sciences; Chemistry; Crop and Soil Environment Science; Environmental Science and Policy; Forest Resource Management; Geography, Geology, Horticulture; Legal Studies; Microbiology; Parks, Recreation, and Tourism Management; Urban Forestry, Wildlife and Fisheries Biology. Courses may not be used to fulfill both major and minor requirements.

NATURAL RESOURCES MANAGEMENT
CONCENTRATION
Sophomore Year
First Semester
3 - AP EC 257 Natural Resources, Environment, and Economics
4 - CSENV 202 Soils
3 - FOR 205 Dendrology
3 - W F B (BIOSC) 313 Conservation Biology
3 - Computer Skills Requirement^1
16

Second Semester
3 - COMM 250 Public Speaking
3 - FOR 206 Forest Ecology
4 - PHYS 200 Introductory Physics
3 - Humanities Requirement E.2^1
3 - Literature Requirement^2
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 - C R D 357 Natural Resources Economics
3 - EX ST 301 Introductory Statistics
3 - GEOL 101 Physical Geology
1 - GEOL 103 Physical Geography Lab.
3 - Minor^1
17
Second Semester
3 - E N R 302 Natural Resources Measurements
3 - ENGL 314 Technical Writing
3 - W F B 350 Principles of Fish and Wildlife Biol.
3 - Minor 1
3 - Elective
15

Senior Year
First Semester
2 - FOR (E N R) 416 Forest Policy and Admin.
3 - W F B 462 Wetland Wildlife Biology
3 - Conservation Colloquium 1
6 - Minor 1
4 - Elective
17

Second Semester
3 - C R P (E N R) 434 Geographic Information Systems for Landscape Planning
3 - E N R 450 Conservation Issues
3 - FOR 400 Public Relations in Natural Res.
2 - FOR 406 Forested Watershed Management
3 - W F B 418 Fishery Conservation
3 - Minor 1
17

129 Total Semester Hours

See General Education Requirements.
1ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H210.
2A minor is required and must be selected from the following: Biochemistry; Biological Sciences; Chemistry; Crop and Soil Environmental Science; Environmental Science and Policy; Forest Resource Management; Geology; Horticulture; Legal Studies; Microbiology; Natural Resource Economics; Parks, Recreation, and Tourism Management; Urban Forestry; Wildlife and Fisheries Biology. Courses may not be used to fulfill both major and minor requirements.
3AF EC 490, BIOSC 491, ENT 490, FOR 419, or W F B 493.

FOOD SCIENCE
Bachelor of Science

Food Science majors apply principles of basic and applied sciences to the creation, production, processing, evaluation, packaging, distribution, and utilization of safe, nutritious, and enjoyable foods and food products. The safety of foods during processing and preservation, the provision of foods with adequate nutritional value, adherence to dietary recommendations, and the conservation of resources are important consumer issues addressed by food scientists.

The curriculum allows flexibility for concentrating in one of two areas. In the Food Science and Technology concentration, students may emphasize business, engineering, food packaging, additional sciences, or other areas 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, 216 West Jackson Blvd., Chicago, IL 60606-6995.

Food processing industries, ingredient manufacturers, and packaging suppliers employ Food Science graduates in food product development, quality assurance, production, management, and business 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. Graduates in Food Science are also well prepared to pursue graduate study in many areas.

The Department of Food Science and Human Nutrition allows students to count up to twelve hours of graduate credit toward both the Bachelor of Science degree in Food Science and Master of Science degree in Food, Nutrition, and Culinary Sciences. 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 of Food Science and Human Nutrition.

Freshman Year
First Semester
4 - BIOL 103 General Biology I or
5 - BIOL 110 Principles of Biology I
4 - CH 101 General Chemistry
3 - ENGL 101 Composition I
1 - FD SC 101 Epochs in Man's Struggle for Food
3 - Mathematical Sciences Requirement 1
15-17

Second Semester
4 - BIOL 104 General Biology II or
5 - BIOL 111 Principles of Biology II
4 - CH 102 General Chemistry
3 - ENGL 102 Composition II
2 - FD SC 102 Perspectives in Food and Nutrition Science
3 - Computer Skills Requirement 1
16-17

Sophomore Year
First Semester
4 - CH 201 Survey of Organic Chemistry or
3 - CH 223 Organic Chemistry and
1 - CH 227 Organic Chemistry Lab.
3 - PHYS 122 Physics with Calculus I or
4 - PHYS 200 Introductory Physics or
4 - PHYS 207 General Physics I
3 - Humanities Requirement E 1
3 - Social Science Requirement 1
2 - Elective
15-16

Second Semester
4 - BIOCH 305 Essential Elements of Biochemistry
1 - BIOCH 306 Essential Elements of Bioch. Lab.
3 - FD SC 214 Food Resources and Preservation
3 - Oral Communication Requirement 1
3 - Social Science Requirement 1
3 - Elective
16

NUTRITION AND DIETETICS CONCENTRATION

Junior Year
First Semester
4 - BIOSC 222 Human Anatomy and Phys. I
3 - FD SC 306 Food Service Operations
3 - FD SC 404 Food Preservation and Processing
2 - FD SC 407 Quantity Food Production
3 - NUTR 451 Human Nutrition
3 - Emphasis Area 1
3 - Elective
18

Second Semester
4 - BIOSC 223 Human Anatomy and Phys. II
3 - EX ST 301 Introductory Statistics
3 - NUTR 455 Nutrition and Metabolism
3 - Writing Intensive Requirement 1
3 - Elective
16

NUTRITION AND DIETETICS CONCENTRATION

Junior Year
First Semester
4 - BIOSC 222 Human Anatomy and Phys. I
3 - FD SC 306 Food Service Operations
3 - FD SC 404 Food Preservation and Processing
2 - FD SC 407 Quantity Food Production
3 - NUTR 451 Human Nutrition
3 - Emphasis Area 1
3 - Elective
18

Second Semester
4 - BIOSC 223 Human Anatomy and Phys. II
3 - EX ST 301 Introductory Statistics
3 - NUTR 455 Nutrition and Metabolism
3 - Writing Intensive Requirement 1
3 - Elective
16
Senior Year
First Semester
4 - FD SC 401 Food Chemistry I
2 - FD SC 491 Practicum
4 - MICRO 305 General Microbiology
4 - NUTR 424 Medical Nutrition Therapy I
2-3 Elective
16-17

Second Semester
4 - FD SC 402 Food Chemistry II
3 - FD SC 409 Total Quality Management for the Food and Packaging Industries
4 - MICRO 407 Food and Dairy Microbiology
4 - NUTR 425 Medical Nutrition Therapy II
3 - NUTR 426 Community Nutrition
18
130-135 Total Semester Hours

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 54.) The curriculum also provides the necessary prerequisites for graduate study. The Department of Forestry and Natural Resources offers graduate programs leading to the Master of Science, Master of Forest Resources, and Doctor of Philosophy degrees.

Freshman Year
First Semester
4 - BIOL 103 General Biology I
4 - CH 105 Beg. General and Organic Chemistry
3 - ENGL 101 Composition I
1 - FOR 101 Introduction to Forestry
3 - MTHSC 102 Intro. to Mathematical Analysis
15
Second Semester
4 - BIOL 104 General Biology II
3 - CP SC 120 Intro. to Information Technology
3 - ENGL 102 Composition II
3 - FOR 221 Wood Properties I
3 - Elective
16
Sophomore Year
First Semester
4 - CSENV 202 Soils
3 - FOR 205 Forestry I
3 - Literature Requirement
3 - Social Science Requirement
3 - Humanities Requirement
16
Second Semester
3 - COMM 250 Public Speaking
3 - FOR 206 Forestry Ecology
4 - PHYS 200 Introductory Physics
3 - Economics Requirement
3 - Elective
16
Forestry Summer Camp
2 - FOR 251 Forest Communities
4 - FOR 253 Forest Mensuration
1 - FOR 254 Forest Products
7
Junior Year
First Semester
3 - EX ST 301 Introductory Statistics
3 - FOR 302 Forest Biometrics
3 - FOR 304 Forest Resource Economics
4 - FOR 413 Integrated Forest Pest Management
3 - FOR 460 Silviculture I
3 - Minor
19
Second Semester
3 - ENGL 314 Technical Writing
3 - FOR 308 Remote Sensing and GIS in Forestry
3 - FOR 418 Forest Resource Valuation
3 - FOR 462 Silviculture II
3 - Minor
3 - Elective
18
Senior Year
First Semester
4 - FOR 314 Harvesting and Forestry Products
2 - FOR (E R) 416 Forest Policy and Admin.
3 - FOR 417 Forest Res. Mgt. and Regulation
3 - Minor
15
Second Semester
2 - FOR 406 Forest Watershed Management
3 - FOR 415 Forest Wildlife Management
2 - FOR 423 Current Issues in Natural Resources
2 - FOR 425 Forest Resource Management Plans
3 - Minor
14
136 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 is an excellent foundational degree 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.

Freshman Year
First Semester
5 - BIOL 110 Principles of Biology I
4 - CH 101 General Chemistry
3 - ENGL 101 Composition I
4 - MTHSC 106 Calculus of One Variable I
16
Second Semester
5 - BIOL 111 Principles of Biology II
4 - CH 102 General Chemistry
3 - ENGL 102 Composition II
4 - MTHSC 108 Calculus of One Variable II
16
Sophomore Year
First Semester
3 - CH 223 Organic Chemistry
1 - CH 227 Organic Chemistry Lab.
3 - GEN 302 Molecular and General Genetics
3 - PHYS 122 Physics with Calculus I
1 - PHYS 124 Physics Lab. I
3 - Computer Skills Requirement
14
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
3 - BIOL 103 General Biology I
2 - ENGL 101 Composition I
1 - HORT 101 Horticulture
3 - MTHSC 102 Intro. to Mathematical Analysis
3 - Computer Skills Requirement

Second Semester
3 - BIOSC 205 Plant Form and Function
1 - BIOSC 206 Plant Form and Function Lab.
2 - ENGL 102 Composition II
2 - EX ST 301 Introductory Statistics or
3 - MTHSC 101 Introduction to Probability
3 - Humanities Requirement E.2
3 - Social Science Requirement

Sophomore Year
First Semester
4 - CH 101 General Chemistry
3 - HORT 303 Plant Materials
3 - Business Requirement
3 - Oral Communication Requirement
3 - Social Science Requirement

Second Semester
4 - CH 102 General Chemistry
3 - HORT 304 Annuals and Perennials
3 - HORT 305 Plant Propagation
1 - HORT 306 Plant Propagation Techniques Lab.
3 - Humanities Requirement E.1

Summer
3 - HORT 271 Internship or
3 - HORT 471 Advanced Internship

Junior Year
First Semester
4 - CSENV 202 Soils
3 - Business Requirement
2 - Life Science Requirement
3 - Physical Science Requirement
3 - Plant Protection Requirement

Second Semester
3 - BIOSC 401 Plant Physiology
1 - BIOSC 402 Plant Physiology Lab.
1 - HORT 409 Seminar
3 - Horticulture Specialization Requirement
4 - Physical Science Requirement
3 - Plant Protection Requirement

Senior Year
First Semester
6 - Horticulture Specialization Requirement
3 - Life Science Requirement
3 - Writing Intensive Requirement
4 - Elective

Second Semester
3 - Departmental Requirement
6 - Horticulture Specialization Requirement
6 - Elective

127 Total Semester Hours

1 See General Education Requirements.
2 See advisor. Select from approved departmental list.
3 Internship may be completed in one or two semesters. Internship may be taken in the fall, spring, or summer after completing HORT 303. Prior approval is required, and a 2.0 grade-point ratio is required for registration.

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 biochemistry, 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 Molecular Biology Concentration is recommended for students planning postgraduate programs. Microbiology graduates may enter graduate school in microbiology, biochemistry, bioengineering, or related disciplines; they may enter a medical or dental school or pursue a career in one 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**

<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>5 - BIOL 110 Principles of Biology 1†</td>
</tr>
<tr>
<td>4 - CH 101 General Chemistry</td>
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<tr>
<td>3 - ENGL 101 Composition I</td>
</tr>
<tr>
<td>4 - MTHSC 106 Calculus of One Variable I</td>
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<td>16</td>
</tr>
</tbody>
</table>

**Second Semester**

| 5 - BIOL 111 Principles of Biology II† |
| 4 - CH 102 General Chemistry |
| 3 - ENGL 102 Composition II |
| 1 - MICRO 100 Microbes and Human Affairs |
| 3-4 - Mathematical Sciences Requirement† |
| 16-17 |

**Sophomore Year**

<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>3 - CH 223 Organic Chemistry</td>
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<tr>
<td>1 - CH 227 Organic Chemistry Lab.</td>
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<tr>
<td>1 - CP SC 120 Intro. to Information Technology</td>
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<tr>
<td>4 - MICRO 305 General Microbiology</td>
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<tr>
<td>3 - Literature Requirement‡</td>
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<tr>
<td>3 - Social Science Requirement§</td>
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<tr>
<td>17</td>
</tr>
</tbody>
</table>

**Second Semester**

| 3 - BIOCH 301 Molecular Biochemistry |
| 3 - CH 224 Organic Chemistry |
| 1 - CH 228 Organic Chemistry Lab. |
| 3 - Approved Requirement§ |
| 3 - Literature Requirement‡ |
| 3 - Social Science Requirement§ |
| 16 |

**Junior Year**

<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>3 - CH 313 Quantitative Analysis</td>
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<tr>
<td>1 - CH 317 Quantitative Analysis Lab.</td>
</tr>
<tr>
<td>4 - MICRO 401 Advanced Bacteriology</td>
</tr>
<tr>
<td>4-3 - Physics Requirement§</td>
</tr>
<tr>
<td>6-7 - Elective</td>
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</table>

<table>
<thead>
<tr>
<th>Second Semester</th>
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<tbody>
<tr>
<td>4 - MICRO 412 Bacterial Physiology</td>
</tr>
<tr>
<td>4 - MICRO 415 Microbial Genetics</td>
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<tr>
<td>4 - Physics Requirement§</td>
</tr>
<tr>
<td>3 - Social Science Requirement§</td>
</tr>
<tr>
<td>3-4 - Elective</td>
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<tr>
<td>18-19</td>
</tr>
</tbody>
</table>

**Senior Year**

<table>
<thead>
<tr>
<th>First Semester</th>
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</thead>
<tbody>
<tr>
<td>3 - ENGL 314 Technical Writing</td>
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<tr>
<td>14-13 - Approved Requirement§</td>
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<td>17-16</td>
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</tbody>
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<table>
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<tr>
<th>Second Semester</th>
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</thead>
<tbody>
<tr>
<td>4 - MICRO 411 Pathogenic Bacteriology</td>
</tr>
<tr>
<td>12 - Approved Requirement§</td>
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<td>16</td>
</tr>
</tbody>
</table>

134 Total Semester Hours

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‡ BIOL 103 may substitute for BIOL 110, and BIOL 104 may substitute for BIOL 111; the remaining 1-2 hours required must be satisfied by completing 1-2 extra hours in either biological sciences or microbiology.

§ Select from MTHSC 108, 101, or EX ST 101. MTHSC 108 is required for Microbiology—Molecular Biology majors.

† Select from PHYS 207/208 or 122/221/223.

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### MOLECULAR BIOLOGY CONCENTRATION

See Microbiology curriculum for Freshman year.

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### 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 service. 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 allow students to select courses to improve career preparation for specific industry segments. The food packaging emphasis area prepares students for this technically challenging field; the general packaging emphasis area allows students to concentrate in other specialty areas, such as environmental science or graphic communications.

Students changing majors to Packaging Science must have at least a 2.0 cumulative grade-point ratio.

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**Freshman Year**

<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>4 - BIOL 103 General Biology I</td>
</tr>
<tr>
<td>4 - CH 101 General Chemistry</td>
</tr>
<tr>
<td>3 - ENGL 101 Composition I</td>
</tr>
<tr>
<td>1 - PKGSC 101 Packaging Orientation†</td>
</tr>
<tr>
<td>3 - Mathematical Sciences Requirement‡</td>
</tr>
<tr>
<td>15</td>
</tr>
</tbody>
</table>

**Second Semester**

| 4 - BIOL 104 General Biology II |
| 4 - CH 102 General Chemistry |
| 3 - ENGL 102 Composition II |
| 4 - MTHSC 106 Calculus of One Variable I |
| 2 - PKGSC 102 Intro. to Packaging Science‡ |
| 1 - Elective |
| 18 |
Sophomore Year
First Semester
3 - CH 223 Organic Chemistry
1 - CH 227 Organic Chemistry Lab.
3 - CP SC 120 Intro. to Information Technology
4 - PHYS 207 General Physics 1
4 - PKGSC 202 Packaging Materials and Manuf. 1
3 - THRD 180 Introduction to Technical Drawing and Computer-Aided Drafting
18

Second Semester
3 - FD SC 214 Food Resources and Preservation
4 - G C 104 Graphic Communications I
3 - PKGSC 204 Container Systems
1 - PKGSC 206 Container Systems Lab.
3 - Emphasis Area 2
3 - Humanities Requirement E.1 17

Summer
0 - CO-OP 101 Cooperative Education 5

Junior Year
First Semester
3 - COMM 250 Public Speaking
3 - PKGSC 368 Packaging and Society
3 - PKGSC 404 Mechanical Properties of Packages and Principles of Package Evaluation
2 - PKGSC 454 Package Evaluation Lab.
3 - Emphasis Area 2
3 - Social Science Requirement 6
17

Second Semester
3 - ENGL 314 Technical Writing
4 - MICRO 305 General Microbiology
3 - PKGSC 401 Packaging Machinery
3 - PKGSC 440 Packaging for Distribution
3 - Emphasis Area 2
16

Senior Year
First Semester
3 - EX ST 301 Introductory Statistics
3 - PKGSC 464 Food Packaging Systems
1 - PKGSC 466 Food Packaging Systems Lab.
3 - Emphasis Area 2
3 - Humanities Requirement E.2 5
3 - Social Science Requirement 6
16

Second Semester
3 - PKGSC 416 Appl. of Polymers in Packaging
3 - PKGSC 420 Package Design and Development
3 - Emphasis Area 2
9 - Elective
18

135 Total Semester Hours

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 professional 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 68 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. 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 Pharmacy 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 - ENGL 101 Composition I
3 - MTHSC 101 Introduction to Probability or
3 - HIST 365 English Cultural History
3 - PSYCH 201 Introduction to Psychology
17

Second Semester
4 - BIOL 104 General Biology II
4 - CH 102 General Chemistry
3 - ECON 200 Economic Concepts
3 - ENGL 102 Composition II
4 - MTHSC 106 Calculus of One Variable I or
3 - MTHSC 102 Intro. to Math. Analysis
17-18

Second Year
First Semester
3 - CH 223 Organic Chemistry
1 - CH 227 Organic Chemistry Lab.
4 - MICRO 305 General Microbiology
3 - PHYS 207 General Physics or
3 - Physiology Requirement
4 - PHYS 207 General Physics I
3 - Fine Arts Requirement
4 - Foreign Language Requirement or
3 - Liberal Arts Requirement
17-19

Second Semester
3 - CH 224 Organic Chemistry
1 - CH 228 Organic Chemistry Lab.
3 - COMM 150 Intro. to Speech Communication
3 - MTHSC 301 Stat. Theory and Methods I or
3 - EX ST 301 Introductory Statistics
4 - PHYS 208 General Physics II
4 - Foreign Language Requirement or
3 - Liberal Arts Requirement
17-18

68-72 Total Semester Hours

1 A C or better is required in this course for graduation. See advisor.
2 PHYS 122 and 124 may be substituted.
3 General Education Requirements
4 Students are required to complete at least one 15-week period (six months preferred) of Cooperative Education.
5 AP AB 202 or ECON 211, and three credits selected from HIST 101, 102, 172, 173, PO SC 101, PSYCH 201, R S (SOC 401, SOC 201, GEOG 101, 103.

The Medical University of South Carolina requires a math course. The University of South Carolina requires a history course. To be eligible for both professional schools, the coursework not taken this semester must be taken during a summer term.

The Medical University of South Carolina requires MICRO 305. The University of South Carolina requires a physiology course. To be eligible for both professional schools, the coursework not taken this semester must be taken during a summer term.
The University of South Carolina requires credit for two semesters of a foreign language or exemption by examination. Students exempting the foreign language must take a liberal arts requirement. Either the foreign language or the liberal arts requirement meets the Medical University of South Carolina requirement.

**PREREHABILITATION SCIENCES**

Prerehabilitation 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 68-90 semester hours of undergraduate coursework dependent on the concentration. In addition, students must apply to a professional school for acceptance into its program.

Because preparation of some of the concentrations requires three years, students are advised to select a major with similar requirements after consultation with the Prerehabilitation 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 electives. These 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 Prerehabilitation Sciences program are considered to be enrolled in a degree-seeking program.

**First Year**

**First Semester**
- 4 - BIOL 101 General Biology I
- 4 - CH 101 General Chemistry
- 3 - ENGL 101 Composition I
- 3 - PSYCH 201 Introduction to Psychology
- 3-4 - Mathematical Sciences Requirement

**Second Semester**
- 4 - BIOL 104 General Biology II
- 4 - CH 102 General Chemistry
- 3 - ENGL 102 Composition II
- 3 - Humanities Requirement
- 3 - Mathematical Sciences Requirement

**Second Year**

**First Semester**
- 4 - BIOSC 222 Human Anatomy and Phys. I
- 4 - PHYS 207 General Physics I
- 3 - PSYCH 340 Lifespan Developmental Psych.
- 3 - Humanities Requirement
- 3 - Literature Requirement

**Second Semester**
- 4 - BIOSC 223 Human Anatomy and Phys. II
- 3 - OMM 150 Intro. to Speech Communication
- 3 - CP SC 120 Intro. to Information Technology
- 3 - HIST 365 English Cultural History
- 4 - PHYS 208 General Physics II

**Third Year**

68-90 Total Semester Hours

The University of South Carolina requires credit for two semesters of a foreign language or exemption by examination. Students exempting the foreign language must take a liberal arts requirement. Either the foreign language or the liberal arts requirement meets the Medical University of South Carolina requirement.

**PREVETERINARY MEDICINE**

Under a regional plan, the South Carolina Preveterinary 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 Preveterinary 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 premedical level; they may not be survey courses.)

To be in 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 minimal 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 - ENGL 101 Composition I
- 3 - HORT 101 Horticulture
- 3 - MTHSC 102 Intro. to Mathematical Analysis

**Second Semester**
- 3 - BIOSC 205 Plant Form and Function
- 1 - BIOSC 206 Plant Form and Function Lab.
- 3 - ENGL 102 Composition II
- 3 - EX ST 301 Introductory Statistics or
- 3 - MTHSC 101 Introduction to Probability
- 3 - Humanities Requirement
- 3 - Social Science Requirement

**Sophomore Year**

**First Semester**
- 4 - CH 101 General Chemistry
- 3 - HORT 212 Introduction to Turfgrass Culture
- 1 - HORT 213 Turfgrass Culture Lab.
- 3 - HORT 303 Plant Materials
- 3 - Oral Communication Requirement

**Second Semester**
- 4 - CH 102 General Chemistry
- 3 - Business Requirement
- 3 - Humanities Requirement
- 3 - Social Science Requirement
- 3 - Writing Intensive Requirement
Summer
3 - HORT 271 Internship\(^1\) or
3 - HORT 471 Advanced Internship\(^1\)

Junior Year
First Semester
4 - CSENV 202 Soils
3 - Physical Science Requirement\(^1\)
3 - Plant Protection Requirement\(^2\)
4 - Elective
14

Second Semester
3 - BIOSC 401 Plant Physiology
1 - BIOSC 402 Plant Physiology Lab.
3 - Business Requirement\(^1\)
3 - Life Science Requirement\(^1\)
4 - Physical Science Requirement\(^2\)
3 - Plant Protection Requirement\(^2\)
17

Senior Year
First Semester
3 - HORT 412 Turfgrass Management
6 - Horticulture Specialization Requirement\(^1\)
4 - Life Science Requirement\(^1\)
3 - Soils Requirement\(^1\)
16

Second Semester
3 - HORT 420 Contemporary Issues in Turfgrass Science and Management
3 - Horticulture Specialization Requirement\(^1\)
3 - Soils Requirement\(^2\)
6 - Elective
17

127 Total Semester Hours
\(^*\)See General Education Requirements.
\(^*\)See advisor.
Internship must be completed in one or two semesters. Internship may be done fall, spring, or summer after completing HORT 212/211. Prior approval is required, and a 2.0 grade-point ratio is required for registration.

WILDLIFE AND FISHERIES BIOLOGY
Bachelor of Science
Increased interest in conservation of natural resources and the environment and demand for seafood products has 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 undergraduate curriculum 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, six credit hours are available for field train-}

Senior Year
First Semester
3 - WFB 416 Fishery Biology
3 - WFB 430 Wildlife Conservation Policy
3 - Approved Requirement\(^1\)
3 - Botany Requirement\(^4\)
3 - Ecology Requirement\(^1\)
15

Second Semester
3 - COMM 250 Public Speaking
3 - WFB 412 Wildlife Management
3 - WFB 440 Non-game Wildlife Management
1 - WFB 499 Wildlife Biology and Fishes Sem.
6 - Elective
16
124 Total Semester Hours
\(^*\)See General Education Requirements. (EX ST 301 may not be used to satisify the Mathematical Sciences Requirement.)
\(^*\)Three credits from BIOSC 203 or 103, and three credits from 304 or 305.
\(^*\)Nine credits selected from departmental list.
\(^*\)At least three credits from BIOSC 320, 406/407, FOR 205.
\(^*\)Select from BIOSC 441, 443, 446, FOR 315.
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
Anthropology
Athletic Leadership
Beef Cattle Production— not open to Animal and Veterinary Sciences majors
Biochemistry
Bioengineering
Biological Sciences
Business Administration
Chemistry
Cluster
Communication Studies
Communications
Computer Science
Crop and Soil Environmental Science
Early Intervention
East Asian Studies
Economics
Education
English
Entomology
Entrepreneurship
Environmental Engineering
Environmental Science and Policy
Film Studies
Financial Management
Fine Arts
Food Science
Forest Products
Forest Resource Management
Geography
Geology
Great Works
Health Science
History
Horse Production— not open to Animal and Veterinary Sciences majors
Horticulture— not open to Turfgrass majors
Human Resource Management
International Politics
Legal Studies
Management
Mathematical Sciences
Microbiology
Military Leadership
Modern Languages
Music
Natural Resource Economics
Operations Management
Packaging Science
Parks, Recreation, and Tourism Management
Philosophy
Physics
Political Science
Poultry Science— not open to Animal and Veterinary Sciences majors
Psychology
Public Policy
Religion
Science and Technology in Society
Screenwriting
Sociology
Spanish-American Area Studies
Textiles
Theatre
Turfgrass— not open to Horticulture majors
Urban Forestry
Wildlife and Fisheries Biology
Women’s Studies
Writing

See pages 35–38 for details.
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 two years of 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 classes 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.

In addition to the facilities housed on the Clemson campus, the College offers students the opportunity to study at two off-campus sites. The center at the College of Charleston is available to third- and fourth-year architecture and fourth-year landscape architecture students for a semester's study while earning credit from both Clemson University and the College of Charleston. The Charles E. Daniel Center for Building Research and Urban Studies in Genoa, Italy, provides graduate students and upper division undergraduates in the above mentioned programs a semester's residence in an intensive program of study and travel while earning full credit toward their degrees.

Architecture Charleston Program

Located in Charleston, South Carolina, this program is available to qualified undergraduates in Architecture, Art, Construction Science and Management, and Landscape Architecture. Studio work is oriented toward design within the historic seaport setting. Students also enroll in classes at the University of Charleston campus. The program is enriched by visiting scholars and professionals from the area.

Architecture Overseas Program

The Daniel Center for Urban Studies in Genoa, Italy, is available to qualified 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 or 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.

Change of Major

When space is available, a student may change majors to one of the degree programs in the School of Design and Building with a 2.5 cumulative grade-point ratio, at least 30 credit hours earned, and design aptitude evidenced by a portfolio review (in the case of the Architecture discipline) or by approval of the department chair.

Advancement in Architecture

Students enrolled in second-, third-, or fourth-year design studies 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 students, 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 educational 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 Bachelor of Arts in Communication Studies, English, History, Modern Languages, and Philosophy requires 130 total semester credits; Language and International Trade requires 129-137, depending on the concentration. Of these, at least 12 credits must be earned in humanities courses numbered 300 or higher (A H 210, MUSIC 210, and THEA 210 excepted). All majors in the School of Humanities (with the exception of English majors) must earn 12 credits in social science courses numbered 300 or higher. English majors must earn at least six credits in this category. The humanities for this purpose are considered to include art and architectural history, communication studies (except 362 and 364), English (except 304, 312, 314, 316, 333, 334, 335, 485, 490, 495), languages, music, philosophy, religion, theatre (except 377, 487, and 497), and women's studies, as well as courses entitled Humanities. The social sciences for this purpose are considered to include agricultural and applied economics, anthropology, economics, geography, history, political science, psychology, and sociology. 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 State 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.
ARCHITECTURE
Bachelor of Arts
Architects have a creative responsibility of designing the buildings which shape our physical environment. To understand the humanistic, economic, and technological nature of environmental problems, students must have a sound general education. Subsequent professional education must be preparation for a life of continuing change in which the problems to be solved will be large and small, for every sort of function, in every type of climate, and for every condition of budget.

Architectural Registration/Licensure
Most states require that an individual intending to become an architect hold an accredited degree. There are two types of degrees that are accredited by the National Architectural Accrediting Board: (1) the Bachelor of Architecture, which requires a minimum of five years of study, and (2) 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 professional degrees are structured to educate those who aspire to registration/licensure as architects.

The four-year preprofessional degree, where offered, is not accredited by NAAB; it is useful for those wishing a foundation in the field of architecture, as preparation for either continued education in a professional degree program, or for employment opportunities in architecturally related areas.

Freshman Year
First Semester
1. ARCH 151 Collaborative Studio I
2. ENGL 101 Composition I
3. HIST 172 Western Civilization
4. MTHSC 106 Calculus of One Variable I
5. Foreign Language Requirement
18
Second Semester
1. ARCH 152 Collaborative Studio II
2. ENGL 102 Composition II
3. HIST 173 Western Civilization
4. MTHSC 301 Stat. Theory and Methods 1
5. Foreign Language Requirement
1. Elective
17

Sophomore Year
First Semester
2. ARCH 251 Collaborative Studio III
3. ENGL 207 Survey of World Literature I
4. PHYS 207 General Physics I
5. Foreign Language Requirement
17
Second Semester
1. A H 102 Survey of Art and Art. History II
2. ARCH 252 Collaborative Studio IV
3. ENGL 208 Survey of World Literature II
4. PHYS 208 General Physics II
5. Foreign Language Requirement
17

Junior Year
First Semester
1. ARCH 351 Architecture Studio I
2. C S M 201 Structures I
3. History and Theory Requirement
4. Technology Requirement
5. Minor
18
Second Semester
1. ARCH 352 Architecture Studio II
2. C S M 202 Structures II
3. History and Theory Requirement
4. Technology Requirement
5. Minor
18

Senior Year
First Semester
1. ARCH 451 Architecture Studio III
2. C S M 304 Environmental Systems I
3. Humanities Seminar
4. Minor
5. Elective
18
Second Semester
1. ARCH 452 Architecture Studio IV
2. Minor
3. Elective
18
4. Total Semester Hours
141

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. Communication Studies examines communication in a variety of contexts. Students will select an emphasis area that is germane to individual career interests: Organizational Studies, Medial Studies, or Relational/Cultural Studies.

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 all the following courses prior to the semester of application: ENGL 101 and 102, HIST 172 or 173, one of the mathematical sciences requirements, the computer skills requirement, and COMM 201 (with a C or better). Students requesting a transfer into the Communication Studies program with fewer than 50 hours must have a grade-point ratio of 2.3 or higher, students with 50 hours or more 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 Stroud Tower.

COMM 250 or 251 is required of all Communication Studies majors.

I. Core Courses (15 hours)
   1. COMM 201, 301, 310, 360 or 361, 495

II. Emphasis Areas (12 hours)
   1. Organizational Studies—COMM 364, 464, and two courses from COMM 367, 368, 460.
   2. Media Studies—COMM 302, 402, and two courses from COMM 300, 320, ENGL 357.
   3. Relational/Cultural Studies—COMM 348, 480, and two courses from COMM 330, 350, 455.

III. General Requirements (9 hours)
   Any 300- or 400-level communication studies course. Additional courses taken under an emphasis area may also be used to fulfill this requirement.

36 total hours

Advanced Social Science Requirement (12 hours)

Electives as needed to complete 130 hours

Freshman Year
First Semester
1. ENGL 101 Composition I
2. HIST 172 Western Civilization
3. Foreign Language Requirement
4. Elective
17
Second Semester
1. ENGL 102 Composition II
2. HIST 173 Western Civilization
3. Foreign Language Requirement
4. Elective
17

Sophomore Year
First Semester
1. COMM 250 Public Speaking or
2. COMM 251 Business and Prof. Speaking
3. Computer Skills Requirement
4. Foreign Language Requirement
5. Literature Requirement
6. Elective
18
Second Semester
1. Advanced Social Science Requirement
2. Foreign Language Requirement
3. Literature Requirement
4. Major and Minor Areas
5. Elective
16
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
3 - A A H 210 Intro. to Art and Architecture
3 - ARCH 201 Introduction to Architecture
3 - ENGL 101 Composition I
4 - MTHSC 106 Calculus of One Variable I
4 - PHYS 207 General Physics I

Second Semester
3 - CS M 100 Introduction to Construction Science and Management
3 - CP SC 120 Intro. to Information Technology
3 - ENGL 102 Composition II
3 - MTHSC 301 Stat. Theory and Methods I
4 - PHYS 208 General Physics II

Second Semester
134 Total Semester Hours

This department is advised to take PHYS 210 and MTHSC 111.

Sophomore Year

First Semester
2 - B E 221 Surveying for Soil and Water Resources
C - CS M 201 Structures I
C - CS M 203 Materials and Methods of Const. I
3 - ENGL 211 Principles of Microeconomics
3 - Literature Requirement
3 - Elective

Second Semester
2 - ACC 201 Financial Accounting Concepts
C - CS M 202 Structures II
C - CS M 204 Contract Documents
C - CS M 205 Materials and Methods of Const. II
3 - COMM 150 Intro. to Speech Communication or
3 - COMM 250 Public Speaking
3 - ECON 212 Principles of Macroeconomics
3 - Elective

Junior Year

First Semester
C - CS M 301 Structures III
C - CS M 303 Soils and Foundations
C - CS M 304 Environmental Systems I
C - CS M 351 Construction Estimating
3 - ENGL 304 Business Writing or
3 - ENGL 314 Technical Writing
3 - Elective

Second Semester
C - CS M 305 Environmental Systems II
C - CS M 352 Construction Scheduling
C - CS M 353 Construction Estimating II
C - LAW 322 Legal Environment of Business
C - MGT 307 Personnel Management
3 - Elective

Senior Year

First Semester
C - CS M 411 Safety in Building Construction
C - CS M 453 Construction Project Management
C - CS M 461 Construction Economics Seminar
6 - Major Requirement

Second Semester
C - CS M 454 Construction Capstone
C - CS M 491 CSIM Internship and Examination
6 - Major Requirement
3 - Elective

134 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 humane study; and prepare for advanced work in English language, literature, and related disciplines.

The program of study consists of courses stipulated in the map below, which includes 31 semester hours of English, arranged as follows:

Group I—Seven credits from ENGL 190, 310, and 411 or 412.

Group II—Three credits from ENGL 405, 407, 408, 409, 410, 412, 413, 414.

Group III—Three credits from ENGL 406, 415, 416, 417, 418.

Group IV—Three credits from ENGL 422, 423, 424, 425.

Group V—Three credits from ENGL 400, 401, 435, 436, 440, (COMM) 491, (COMM) 492.

Group VI—Three credits from ENGL 353, 380, (HUM) 456, 482, 483.

Group VII—Three credits from ENGL 312, 345, 346, 348.

Group VIII—Six additional credits from 300- and 400-level courses, at least three credits from the 400 level.

Three 400-level credits must be from the department's variable list of "Senior Seminar" offerings.

Proficiency in composition is required of all English majors and minors. Those with writing problems must overcome them in the Writing Laboratory.

Electives are added as necessary to meet the minimum number of 130 hours required for graduation.

*No course may be used to satisfy both major and minor requirements.

Freshman Year

First Semester
3 - ENGL 101 Composition I
3 - HIST 172 Western Civilization
4 - Foreign Language Requirement
3 - Mathematical Sciences Requirement
4 - Science Requirement

Second Semester
3 - ENGL 102 Composition II
3 - HIST 173 Western Civilization
4 - Foreign Language Requirement
3 - Mathematical Sciences Requirement
4 - Science Requirement

Sophomore Year

First Semester
1 - ENGL 190 The Study of English
3 - Computer Skills Requirement
3 - Fine Arts Requirement
3 - Foreign Language Requirement
3 - Literature Requirement
3 - Oral Communication Requirement

Notes:
1. ENGL 101 and 102 must be completed in the freshman year.
2. A minimum of 800 hours of construction experience will be required prior to graduation.
Second Semester
3 - ENGL 310 Writing About Literature
3 - Foreign Language Requirement1
3 - Literature Requirement4
6 - Major and Minor Areas
3 - Philosophy/Religion Requirement2
18

Junior Year
First Semester
3 - History Requirement2
9 - Major and Minor Areas
3 - Writing Intensive Requirement1
15

Second Semester
9 - Major and Minor Areas
6 - Elective
15

Senior Year
First Semester
3 - ENGL 496 Senior Seminar
3 - Advanced Social Science Requirement8
9 - Major and Minor Areas
2 - Elective
17

Second Semester
9 - Major and Minor Areas
6 - Elective
15
130 Total Semester Hours

1The equivalent of two years (through 202) in the same foreign language is required.
2See advisor.
3See General Education Requirements.
4CP SC 101, 111, 120, or 210.
6ENGL 203, 204, 205, 206, 207, 208, or H210.
7PHIL 101, 102, 103, REL 101, or 102.
8Select any 300- or 400-level social science class.

HISTORY
Bachelor of Arts
The recommended program consists of the required courses in the basic curriculum, plus GEOG 103 or 306 (with consent of instructor) and 30 additional credits in history. These additional credits must include two courses at the 400 level, one of which must be HIST 490, and at least one course each at the 300 or 400 level in United States, European, African, Asian, or Latin American history. Consult advisor for a detailed list. Additional electives are added as needed to meet the minimum of 130 semester hours required for graduation.

Pre-law students majoring in History should consult the departmental advisor for a recommended program.

LANDSCAPE ARCHITECTURE
Bachelor of Landscape Architecture

As practicing design professionals, landscape architects base their land area design plans on very highly developed design standards and a keen awareness of the environmental and cultural context of the site. Landscape architects are active in the design of regional and city plans, urban designs, urban plazas, city parks and playgrounds, athletic fields, marinas, and other recreational areas. They design housing areas of all types, industrial and office parks, medical and academic campuses, parkways and bikeways, courtyards and backyards.

To succeed in landscape architecture, individuals must first enjoy creating something new or re-creating something old. They must also see the study of landscape architecture as a way to improve the environment through an enlightened application of design on the land.

The five-year program leads to the professional degree, Bachelor of Landscape Architecture. Students can use the professional support course requirements to tailor the degree to an area of specialization such as construction, architecture, horticulture, business, city and regional planning, etc. Seniors who have been accepted into Clemson's graduate program in City and Regional Planning may fulfill the Professional Support Requirement with C R P courses, which will also count toward the requirements for the Master of City and Regional Planning degree. Following completion of the Bachelor of Landscape Architecture degree, most states require a two- or three-year work experience before taking the professional license examination.

Freshman Year
First Semester
3 - ENGL 101 Composition I
3 - HIST 172 Western Civilization
3 - MTHSC 101 Introduction to Probability2
4 - Foreign Language Requirement1
4 - Science Requirement2
17

Second Semester
3 - ENGL 102 Composition II
3 - HIST 173 Western Civilization
3 - MTHSC 102 Intro. to Mathematical Analysis1
4 - Foreign Language Requirement1
4 - Science Requirement2
17

Sophomore Year
First Semester
3 - Computer Skills Requirement2
3 - Foreign Language Requirement
3 - Literature Requirement1
9 - Major and Minor Areas
18

Second Semester
6 - Advanced Humanities Requirement4
3 - Foreign Language Requirement
3 - Literature Requirement1
4 - Elective
16

Junior Year
First Semester
9 - Major and Minor Areas
3 - Writing Intensive Requirement1
3 - Elective
15

Second Semester
12 - Major and Minor Areas
3 - Oral Communication Requirement1
15

Senior Year
First Semester
6 - Advanced Humanities Requirement4
9 - Major and Minor Areas
2 - Elective
17

Second Semester
9 - Major and Minor Areas
6 - Elective
15
130 Total Semester Hours

1Students may pursue alternate sequences such as the following: MTHSC 101 and 106 or 203; 102 and 207; or 106 and 109, 207, 301.
2See General Education Requirements.
3ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H210.
4See advisor.

Sophomore Year
First Semester
3 - A H 101 Survey of Art and Arch. History I
3 - GEOG 305 Cultural Geography
6 - LARCH 215 Basic Design III
3 - Art Requirement1
3 - Oral Communication Requirement1
18
Second Semester
3 - A H 102 Survey of Art and Arch. History II
3 - AG M 301 Soil and Water Conservation
6 - LARCH 252 Basic Design IV
3 - LARCH 262 Landscape Arch. Technology I
3 - Writing Intensive Requirement
18

Maysemester
3 - Off Campus Travel Requirement

Junior Year
First Semester
3 - A H 416 History of Landscape Architecture
2 - B E 221 Surveying for Soil and Water Res.
3 - HORT 303 Plant Materials
6 - LARCH 351 Landscape Arch. Design Studio I
3 - LARCH 362 Landscape Arch. Technology II
17

Second Semester
3 - HORT 101 Horticulture
4 - HORT 461 Problems in Landscape Design
6 - LARCH 352 Landscape Arch. Technology I
3 - Computer-Aided Design Requirement
16

Summer
1 - LARCH 293 Field Studies Internship or
   1 - LARCH 493 Prof. Office Internship

Senior Year
First Semester
6 - LARCH 451 Landscape Arch. Design III
3 - LARCH 462 Landscape Arch. Technology III
3 - Humanities Requirement E.1
3 - Elective
15

Second Semester
6 - LARCH 452 Landscape Arch. Design IV
3 - LARCH 581 Landscape Arch. Prof. Practice
6 - Elective
15

Summer
1 - LARCH 293 Field Studies Internship or
   1 - LARCH 493 Prof. Office Internship

Professional Year
First Semester
15 - Professional Support Requirement
15

Second Semester
6 - LARCH 552 Landscape Arch. Design VI
7 - Professional Support Requirement
13

167 Total Semester Hours

Languages and International Health
Bachelor of Science
The Bachelor of Science program in Language and International Health is jointly administered by the Department of Languages and the Department of Public Health Sciences in the College of Health, Education, and Human Development. Students acquire knowledge in public health theory and practice, including the history and philosophy of public health and medicine; the organization, management, and financing of health services; the social and behavioral aspects of health, epidemiology, health evaluation methods, and health communications. Students also acquire communicative competence in Spanish and a familiarity with Hispanic cultures, literatures, health environments, and multicultural issues. The program requires study abroad and the completion of a practicum in a Spanish-speaking country. Graduates will be qualified to assume positions in a variety of settings including integrated hospital systems, consulting firms, managed care organizations, pharmaceutical companies, and well as multicultural community centers. They can also pursue graduate degrees in community health, epidemiology/biostatistics, health administration, health systems research, and Spanish.

Freshman Year
First Semester
4 - BIOL 103 General Biology I
3 - CP SC 120 Intro. to Information Technology
3 - ENGL 101 Composition I
3 - HLTH 298 Human Health and Disease
1 - L&IT 127 Intro. to Language and Inter. Trade
3 - SPAN 202 Intermediate Spanish
17

Second Semester
4 - BIOL 104 General Biology II
3 - ENGL 102 Composition II
3 - HLTH 202 Introduction to Public Health
3 - SPAN 305 Inter. Spanish Conv. and Comp. 1
3-4 Mathematical Sciences Requirement
16-17

Sophomore Year
First Semester
4 - BIOSC 222 Human Anatomy and Phys. I
3 - EX ST 301 Introductory Statistics or
3 - MTHSC 301 Statistical Theory and Methods
3 - SPAN 302 Inter. Spanish Grammar and Comp.
3 - Oral Communication Requirement
3 - Social Science Requirement
16

Second Semester
4 - BIOSC 223 Human Anatomy and Phys. II
3 - EN SP 200 Intro. to Environmental Science or
3 - NUTR 203 Principles of Human Nutrition
3 - HLTH 240 Determinants of Health Behavior
3 - SPAN 415 Spanish for Health Professionals
3 - Emphasis Area Requirement
16

Junior Year
First Semester
3 - ENGL 316 Writing and International Trade
3 - HLTH 303 Public Health Communication
3 - HLTH 480 Community Health Promotion
3 - SPAN 308 Hispanic World: Latin America or
3 - SPAN 318 Spanish Through Culture
3 - Emphasis Area Requirement
18

Second Semester
3 - HLTH 315 Social Epidemiology
3 - HLTH 490 Research and Evaluation Strategies for Public Health
3 - PSYCH 201 Introduction to Psychology
3 - SPAN 418 Technical Spanish for Health Management Professionals
3 - SPAN 435 Contemporary Hispanic Culture
15

Summer
3 - L&IT 400 L&IT Internship or
3 - L&IT 401 L&IT Practicum

Senior Year
First Semester
3 - HLTH 380 Epidemiology
3 - HLTH 440 Managing Health Service Org.
3 - HLTH 470 International Health
3 - SPAN 409 Comprehensive Writing in Spanish
3 - SPAN 419 Health and the Hispanic Comm.
3 - Elective
18

Second Semester
3 - HLTH 498 Improving Population Health
3 - PHIL 326 Science and Values
3 - SPAN 311 Survey of Spanish-American Lit.
3 - Emphasis Area Requirement
4 - Elective
16

135-136 Total Semester Hours

1Students are expected to have completed the first three semesters of elementary language in high school or Clemson summer sessions before the first semester of freshman year.
2Select from MTHSC 101, 102, 106.
3See General Education Requirements.
4See advisor. Select from the following emphasis areas: Health Systems or Community Development.
5Mandatory student internship between junior and senior years in a Hispanic country.

BIO101/102, 103/104, or PHYS 207/208 may be substituted.
MTHSC 106 may substitute for MTHSC 102. MTHSC 301 may substitute for EX ST 301.
See General Education Requirements.
Any 200-level ART course.
Select from approved departmental list or as approved in writing by advisor and department chair.
ARCH 426, 427, 428, LARCH 428, or other computer-aided design course as approved.

College of Architecture, Arts, and Humanities

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LANGUAGE AND INTERNATIONAL TRADE
Bachelor of Arts
The Bachelor of Arts program in Language and International Trade expects students to acquire communicative competence in the foreign language; a familiarity with specific peoples, cultures, literatures, and business environments; and the knowledge and skills to pursue graduate studies or careers in business.

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 option (Applied International Economics, International Trade, Textiles, or Tourism).

A summer internship between the junior and senior years gives students the opportunity to apply classroom learning to a business/industrial work environment. Language and International Trade majors are also encouraged to participate in Study Abroad programs to increase language proficiency.

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 and the nation.

In addition to the curriculum requirements outlined below, students will be required, as a condition of graduation, to pass a noncredit examination to determine their language competency. The examination will be taken in the student’s last full semester at the University.

Freshman Year
First Semester
1 4 - CHIN 101 Elementary Chinese or 1
2 4 - JAPN 101 Elementary Japanese 1
3 3 - CP SC 120 Intro. to Information Technology
4 3 - ENGL 101 Composition I
5 1 - L&IT 127 Intro. to Language and Intercultural Studies
6 3 - MTHSC 102 Intro. to Mathematical Analysis
7 4 - Science Requirement 1
8 15
9
10 Second Semester
1 - CHIN 102 Elementary Chinese or 1
2 - FR 102 Elementary French or 1
3 - GER 102 Elementary German or 1
4 - JAPN 102 Elementary Japanese or 1
5 - SPAN 102 Elementary Spanish
6 3 - ENGL 102 Composition II
7 3 - HIST 172 Western Civilization
8 3 - MTHSC 207 Multivariable Calculus
9 4 - Science Requirement 1
10 17
11 1
12

1 Students in language concentrations other than Chinese and Japanese are expected to have completed the first semester of elementary language in high school or in a Clemson summer session before the first semester of the freshman year.
2 See General Education Requirements.

APPLIED INTERNATIONAL ECONOMICS CONCENTRATION
Sophomore Year
First Semester
3 3 - AP EC 202 Agricultural Economics
4 3 - CHIN 201 Intermediate Chinese or 3
5 3 - FR 201 Intermediate French or 3
6 3 - GER 201 Intermediate German or 3
7 3 - JAPN 201 Intermediate Japanese or 3
8 3 - SPAN 201 Intermediate Spanish
9 3 - COMM 250 Public Speaking or 3
10 - COMM 250 Business and Prof. Speaking
11 - ECON 212 Principles of Macroeconomics
12 - Literature Requirement 3
13 - Elective
14 18
Second Semester
3 - ACCT 201 Financial Accounting Concepts
4 - CHIN 202 Intermediate Chinese or 4
5 - FR 202 Intermediate French or 4
6 - GER 202 Intermediate German or 4
7 - JAPN 202 Intermediate Japanese or 4
8 - SPAN 202 Intermediate Spanish
9 3 - GEG 103 World Regional Geography
10 3 - HIST 173 Western Civilization
11 6 - Elective
12 18
Junior Year
First Semester
3 - CHIN 305 Chinese Conv. and Comp. I or 3
4 - FR 305 Inter. French Conv. and Comp. I or 4
5 - GER 305 Inter. Ger. Conv. and Comp. or 5
6 - JAPN 305 Japanese Conv. and Comp. or 6
7 - SPAN 305 Inter. Span. Conv. and Comp. I or 7
8 3 - ENGL 316 Writing and International Trade
9 - MKT 301 Principles of Marketing
10 - Advanced Social Science Requirement 3
11 - Civilization Requirement 3
12 15
Second Semester
3 - CHIN 306 Chinese Conv. and Comp. II or 3
4 - FR 411 Adv. French Conv. and Comp. or 4
5 - GER 411 Studies in the German Lang. I or 5
6 - JAPN 411 Studies in the Japanese Lang. I or 6
7 - SPAN 411 Adv. Spanish Conv. and Comp. or 7
8 3 - CHIN 316 Chinese for International Trade I or 3
9 - FR 316 French for International Trade I or 9
10 - GER 316 German for Interc. Trade I or 10
11 - JAPN 316 Japanese for Interc. Trade I or 11
12 - SPAN 316 Spanish for Interc. Trade I or 12
13 3 - EX ST 462 Statistics Applied to Economics
14 - MKT 427 International Marketing
15 - Foreign Language 300/400-level Requirement 4
16 15
Summer
3 - L&IT 400 L&IT Internship or 3
4 - L&IT 401 L&IT Practicum
17

Senior Year
First Semester
3 - AP EC 409 Commodity Futures Markets
4 - CHIN 416 Chinese for Inter. Trade II or 4
5 - FR 416 French for International Trade II or 5
6 - GER 416 German for Interc. Trade II or 6
7 - JAPN 416 Japanese for Interc. Trade II or 7
8 - SPAN 416 Spanish for Interc. Trade II
9 3 - MKT 423 Promotional Strategy
10 3 - Foreign Language 300/400-level Requirement 4
11 3 - Elective
12 14
Second Semester
3 - AP EC 420 World Agricultural Trade
4 - ECON 410 International Economics or 4
5 - ECON 412 International Microeconomics
6 - Fine Arts Requirement 3
7 - Foreign Language 300/400-level Requirement 4
8 3 - Elective
9 15
10 129-133 Total Semester Hours
11 1
12

INTERNATIONAL TRADE CONCENTRATION
Sophomore Year
First Semester
3 - CHIN 201 Intermediate Chinese or 3
4 - FR 201 Intermediate French or 4
5 - GER 201 Intermediate German or 5
6 - JAPN 201 Intermediate Japanese or 6
7 - SPAN 201 Intermediate Spanish
8 - COMM 250 Public Speaking or 3
9 - COMM 251 Business and Prof. Speaking
10 - ECON 211 Principles of Microeconomics
11 - HIST 173 Western Civilization
12 - Advanced Social Science Requirement 3
13 - Literature Requirement 3
14 18
Second Semester
3 - ACCT 201 Financial Accounting Concepts
4 - CHIN 202 Intermediate Chinese or 4
5 - FR 202 Intermediate French or 5
6 - GER 202 Intermediate German or 6
7 - JAPN 202 Intermediate Japanese or 7
8 - SPAN 202 Intermediate Spanish
9 - LAW 212 Legal Environment of Business
10 - Advanced Social Science Requirement 3
11 - Elective
12 15
Junior Year

First Semester
1. CHIN 305 Chinese Conv. and Comp. I or
2. FR 305 Inter. French Conv. and Comp. I or
3. GER 305 Inter. Ger. Conv. and Comp. I or
4. JAPN 305 Japanese Conv. and Comp. I or
5. SPAN 305 Inter. Span. Conv. and Comp. I or
6. ECON 310 International Economy or
7. ECON 412 International Microeconomics
8. ENGL 316 Writing and International Trade
9. MKT 301 Principles of Marketing
10. Civilization Requirement

Second Semester
1. CHIN 306 Chinese Conv. and Comp. II or
2. FR 411 Adv. French Conv. and Comp. or
3. GER 411 Studies in the German Lang. I or
4. JAPN 411 Studies in the Japanese Lang. I or
5. SPAN 411 Adv. Spanish Conv. and Comp. I or
6. CHIN 316 Chinese for International Trade I or
7. FR 316 French for International Trade I or
8. GER 316 German for Inter. Trade I or
9. JAPN 316 Japanese for Inter. Trade I or
10. SPAN 316 Spanish for Inter. Trade I or
11. MKT 427 International Marketing
12. MTHSC 301 Statistical Theory and Meth. I or
14. Foreign Language 300/400-level Requirement
15. Elective

Summer
1. L&IT 400 L&IT Internship or
2. L&IT 401 L&IT Practicum

Senior Year

First Semester
1. CHIN 416 Chinese for Inter. Trade II or
2. FR 416 French for International Trade II or
3. GER 416 German for Inter. Trade II or
4. JAPN 416 Japanese for Inter. Trade II or
5. SPAN 416 Spanish for Inter. Trade II
6. FIN 306 Corporation Finance
7. MGT 301 Principles of Management
8. Advanced Social Science Requirement
9. Foreign Language 300/400-level Requirement
10. Elective
11. 15
12. 133-137 Total Semester Hours

Second Semester
1. MGT 418 Management Information Systems
2. MGT 424 Int. Transportation and Logistics
3. Fine Arts Requirement
4. Foreign Language 300/400-level Requirement
5. Elective
6. 18

Summer
1. L&IT 400 L&IT Internship or
2. L&IT 401 L&IT Practicum

TOURISM CONCENTRATION

Sophomore Year

First Semester
1. CHIN 201 Intermediate Chinese or
2. FR 201 Intermediate French or
3. GER 201 Intermediate German or
4. JAPN 201 Intermediate Japanese or
5. SPAN 201 Intermediate Spanish
6. COMM 250 Public Speaking or
7. COMM 251 Business and Prof. Speaking
8. ECON 211 Principles of Microeconomics or
9. ECON 212 Principles of Macroeconomics
10. TEXT 460 Textile Processes
11. Literature Requirement
12. Elective
13. 18

Second Semester
1. ACCT 201 Financial Accounting Concepts
2. CHIN 202 Intermediate Chinese or
3. FR 202 Intermediate French or
4. GER 202 Intermediate German or
5. JAPN 202 Intermediate Japanese or
6. SPAN 202 Intermediate Spanish
7. HIST 173 Western Civilization
8. Advanced Social Science Requirement
9. Elective
10. 18

Junior Year

First Semester
1. CHIN 305 Chinese Conv. and Comp. I or
2. FR 305 Inter. French Conv. and Comp. I or
3. GER 305 Inter. Ger. Conv. and Comp. or
4. JAPN 305 Japanese Conv. and Comp. or
5. SPAN 305 Inter. Span. Conv. and Comp. I or
6. ECON 310 International Economy or
7. ECON 412 International Microeconomics
8. ENGL 316 Writing and International Trade
9. MKT 301 Principles of Marketing
10. TEXT 314 Chemical Processing of Textiles
11. Civilization Requirement
12. 16

Second Semester
1. CHIN 306 Chinese Conv. and Comp. II or
2. FR 411 Adv. French Conv. and Comp. or
3. GER 411 Studies in the German Lang. I or
4. JAPN 411 Studies in the Japanese Lang. I or
5. SPAN 411 Adv. Spanish Conv. and Comp. I or
6. CHIN 316 Chinese for Inter. Trade I or
7. FR 316 French for International Trade I or
8. GER 316 German for Inter. Trade I or
9. JAPN 316 Japanese for Inter. Trade I or
10. SPAN 316 Spanish for Inter. Trade I or
11. Elective
12. 16

Summer
1. L&IT 400 L&IT Internship or
2. L&IT 401 L&IT Practicum

Senior Year

First Semester
1. CHIN 416 Chinese for Inter. Trade II or
2. FR 416 French for International Trade II or
3. GER 416 German for Inter. Trade II or
4. JAPN 416 Japanese for Inter. Trade II or
5. SPAN 416 Spanish for Inter. Trade II
6. MKT 427 International Marketing
7. TEXT 422 Properties of Textile Structures
8. Advanced Social Science Requirement
9. Foreign Language 300/400-level Requirement
10. 15

Second Semester
1. ECON 310 International Economy or
2. ECON 412 International Microeconomics
3. TEXT 475 Textile Marketing
4. Fine Arts Requirement
5. Foreign Language 300/400-level Requirement
6. Elective
7. 16

8. ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H210.
9. Twelve hours in social sciences are required at the 300-400 level. This includes AP EC, ANTH, ECON, GEOG, HIST, PO SC, PSYCH, and SOC.
10. Select from FR, JAPN, or SPAN 201, or GER, JAPN, or SPAN 308, or GER 309 or 413; or SPAN 435; or CHIN (ANTH) 418.
11. A minimum of three courses is required. At least one course must be in literature. H148 and H439 may not be used to satisfy requirements for the French or Spanish Concentration. Advanced grammar is recommended for those exempting 100/200 levels.
12. Three credits from A AH, MUSIC, or THEA (practica with the approval of the department chair).
Junior Year
First Semester
3 - CHIN 305 Chinese Conv. and Comp. I or
3 - FR 305 Inter. French Conv. and Comp. I or
3 - GER 305 Inter. Ger. Conv. and Comp. 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 301 Principles of Marketing
3 - PRTM 343 Spatial Aspects of Tourist Behavior
3 - Civilization Requirement

Second Semester
3 - CHIN 306 Chinese Conv. and Comp. II or
3 - FR 411 Adv. French Conv. and Comp. or
3 - GER 411 Studies in the German Lang. I or
3 - JAPN 411 Studies in the Japanese Lang. I or
3 - SPAN 411 Adv. Spanish Conv. and Comp.
3 - CHIN 316 Chinese for International Trade or
3 - FR 316 French for International Trade I or
3 - GER 316 German for Inte. Trade I or
3 - JAPN 316 Japanese for Inter. Trade I or
3 - SPAN 316 Spanish for Inte. Trade I
3 - Foreign Language 300-400-level Requirement
3 - PRTM 300/400-level Requirement
3 - Elective

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 Inte. Trade II or
3 - FR 416 French for International Trade II or
3 - GER 416 German for Inte. Trade II or
3 - JAPN 416 Japanese for Inte. Trade II or
3 - SPAN 416 Spanish for Inte. Trade II
3 - MKT 427 International Marketing
3 - PRTM 444 Tour Planning and Operations
3 - Advanced Social Science Requirement
3 - Foreign Language 300/400-level Requirement

Second Semester
3 - ECON 310 International Economy or
3 - ECON 412 International Microeconomics
3 - PRTM 447 Perspectives on Inter. Travel
3 - Fine Arts Requirement
3 - Foreign Language 300/400-level Requirement
3 - Elective

133-137 Total Semester Hours

MODERN LANGUAGES
Bachelor of Arts
The Bachelor of Arts degree in Modern Languages helps students acquire a basic use of the four language skills (listening, reading, speaking, and writing); a familiarity with specific peoples, cultures, and literatures; and the knowledge and foreign-language skills to pursue graduate studies or careers in education or business. All Modern Language majors are encouraged to travel/study abroad.

A student may elect a major in a single language, a double major in two languages, or a double major combining a language major with a Bachelor of Arts major outside the department. All Modern Language majors must complete the courses stipulated in the basic curriculum.

French—Requires FR 305 and 309 plus 24 additional credits in French at the 300–400 level. Six credits of literature courses, three credits of which must be at the 400 level, are required. FR H438 and H439 may not be used to satisfy requirements for the French major.

German—Requires 24 credits in German at the 300–400 level.

Spanish—Requires 30 credits at the 300–400 levels, of which nine credits must be at the 400 level. A minimum of six credit hours of literature, including one course at the 400 level, is also required. SPAN H438 and H439 may not be used to satisfy requirements for the Spanish major.

As a condition of graduation, students are required to pass a noncredit examination to determine their proficiency in the area. This examination is taken in the student's last full semester at the University.

Freshman Year
First Semester
3 - ENGL 101 Composition I
3 - HIST 172 Western Civilization
3 - MTHSC 101 Introduction to Probability
4 - Foreign Language Requirement
4 - Science Requirement

Second Semester
3 - ENGL 102 Composition II
3 - HIST 173 Western Civilization
3 - MTHSC 102 Intro. to Mathematical Analysis
4 - Foreign Language Requirement
4 - Science Requirement

Sophomore Year
First Semester
3 - Computer Skills Requirement
3 - Fine Arts Requirement
3 - Foreign Language Requirement
3 - Literature Requirement
3 - Elective

Second Semester
3 - Advanced Social Science Requirement
3 - Foreign Language Requirement
3 - Literature Requirement
7 - Elective

Senior Year
First Semester
3 - Advanced Social Science Requirement
9 - Major and Minor Areas
3 - Oral Communication Requirement

Second Semester
12 - Major and Minor Areas
3 - Writing Intensive Requirement

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.

The standard Philosophy major consists of PHIL 315, 316, 401 or 402, and 24 additional credits in philosophy selected with the advice and consent of a departmental advisor; three of these 24 credits may be at the 100 level. Additional electives are added as needed to meet the minimum of 130 semester hours required for graduation.

The Philosophy major with a Religious Studies Emphasis Area consists of 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 a departmental advisor. Of these nine credits, three must be in philosophy and three must be in religion at the 300 level or above. The remaining six credits may be in either religion or philosophy but must be at the 300 level or above. Students with this emphasis area must choose a minor other than religion. Additional electives are added as needed to meet the minimum of 130 semester hours required for graduation.
The Philosophy major with a Law, Liberty, and Justice Emphasis Area consists of PHIL 102, 304 or 320 or 321, 315, 316, 343, 401 or 402, HIST 328, 329, and nine additional credits in philosophy selected with the advice and consent of the departmental pre-law advisor. Students with this emphasis area are strongly advised to partially fulfill their advanced social science requirement by taking one or more of POSC 432, 433. Additional electives are added as needed to meet the minimum of 130 semester hours required for graduation.

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 101 Composition I
3 - HIST 172 Western Civilization
3 - MTHSC 101 Introduction to Probability
4 - Foreign Language Requirement
4 - Science Requirement
17
Second Semester
3 - ENGL 102 Composition II
3 - HIST 173 Western Civilization
3 - MTHSC 102 Intro. to Mathematical Analysis
4 - Foreign Language Requirement
4 - Science Requirement
17

Sophomore Year
First Semester
3 - Foreign Language Requirement
3 - Literature Requirement
9 - Major and Minor Areas
3 - Oral Communication Requirement
18
Second Semester
3 - Computer Skills Requirement
3 - Foreign Language Requirement
3 - Literature Requirement
7 - Elective
16

Junior Year
First Semester
9 - Major and Minor Areas
3 - Writing Intensive Requirement
3 - Elective
15
Second Semester
12 - Major and Minor Areas
3 - Elective
15

Senior Year
First Semester
6 - Advanced Social Sciences Requirement
11 - Major and Minor Areas
17
Second Semester
6 - Advanced Social Sciences Requirement
9 - Major and Minor Areas
15
130 Total Semester Hours
1Students may pursue alternate sequences such as the following: MTHSC 101 and 106 or 203; 102 and 207, or 106 and 108, 207, or 101.
2See General Education Requirements.
3ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H210.
4See advisor.

PRODUCTION STUDIES IN PERFORMING ARTS
Bachelor of Arts
The Bachelor of Arts in Production Studies in Performing Arts is a distinctive program that combines the disciplines of music and theatre. The curriculum includes practical hands-on experience in performing arts production technologies with classes in performance, history, and theory. The curriculum allows students to choose from over 70 minors to tailor the program to their specific interests. The program integrates multidisciplinary and collaborative performing arts, teamwork, outreach, and service learning with traditional performance.

The degree is rooted in the liberal arts tradition with specific training in the performing arts. It provides the background for a number of career options or advanced studies, including graduate school, professional internships, and specialized postgraduate training.

The curriculum features a senior "capstone" project in which students spend their final year working as a production team, writing, composing, designing, marketing, and performing a final project.

To be considered for admission to this program, students must undergo an interview and/or audition with the Department of Performing Arts. Please note that students will not be eligible for admission to Clemson University in Production Studies in Performing Arts until this process is completed. Contact the department for specific requirements.

MUSIC CONCENTRATION
Freshman Year
First Semester
3 - ENGL 101 Composition I
1 - MUSIC 153 Applied Music for Majors
3 - MUSIC 180 Intro. to Music Technology
3 - P A 101 Introduction to Performing Arts
4 - Foreign Language Requirement
1 - Large Ensemble Requirement
15
Second Semester
3 - ENGL 102 Composition II
1 - MUSIC 154 Applied Music for Majors
3 - Computer Skills Requirement
4 - Foreign Language Requirement
1 - Large Ensemble Requirement
3 - Mathematical Sciences Requirement
15

Sophomore Year
First Semester
3 - MUSIC 205 Music Theory I
1 - MUSIC 253 Applied Music for Majors
1 - P A 201 Performing Arts Seminar I
3 - Foreign Language Requirement
3 - Humanities Requirement
1 - Large Ensemble Requirement
3 - Mathematical Sciences Requirement
3 - Oral Communication Requirement
18
Second Semester
3 - MUSIC 206 Music Theory II
1 - MUSIC 254 Applied Music for Majors
1 - P A 279 Performing Arts Laboratory
3 - Foreign Language Requirement
1 - Large Ensemble Requirement
3 - Social Science Requirement
3 - Writing Intensive Requirement
15

Junior Year
First Semester
3 - MUSIC 310 Survey of Music History
1 - MUSIC 353 Applied Music for Majors
1 - P A 301 Performing Arts Seminar II
3 - Humanities Requirement
2 - Social Science Requirement
4 - Science Requirement
3 - Minor
18
Second Semester
1 - MUSIC 354 Applied Music for Majors
3 - MUSIC 480 Advanced Music Technology
1 - P A 279 Performing Arts Lab.
6 - Minor
4 - Science Requirement
3 - Elective
18

Senior Year
First Semester
1 - P A 401 Senior Project Research
3 - Minor
12 - Elective
16
Second Semester
3 - P A 402 Senior Project
3 - Minor
9 - Elective
15
130 Total Semester Hours
1Four semesters of the same modern foreign language are required.
2Select from MUSIC 361 (maximum two credits in combination with MUSIC 364), 362, 363, 364 (maximum two credits in combination with MUSIC 361), 369, 370, 371, 372. Keyboard students must take a minimum of one hour each of MUSIC 313, Applied Organ, and Applied Carillon.
3See General Education Requirements.
## THEATRE CONCENTRATION

### Freshman Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course</th>
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<tbody>
<tr>
<td>First</td>
<td>3 - ENGL 101 Composition I</td>
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<tr>
<td></td>
<td>3 - P A 101 Introduction to Performing Arts</td>
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<tr>
<td></td>
<td>4 - Foreign Language Requirement</td>
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<td>3 - Mathematical Sciences Requirement</td>
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<td>3 - Oral Communication Requirement</td>
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</tr>
<tr>
<td>Second</td>
<td>3 - ENGL 102 Composition II</td>
</tr>
<tr>
<td></td>
<td>3 - THEA 278 Acting I</td>
</tr>
<tr>
<td></td>
<td>1 - THEA 279 Theatre Laboratory</td>
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<tr>
<td></td>
<td>3 - Computer Skills Requirement</td>
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<td>4 - Foreign Language Requirement</td>
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<td>3 - Mathematical Sciences Requirement</td>
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<td>3 - Social Science Requirement</td>
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### Sophomore Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>First</td>
<td>1 - P A 201 Performing Arts Seminar I</td>
</tr>
<tr>
<td></td>
<td>3 - THEA (ENGL) 347 Structure of Drama</td>
</tr>
<tr>
<td></td>
<td>3 - THEA 377 Stagecraft</td>
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<tr>
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<td>3 - Humanities Requirement</td>
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<td></td>
<td>3 - Social Science Requirement</td>
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<td>16</td>
</tr>
<tr>
<td>Second</td>
<td>1 - P A 279 Performing Arts Laboratory</td>
</tr>
<tr>
<td></td>
<td>3 - Foreign Language Requirement</td>
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<td></td>
<td>3 - Humanities Requirement</td>
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<td>3 - Social Science Requirement</td>
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<td></td>
<td>3 - Theatre 300/400-level Requirement</td>
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<td></td>
<td>3 - Writing Intensive Requirement</td>
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### Junior Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course</th>
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<tbody>
<tr>
<td>First</td>
<td>3 - P A 301 Performing Arts Seminar II</td>
</tr>
<tr>
<td></td>
<td>3 - THEA 315 Theatre History I</td>
</tr>
<tr>
<td></td>
<td>3 - THEA 376 Stage Directing I</td>
</tr>
<tr>
<td></td>
<td>4 - Science Requirement</td>
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<td>3 - Minor</td>
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<td>3 - Elective</td>
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<tr>
<td>Second</td>
<td>1 - P A 279 Performing Arts Laboratory</td>
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<tr>
<td></td>
<td>3 - THEA 316 Theatre History II</td>
</tr>
<tr>
<td></td>
<td>3 - Minor</td>
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<tr>
<td></td>
<td>4 - Science Requirement</td>
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<td></td>
<td>3 - Theatre 400-level Requirement</td>
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<td></td>
<td>3 - Elective</td>
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### Senior Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>3 - P A 401 Senior Project Research</td>
</tr>
<tr>
<td></td>
<td>6 - Minor</td>
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<tr>
<td></td>
<td>9 - Elective</td>
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<td>16</td>
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<tr>
<td>Second</td>
<td>3 - A A H 102 Survey of Art and Arch. History II</td>
</tr>
<tr>
<td></td>
<td>3 - ART 152 Foundations in 3D Art</td>
</tr>
<tr>
<td></td>
<td>1 - ART 154 Orientation to Visual Arts I</td>
</tr>
<tr>
<td></td>
<td>3 - ART 207 Beginning Painting</td>
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<tr>
<td></td>
<td>3 - ENGL 102 Composition II</td>
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<tr>
<td></td>
<td>3 - MTHSC 102 Intro. to Mathematical Analysis</td>
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### 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 prepares students interested in a balanced curriculum of academic coursework and studio art and art history courses for careers in studio-related areas of the visual arts.

Students begin to concentrate their studio coursework in a specific area of the visual arts—ceramics, drawing, painting, photography, printmaking, or sculpture—in the junior year in preparation for the senior studio experience. The program is structured so that the concentrated studio experiences in the junior year allow students opportunities to explore and develop concepts and skills that lead to a cohesive body of artwork in the senior year and a portfolio for professional application or graduate study.

### Freshman Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course</th>
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<tbody>
<tr>
<td>First</td>
<td>3 - A A H 101 Survey of Art and Arch. History I</td>
</tr>
<tr>
<td></td>
<td>3 - ART 151 Foundations in 2D Art</td>
</tr>
<tr>
<td></td>
<td>1 - ART 153 Orientation to Visual Arts I</td>
</tr>
<tr>
<td></td>
<td>3 - ART 205 Beginning Drawing</td>
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<tr>
<td></td>
<td>3 - ENGL 101 Composition I</td>
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<td>3 - MTHSC 101 Introduction to Probability</td>
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<tr>
<td>Second</td>
<td>3 - A A H 102 Survey of Art and Arch. History II</td>
</tr>
<tr>
<td></td>
<td>3 - ART 152 Foundations in 3D Art</td>
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<td></td>
<td>1 - ART 154 Orientation to Visual Arts II</td>
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<tr>
<td></td>
<td>3 - ART 207 Beginning Painting</td>
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<tr>
<td></td>
<td>3 - ENGL 102 Composition II</td>
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<tr>
<td></td>
<td>3 - MTHSC 102 Intro. to Mathematical Analysis</td>
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### Sophomore Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course</th>
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<tbody>
<tr>
<td>First</td>
<td>3 - A A H 205 History and Theory of Art I</td>
</tr>
<tr>
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<td>3 - ART 209 Beginning Sculpture</td>
</tr>
<tr>
<td></td>
<td>3 - ART 211 Beginning Printmaking</td>
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<td>3 - Computer Skills Requirement</td>
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<td>4 - Science Requirement</td>
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<tr>
<td>Second</td>
<td>3 - A A H 206 History and Theory of Art II</td>
</tr>
<tr>
<td></td>
<td>3 - ART 213 Beginning Photography</td>
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<td></td>
<td>3 - ART 217 Beginning Ceramics</td>
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<td>3 - ART 305 Drawing</td>
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<td>4 - Science Requirement</td>
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### Senior Year

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course</th>
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<tbody>
<tr>
<td>First</td>
<td>3 - A A H 305 Contemporary Art History I</td>
</tr>
<tr>
<td></td>
<td>6 - Art 300/400 Requirement</td>
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<tr>
<td></td>
<td>3 - Studio Requirement</td>
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<td>3 - Writing Intensive Requirement</td>
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<td>3 - Elective</td>
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<tr>
<td>Second</td>
<td>6 - Art 300/400 Requirement</td>
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<td></td>
<td>3 - Humanities Requirement</td>
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<td></td>
<td>3 - Oral Communication Requirement</td>
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<td></td>
<td>3 - Studio Requirement</td>
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<td>3 - Elective</td>
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</table>

1. See General Education Requirements.
2. All ART courses and other courses 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
Anthropology
Athletic Leadership
Beef Cattle Production
Biochemistry
Bioengineering
Biological Sciences
Business Administration
Chemistry
Cluster
Communication Studies
Communications
Computer Science
Crop and Soil Environmental Science
Early Intervention—not open to Visual Arts majors
East Asian Studies
Economics
Education
English
Entomology
Entrepreneurship
Environmental Engineering
Environmental Science and Policy
Film Studies
Financial Management
Fine Arts
Food Science
Forest Products
Forest Resource Management
Geography
Geology
Great Works
Health Science
History

Horse Production
Horticulture
Human Resource Management
International Politics
Legal Studies
Management
Mathematical Sciences
Microbiology
Military Leadership
Modern Languages—not open to Language and International Trade majors
Music
Natural Resource Economics
Operations Management
Packaging Science
Parks, Recreation, and Tourism Management
Philosophy
Physics
Plant Pathology
Political Science
Poultry Science
Psychology
Public Policy
Religion—not open to Philosophy—Religious Studies majors
Science and Technology in Society
Screenwriting
Sociology
Spanish-American Area Studies
Textiles
Theatre
Turfgrass
Urban Forestry
Wildlife and Fisheries Biology
Women's Studies
Writing

See pages 35-38 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 needs 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 76 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 - ENGL 101 Composition I
3 - MTHSC 102 Intro. to Mathematical Analysis
3 - Option List 1
4 - Science Requirement 1
16

Second Semester
3 - ECON 212 Principles of Macroeconomics
3 - ENGL 102 Composition II
3 - MTHSC 207 Multivariable Calculus
3 - Option List 1
4 - Science Requirement 1
3 - Leadership Requirement 1
3 - Oral Communication Requirement 1
24

See advisor.
See General Education 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 32 credit hours 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 Admission Test (GMAT). For information, contact the School of Accountancy and Legal Studies, 301 Summerville 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
3 - EX ST 301 Introductory Statistics or
3 - MTH 301 Stat. Theory and Methods I or
3 - MTH SC 301 Intro Business Statistics
3 - MGT 301 Principles of Management
9 - Option List 1
1 - Elective
16

Second Semester
3 - ACCT 201 Financial Accounting Concepts
1 - ACCT 204 Accounting Procedures
3 - CP SC 220 Microcomputer Applications
9 - Option List 1
16

Junior Year

First Semester
3 - ACCT 311 Intermediate Financial Acc 1
3 - ACCT 322 Accounting Information Systems
3 - ENGL 304 Business Writing
3 - FIN 311 Financial Management I
3 - Fine Arts Requirement
1 - Elective
16

Second Semester
3 - ACCT 312 Intermediate Financial Acc 2
3 - ACCT 340 Intern Auditing Theory or
3 - ACCT 415 Auditing
3 - FIN 312 Financial Management II
3 - LAW 322 Legal Environment of Business
3 - PHIL 344 Business Ethics
1 - Elective
16

Senior Year

First Semester
3 - ACCT 303 Cost Accounting
3 - ACCT 313 Intermediate Financial Acc 3
3 - ACCT 406 Individual Taxation or
3 - ACCT 415 Auditing
3 - MKT 301 Principles of Marketing
3 - International Business Requirement
1 - Elective
16

Second Semester
15 - Senior Option (see below)
15

127 Total Semester Hours

Senior Option

Completion of one of the following options is required.

INTERNSHIP OPTION

Senior Year
Second Semester
3 - ACCT 399 Internship in Accounting
3

First Summer Session
3 - MGT 415 Business Strategy
3 - Elective
6

Second Summer Session
3 - ACCT 410 Auditing and Executive Control
3 - Elective
6

BUSINESS MANAGEMENT COURSE OPTION

Senior Year
Second Semester
3 - ACCT 410 Auditing and Executive Control
3 - MGT 415 Business Strategy
3 - Business Management Requirement
6 - Elective
15

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 study 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 76.)

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.

Graduate Study

The Department of Economics allows students to count up to 12 hours of graduate credit (600-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
3 - ECON 211 Principles of Microeconomics
3 - ENGL 101 Composition I
3 - MTHSC 102 Intro. to Mathematical Analysis
4 - Foreign Language Requirement
4 - Science Requirement
17
Second Semester
3 - ECON 212 Principles of Macroeconomics
3 - MTHSC 102 Composition II
3 - MTHSC 207 Multivariable Calculus
5 - Science Requirement
15
Sophomore Year
First Semester
3 - CPSC 120 Intro. to Information Technology
3 - ECON 314 Intermediate Microeconomics
3 - MTHSC 301 Statistical Theory and Methods I
3 - Foreign Language Requirement
3 - Literature Requirement
1
Elective
16
Second Semester
3 - ECON 115 Intermediate Macroeconomics
3 - HIST 173 Western Civilization
3 - Foreign Language Requirement
3 - Literature Requirement
4 - Elective
16
Junior Year
First Semester
3 - COMM 250 Public Speaking or
3 - COMM 251 Business and Prof. Speaking
3 - Major Requirement
3 - Minor
3 - Writing Intensive Requirement
4 - Elective
16
Second Semester
3 - Major Requirement
6 - Minor
7 - Elective
16
Senior Year
First Semester
6 - Major Requirement
6 - Minor
6 - Elective
15
Second Semester
6 - Major Requirement
6 - Minor
6 - Elective
15
128 Total Semester Hours
MTHSC 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.

'2 Years of the same modern language are required.
'3 See General Education Requirements.
'4 ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H210.
'5 ECON 301, 302, (MGT) 306, 309, 310, and 324 may not be used to satisfy the Major Requirement.
Note: Students seeking teaching certification will be required to complete more than 128 semester hours.

ECONOMICS
Bachelor of Science
Sophomore Year
First Semester
3 - ECON 314 Intermediate Microeconomics
3 - Stat. 301 Introductory Statistics or
3 - MTHSC 301 Statistical Theory and Methods I
3 - MTHSC 309 Intro. Business Statistics
3 - MGT 301 Principles of Management
6 - Option List
1 - Elective
16
Second Semester
3 - ACCT 201 Financial Accounting Concepts
3 - ECON 315 Intermediate Macroeconomics
9 - Option List
1 - Elective
16
Junior Year
First Semester
3 - ACCT 202 Managerial Accounting Concepts
3 - FIN 306 Corporation Finance
3 - Minor
3 - Option List
3 - Elective
15
Second Semester
4 - ECON 405 Introduction to Econometrics
3 - Major Requirement
3 - Minor
3 - Writing Intensive Requirement
3 - Elective
16
Senior Year
First Semester
6 - Major Requirement
6 - Minor
6 - Elective
18
Second Semester
6 - Major Requirement
3 - Minor
6 - Elective
15
128 Total Semester Hours
'Select from Option List in Pre-Business curriculum.
'Students who complete a minor in Financial Management must complete three hours of electives to replace the FIN 306 requirement in the Economics major.
'ECON 301, 302, (MGT) 306, 309, 310, and 324 may not be used to satisfy the Major Requirement.
'See General Education Requirements.
Note: At least 50 percent of the total credits taken in ACCT, ECON, FIN, LAW, MGT, and MRT 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 - EX ST 301 Introductory Statistics or
3 - MTHSC 301 Stat. Theory and Methods I or
3 - MTHSC 309 Intro. Business Statistics
3 - MGT 301 Principles of Management
9 - Option List
1 - Elective
16
Second Semester
3 - ACCT 201 Financial Accounting Concepts
1 - ACCT 204 Accounting Procedures
3 - MGT 310 Intermediate Business Statistics
9 - Option List
1 - Elective
16
Junior Year
First Semester
3 - ACCT 311 Intermediate Financial Acct. I
3 - CPSC 220 Microcomputer Applications
3 - FIN 311 Financial Management I
3 - LAW 312 Commercial Law or
3 - LAW 322 Legal Environment of Business
3 - Writing Intensive 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 - MKT 301 Principles of Marketing
3 - Elective
18
Senior Year
First Semester
3 - ACCT 303 Cost Accounting
3 - FIN 309 Financial Institutions and Markets
9 - Emphasis Area
15
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
3 - ENGL 101 Composition I
1 - G C 101 Orientation to Graphic Comm.
3 - PSYC 201 Introduction to Psychology
3 - THRD 180 Intro. to Technical Drawing and Computer-Aided Drafting
4 - Approved Laboratory Science Requirement
3 - Mathematical Sciences Requirement
17

Second Semester
3 - CP SC 120 Intro. to Information Technology
3 - ENGL 102 Composition II
3 - EX ST 301 Introductory Statistics or
3 - MTHSC 203 Elem. Statistical Inference or
3 - MTHSC 301 Stat. Theory and Methods I
4 - G C 104 Graphic Communications I
4 - Approved Laboratory Science Requirement
17

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 218 Mgt. Personal Computer Appl.
3 - MGT 301 Principles of Management
2 - PKO 102 Intro. to Packaging Science
17

Second Semester
3 - ACCT 202 Managerial Accr. Concepts
3 - COMM 250 Public Speaking or
3 - COMM 251 Business and Prof. Speaking
3 - ECON 211 Principles of Microeconomics
3 - G C 245 Graphic Comm. Mechanical Systems
4 - G C 110 Alternative Approaches to Imaging
16

Summer
6 - CO-OP 101 Cooperative Education
1 - G C 350 Graphic Comm. Internship
1

Junior Year

First Semester
3 - ENGL 302 Intro. to Environmental Science
2 - G C 405 Package and Specialty Printing
2 - G C 406 Package and Specialty Printing Lab
3 - MGT 307 Personnel Management or
3 - PSYC 364 Industrial Psychology
3 - Literature Requirement
4 - Major Requirement
17

Second Semester
3 - ENGL 314 Technical Writing
5 - G C 440 Commercial Printing
3 - G C 446 Ink and Substrates
3 - MKT 301 Principles of Marketing
3 - Humanities Requirement F.
17

Summer
0 - CO-OP 102 Cooperative Education
1 - G C 450 Graphic Comm. Internship II
1

Senior Year

First Semester
4 - G C 444 Current Developments and Trends in Graphic Communications
3 - THRD 360 Ind. Organizations and Safety
6 - Major Requirement
3 - Elective
16

Second Semester
3 - G C 448 Planning and Controlling Printing Functions
2 - G C 480 Senior Seminar in Graphic Comm.
4 - Major Requirement
7 - Elective
16

135 Total Semester Hours

Must include a two-semester sequence from chemistry or physics.

See General Education Requirements.

One internship must be in a fall or spring semester. (Summer at least 12 weeks; fall/spring 15 weeks minimum.)

Required for any required G C 400-level courses may be taken.

ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H 210.

Must be approved by advisor prior to registration. A list of acceptable major requirements is available in the Graphic Communications Office.

G C 455 will not substitute for G C 450.
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 a special commendation for excellence from the South Carolina Commission on Higher Education.

Sophomore Year
First Semester
3 - EX ST 301 Introductory Statistics or
   3 - MTHSC 301 Stat. Theory and Methods I or
   3 - MTHSC 309 Intro. Business Statistics
3 - MGT 301 Principles of Management
9 - Option List
1 - Elective
16
Second Semester
3 - ACCT 202 Managerial Accounting Concepts
3 - MGT 218 Mgt. Personal Computer Appl.
9 - Option List
1 - Elective
16

Junior Year
First Semester
3 - ACCT 202 Managerial Accounting Concepts
3 - LAW 322 Legal Environment of Business
3 - MGT 310 Intermediate Business Statistics
3 - MGT 301 Principles of Marketing
3 - Writing Intensive Requirement
2 - Elective
17
Second Semester
3 - ACCT 201 Financial Accounting Concepts
3 - MGT 312 Decision Models for Management
3 - MGT 310 Operations Management
2 - Elective
17

Senior Year
First Semester
3 - ECON (MGT) 306 Managerial Economics
3 - MGT 307 Personnel Management
3 - MGT 402 Operations Planning and Control
3 - MGT 414 Statistical Analysis
3 - MGT 418 Management Information Systems
2 - Elective
17
Second Semester
3 - MGT 400 Mgt. of Organizational Behavior
3 - MGT 404 Adv. Statistical Quality Control
3 - MGT 408 Design of Production Systems
3 - MGT 415 Business Strategy
3 - MGT 423 International Business Mgt.
2 - Elective
17
132 Total Semester Hours

Note: At least 50 percent of the total credits taken in ACCT, ECON, FIN, LAW, MGT, and MKT must be taken at Clemson University.

MANAGEMENT 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 examination 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 - EX ST 301 Introductory Statistics or
   3 - MTHSC 301 Stat. Theory and Methods I or
   3 - MTHSC 309 Intro. Business Statistics
3 - MGT 301 Principles of Management
9 - Option List
1 - Elective
16
Second Semester
3 - ACCT 201 Financial Accounting Concepts
3 - MGT 218 Mgt. Personal Computer Appl.
9 - Option List
1 - Elective
16

Junior Year
First Semester
3 - ACCT 202 Managerial Accounting Concepts
3 - LAW 322 Legal Environment of Business
3 - MGT 310 Intermediate Business Statistics
3 - MGT 301 Principles of Marketing
3 - Writing Intensive Requirement
2 - Elective
17
Second Semester
3 - ACCT 201 Financial Accounting Concepts
3 - MGT 312 Decision Models for Management
3 - MGT 310 Operations Management
2 - Elective
17
132 Total Semester Hours

Note: At least 50 percent of the total credits taken in ACCT, ECON, FIN, LAW, MGT, and MKT must be taken at Clemson University.
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 non-profit 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 promotional strategy, professional selling, sales management, public and nonprofit marketing, entrepreneurship, marketing research, product management, marketing management, and international marketing. Emphasis is placed on marketing, sport marketing, and technical marketing 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 average of 3.0 or better and must obtain permission of the department chair.

Sophomore Year

First Semester
3 - EX ST 301 Introductory Statistics or
3 - MTHSC 301 Stat. Theory and Methods I or
3 - MTHSC 309 Intro. Business Statistics
3 - MGT 301 Principles of Management
9 - Option List 1
1 - Elective
16

Second Semester
3 - ACCT 201 Financial Accounting Concepts
3 - MGT 310 Intermediate Business Statistics
9 - Option List 2
1 - Elective
16

Junior Year

First Semester
3 - ACCT 202 Managerial Accounting Concepts
3 - LAW 312 Commercial Law or
3 - LAW 322 Legal Environment of Business
3 - MGT 301 Principles of Marketing
3 - Support Course Requirement 1
3 - Writing Intensive Requirement 1
15

Second Semester
3 - FIN 306 Corporation Finance
3 - MKT 302 Consumer Behavior
3 - MKT 431 Marketing Research
3 - Emphasis Area 1
3 - Support Course Requirement 1
15

Senior Year

First Semester
3 - MGT 415 Business Strategy
3 - MKT 427 International Marketing
3 - Emphasis Area 2
3 - Support Course Requirement 3
4 - Elective
16

Second Semester
3 - MKT 450 Strategic Marketing Management
3 - Emphasis Area 3
6 - Support Course Requirement 3
4 - Elective
16

126 Total Semester Hours

1. Select from Option List in Pre-Business curriculum.
2. Chosen jointly by the student and the advisor. These must be courses that are not support the emphasis area selected by the student. Certain minors may be used to satisfy the support course requirement. See advisor for details.
3. See General Education Requirements.
4. Select 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 429; and 428.
   Sport Marketing—MKT 321, 422 or 423; and 428.
   Technical Marketing—MKT 420, 423, 424, 426, or 428.

Note: 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 130 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 language arts. 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 foreign policy or international relations. 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, 301, and at least 21 additional credit hours in political science at the 300-400 level, including at least one course from four of the following five fields:
- American Government—PO SC 403, 405, 416, 432, 442
- Comparative Politics—PO SC 371, 471, 472, 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 elective hours in political science are 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 - ENGL 101 Composition I
3 - MTHSC 101 Intro to Probability
3 - PO SC 101 American National Government
4 - Foreign Language Requirement
4 - Science Requirement
17

Second Semester
3 - ENGL 102 Composition II
3 - MTHSC 102 Intro. to Mathematical Analysis
3 - PO SC 102 Intro. to International Relations or
3 - PO SC 104 Intro. to Comparative Politics
4 - Foreign Language Requirement
4 - Science Requirement
17

Sophomore Year

First Semester
3 - HIST 172 Western Civilization
3 - PO SC 301 Foundations of Political Science
3 - Computer Skills Requirement
3 - Foreign Language Requirement
3 - Literature Requirement
3 - Oral Communication Requirement
18

Second Semester
3 - HIST 173 Western Civilization
3 - Foreign Language Requirement
3 - Literature Requirement
6 - Major and Minor Areas
3 - Writing Intensive Requirement
18

Junior Year

First Semester
3 - ECON 211 Principles of Microeconomics
3 - Advanced Humanities Requirement
6 - Major and Minor Areas
3 - Elective
15

Second Semester
3 - ECON 212 Principles of Macroeconomics
3 - Advanced Humanities Requirement
6 - Major and Minor Areas
3 - Elective
15
Senior Year
First Semester
3 - Advanced Humanities Requirement
9 - Major and Minor Areas
3 - Elective
15
Second Semester
9 - Major and Minor Areas
6 - Elective
15
130 Total Semester Hours

International Politics Concentration
Junior Year
First Semester
3 - PO SC 341 Quantitative Methods in Pol. Sci.
3 - International Politics Requirement
6 - Minor
6 - Elective
15
Second Semester
3 - International Politics Requirement
3 - Minor
9 - Elective
15
Senior Year
First Semester
3 - International Politics Requirement
6 - Minor
6 - Elective
15
Second Semester
3 - International Politics Requirement
3 - Minor
6 - Elective
15
130 Total Semester Hours

American Politics Concentration
Junior Year
First Semester
3 - PO SC 341 Quantitative Methods in Pol. Sci.
3 - American Politics Requirement
6 - Elective
15
Second Semester
3 - American Politics Requirement
3 - Minor
9 - Elective
15
Senior Year
First Semester
3 - American Politics Requirement
6 - Minor
6 - Elective
15
Second Semester
3 - American Politics Requirement
6 - Minor
6 - Elective
15
130 Total Semester Hours

Political Economy Concentration
Junior Year
First Semester
3 - ECON 314 Intermediate Microeconomics
4 - ECON 405 Introduction to Econometrics
3 - Advanced Political Science Requirement
5 - Elective
15
Second Semester
3 - ECON 315 Intermediate Macroeconomics
3 - Advanced Political Science Requirement
9 - Elective
15
Senior Year
First Semester
6 - Advanced Political Science Requirement
3 - Economics Requirement
6 - Elective
15
Second Semester
3 - Advanced Economics Requirement
3 - Advanced Political Science Requirement
9 - Elective
15
130 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, personnel, 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](http://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 which must include the following:

- 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 489. BIOSCI 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

<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>3 - PO SC 321 Public Administration</td>
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<tr>
<td>3 - PO SC 341 Quantitative Methods in Pol. Sci.</td>
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<tr>
<td>3 - Political Science Requirement*</td>
<td>6 - Elective</td>
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<table>
<thead>
<tr>
<th>Second Semester</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>3 - Advanced Political Science Requirement*</td>
<td>6 - Public Administration Requirement*</td>
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<tr>
<td>6 - Elective</td>
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#### Senior Year

<table>
<thead>
<tr>
<th>First Semester</th>
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</thead>
<tbody>
<tr>
<td>3 - PO SC 430 Public Policy Evaluation</td>
<td>6 - Public Administration Requirement*</td>
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<tr>
<td>6 - Elective</td>
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</table>

<table>
<thead>
<tr>
<th>Second Semester</th>
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</tr>
</thead>
<tbody>
<tr>
<td>6 - Public Administration Requirement*</td>
<td>9 - Elective</td>
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<td>15</td>
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</tbody>
</table>

130 Total Semester Hours

*Any ECON course numbered 300 or higher.

### PSYCHOLOGY

#### 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, personnel, 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](http://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 which must include the following:

- 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 489. BIOSCI 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

<table>
<thead>
<tr>
<th>First Semester</th>
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</thead>
<tbody>
<tr>
<td>3 - ENGL 101 Composition I</td>
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<tr>
<td>3 - PSYCH 201 Introduction to Psychology</td>
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<tr>
<td>1 - PSYCH 202 Introductory Psychology Lab</td>
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<tr>
<td>4 - Foreign Language Requirement*</td>
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<tr>
<td>3 - Mathematical Sciences Requirement*</td>
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<tr>
<td>3 - Social Science Requirement*</td>
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<table>
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<th>Second Semester</th>
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<tbody>
<tr>
<td>3 - CP SC 120 Intro. to Information Technology</td>
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<tr>
<td>3 - ENGL 102 Composition II</td>
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<tr>
<td>3 - Cultural Awareness Requirement*</td>
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<td>4 - Foreign Language Requirement*</td>
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<td>3 - Mathematical Sciences Requirement*</td>
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#### Sophomore Year

<table>
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<th>First Semester</th>
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<tbody>
<tr>
<td>4 - PSYCH 309 Intro. Experimental Psychology</td>
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<tr>
<td>3 - Foreign Language Requirement*</td>
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<tr>
<td>3 - Humanities Requirement E.1</td>
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<tr>
<td>4 - Science Requirement*</td>
<td>3 - Elective</td>
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<table>
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<tr>
<th>Second Semester</th>
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<tbody>
<tr>
<td>4 - PSYCH 310 Adv. Experimental Psychology</td>
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<tr>
<td>3 - Foreign Language Requirement*</td>
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<tr>
<td>3 - Humanities Requirement E.2</td>
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<tr>
<td>4 - Science Requirement*</td>
<td>3 - Elective</td>
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<table>
<thead>
<tr>
<th>Junior Year</th>
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<tbody>
<tr>
<td>1 - PSYCH 492 Senior Laboratory in Psychology</td>
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<tr>
<td>6 - Major Area</td>
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<tr>
<td>6 - Minor Area</td>
<td>3 - Elective</td>
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<td>16</td>
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<table>
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<tr>
<th>Second Semester</th>
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<tbody>
<tr>
<td>6 - Major Area</td>
<td>3 - Minor Area</td>
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</tbody>
</table>

128 Total Semester Hours

*The equivalent of two years (through 220) of the same modern language is required. Courses used to satisfy the Foreign Language Requirement may not also be used to satisfy the Humanities Requirement E.2.

*See General Education Requirements. Note: Courses used to satisfy the Humanities Requirement E.2 may also not be used to satisfy the Foreign Language Requirement.

*See General Education Requirements. Social science other than psychology.

*See department approved Inst. Courses used to fulfill the Humanities Requirement, Social Science Requirement, or Major Area may not be used to meet this requirement.

*Any minor listed on page 76.

### PSYCHOLOGY

#### Bachelor of Science

The requirements for the Bachelor of Science program in Psychology consist of PSYCH 201, 202, 309, 310, 492, and 19 additional credits of psychology courses which must include the following:

- 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

- See advisor.

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*See advisor.

*ECON 404, 413, 419, or 420.

*Any ECON course numbered 300 or higher.
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 489. BIO 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**
1. CP SC 120 Intro. to Information Technology
2. ENGL 101 Composition I
3. PSYCH 201 Introduction to Psychology
4. PSYCH 202 Introductory Psychology Lab
5. 3 - Elective

**Second Semester**
1. BIOL 103 General Biology I
2. ENGL 102 Composition II
3. PHIL 102 Introduction to Logic
4. 3 - Elective

**Sophomore Year**

**First Semester**
1. PSYCH 309 Intro. Experimental Psychology
2. 3 - Elective
3. 3 - Elective
4. 3 - Elective

**Second Semester**
1. PSYCH 310 Adv. Experimental Psychology
2. 3 - Elective
3. 3 - Elective
4. 3 - Elective

**Junior Year**

**First Semester**
1. 3 - Elective
2. 3 - Elective
3. 3 - Elective
4. 3 - Elective

**Second Semester**
1. 3 - Elective
2. 3 - Elective
3. 3 - Elective
4. 3 - Elective

**Senior Year**

**First Semester**
1. PSYCH 492 Senior Laboratory in Psychology
2. 3 - Elective
3. 3 - Elective
4. 3 - Elective

**Second Semester**
1. 3 - Elective
2. 3 - Elective
3. 3 - Elective
4. 3 - Elective

**Bachelor of Arts**

**Freshman Year**

**First Semester**
1. ENGL 101 Composition I
2. MTHSC 101 Introduction to Probability
3. SOC 201 Introduction to Sociology
4. 3 - Elective

**Second Semester**
1. 3 - Elective
2. MTHSC 203 Elementary Statistical Inference
3. 3 - Elective

**Sophomore Year**

**First Semester**
1. CP SC 120 Intro. to Information Technology
2. 3 - Elective
3. 3 - Elective
4. 3 - Elective

**Second Semester**
1. 3 - Elective
2. 3 - Elective
3. 3 - Elective
4. 3 - Elective

**Junior Year**

**First Semester**
1. SOC (R S) 303 Methods of Social Research
2. 3 - Elective
3. 3 - Elective
4. 3 - Elective

**Second Semester**
1. 3 - Elective
2. 3 - Elective
3. 3 - Elective
4. 3 - Elective

**Senior Year**

**First Semester**
1. 3 - Elective
2. 3 - Elective
3. 3 - Elective
4. 3 - Elective

**Second Semester**
1. 3 - Elective
2. 3 - Elective
3. 3 - Elective
4. 3 - Elective

**Bachelor of Science**

**Freshman Year**

**First Semester**
1. CS 101 C Programming
2. ENGL 101 Composition I
3. MTHSC 102 Introduction to Probability
4. SOC 201 Introduction to Sociology
5. 3 - Elective

**Second Semester**
1. 3 - Elective
2. MTHSC 203 Elementary Statistical Inference
3. 3 - Elective
4. 3 - Elective

**Sophomore Year**

**First Semester**
1. CS 201 Advanced C Programming
2. ENGL 102 Composition II
3. MTHSC 204 Calculus I
4. 3 - Elective

**Second Semester**
1. 3 - Elective
2. MTHSC 205 Calculus II
3. 3 - Elective
4. 3 - Elective

**Junior Year**

**First Semester**
1. CS 301 Advanced C Programming
2. ENGL 201 Composition III
3. MTHSC 304 Calculus III
4. 3 - Elective

**Second Semester**
1. 3 - Elective
2. MTHSC 305 Calculus IV
3. 3 - Elective
4. 3 - Elective

**Senior Year**

**First Semester**
1. CS 401 Advanced C Programming
2. ENGL 301 Composition IV
3. MTHSC 404 Calculus V
4. 3 - Elective

**Second Semester**
1. 3 - Elective
2. MTHSC 405 Calculus VI
3. 3 - Elective
4. 3 - Elective
Second Semester
3 - Advanced Humanities Requirement
6 - Emphasis Area
6 - Minor
3 - Elective
18

Senior Year
First Semester
3 - Advanced Humanities Requirement
6 - Emphasis Area
3 - Stratification Requirement
3 - Elective
15
Second Semester
3 - SOC 404 Sociological Theory
3 - Advanced Humanities Requirement
3 Minor
3 - Elective
15

128 Total Semester Hours

Sociology
Bachelor of Science

Freshman Year
First Semester
3 - ENGL 101 Composition I
3 - MTHSC 101 Introduction to Probability
3 - SOC 201 Introduction to Sociology
3 - Humanities Requirement E.2
4 - Science Requirement
16

Second Semester
3 - ENGL 102 Composition II
3 - MTHSC 203 Elementary Statistical Interference
3 - Oral Communication Requirement
4 - Science Requirement
3 - Elective
16

Sophomore Year
First Semester
3 - CP SC 120 Intro. to Information Technology
3 - Humanities Requirement E.1
6 - Mathematics or Science Requirement
3 - Elective
15

Second Semester
4 - Mathematics or Science Requirement
6 - Minor
5 - Elective
15

Junior Year
First Semester
3 - ENGL 314 Technical Writing
4 - SOC (R, S) 303 Methods of Social Research I
3 - Emphasis Area
3 - Global Awareness Requirement
3 - Philosophy Requirement
16
Second Semester
3 - Advanced Humanities Requirement
6 - Emphasis Area
6 - Minor
3 - Elective
18

Senior Year
First Semester
3 - ANTH 351 Physical Anthropology
3 - Emphasis Area
5 - Mathematics or Science Requirement
3 - Stratification Requirement
3 - Elective
17
Second Semester
3 - SOC 404 Sociological Theory
6 - Emphasis Area
3 - Minor
3 - Elective
15

128 Total Semester Hours

Suggested Elective Courses
- MTHSC 106 and 301 may be substituted.
- General Education Requirements.
- At least six of the 15 hours must be at the 300 level or above.
- 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 365 and 364), English (except 304, 312, 314, 316, 333, 334, 335, 485, 490, 495), languages, music, philosophy, religion, theatre (except 177, 487, 497), and women's studies, as well as courses entitled Humanities.

Suggested Minor
- ANTH 301 or SOC 413.
- SOC 460 or 461.

Sociology
Bachelor of Science

Freshman Year
First Semester
3 - ENGL 101 Composition I
3 - MTHSC 101 Introduction to Probability
3 - SOC 201 Introduction to Sociology
3 - Humanities Requirement E.2
4 - Science Requirement
16

Second Semester
3 - ENGL 102 Composition II
3 - MTHSC 203 Elementary Statistical Interference
3 - Oral Communication Requirement
4 - Science Requirement
3 - Elective
16

Sophomore Year
First Semester
3 - CP SC 120 Intro. to Information Technology
3 - Humanities Requirement E.1
6 - Mathematics or Science Requirement
3 - Elective
15

Second Semester
4 - Mathematics or Science Requirement
6 - Minor
5 - Elective
15

Junior Year
First Semester
3 - ENGL 314 Technical Writing
4 - SOC (R, S) 303 Methods of Social Research I
3 - Emphasis Area
3 - Global Awareness Requirement
3 - Philosophy Requirement
16
Second Semester
3 - Advanced Humanities Requirement
6 - Emphasis Area
6 - Minor
3 - Elective
18

Senior Year
First Semester
3 - ANTH 351 Physical Anthropology
3 - Emphasis Area
5 - Mathematics or Science Requirement
3 - Stratification Requirement
3 - Elective
17
Second Semester
3 - SOC 404 Sociological Theory
6 - Emphasis Area
3 - Minor
3 - Elective
15

128 Total Semester Hours

Suggested Elective Courses
- MTHSC 106 and 301 may be substituted.
- General Education Requirements.
- At least six of the 15 hours must be at the 300 level or above.
- 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 365 and 364), English (except 304, 312, 314, 316, 333, 334, 335, 485, 490, 495), languages, music, philosophy, religion, theatre (except 177, 487, 497), and women's studies, as well as courses entitled Humanities.

Suggested Minor
- ANTH 301 or SOC 413.
- SOC 460 or 461.
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
Anthropology
Athletic Leadership
Beef Cattle Production
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
Computer Science
Crop and Soil Environmental Science
Early Intervention—open to Psychology and Sociology majors only
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
Film Studies
Financial Management
Fine Arts
Food Science
Forest Products
Forest Resource Management
Geography
Geology
Great Works

Health Science
History
Horse Production
Horticulture
Human Resource Management—not open to Industrial Management or Management majors
International Politics—not open to Political Science majors
Legal Studies
Management—not open to Industrial Management majors
Mathematical Sciences
Microbiology
Military Leadership
Modern Languages
Music
Natural Resource Economics
Operations Management—not open to Industrial Management or Management majors
Packaging Science
Parks, Recreation, and Tourism Management
Philosophy
Physics
Plant Pathology
Political Science
Poultry Science
Psychology
Public Policy—not open to Political Science majors
Religion
Science and Technology in Society
Screenwriting
Sociology
Spanish-American Area Studies
Textiles
Theatre
Turfgrass
Urban Forestry
Wildlife and Fisheries Biology
Women’s Studies
Writing

See pages 35-38 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 93.)

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 on the Web at www.ces.clemson.edu.

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 producing 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
The General Engineering Program provides students with an opportunity to explore various engineering fields while gaining a sound academic preparation for engineering study. All engineering students must complete the freshman engineering curriculum before being admitted into an engineering baccalaureate degree program. All new engineering students (including transfer students) are admitted into General Engineering. Students with no programming experience who plan to enter Computer Engineering should consult an advisor about taking CP SC 101 or 111 as an elective in the first semester. Additional information about General Engineering can be found on the Web at www.ces.clemson.edu.

Freshman Curriculum

First Semester
4 - CH 101 General Chemistry
1 - CES 101 Intro. to Engineering and Science or 1 - ENGR 101 Introduction to Engineering
3 - ENGL 101 Composition I
4 - MTHSC 106 Calculus of One Variable I
3 - Humanities/Social Science Requirement

Second Semester
4 - CH 102 General Chemistry
3 - ENGL 102 Composition II
3 - ENGR 120 Engineering Problem Solving and Design
4 - MTHSC 108 Calculus of One Variable II
3 - PHYS 122 Physics with Calculus I

Admission into Engineering Degree Programs
To transfer into an engineering degree program, a student must have a 2.0 minimum cumulative grade-point ratio in courses taken at Clemson and have completed the General Engineering freshman curriculum with a C or better in each course in the freshman curriculum except the humanities/social science requirement.

Students should initiate a change-of-major request prior to the registration period during the semester in which 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 (major code 402) majors will not be permitted to take any 100- or 200-level engineering courses. Individual 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 these responsibilities and make them aware of the constraints imposed by societal factors. Thus, an important component of the engineering curriculum is a program of study in the humanities and social sciences in which students are required to achieve depth of knowledge in one or two areas rather than simply taking a collection of introductory courses.

This program of study must include a minimum of 15 credits selected so as to satisfy the University’s General Education policy in humanities and social sciences as well as meeting engineering objectives. Thus, the courses chosen must satisfy all of the following criteria:

1. Six credits of General Education humanities courses, which must include
   a) Three credits of sophomore literature (200 level) or foreign language literature (300 level or higher) selected from General Education Section E.1
   b) Three credits selected from courses in General Education Section E.2
2. Six credits of social science courses selected from General Education Section F.
3. At least three additional credits selected from the List of Approved Humanities and Social Science Courses for Engineering Curricula. (This list includes General Education courses, plus additional choices.)
4. To provide depth, the courses chosen must contain either
   a) Nine credits in a single subject area or
   b) Six credits in each of two different subjects.

Individual engineering curricula may have more specific requirements (e.g., an economics course or a second literature course may be required), or may require more than 15 hours of humanities/social science courses. Students should consult their academic advisors for information.

*All courses must be selected from the List of Approved Humanities and Social Science Courses for Engineering Curricula. Specifically, some courses approved in the General Education policy may not be accepted by the College of Engineering and Science because of Accreditation Board for Engineering and Technology (ABET) restrictions.

Electives for Engineering Curricula
Advisors must approve any course taken for elective credit in the Engineering curricula. Courses excluded for elective credit include PHYS 200, 207, 208.
AGRICULTURAL ENGINEERING CONCENTRATION

Sophomore Year
First Semester
2 - E E 221 Surveying for Soil and Water Res.
2 - E G 209 Intro. to Engr./Comp. Graphics
3 - E M 201 Engineering Mechanics: Statics
4 - MTHSC 206 Calculus of Several Variables
3 - PHYS 221 Physics with Calculus II
3 - Elective
17
Second Semester
2 - E E 214 Fabrication and Manufacturing Meth.
3 - E M 202 Engineering Mechanics: Dynamics
4 - ENGL 314 Technical Writing
4 - MTHSC 208 Intro. to Ord. Diff. Equations
3 - Humanities/Social Science Requirement
3 - Literature Requirement
18

Junior Year
First Semester
2 - B E 357 Machine Unit Operations
3 - COMM 250 Public Speaking
2 - E C E 307 Basic Electrical Engineering
3 - E M 304 Mechanics of Materials
3 - M E 310 Thermodynamics and Heat Transfer
3 - Plant/Animal Science Requirement
16
Second Semester
3 - B E 322 Small Watershed Hydrology and Sedimentology
2 - B E 333 Environmental Modification
2 - B E 350 Microcomputer Controls in Biosys.
2 - B E 362 Energy Conversion for Biosystems
4 - C E 341 Introduction to Fluid Mechanics
4 - CSENV 202 Soils
18

Senior Year
First Semester
3 - B E 416 Biosystems Engr. Capstone Design
2 - B E 431 Structural Design for Biosystems
3 - B E 450 Instrumentation for Biosys. Engineers
3 - I E 384 Engineering Economic Analysis
3 - Humanities/Social Science Requirement
3 - Elective
18
Second Semester
2 - B E 471 Engineering Research and Mgt.
3 - ECON 211 Principles of Microeconomics or
3 - ECON 200 Economic Concepts
3 - Technical Requirement
4 - Elective
16

135 Total Semester Hours

APPLIED BIOTECHNOLOGY CONCENTRATION

Sophomore Year
First Semester
2 - E G 209 Intro. to Engr./Comp. Graphics
2 - E G 209 Intro. to Engr./Comp. Graphics
3 - E M 201 Engineering Mechanics: Statics
4 - MTHSC 206 Calculus of Several Variables
3 - PHYS 221 Physics with Calculus II
4 - Organic Chemistry Requirement
16
Second Semester
2 - B E 214 Fabrication and Manufacturing Meth.
3 - E M 202 Engineering Mechanics: Dynamics
3 - ENGL 314 Technical Writing
4 - MTHSC 208 Intro. to Ord. Diff. Equations
4 - Biochemistry Requirement
16

Junior Year
First Semester
3 - B E 430 Problem Solving Methods and
3 - B E 307 Basic Electrical Engineering
3 - E M 304 Mechanics of Materials
3 - M E 310 Thermodynamics and Heat Transfer
4 - BIOCH 305 General Microbiology
3 - Technical Requirement
18
Second Semester
2 - B E 333 Environmental Modification
2 - B E 350 Microcomputer Controls in Biosys.
2 - B E 362 Energy Conversion for Biosystems
3 - B E (CH E) 428 Biochemical Engineering
3 - E C E 341 Introduction to Fluid Mechanics
3 - COMM 250 Public Speaking
17

Senior Year
First Semester
3 - B E 416 Biosystems Engr. Capstone Design
3 - B E 435 Appl. in Biotechnology Engineering
3 - B E 450 Instrumentation for Biosys. Engineers
3 - Literature Requirement
6 - Elective
18
Second Semester
2 - B E 471 Engineering Research and Mgt.
3 - ECON 211 Principles of Microeconomics or
3 - ECON 200 Economic Concepts
6 - Humanities/Social Science Requirement
5 - Elective
18

135 Total Semester Hours

\[CH\ 201, 223/229, \text{or} 227/229 \text{with the extra two credit hours}
\text{credited to electives. Students interested in medical careers}
\text{should consider CH 221/229.}
\]
\[BIOCH\ 301/302 \text{or} 305/306.\]
\text{Select from courses in math, statistics, or computational}
\text{science or minor course.}

*See Policy on Humanities and Social Sciences for Engineering
Curricula.
*See advisor.
*ECON 211 is preferred.
NATURAL RESOURCES AND ENVIRONMENT CONCENTRATION

Sophomore Year
First Semester
1 - B E 221 Surveying for Soil and Water Res.
2 - E G 209 Intro. to Engr./Comp. Graphics
3 - C E 202 Engineering Mechanics: Statics
4 - MTHSC 206 Calculus of Several Variables
3 - PHYS 221 Physics with Calculus II
2 - Elective

Second Semester
2 - B E 214 Fabrication and Manufacturing Meth.
3 - E M 202 Engineering Mechanics: Dynamics
3 - ENGL 314 Technical Writing
4 - MTHSC 208 Intro. to Ord. Diff. Equations
3 - Humanities/Social Science Requirement¹
3 - Literature Requirement¹

Junior Year
First Semester
2 - B E 357 Machine Unit Operations
3 - COMM 250 Public Speaking
2 - E C E 307 Basic Electrical Engineering
3 - E M 304 Mechanics of Materials
3 - M E 310 Thermodynamics and Heat Transfer
3 - Biological Science Requirement

Second Semester
2 - B E 322 Small Watershed Hydrology and Sedimentology
2 - B E 333 Environmental Modification
2 - B E 350 Microcomputer Controls in Biosy.
3 - B E 362 Energy Conversion for Biosystems
4 - C E 341 Introduction to Fluid Mechanics
4 - CSENV 202 Soils

Senior Year
First Semester
3 - B E 416 Biosystems Engr. Capstone Design
3 - B E 430 Problem Solving Methods and Models in Biosystems Engineering
2 - B E 431 Structural Design for Biosystems
3 - B E 450 Instrumentation for Biosys. Engineers
3 - Approved Engineering Requirement
3 - Elective

Second Semester
2 - B E 471 Engineering Research and Mgt
3 - ECON 211 Principles of Microeconomics or
3 - ECON 200 Economics Concepts¹
3 - Humanities/Social Science Requirement¹
5 - Elective

CERAMIC AND MATERIALS ENGINEERING
Bachelor of Science
The School of Materials Science and 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 variety of industries with diverse applications. These range from the semi-conductor 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 lifelong 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 77, 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.

Sophomore Year
First Semester
3 - C M E 210 Intro. to Materials Science
1 - C M E 241 Metrics Lab.
4 - MTHSC 206 Calculus of Several Variables
3 - PHYS 221 Physics with Calculus II
3 - Humanities/Social Science Requirement¹
3 - Literature Requirement¹

135 Total Semester Hours

¹See Policy on Humanities and Social Sciences for Engineering Curricula.
²See advisor.
³ECON 211 is preferred.
CHEMICAL ENGINEERING

Bachelor of Science

Chemical engineering is based on chemistry, physics, and mathematics. 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 function effectively in chemical and related industries and postgraduate school; to identify, formulate, and solve chemical engineering problems; to develop skills for the successful practice of their profession; and to serve their chosen profession. 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, the Department of Chemical 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.celemon.edu/chemeng.

Sophomore Year

First Semester
1. CH 223 Organic Chemistry
2. CH 241 Intro to Chemical Engineering
3. E 250 Intro. to Engr./Comp. Graphics
4. MTHSC 206 Calculus of Several Variables
5. PHYS 221 Physics with Calculus II
6. Literature Requirement

Second Semester
1. CH 224 Organic Chemistry
2. CH 279 Organic Chemistry Lab.
3. CH 222 Chemical Engr. Thermodynamics I
4. CH 311 Fluid Flow
5. MTHSC 208 Intro. to Ord. Diff. Equations
6. Literature Requirement

Junior Year

First Semester
1. CH 339 Physical Chemistry Lab.
2. CH 312 Heat and Mass Transfer
3. CH 321 Chemical Engr. Thermodynamics II
4. EM 201 Engineering Mechanics: Statics
5. MTHSC 302 Statistics for Science and Engr. or
   3. EX ST 411 Statistical Methods for Process Development and Control
6. Humanities/Social Science Requirement
7. Elective

Second Semester
1. CH 332 Physical Chemistry
2. CH 340 Physical Chemistry Lab.
3. CH 307 Unit Operation Lab. I
4. CH 344 Chemical Engr. Junior Seminar
5. CH 353 Process Dynamics and Control
6. CH 413 Separation Processes
7. Humanities/Social Science Requirement
8. Technical Requirement

Senior Year

First Semester
1. CH 319 Engineering Materials
2. CH 407 Unit Operations Lab. II
4. CH 450 Chemical Reaction Engineering
5. Technical Requirement
6. Elective

Second Semester
1. CH 432 Process Development, Design, and Optimization of Chemical Engr. Systems II
2. CH 444 Chemical Engr. Senior Seminar II
3. Advanced Chemistry Requirement
4. Technical Requirement
5. Elective

138 Total Semester Hours

CIVIL ENGINEERING

Bachelor of Science

Civil Engineering involves the planning, design, construction management, operation, and maintenance of facilities and systems in the built environment. Civil engineering students are exposed to the design of 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 77 for the College of Engineering and Science. The first two years provide students with broad skills necessary to be successful civil engineers. This includes proficiency in calculus, statistics, probability, 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, lifelong 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.celemon.edu.

Sophomore Year

First Semester
1. C 251 Analysis Techniques in Civil Engr.
2. C 255 Geometrics
3. E 259 Intro. to Engr./Comp. Graphics
4. MTHSC 206 Calculus of Several Variables
5. PHYS 221 Physics with Calculus II

Second Semester
1. C 253 Civil Engineering Measurements
2. COMM 250 Public Speaking
4. MTHSC 208 Intro. to Ord. Diff. Equations
5. Technical Requirement

Junior Year

First Semester
1. C 301 Structural Analysis
2. C 341 Introduction to Fluid Mechanics
3. C 351 Civil Engineering Materials
4. C 352 Economic Evaluation of Projects
5. ENGL 314 Technical Writing
6. EX ST 301 Introductory Statistics

Second Semester
1. C 311 Transportation Engr. Plan. and Design
2. C 321 Geotechnical Engineering
3. C 331 Construction Engineering and Mgt.
4. C 342 Applied Hydraulics and Hydrology
5. C 353 Professional Seminar
6. EE&S 401 Environmental Engineering

Senior Year

First Semester
1. Humanities/Social Science Requirement
2. Technical Design Requirement
3. Technical Requirement
4. Elective

5. Humanities/Social Science Requirement
6. Technical Design Requirement
7. Technical Requirement
8. Elective
Second Semester
3 - ECE 459 Capstone Design Project
3 - Humanities/Social Science Requirement
1 - Literature Requirement
3 - Technical Requirement
3 - Elective
15

135 Total Semester Hours

See policy on Humanities and Social Sciences for Engineering Curricula.

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 education. Detailed information can be found on the Web at www.ece.clemson.edu.

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.

Sophomore Year
First Semester
3 - CP SC 111 Elem. Computer Prog. in C/C++
3 - ECE 201 Logic and Computing Devices
3 - ECE 202 Electric Circuits I
1 - ECE 211 Electrical Engineering Lab. I
4 - MTHSC 206 Calculus of Several Variables
3 - PHYS 221 Physics with Calculus II
18

Second Semester
1 - ECE 311 Electrical Engineering Lab. III
3 - ECE 320 Electronics I
3 - ECE 329 Computer Systems Structures
3 - ECE 330 Signals, Systems, and Transforms
4 - ECE 371 Microcomputer Interfacing
3 - MTHSC 419 Discrete Math. Structures I
1 - Elective
18

Senior Year
First Semester
9 - Computer Engineering Technical Requirement
3 - Humanities/Social Science Requirement
6 - Elective
18

Second Semester
3 - ECE 453 Software Practicum
6 - Computer Engineering Depth Requirement
3 - Humanities/Social Science Requirement
3 - Literature Requirement
3 - Elective
18

141 Total Semester Hours

Sophomore Year
First Semester
4 - CP SC 210 Programming Methodology or
4 - CP SC 102 Computer Science II
3 - ECE 201 Logic and Computing Devices
3 - ECE 202 Electric Circuits I
1 - ECE 211 Electrical Engineering Lab. I
4 - MTHSC 206 Calculus of Several Variables
3 - PHYS 221 Physics with Calculus II
18

Junior Year
First Semester
1 - ECE 311 Electrical Engineering Lab. III
3 - ECE 320 Electronics I
3 - ECE 330 Signals, Systems, and Transforms
4 - ECE 371 Microcomputer Interfacing
3 - ECE 380 Electromagnetics
3 - Technical Requirement (Advanced Mathematics)
17

Second Semester
1 - ECE 212 Electrical Engineering Lab. II
3 - ECE 262 Electric Circuits II
4 - ECE 272 Computer Organization
3 - EME 201 Engineering Mechanics: Statics
4 - MTHSC 208 Intro. to Ord. Diff. Equations
3 - Elective
18

Junior Year
First Semester
4 - CP SC 212 Algorithms and Data Structures
1 - ECE 212 Electrical Engineering Lab. II
3 - ECE 262 Electric Circuits II
4 - ECE 272 Computer Organization
4 - MTHSC 208 Intro. to Ord. Diff. Equations
3 - MTHSC 311 Linear Algebra
19

Junior Year
First Semester
4 - CP SC 212 Algorithms and Data Structures
1 - ECE 212 Electrical Engineering Lab. II
3 - ECE 262 Electric Circuits II
4 - ECE 272 Computer Organization
4 - MTHSC 208 Intro. to Ord. Diff. Equations
3 - MTHSC 311 Linear Algebra
19
Second Semester
1 - ECE 312 Electrical Engineering Lab. IV
3 - ECE 317 Random Signal Analysis
3 - ECE 321 Electronics II
2 - ECE 360 Electric Power Engineering
3 - ECE 381 Fields, Waves, and Circuits
3 - Humanities/Social Science Requirement

16

Senior Year
First Semester
3 - ECE 409 Continuous and Discrete Syst. Des.
3 - ECE 427 Communications Systems
2 - ECE 495 Integrated System Design I
3 - M E 310 Thermodynamics and Heat Transfer
3 - Literature Requirement
3 - Technical Requirement (Electrical and Computer Engineering)
7 - Elective
18

135 Total Semester Hours

1) Select from list maintained in the department.
2) See Policy on Humanities and Social Sciences for Engineering Curricula.

Notes:
1. A student is allowed to enroll in ECE courses (excluding ECE 307, 308, 309) only when all prerequisites have been passed with a grade of C or better.
2. All Electrical Engineering students must have a cumulative engineering grade-point ratio of 2.0 to enroll in any 300- or 400-level ECE courses. In addition, no student may exceed the maximum of two attempts, including a W, to complete successfully any ECE course.

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 on 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/ie.

Sophomore Year
First Semester
3 - CME 210 Introduction to Materials Science
1 - E 201 System Design I
1 - E 220 Design of Information Systems in Industrial Engineering
4 - MTHSC 206 Calculus of Several Variables
3 - PHYS 221 Physics with Calculus II
17

Second Semester
3 - E 201 Engineering Mechanics: Statics
1 - E 210 Design and Analysis of Work Systems
3 - E 280 Methods of Operational Research I
4 - MTHSC 208 Intro. to Ord. Diff. Equations
3 - MTHSC 302 Statistics for Science and Engr.
17

Junior Year
First Semester
4 - CME 220 Structural Mechanics
3 - E 307 Basic Electrical Engineering
3 - E 309 Electrical Engineering Lab. I
3 - ENGL 314 Technical Writing
1 - E 368 Prob. Practice in Industrial Engineering
3 - E 381 Methods of Operational Research II
3 - E 386 Production Planning and Control
4 - Elective
17

Second Semester
2 - ECE 307 Basic Electrical Engineering
1 - ECE 309 Electrical Engineering Lab. I
3 - ENGL 314 Technical Writing
1 - E 368 Prob. Practice in Industrial Engineering
3 - E 381 Methods of Operational Research II
3 - E 386 Production Planning and Control
4 - Elective
17

Senior Year
First Semester
3 - E 461 Quality Engineering
3 - E 482 Systems Modeling
6 - Humanities Requirement E.1 and E.2
3 - Technical Requirement
2 - Elective
17

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 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 Commencement 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/mec.
Sophomore Year
First Semester
1. ENG 209 Intro to Engr/Comp. Graphics 4  
2. EN 201 Engineering Mechanics - Statics 4  
3. ME 202 Foundations of Mechanical Systems 4  
4. MTHSC 206 Calculus of Several Variables 4  
5. PHYS 221 Physics with Calculus II 4  
6. Humanities/Social Science Requirement 1  
7. English Composition Requirement 2  
8. Elective 4

Second Semester
1. ECE 307 Basic Electrical Engineering 4  
2. ECE 309 Electrical Engineering Lab. I 2  
3. ECE 302 Engineering Mechanics - Dynamics 4  
4. ME 203 Found. of Thermal and Fluid Syst. 4  
5. ECE 205 Computer Analysis in Engineering 4  
6. MME 221 Mechanical Engineering Lab. I 2  
7. MTHSC 208 Intro. to Ord. Diff. Equations 4

Junior Year
First Semester
1. ENG 304 Mechanics of Materials 4  
2. ENG 322 Fluid Mechanics 4  
3. ECE 411 Statistical Methods for Process Development and Control 4  
4. MTHSC 302 Stats. for Science and Engr. 4  
5. ENG 305 Thermodynamics 4  
6. MME 322 Mechanical Engineering Lab. II 2  
7. Humanities/Social Science Requirement 1  
8. Elective 4

Second Semester
1. MME 301 Materials for Mech. Engr. Appl. 4  
2. MME 304 Heat Transfer 4  
3. MME 355 Model. and Analysis of Dynamic Syst. 4  
4. MME 366 Fundamentals of Machine Design 4  
5. MME 323 Mechanical Engineering Lab. II 2  
6. Elective 4

Senior Year
First Semester
1. MME 401 Mechanical Engineering Design 4  
2. MME 404 Manufacturing Processes and Their Application 4  
3. MME 424 Mechanical Engineering Lab. IV 2  
4. Literature Requirement 2  
5. Technical Requirement 2  
6. Elective 4

Second Semester
1. MME 400 Senior Seminar 2  
2. MME 402 Internship in Engineering Design 2  
3. Humanities/Social Science Requirement 1  
4. Technical Requirement 2  
5. Elective 2

133 Total Semester Hours

SCIENCE PROGRAMS
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 more highly structured than BA curricula but nonetheless offer ample 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 degree of flexibility and responsibility in selecting the minor area from those listed on page 93. 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, production, technical sales, or management positions in 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
1. CH 101 General Chemistry 4  
2. CH 144 Chemistry Orientation 2  
3. ENGL 101 Composition I 2  
4. MTHSC 106 Calculus of One Variable I 4

Second Semester
1. CH 205 Intro to Inorganic Chemistry 4  
2. CH 206 Inorganic Chemistry Lab. 2  
3. ENGL 102 Composition II 2  
4. MTHSC 108 Calculus of One Variable II 4  
5. PHYS 122 Physics with Calculus I 4

Sophomore Year
First Semester
1. CH 223 Organic Chemistry 4  
2. CH 227 Organic Chemistry Lab. 2  
3. MTHSC 206 Calculus of Several Variables 4  
4. PHYS 221 Physics with Calculus II 4  
5. American Language Requirement 4

Second Semester
1. CH 224 Organic Chemistry 4  
2. CH 228 Organic Chemistry Lab. 2  
3. MTHSC 208 Intro. to Ord. Diff. Equations 4  
4. PHYS 222 Physics with Calculus III 4  
5. American Language Requirement 4

Junior Year
First Semester
1. CH 313 Quantitative Analysis 4  
2. CH 315 Quantitative Analysis Lab. 2  
3. CH 331 Physical Chemistry 4  
4. CH 339 Physical Chemistry Lab. 2  
5. Humanities Requirement 4  
6. Literature Requirement 2  
7. Oral Communication Requirement 2

Second Semester
1. CH 332 Physical Chemistry 4  
2. CH 340 Physical Chemistry Lab. 2  
3. CH 411 Instrumental Analysis 4  
4. CH 412 Instrumental Analysis Lab. 2  
5. ENGL 314 Technical Writing 4  
6. Social Science Requirement 4

Senior Year
First Semester
1. BIOCH 301 Molecular Biochemistry 4  
2. CH 402 Inorganic Chemistry 4  
3. CH 443 Research Problems 4  
4. Chemistry Requirement 4  
5. Social Science Requirement 4  
6. Elective 2

Note: A student is allowed to enroll in any ME or EM course only when all prerequisites, as defined by current official listings for that course, have been passed with a grade of C or better.

1Select from list of approved courses.
2Select from 200-level literature or 300-level and higher foreign language literature courses.
3See advisor.
4Required for Chemistry Majors.
5Required for Biochemistry Majors.

83
Second Semester
3 - CH 444 Research Problems
3 - Chemistry Requirement\(^6\)
9 - Elective
15

130 Total Semester Hours

\(^1\) CP SC 120, 111, or other C.3 course selected from departmental list.
\(^2\) Two semesters of the same modern language.
\(^3\) See General Education Requirements. See also other college requirements.
\(^4\) ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H210.
\(^5\) COMM 150, 250, 251, or as approved by advisor.
\(^6\) See advisor. CH 421 and 435 are recommended for students qualifying for graduate studies.

### CHEMISTRY Bachelor of Arts

#### Freshman Year

**First Semester**
4 - CH 101 General Chemistry
1 - CH 141 Chemistry Orientation
3 - ENGL 101 Composition I
4 - MTHSC 106 Calculus of One Variable I
3 - Computer Skills Requirement\(^1\)
15

#### Second Semester
4 - CH 102 General Chemistry
2 - CH 205 Introduction to Inorganic Chemistry
3 - ENGL 102 Composition II
4 - MTHSC 108 Calculus of One Variable II
3 - PHYS 122 Physics with Calculus I
16

**Sophomore Year**

**First Semester**
3 - CH 223 Organic Chemistry\(^2\)
1 - CH 227 Organic Chemistry Lab.\(^2\)
4 - MTHSC 206 Calculus of Several Variables
3 - PHYS 221 Physics with Calculus II
4 - Foreign Language Requirement\(^1\)
15

**Second Semester**
3 - CH 224 Organic Chemistry\(^2\)
1 - CH 228 Organic Chemistry Lab.\(^2\)
3 - HIST 172 Western Civilization
4 - Foreign Language Requirement\(^1\)
3 - Literature Requirement\(^6\)
3 - Elective
17

**Junior Year**

**First Semester**
3 - CH 313 Quantitative Analysis
1 - CH 317 Quantitative Analysis Lab.
3 - HIST 173 Western Civilization
3 - Foreign Language Requirement\(^1\)
3 - Humanities Requirement E.2\(^1\)
3 - Minor\(^6\)
16

**Second Semester**
3 - CH 331 Physical Chemistry
3 - ENGL 314 Technical Writing
3 - Foreign Language Requirement\(^1\)
6 - Minor\(^6\)
3 - Oral Communication Requirement\(^7\)
18

**Senior Year**

**First Semester**
3 - CH 332 Physical Chemistry
3 - Chemistry Requirement\(^8\)
3 - Minor\(^6\)
9 - Elective
18

**Second Semester**
3 - Chemistry Requirement\(^8\)
3 - Minor\(^6\)
9 - Elective
15

130 Total Semester Hours

\(^1\) CP SC 111, 120, or other C.3 course selected from departmental list.
\(^2\) CH 223/227 and 224/228 will count toward the 24 hours of the Chemistry major.
\(^3\) Four semesters of the same modern language.
\(^4\) ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H210.
\(^5\) See General Education Requirements. See also other college requirements.
\(^6\) See minors on page 93.
\(^7\) COMM 150, 250, 251, or other O.3 course selected from departmental list.

### COMPUTER INFORMATON 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**
4 - CP SC 101 Computer Science I
3 - ENGL 101 Composition I
4 - MTHSC 106 Calculus of One Variable I
3 - Humanities Requirement E.2\(^1\)
3 - Social Science Requirement\(^1\)
17

**Second Semester**
4 - CP SC 102 Computer Science II
3 - ENGL 102 Composition II
4 - MTHSC 108 Calculus of One Variable II
3 - Natural Science Requirement\(^1\)
3 - Social Science Requirement\(^1\)
17

**Sophomore Year**

**First Semester**
4 - CP SC 212 Algorithms and Data Structures
3 - ECON 211 Principles of Microeconomics
3 - MTHSC 119 Intro. to Discrete Methods
3 - Literature Requirement\(^1\)
4 - Natural Science Requirement\(^1\)
17

**Second Semester**
3 - ACCT 201 Financial Accounting Concepts
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 210 Applied Matrix Algebra or
3 - MTHSC 311 Linear Algebra
4 - Natural Science Requirement\(^2\)
18

**Junior Year**

**First Semester**
3 - ACCT 202 Managerial Accounting Concepts
3 - CP SC 332 Computer Systems\(^9\)
3 - MKT 301 Principles of Marketing
3 - MTHSC 301 Stat. Theory and Methods I or
3 - MTHSC 302 Stats. for Science and Engr.
3 - Oral Communication Requirement\(^2\)
15

**Second Semester**
3 - CP SC 360 Distributed and Network Prog.
3 - CP SC 372 Intro. to Software Development
3 - ENGL 314 Technical Writing
3 - MGT 301 Principles of Management
3 - Elective
15

**Senior Year**

**First Semester**
3 - CP SC 462 Database Management Systems
1 - CP SC 491 Seminar in Professional Issues II\(^10\)
3 - Business Requirement\(^7\)
3 - Computer Science Requirement\(^7\)
4 - Elective
14

**Second Semester**
3 - MGT 312 Decision Models for Management
3 - Business Requirement\(^7\)
3 - Computer Science Requirement\(^9\)
3 - Humanities/Social Science Requirement\(^1\)
3 - Elective
15

128 Total Semester Hours

\(^1\) See General Education Requirements.
\(^2\) Select from BIOL 101/102, 103/104, 110/111; CH 101/102, 105/106, PHYS 121/122/223/224/225; 207/208. The other three hours may be selected from EN SP 200 or any course designated BIOL, CH, GBOL, BIOCH, BIOSC, MICRO, or PHYS.
COMPUTER SCIENCE

Bachelor of Science

The Computer Science degree program is oriented toward design, implementation, and application of software systems to solve information processing problems. Emphasis areas outside computer science allow the program to be tailored to the needs and interests of individual students. This program is more technically oriented than the Computer Information Systems curriculum. It prepares students for employment in the computer software field or for continued study toward an advanced degree in computer science. This program is accredited by the Computing Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

Students who change majors into Computer Science must have a cumulative grade-point ratio of 2.0 or better.

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

Freshman Year

First Semester
1. CP SC 101 Computer Science I
2. ENGL 101 Composition I
3. MTHSC 106 Calculus of One Variable I
4. Humanities/Social Science Requirement
5. Social Science Requirement
6. 17

Second Semester
1. CP SC 102 Computer Science II
2. ENGL 102 Composition II
3. MTHSC 108 Calculus of One Variable II
4. Humanities/Social Science Requirement
5. Social Science Requirement
6. 17

Sophomore Year

First Semester
1. CP SC 212 Algorithms and Data Structures
2. MTHSC 119 Intro. to Discrete Methods
3. PHYS 122 Physics with Calculus I
4. Literature Requirement
5. Elective
6. 16

Second Semester
1. CP SC 215 Tools and Tech. for Software Dev.
2. CP SC 231 Intro. to Computer Organization
3. CP SC 291 Seminar in Professional Issues I
4. ECE 201 Logic and Computing Devices
5. PHYS 221 Physics with Calculus II
6. Oral Communication Requirement

Junior Year

First Semester
1. CP SC 323 Computer Systems
2. CP SC 360 Distributed and Network Prog.
3. ENGL 314 Technical Writing
4. MTHSC 301 Stat. Theory and Methods I
5. MTHSC 311 Linear Algebra
6. Minor
7. 15

Notes:
1. For graduation, a candidate for the BS degree in Computer Science must have earned a grade of C or better in each CPSC course applied to the degree.
2. A grade of C or better must be earned in all prerequisite courses (including CPSC, ECE and MTHSC courses) before enrolling in the next CPSC course.
3. No student may exceed a maximum of two attempts, excluding a W, to complete successfully any CPSC 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
1. CP SC 101 Computer Science I
2. ENGL 101 Composition I
3. MTHSC 106 Calculus of One Variable I
4. Foreign Language Requirement
5. 15

Second Semester
1. CP SC 102 Computer Science II
2. ENGL 102 Composition II
3. HIST 172 Western Civilization
4. MTHSC 108 Calculus of One Variable II
5. Foreign Language Requirement
6. 18

Sophomore Year

First Semester
1. CP SC 212 Algorithms and Data Structures
2. MTHSC 119 Intro. to Discrete Methods
3. Foreign Language Requirement
4. Literature Requirement
5. Natural Science Requirement
6. 17

Second Semester
1. CP SC 215 Tools and Tech. for Software Dev.
2. CP SC 231 Intro. to Computer Organization
3. Foreign Language Requirement
4. Literature Requirement
5. Natural Science Requirement
6. 17

Junior Year

First Semester
1. CP SC 323 Computer Systems
2. CP SC 360 Distributed and Network Prog.
3. ENGL 314 Technical Writing
4. MTHSC 301 Stat. Theory and Methods I
5. MTHSC 311 Linear Algebra
6. Minor
7. 15
Second Semester
1. CP SC 291 Seminar in Professional Issues I
2. CP SC 372 Intro. to Software Development
3. HIST 173 Western Civilization
4. Oral Communication Requirement
5. Minor
6. Senior Year
16

Senior Year
First Semester
6. Computer Science Requirement
7. Departmental Requirement
8. Fine Arts Requirement
9. Minor
10. Elective
11. Total Semester Hours
12. 129
13. Geology

Bachelor of Science

Geology involves the physics and chemistry of materials which comprise the earth, but equally important, it considers the development of life on earth. Fundamentally, the chemical, physical, and biological responses to environments on and in the earth must be thoroughly understood so that the historical development of the earth can be deduced, predictions of the future inferred, and natural resources intelligently developed. Industry depends on minerals and rocks; metals have their origin in them as do our chief power sources: coal, petroleum, and radioactive minerals.

Employment opportunities for geologists include such far-reaching fields as mineral-producing industries, railroads, municipalities, engineering firms, and water authorities. It is important, therefore, that a geology education rest on a broad yet rigorous base.

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 Geology 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 one course from one of these subdisciplines: geology/soil science, biology/ecology, or chemistry/physics. The Engineering Geology 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 101 Composition I
3. GEOG 100 Current Topics in Geology
4. GEOG 101 Physical Geology
5. GEOG 103 Physical Geology Lab.
6. MTHSC 106 Calculus of One Variable I
7. MTHSC 106 Calculus of One Variable II
8. Elective
9. 15
10. Second Semester
11. CH 102 General Chemistry
12. ENGL 102 Composition II
13. GEOG 102 Historical Geology
14. MTHSC 108 Calculus of One Variable II
15
16. Sophomore Year
17. First Semester
18. BIOL 103 General Biology I
19. GEOG 302 Structural Geology
20. MTHSC 206 Calculus of Several Variables
21. Literature Requirement
22. 15
23. Second Semester
24. COMM 250 Public Speaking
25. CP SC 110 Elementary Computer Programming
26. CP SC 111 Elem. Comp. Prog. in C/C++
27. GEOG 306 Mineralogy
28. PHYS 122 Physics with Calculus I
29. Humanities Requirement E
30. 16
31. Junior Year
32. First Semester
33. ENGL 314 Technical Writing
34. GEOG 314 Sedimentary Petrology
35. PHYS 221 Physics with Calculus II
36. Social Science Requirement
37. Elective
38. 15
39. Second Semester
40. ENGL 315 Writing in the Environmental Sciences
41. GEOG 315 Ancient Geology
42. MTHSC 206 Calculus of Several Variables
43. Literature Requirement
44. 15
45. Sophomore Year
46. First Semester
47. CP SC 110 Elementary Computer Programming
48. CP SC 111 Elem. Comp. Prog. in C/C++
49. GEOG 302 Structural Geology
50. MTHSC 206 Calculus of Several Variables
51. Literature Requirement
52. 15
53. Summer
54. 6
55. Summer Geology Field Course
56. Senior Year
57. First Semester
58. GEOG 316 Igneous and Metamorphic Petrology
59. GEOG 403 Invertebrate Paleontology
60. Technical Requirement
61. Elective
62. 15
63. Second Semester
64. GEOG 401 Applied Geophysics
65. GEOG 411 Stratigraphy
66. Technical Requirement
67. 15
68. Elective
69. 15
70. Total Semester Hours
71. 130
72. GEOL 202, 204, 205, 206, 207, 208, 209, or H210.
73. See General Education Requirements.
74. Select from 300- or 400-level geology courses.
75. GEOL 475 or select from departmental list.
76. Choose from departmental list of approved courses.
77. Engineering Geology Concentration
78. Freshman Year
79. First Semester
80. CH 101 General Chemistry
81. ENGL 101 Composition I
82. GEOG 100 Current Topics in Geology
83. GEOG 101 Physical Geology
84. GEOG 103 Physical Geology Lab.
85. MTHSC 106 Calculus of One Variable I
86. Elective
87. 15
88. Second Semester
89. CH 102 General Chemistry
90. ENGL 102 Composition II
91. GEOG 102 Historical Geology
92. MTHSC 108 Calculus of One Variable II
93. Elective
94. 15
95. Sophomore Year
96. First Semester
97. BIOL 103 General Biology I
98. GEOG 302 Structural Geology
99. MTHSC 206 Calculus of Several Variables
100. Literature Requirement
101. 15
102. Second Semester
103. COMM 250 Public Speaking
104. CP SC 110 Elementary Computer Programming
105. CP SC 111 Elem. Comp. Prog. in C/C++
106. GEOG 306 Mineralogy
107. PHYS 122 Physics with Calculus I
108. Humanities Requirement E
109. 16
110. Junior Year
111. First Semester
112. ENGL 314 Technical Writing
113. GEOG 314 Sedimentary Petrology
114. PHYS 221 Physics with Calculus II
115. Social Science Requirement
116. Elective
117. 15
118. Second Semester
119. ENGL 315 Writing in the Environmental Sciences
120. GEOG 315 Ancient Geology
121. MTHSC 206 Calculus of Several Variables
122. Literature Requirement
123. 15
124. Summer
125. GEOL 316 Igneous and Metamorphic Petrology
126. GEOL 403 Invertebrate Paleontology
127. Technical Requirement
128. Elective
129. 15
130. Second Semester
131. GEOL 401 Applied Geophysics
132. GEOL 411 Stratigraphy
133. Technical Requirement
134. Elective
135. 15
136. Total Semester Hours
137. GEOL 202, 204, 205, 206, 207, 208, 209, or H210.
138. See General Education Requirements.
139. Select from 300- or 400-level geology courses.
140. GEOL 475 or select from departmental list.
141. Choose from departmental list of approved courses.
### Sophomore Year

**First Semester**
- BIOL 103 General Biology I
- GEOL 302 Structural Geology
- MTHSC 106 Calculus of Several Variables
- Literature Requirement

**Second Semester**
- BIOL 104 General Biology II
- CP SC 110 Elementary Computer Program or
  - CP SC 111 Elem. Comp. Prog. in C/C++
- EN SP 200 Intro. to Environmental Science
- GEOL 306 Mineralogy
- PHYS 122 Physics with Calculus I

### Summer

6 - Summer Geology Field Course

### Senior Year

**First Semester**
- GEOL 408 Geohydrology
- Engineering Geology Requirement
- Social Science Requirement
- Elective

**Second Semester**
- GEOL 401 Applied Geophysics
- Engineering Geology Requirement
- Elective

130 Total Semester Hours

1. ENGL 201, 203, 204, 205, 206, 207, 208, 209, or H210.
2. See General Education Requirements.
3. Select from departmental list of approved courses. A minimum of 15 credits is required.
4. Select from 300-400 level geology courses.
5. GEOL 475 or select from departmental list.

### Environmental Geology Concentration

**Freshman Year**

**First Semester**
- CH 101 General Chemistry
- ENGL 101 Composition I
- GEOL 100 Current Topics in Geology
- GEOL 101 Physical Geology
- GEOL 103 Physical Geology Lab.
- MTHSC 106 Calculus of One Variable I

**Second Semester**
- CH 102 General Chemistry
- ENGL 102 Composition II
- GEOL 102 Historical Geology
- MTHSC 108 Calculus of One Variable II

### Second Semester

4 - CH 101 General Chemistry
3 - ENGL 101 Composition I
1 - GEOL 100 Current Topics in Geology
3 - GEOL 101 Physical Geology
1 - GEOL 103 Physical Geology Lab.
3 - Mathematical Sciences Requirement

### Junior Year

**First Semester**
- ENG 102 Composition II
- GEOL 102 Historical Geology
- Mathematical Sciences Requirement
- Elective

**Second Semester**
- GEOL 104 General Biology II
- CP SC 110 Elementary Computer Program or
  - CP SC 111 Elem. Comp. Prog. in C/C++
- EN SP 200 Intro. to Environmental Science
- GEOL 306 Mineralogy
- PHYS 122 Physics with Calculus I

**Summer**

6 - Summer Geology Field Course

**Senior Year**

**First Semester**
- GEOL 408 Geohydrology
- Engineering Geology Requirement
- Social Science Requirement
- Elective

**Second Semester**
- GEOL 401 Applied Geophysics
- Engineering Geology Requirement
- Elective

130 Total Semester Hours

1. ENGL 201, 203, 204, 205, 206, 207, 208, 209, or H210.
2. See General Education Requirements.
3. Select from departmental list of approved courses. A minimum of 15 credits is required.
4. GEOL 475 or select from departmental list.

### GEOLOGY

**Bachelor of Arts**

**Freshman Year**

**First Semester**
- CH 101 General Chemistry
- ENGL 101 Composition I
- GEOL 100 Current Topics in Geology
- GEOL 101 Physical Geology
- GEOL 103 Physical Geology Lab.
- Mathematical Sciences Requirement

**Second Semester**
- CH 102 General Chemistry
- ENGL 102 Composition II
- GEOL 102 Historical Geology
- Mathematical Sciences Requirement
- Elective

**Sophomore Year**

**First Semester**
- COMM 250 Public Speaking
- GEOL 302 Structural Geology
- HIST 172 Western Civilization
- Foreign Language Requirement
- Literature Requirement

**Second Semester**
- COMM 250 Public Speaking
- GEOL 302 Structural Geology
- HIST 172 Western Civilization
- Computer Skills Requirement
- Foreign Language Requirement
- Literature Requirement

**Junior Year**

**First Semester**
- GEOL 408 Geohydrology
- Engineering Geology Requirement
- Social Science Requirement
- Elective

**Second Semester**
- GEOL 401 Applied Geophysics
- Engineering Geology Requirement
- Elective

130 Total Semester Hours

1. ENGL 201, 203, 204, 205, 206, 207, 208, 209, or H210.
2. See General Education Requirements.
3. Select from departmental list of approved courses. A minimum of 15 credits is required.
4. GEOL 475 or select from departmental list.

**Senior Year**

**First Semester**
- GEOL 408 Geohydrology
- Engineering Geology Requirement
- Social Science Requirement
- Elective

**Second Semester**
- GEOL 401 Applied Geophysics
- Engineering Geology Requirement
- Elective

130 Total Semester Hours

1. ENGL 201, 203, 204, 205, 206, 207, 208, 209, or H210.
2. See General Education Requirements.
3. Select from departmental list of approved courses. A minimum of 15 credits is required.
4. GEOL 475 or select from departmental list.
Second Semester
6 - Major
3 - Minor
3 - Technical Requirement
4 - Elective
16

128 Total Semester Hours

*See General Education Requirements. MTHSC 106 and 108 are recommended.
*German or French is recommended. Two years of the same language are required.
*ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H210.
*See General Education Requirements. CP SC 110 or 111 is recommended.
*Select from any 300- or 400-level geology courses.
*Choose from departmental list of approved courses.

MATHEMATICAL 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 Analysis, 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.temsc.edu.

Freshman Year

First Semester
3 - ECON 200 Economic Concepts or
3 - ECON 211 Principles of Microeconomics
3 - ENGL 101 Composition I
3 - HIST 172 or 173 Western Civilization
4 - MTHSC 106 Calculus of One Variable I
4 - Foreign Language Requirement
17

Second Semester
3 - CP SC 120 Intro. to Information Technology
3 - ENGL 102 Composition II
4 - MTHSC 108 Calculus of One Variable II
4 - MTHSC 129 Prob. Solving in Discrete Math.
4 - Foreign Language Requirement
17

Sophomore Year

First Semester
4 - MTHSC 206 Calculus of Several Variables
1 - MTHSC 250 Intro. to Mathematical Sciences
3 - MTHSC 360 Intermediate Math. Computing
2 - Literature Requirement
1 - Science Requirement
15

Second Semester
4 - MTHSC 208 Intro. to Ord. Diff. Equations
3 - MTHSC 311 Linear Algebra
3 - PHYS 122 Physics with Calculus I
3 - Literature Requirement
4 - Science Requirement
17

Junior Year

First Semester
3 - MTHSC 302 Statistics for Science and Engr.
3 - MTHSC 440 Linear Programming
4 - Approved Requirement
3 - Emphasis Area
3-4 - Science Requirement
16

Second Semester
3 - MTHSC 400 Theory of Probability
3 - MTHSC 412 Introduction to Modern Algebra
3 - Approved Requirement
3 - Emphasis Area
4 - Science Requirement
16

Senior Year

First Semester
3 - COMM 250 Public Speaking
3 - ENGL 314 Technical Writing
3 - MTHSC 450 Intro. to Mathematical Models
3 - MTHSC 453 Advanced Calculus I or
3 - MTHSC 463 Mathematical Analysis I
4 - Approved Requirement
3 - Emphasis Area
19

Second Semester
3 - MTHSC 454 Advanced Calculus II
3 - Emphasis Area
10 - Elective
16

133 Total Semester Hours

EMPHASIS AREAS

Applied Analysis
3 - MTHSC 435 Complex Variables
3 - MTHSC 460 Intro. to Numerical Analysis I
6 - Applications Area
12

Operations Research/Management Science
3 - E 386 Production Planning and Control or
3 - MGT 402 Operations Planning and Cont.
3 - E 482 Systems Modeling or
3 - E 384 Engineering Economic Analysis
3 - MTHSC 407 Regress. and Time-Ser. Analysis
3 - MTHSC 441 Intro. to Stochastic Models
3 - MTHSC 460 Intro. to Numerical Analysis I
15

Statistics
3 - MGT 414 Statistical Analysis
3 - MTHSC 403 Intro. to Statistical Theory
3 - MTHSC 406 Sampling Theory and Methods
3 - MTHSC 407 Regression and Time-Ser. Analysis
12

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 emphasis area courses.
2. A grade of C or better must be earned in all prerequisite courses before enrolling in the next MTHSC course.

BIOLGY CONCENTRATION

Freshman Year

First Semester
5 - BIOL 110 Principles of Biology I
3 - CP SC 120 Intro. to Information Technology
3 - ENGL 101 Composition I
4 - MTHSC 106 Calculus of One Variable I
15

Second Semester
5 - BIOL 111 Principles of Biology II
3 - ENGL 102 Composition II
4 - MTHSC 108 Calculus of One Variable II
1 - MTHSC 250 Intro. to Mathematical Sciences
16

Sophomore Year

First Semester
4 - CH 101 General Chemistry
4 - MTHSC 206 Calculus of Several Variables
3 - MTHSC 360 Intermediate Math. Computing
4 - PHYS 207 General Physics I
3 - Literature Requirement
18

Second Semester
4 - CH 102 General Chemistry
4 - MTHSC 208 Intro. to Ord. Diff. Equations
3 - MTHSC 311 Linear Algebra
4 - PHYS 208 General Physics II
3 - Literature Requirement
18

Junior Year

First Semester
3 - CH 223 Organic Chemistry
1 - CH 227 Organic Chemistry Lab.
3 - MTHSC 302 Statistics for Science and Engr.
3 - MTHSC 440 Linear Programming
4 - Foreign Language Requirement
2 - Elective
16
Second Semester
3 - CH 224 Organic Chemistry
1 - CH 228 Organic Chemistry Lab.
3 - MTHSC 400 Theory of Probability
3 - MTHSC 412 Introduction to Modern Algebra
4 - Foreign Language Requirement
2 - Elective
16

Senior Year
First Semester
3 - ECON 200 Economic Concepts or
3 - ECON 211 Principles of Microeconomics
3 - MTHSC 450 Intro. to Mathematical Models
3 - MTHSC 453 Advanced Calculus I or
3 - MTHSC 463 Mathematical Analysis I
3 - Animal or Plant Diversity Requirement
4 - Elective
18

Second Semester
3 - COMM 250 Public Speaking
3 - ENGL 314 Technical Writing
3 - HIST 172 or 173 Western Civilization
3 - MTHSC 454 Advanced Calculus II
4-3 - Biological Science Requirement
2-3 - Elective
12

133 Total Semester Hours
1Those qualifying for advanced placement in languages or wanting to take languages the freshman year may take them in place of these courses.
ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H210.
2Eight credit hours in the same language are required.
3BIOC 302, 303, 304, or 305.
4BIOC 301, GEN 302/303, MICRO 305, or any 300- and 400-level biological science course.
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.

COMPUTER SCIENCE CONCENTRATION

Freshman Year
First Semester
3 - ECON 200 Economic Concepts or
3 - ECON 211 Principles of Microeconomics
3 - ENGL 101 Composition I
3 - HIST 172 or 173 Western Civilization
4 - MTHSC 106 Calculus of One Variable I
4 - Foreign Language Requirement
17

Second Semester
3 - CP SC 111 Elem. Computer Prog. in C/C++
3 - ENGL 102 Composition II
4 - MTHSC 108 Calculus of One Variable II
4 - Foreign Language Requirement
17

Sophomore Year
First Semester
4 - CP SC 210 Programming Methodology
1 - MTHSC 206 Calculus of Several Variables
1 - MTHSC 250 Intro. to Mathematical Sciences
3 - literature Requirement
3-4 - Science Requirement
15-16

Second Semester
3 - CP SC 340 Algorithms and Data Structures
4 - MTHSC 208 Intro. to Ord. Diff. Equations
3 - MTHSC 311 Linear Algebra
3 - Literature Requirement
4 - Science Requirement
17

Junior Year
First Semester
3 - MTHSC 302 Statistics for Science and Engr.
3 - MTHSC 360 Intermediate Math. Computing
3 - MTHSC 440 Linear Programming
3 - PHYS 122 Physics with Calculus I
4 - Science Requirement
16

Second Semester
3 - COMM 250 Public Speaking
3 - ENGL 314 Technical Writing
3 - MTHSC 400 Theory of Probability
3 - MTHSC 412 Introduction to Modern Algebra
3-4 - Computer Science Requirement
3-4 - Science Requirement
18-20

Senior Year
First Semester
3 - MTHSC 450 Intro. to Mathematical Models
3 - MTHSC 453 Advanced Calculus I or
3 - MTHSC 463 Mathematical Analysis I
3 - MTHSC 460 Intro. to Numerical Analysis I
7-9 - Approved Requirement
16-18

Second Semester
3 - MTHSC 454 Advanced Calculus II
3 - Computer Science Requirement
10 - Elective
17

132-137 Total Semester Hours
1Eight credit hours in the same language are required.
ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H210.
2Must include two of the following sequences: BIOL 103 and 104, CH 102 and 103, ECON 314 and 315, PHYS 221/222, 223/224.
3One of the following sequences: CP SC 231 and 428, 350 and 450, 360 and 462, or any two courses from CP SC 231, 350, 360, 372.
4Must be 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.

MATHMATICAL SCIENCES

Bachelor of Arts

Freshman Year
First Semester
3 - ECON 200 Economic Concepts or
3 - ECON 211 Principles of Microeconomics
3 - ENGL 101 Composition I
3 - HIST 172 Western Civilization
4 - MTHSC 106 Calculus of One Variable I
4 - Foreign Language Requirement
17

Second Semester
3 - ENGL 102 Composition II
4 - MTHSC 108 Calculus of One Variable II
3 - Computer Skills Requirement
4 - Foreign Language Requirement
17

Sophomore Year
First Semester
4 - MTHSC 206 Calculus of Several Variables
1 - MTHSC 250 Intro. to Mathematical Sciences
3 - literature Requirement
3-4 - Science Requirement
15

Second Semester
4 - MTHSC 208 Intro. to Ord. Diff. Equations
3 - MTHSC 311 Linear Algebra
3 - Foreign Language Requirement
4 - Science Requirement
17

Junior Year
First Semester
3 - COMM 250 Public Speaking
3 - ENGL 314 Technical Writing
3 - MTHSC 400 Theory of Probability
3 - MTHSC 412 Introduction to Modern Algebra
3-4 - Computer Science Requirement
3-4 - Science Requirement
18-20

Second Semester
3 - COMM 250 Public Speaking
3 - ENGL 314 Technical Writing
3 - MTHSC 400 Theory of Probability
3 - MTHSC 412 Introduction to Modern Algebra
3-4 - Computer Science Requirement
3-4 - Science Requirement
18-20

Senior Year
First Semester
3 - MTHSC 450 Intro. to Mathematical Models
3 - MTHSC 453 Advanced Calculus I or
3 - MTHSC 463 Mathematical Analysis I
3 - MTHSC 460 Intro. to Numerical Analysis I
7-9 - Approved Requirement
16-18

Second Semester
3 - MTHSC 454 Advanced Calculus II
3 - Computer Science Requirement
10 - Elective
17

132-137 Total Semester Hours
1Eight credit hours in the same language are required.
ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H210.
2Must include two of the following sequences: BIOL 103 and 104, CH 102 and 103, ECON 314 and 315, PHYS 221/222, 223/224.
3One of the following sequences: CP SC 231 and 428, 350 and 450, 360 and 462, or any two courses from CP SC 231, 350, 360, 372.
4Must be 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.
Second Semester
3 - ENGL 314 Technical Writing
3 - Mathematical Science Breadth Requirement
3 - Mathematical Science Requirement
3 - Minor
3 - Elective
15

130 Total Semester Hours

Notes:
1. Four semesters of the same language.
2. See advisor.
5. See advisor. Select from MTHSC 440, 450, H482, EDSEC 412.
6. Select from 300- and 400-level MTHSC courses with approval of advisor.

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
4 - CH 101 General Chemistry
3 - ENGL 101 Composition I
3 - MTHSC 106 Calculus of One Variable I
1 - PHYS 101 Current Topics in Modern Physics
3 - Social Science Requirement
15

Second Semester
4 - CH 102 General Chemistry
3 - CP SC 120 Intro. to Information Technology
3 - ENGL 102 Composition II
4 - MTHSC 108 Calculus of One Variable II
3 - PHYS 122 Physics with Calculus I
1 - PHYS 124 Physics Lab. I
18

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
3 - Literature Requirement
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
3 - Humanities Requirement E.2
3 - Elective
18

Junior Year

First Semester
3 - PHYS 311 Intro. to Meth. of Theoretical Phys.
3 - PHYS 321 Mechanics I
3 - PHYS 325 Experimental Physics I
3 - Emphasis Area
3 - Writing Intensive Requirement
15

Second Semester
3 - PHYS 322 Mechanics II
3 - PHYS 326 Experimental Physics II
3 - PHYS 355 Modern Physics
3 - PHYS 441 Electromagnetics I
3 - Emphasis Area
3 - Elective
18

Senior Year

First Semester
3 - PHYS 401 Senior Thesis
3 - PHYS 442 Electromagnetics II
3 - PHYS 455 Quantum Physics I
3 - Emphasis Area
3 - Social Science Requirement
15

Second Semester
3 - PHYS 465 Thermodynamics and Statistical Mechanics
3 - Emphasis Area
3 - Oral Communication Requirement
3 - Science Requirement
3 - Elective
16

130 Total Semester Hours

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.

Freshman Year

First Semester
4 - CH 101 General Chemistry
3 - ENGL 101 Composition I
4 - MTHSC 106 Calculus of One Variable I
1 - PHYS 101 Current Topics in Modern Physics
3 - Social Science Requirement
15

Second Semester
4 - CH 102 General Chemistry
3 - CP SC 120 Intro. to Information Technology
3 - ENGL 102 Composition II
4 - MTHSC 108 Calculus of One Variable II
3 - PHYS 122 Physics with Calculus I
1 - PHYS 124 Physics Lab. I
18

Sophomore Year

First Semester
5 - BIOL 110 Principles of Biology I
4 - MTHSC 206 Calculus of Several Variables
3 - PHYS 221 Physics with Calculus II
1 - PHYS 223 Physics Lab. II
1 - PHYS 224 Physics Lab. III
3 - Literature Requirement
16

Second Semester
4 - MTHSC 208 Intro. to Ord. Diff. Equations
3 - PHYS 222 Physics with Calculus III
1 - PHYS 224 Physics Lab. III
4 - Biophysics Requirement
3 - Humanities Requirement E.2
3 - Elective
18

Junior Year

First Semester
3 - PHYS 311 Intro. to Meth. of Theoretical Phys.
3 - PHYS 321 Mechanics I
3 - PHYS 325 Experimental Physics I
3 - Emphasis Area
3 - Social Science Requirement
15

Second Semester
3 - PHYS 322 Mechanics II
3 - PHYS 326 Experimental Physics II
3 - PHYS 355 Modern Physics
3 - PHYS 441 Electromagnetics I
3 - Emphasis Area
3 - Elective
18

The Science Requirement will be fulfilled by courses in the disciplines listed in (4) above at the 300-400 level in a discipline other than that chosen for the emphasis area.
Senior Year
First Semester
1. PHYS 442 Electromagnetics II
2. PHYS 455 Quantum Physics I
3. Biophysics Requirement¹
4. Writing Intensive Requirement¹
5. Elective
15

Second Semester
2. Biophysics Requirement¹
3. Oral Communication Requirement¹
4. Social Science Requirement¹
5. Elective
16

130 Total Semester Hours
¹See General Education Requirements.
²ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H210.
³Select from a list of approved courses in physics, chemistry, mathematics, and the biological sciences. At least six credits must be in the biological sciences.
⁴Two semesters in the same modern foreign language.
⁵An approved physics course may be substituted for PHYS 465 if the student satisfactorily completes CH 331, 332.

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. CH 101 General Chemistry
2. ENGL 101 Composition I
3. MTHSC 106 Calculus of One Variable I
4. PHYS 101 Current Topics in Modern Physics
5. Social Science Requirement¹
15

Second Semester
1. CH 102 General Chemistry
2. CP SC 120 Intro. to Information Technology
3. ENGL 102 Composition II
4. MTHSC 108 Calculus of One Variable II
5. PHYS 122 Physics with Calculus I
6. PHYS 124 Physics Lab. I
18

Sophomore Year
First Semester
1. MTHSC 206 Calculus of Several Variables
2. PHYS 221 Physics with Calculus II
3. PHYS 223 Physics Lab. II
4. Foreign Language Requirement¹
5. Literature Requirement¹
15

Second Semester
1. PHYS 208 Intro. to Relativity and Cosmology
2. PHYS 222 Physics with Calculus III
3. PHYS 224 Physics Lab. III
4. Foreign Language Requirement
5. Humanities Requirement F.2¹
5. Elective
18

Junior Year
First Semester
1. PHYS 311 Intro. to Meth. of Theoretical Physics
2. PHYS 321 Mechanics I
3. Foreign Language Requirement
4. Minor
5. Writing Intensive Requirement¹
15

Second Semester
1. PHYS 322 Mechanics II
2. PHYS 355 Modern Physics
3. PHYS 441 Electromagnetics I
4. Foreign Language Requirement
5. Minor
15

Senior Year
First Semester
1. PHYS 325 Experimental Physics I
2. Minor
3. Physics Requirement⁴
4. Social Science Requirement¹
5. Elective
18

Second Semester
1. Minor
2. Oral Communication Requirement¹
3. Physics Requirement⁴
4. Social Science Requirement¹
5. Elective
16

130 Total Semester Hours
¹See General Education Requirements. (Social science requirement must include either HIST 172 or 173.)
²Four semesters in the same modern foreign language.
³ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H210.
⁴See advisor.

POLYMER AND TEXTILE CHEMISTRY AND TEXTILE MANAGEMENT
The School of Materials Science and Engineering offers undergraduate degrees in Ceramic and Materials Engineering, Polymer and Textile Chemistry, and Textile Management.

Textile students study the production, structure, and properties of natural and man-made fibers, the processes for converting these fibers into textile structures, the science of coloring agents and finishes, and the methods for evaluating the performance of textile materials.

Graduates of the degree programs in Polymer and Textile Chemistry and Textile Management hold jobs in corporate and personnel management, manufacturing management, design, research, development, technical service, quality control, and sales. They create new products and processes and solve problems. They create new products and processes and solve problems. They create new products and processes and solve problems. They create new products and processes and solve problems.

The Bachelor of Science in Polymer and Textile Chemistry is based on chemistry, physics, and mathematics. With this firm base, graduates are able to apply their scientific knowledge to the solution of problems in textile and polymer materials involving both chemical and physical principles. Graduates will be concerned with the conception, design, construction, and management of complete systems of labor, machinery, and processes for the most efficient production of textiles or related chemicals. There are two primary emphasis areas in Polymer and Textile Chemistry. Both allow students to prepare for graduate study in Textiles, Fiber, and Polymer Science as well as other disciplines.

POLYMER AND TEXTILE CHEMISTRY
Bachelor of Science
Freshman Year
First Semester
1. CH 101 General Chemistry
2. ENGL 101 Composition I
3. MTHSC 106 Calculus of One Variable I
4. TEXT 175 Intro. to Textile Manufacturing
5. History Requirement¹
17

Second Semester
1. CH 102 General Chemistry
2. CP SC 110 Elem. Computer Programming or
3. CP SC 120 Intro. to Info. Technology
4. ENGL 102 Composition II
5. MTHSC 108 Calculus of One Variable II
6. PHYS 122 Physics with Calculus I
17
Sophomore Year
First Semester
1. MTHSC 206 Calculus of Several Variables
2. PHYS 221 Physics with Calculus II
3. PHYS 223 Physics Lab. II
4. Elective
5. Literature Requirement
6. Humanities Requirement E.2
7. Approved Requirement

Second Semester
1. MTHSC 208 Intro. to Ord. Diff. Equations
2. PHYS 222 Physics with Calculus III
3. PHYS 224 Physics Lab. III
4. Elective
5. Humanities Requirement E.2

Junior Year
First Semester
1. ECON 200 Economic Concepts
2. PTC 415 Intro. to Polymer Science and Engr.
3. PTC 417 Polymer and Fiber Lab.
4. TEXT 201 Yarn Structures and Formation
5. Elective

Second Semester
1. ENGL 314 Technical Writing
2. PTC 416 Chemical Preparation of Textiles
3. TEXT 202 Fabric Struc., Design, and Analysis
4. Elective

Senior Year
First Semester
1. PTC 457 Dyeing and Finishing I
2. PTC 459 Dyeing and Finishing Lab. I
3. TEXT 421 Fiber Science
4. TEXT 428 Textile Research
5. Approved Requirement

Second Semester
1. COMM 250 Public Speaking or
2. COMM 251 Business and Prof. Speaking
3. TEXT 422 Properties of Textile Structures
4-5. Elective
6. Humanities Requirement E.2

Sophomore Year
First Semester
1. CH 101 General Chemistry or
2. CH 105 Beg., Gen. and Organic Chemistry
3. ENGL 101 Composition I
4. MTHSC 102 Intro. to Mathematical Analysis
5. TEXT 175 Intro. to Textile Manufacturing
6. History Requirement

Second Semester
1. CH 102 General Chemistry or
2. CH 106 Beg., Gen. and Organic Chemistry
3. CP SC 110 Elem. Computer Programming or
4. CP SC 120 Intro. to Info. Technology
5. ENGL 102 Composition II
6. MTHSC 207 Multivariable Calculus
7. TEXT 176 Natural and Man-made Fibers

Freshman Year
First Semester
1. CH 101 General Chemistry or
2. CH 105 Beg., Gen. and Organic Chemistry
3. ENGL 101 Composition I
4. MTHSC 102 Intro. to Mathematical Analysis
5. TEXT 175 Intro. to Textile Manufacturing
6. History Requirement

Second Semester
1. CH 102 General Chemistry or
2. CH 106 Beg., Gen. and Organic Chemistry
3. CP SC 110 Elem. Computer Programming or
4. CP SC 120 Intro. to Info. Technology
5. ENGL 102 Composition II
6. MTHSC 207 Multivariable Calculus
7. TEXT 176 Natural and Man-made Fibers

Second Semester
1. CH 102 General Chemistry or
2. CH 106 Beg., Gen. and Organic Chemistry
3. CP SC 110 Elem. Computer Programming or
4. CP SC 120 Intro. to Info. Technology
5. ENGL 102 Composition II
6. MTHSC 207 Multivariable Calculus
7. TEXT 176 Natural and Man-made Fibers

Junior Year
First Semester
1. ACCT 201 Financial Accounting Concepts
2. ECON 200 Economic Concepts
3. PSYCH 201 Introduction to Psychology
4. TEXT 201 Yarn Structures and Formation
5. Elective

Second Semester
1. ACCT 202 Managerial Accounting Concepts
2. COMM 250 Public Speaking or
3. COMM 251 Business and Prof. Speaking
4. MGT 301 Principles of Management
5. TEXT 202 Fabric Struc., Design, and Analysis
6. Literature Requirement E.2

Second Semester
1. FIN 306 Corporate Finance
2. LAW 322 Legal Environment of Business
3. MKT 301 Principles of Marketing
4. Concentration
5. Elective

Senior Year
First Semester
1. TEXT 324 Textile Statistics
2. TEXT 470 Text. Cost. and Inventory Control
3. Elective

Second Semester
1. Elective

Second Semester
1. Elective

Second Semester
1. Elective

Second Semester
1. Elective

Second Semester
1. Elective

Second Semester
1. Elective

Second Semester
1. Elective

Second Semester
1. Elective

Second Semester
1. Elective

Second Semester
1. Elective

General Education Requirements

Textile Specialties—TEXT 414, 416, 421, 471, 475, 476.
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
Anthropology
Athletic Leadership
Beef Cattle Production
Biochemistry
Bioengineering
Biological Sciences
Business Administration
Chemistry
Cluster
Communication Studies
Communications
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
Film Studies
Financial Management
Fine Arts
Food Science
Forest Products
Forest Resource Management
Geography
Geology
Great Works
Health Science
History

Horse Production
Horticulture
Human Resource Management
International Engineering and Science
International Politics
Legal Studies
Management
Mathematical Sciences
Microbiology
Military Leadership
Modern Languages
Music
Natural Resource Economics
Operations Management
Packaging Science
Parks, Recreation, and Tourism Management
Philosophy
Physics
Plant Pathology
Political Science
Poultry Science
Psychology
Public Policy
Religion
Science and Technology in Society
Screenwriting
Sociology
Spanish-American Area Studies
Textiles—not open to Polymer and Textile Chemistry or Textile Management majors
Theatre
Turfgrass
Urban Forestry
Wildlife and Fisheries Biology
Women's Studies
Writing

See pages 35–38 for details.
COLLEGE OF
HEALTH, EDUCATION, AND HUMAN DEVELOPMENT

The College of Health, Education, and Human Development oversees academic programs offered by the School of Nursing, the School of Education, the Department of Public Health Sciences; the Department of Parks, Recreation, and Tourism Management; the Department of Family and Youth Development, the National Dropout Prevention Center, and the Joseph E. Sullivan Center for Nursing and Wellness. Preparation of professional leaders in the health, education, nursing, recreation, park management, and tourism services is the primary focus of the College. The educational resources of Clemson's other colleges are integrated into these curricular areas, providing students with the breadth as well as the depth to be successful professionals within their chosen fields.

SCHOOL OF EDUCATION
The mission of the School of Education is to prepare outstanding, reflective practitioners in education and human resource development through the provision of diverse experiences in content, method, and research that empower professionals to be effective members of the communities in which they live and serve. The 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 School of Education embraces its conceptual framework of empowered professionals educating a diverse world. These professionals utilize the knowledge of curriculum, technology, assessment, and instructional/leadership/counseling strategies to effect learning for diverse populations. Clemson provides resources for courses and clinical experiences in method, research, and content knowledge which produce reflective practitioners who are knowledgeable, ethical, caring decision makers responding to local, state, and world needs.

The Teacher Education Programs prepare teachers, provide professional services to education in South Carolina, and carry out 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.

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, and Special Education and secondary school programs in Agriculture, Biological Sciences, Earth Sciences, Economics, English, History, Mathematics, Modern Languages, Physical Sciences, Political Science, Psychology, Sociology, and 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 60 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—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.

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. A student who is denied admission may appeal to the Education Admissions Committee.

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 completor 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 40 for the curriculum.

EARLY CHILDHOOD EDUCATION

Bachelor of Arts
The Early Childhood Education curriculum prepares students for teaching positions on the pre-kindergarten and primary levels (Pre-K-3).

Freshman Year
First Semester
1. ED 105 Orientation to Education
2. ENGL 101 Composition I
4. Foreign Language Requirement¹
5. Science Requirement¹
6. Elective
7. 18

Second Semester
3. ENGL 102 Composition II
4. HIST 173 Western Civilization
5. MTHSC 118 Math. for Elem. School Tchrs. II
6. Foreign Language Requirement¹
7. Science Requirement¹
8. 18

Sophomore Year
First Semester
3. COMM 150 Intro. to Speech Comm. or
4. COMM 250 Public Speaking
3. GEOG 103 Intro. to World Regional Geography
3. Foreign Language Requirement¹
4. Science Requirement¹
5. Elective
6. 18

Second Semester
3. ED F 301 Principles of American Education
3. ED F 334 Child Growth and Development
3. Foreign Language Requirement¹
3. Humanities Requirement¹
3. Literature Requirement¹
4. Elective
5. 18

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
4. Writing Intensive Requirement²
5. 18

Second Semester
3. ED EL 321 P. E. Meth. for Classroom Teachers
3. ED EL 458 Health Education Methods for the Classroom Teacher
3. ED F 480 (AG ED, THRD) Educational Applications of Microcomputers
3. ED SP 468 Early Intervention for Infants and Children with Special Needs
3. READ 458 Early Literacy
4. Elective
5. 18

¹ Required by state
² Required by the College of Education
Senior Year
(Courses must be taken as listed in both semesters.)

First Semester
1. ED EC 400 Observation and Assessment in Clinical Settings
2. ED EC 420 Early Childhood Science
3. ED EC 430 Early Childhood Mathematics
4. ED EC 440 Integrated Language Arts and Social Studies in Primary Schools
5. ED EC 450 Early Childhood Curriculum
6. READ 459 Teaching Reading in the Early Grades K-3
18

Second Semester
18

118 Total Semester Hours

Two years of the same foreign language are required.

Three science courses (12 credit hours) composed of both biological and physical sciences are required. Eight of these hours must be a two-semester sequence. PH SC 107 and 108 and BIOL 109 are recommended.

A H 101, 210, MUSIC 210, THEA 210, 315, 316, or 317
ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H 210
ENGL 304, 312, 314, 316, 333, 334, 345, or 346

ELEMENTARY EDUCATION
Bachelor of Arts

The Elementary Education curriculum prepares students for teaching on the elementary school level (grades 1–8).

Freshman Year
First Semester
1. ED 105 Orientation to Education
2. ENGL 101 Composition I
4. Foreign Language Requirement
5. Science Requirement
16

Second Semester
3. ENGL 102 Composition II
4. HIST 172 Western Civilization
5. MTHSC 118 Math. for Elem. School Tchrs. II
6. Foreign Language Requirement
7. Science Requirement
18

Sophomore Year
First Semester
1. HIST 173 Western Civilization
2. Arts and Humanities Requirement
3. Foreign Language Requirement
4. Literature Requirement
5. Science Requirement
6. Elective
17

Second Semester
12. ED EL 481 Dir. Teaching in the Elem. Sch.
12

133 Total Semester Hours

Two years of the same foreign language are required.

Three science courses (12 credit hours) composed of both biological and physical sciences are required. Eight of these hours must be a two-semester sequence. PH SC 107 and 108 and BIOL 109 are recommended.

HUM 301 and 302, or select three credits from two of the following fields:

Arts—A H 210
Music—MUSIC 210, 311, 420
Theatre—THEA 210, 372
ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H 210.

Second Semester

18

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. BIOL 103 General Biology I
5. CH 105 Beg. General and Organic Chemistry
6. ED 105 Orientation to Education
7. ENGL 101 Composition I
8. MTHSC 106 Calculus of One Variable I
9. Elective
18

Second Semester
4. BIOL 104 General Biology II
5. CH 106 Beg. Gen. and Organic Chemistry
6. ENGL 102 Composition II
7. MTHSC 108 Calculus of One Variable II
8. Elective
18

Sophomore Year
First Semester
4. ED EL 321 P.E. Meth. for Classroom Teachers
5. ED EL 458 Health Education Methods for the Classroom Teacher
6. ED F 301 Principles of American Education
7. ED F 302 Educational Psychology
8. ENGL 385 Children’s Literature
9. Elective
18

Second Semester
3. ED EL 452 Elem. Methods in Math. Teaching
4. ED F (THRD) 315 Integrating Computers into the Classroom
5. ED SP 370 Introduction to Special Education
6. READ 459 Teaching Reading in the Early Grades K-3
7. THRD 310 Arts and Creativity for the Elementary Child
8. Elective
19

Junior Year
First Semester
3. ED EL 401 Elementary Field Experience
4. ED EL 451 Elem. Methods in Science Teaching
5. ED EL 487 Teaching Social Studies in the Elementary School
6. ED EL 488 Teaching the Language Arts in the Elementary School
7. READ 460 Teaching Reading in the Intermediate Grades: 4–8
8. Elective
17

Second Semester
12. ED EL 481 Dir. Teaching in the Elem. Sch.
12

133 Total Semester Hours

Two years of the same foreign language are required.

Three science courses (12 credit hours) composed of both biological and physical sciences are required. Eight of these hours must be a two-semester sequence. PH SC 107 and 108 and BIOL 109 are recommended.

HUM 301 and 302, or select three credits from two of the following fields:

Arts—A H 210
Music—MUSIC 210, 311, 420
Theatre—THEA 210, 372
ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H 210.

Second Semester
3. ED F 301 Principles of American Education
4. ENGL 314 Technical Writing
5. MTHSC 301 Statistical Theory and Methods I
6. MTHSC 308 College Geometry
7. Humanities Requirement
8. Elective
17

Second Semester
3. ED F 302 Educational Psychology
4. ED F (THRD) 315 Integrating Computers into the Classroom
5. HIST 173 Western Civilization
6. MTHSC 311 Linear Algebra
7. PHIL 102 Introduction to Logic
8. PHYS 208 General Physics II
17

Junior Year
First Semester
3. ED F 301 Principles of American Education
4. ENGL 314 Technical Writing
5. MTHSC 301 Statistical Theory and Methods I
6. MTHSC 308 College Geometry
7. Humanities Requirement
8. Elective
17

Second Semester
3. ED F 335 Adolescent Growth and Development
4. ED F (AG ED, THRD) 480 Educational Applications of Microcomputers
5. ED SP 370 Introduction to Special Education
7. MTHSC 408 Topics in Geometry
8. Mathematics Requirement
18
Senior Year
First Semester
3 - EDSEC 427 Teaching Secondary Mathematics 1
3 - MTHSC 412 Introduction to Modern Algebra
3 - MTHSC 453 Advanced Calculus I
3 - READ 498 Secondary Content Area Reading 1
3 - Mathematics Requirement 1

15

Second Semester
9 - EDSEC 446 Teaching Internship in Secondary Mathematics 2
3 - MTHSC 456 Secondary Math. Capstone Sem. 3
3 - Elective

15

135 Total Semester Hours

1ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H210.
2May be satisfied by completing A / H 210, HUM 301, 302, MUSIC 210, 311, or THEA 210.
3EDSEC 426 and READ 498 must be taken concurrently. Offered fall semester only.
4EDSEC 446 and 456 must be taken concurrently. Offered spring semester only.

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
4 - CH 101 General Chemistry
3 - CP SC 120 Intro. to Information Technology
3 - ENGL 101 Composition I
3 - HIST 172 Western Civilization
3 - MTHSC 106 Calculus of One Variable I

17

Second Semester
4 - CH 102 General Chemistry
1 - ED 105 Orientation to Education
3 - ENGL 102 Composition II
3 - HIST 173 Western Civilization
3 - MTHSC 301 Stat. Theory and Methods I or 2

4 - MTHSC 108 Calculus of One Variable II
3 - Elective

17-18

Sophomore Year
First Semester
5 - BIOL 100 Principles of Biology I
4 - CH 201 Survey of Organic Chemistry or
3 - CH 330 Intro. to Physical Chemistry
3 - ED F 301 Principles of American Education
1 - ED F (THRD) 315 Integrating Computers into the Classroom
4 - PHYS 207 General Physics I

16-17

Second Semester
5 - BIOL 111 Principles of Biology II
5 - COMM 150 Intro. to Speech Communication or 2
3 - COMM 250 Public Speaking
3 - ED F 302 Educational Psychology
4 - PHYS 208 General Physics II
3 - Literature Requirement 1

18

Junior Year
First Semester
5 - BIOC 301 Molecular Biochemistry and
5 - BIOC 302 Molecular Biochemistry Lab. or
3 - BIOC 305 Essential Elements of Bioch. and
1 - BIOC 306 Essential Elem. of Bioch. Lab.
4 - BIOSC 223 Human Anatomy and Phys. I
3 - ED F 345 Adolescent Growth and Development
3 - GEN 302 Molecular and General Genetics and
1 - GEN 303 Introductory Genetics Lab.
4 - Elective

19

Second Semester
4 - BIOSC 223 Human Anatomy and Phys. II
3 - ENGL 314 Technical Writing
3 - HUM 301 or 302 Humanities
3 - Plant Diversity Requirement 1
3 - Social Science Requirement 1

17

Senior Year
First Semester
3 - EDSEC 427 Teaching Secondary Science 1
3 - READ 498 Secondary Content Area Reading 1
4 - Animal Diversity Requirement 1
3 - Biology Requirement 1
3 - Social Science Requirement 1
3 - Elective

19-20

Second Semester
3 - ED SP 370 Introduction to Special Education
9 - EDSEC 447 Teaching Internship in Sec. Sci. 7
3 - EDSEC 457 Secondary Sci. Capstone Sem. 2

15

138-141 Total Semester Hours

1ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H210.
2MTHSC 302/308 or 303/309.
3Select from courses in ANTH, ECON, GEOG, PO SC, PSYCH, SOC.
4To be taken semester immediately prior to student teaching.
5MTHSC 302/308 or 303/307.
6MTHSC 320, 335, 420, 470, or 491.
7EDSEC 447 and 457 must be taken concurrently. Offered spring semester only.

Note: This curriculum leads to South Carolina certification to teach all science subjects in grades 7-12 and provides educational experience teaching middle school life science and high school biological sciences.

TEACHING AREA:
EARTH SCIENCES
Freshman Year
First Semester
4 - CH 101 General Chemistry
3 - ENGL 101 Composition I
3 - HIST 172 Western Civilization
3 - MTHSC 106 Calculus of One Variable I

18

Second Semester
4 - CH 102 General Chemistry
1 - ED 105 Orientation to Education
3 - ENGL 102 Composition II
4 - GEO 102 Historical Geology
3 - HIST 173 Western Civilization
3 - MTHSC 301 Stat. Theory and Methods I

18

Sophomore Year
First Semester
4 - BIOL 103 General Biology I
3 - ED F 301 Principles of American Education
1 - GEOL 100 Current Topics in Geology
4 - GEOL 306 Mineralogy
3 - Literature Requirement 1
3 - Social Science Requirement 1

18

Second Semester
4 - BIOL 104 General Biology II
3 - CP SC 120 Intro. to Information Technology
3 - ED F 302 Educational Psychology
4 - GEOL 302 Structural Geology
3 - PHYS 240 Physics of the Weather

17

Junior Year
First Semester
3 - ASTR 101 Solar System Astronomy
1 - ASTR 103 Solar System Astronomy Lab.
1 - ED F (THRD) 315 Integrating Computers into the Classroom
3 - ED F 355 Adolescent Growth and Development
3 - ENGL 314 Technical Writing
4 - PHYS 207 General Physics I
4 - Elective

19

Second Semester
3 - ASTR 102 Stellar Astronomy
1 - ASTR 104 Stellar Astronomy Lab.
3 - COMM 150 Intro. to Speech Communication
3 - COMM 250 Public Speaking
4 - PHYS 208 General Physics II
3 - Geology Requirement 1
3 - Elective

17
SECONDARY EDUCATION

Bachelor of Arts

The Bachelor of Arts degree in Secondary Education is available to students preparing to teach economics, English, geography, history, mathematics, modern languages (French, German, Spanish), political science, psychology, and sociology on the secondary school level (grades 9-12). 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 advisors 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 preceding the school year in which student teaching is to be scheduled.

TEACHING AREA: ECONOMICS

Freshman Year

First Semester
1. ED 105 Orientation to Education
2. ENGL 101 Composition
3. MTHSC 101 History of the United States
4. PSYCH 101 Introduction to Probability
5. Foreign Language Requirement
6. Science Requirement
7. Elective
8. Total Semester Hours

Second Semester
1. ED 102 Composition II
2. ENGL 102 History of the United States
3. MTHSC 102 Intro. to Mathematical Analysis
4. Foreign Language Requirement
5. Science Requirement
6. Elective
7. Total Semester Hours

Sophomore Year

First Semester
1. ECON 101 Principles of Microeconomics
2. GEOG 101 Introduction to Geography
3. HIST 172 Western Civilization
4. PSYCH 101 American National Government
5. SOC 201 Introduction to Sociology
6. Foreign Language Requirement
7. Elective
8. Total Semester Hours

Second Semester
1. ECON 202 Principles of Macroeconomics
2. GEOG 102 World Regional Geography
3. HIST 173 Western Civilization
4. PSYCH 201 Introduction to Psychology
5. Foreign Language Requirement
6. Teaching Major
7. Total Semester Hours

TEACHING AREA: PHYSICAL SCIENCES

Freshman Year

First Semester
1. CH 101 General Chemistry
2. CP SC 120 Intro. to Information Technology
3. ENGL 101 Composition
4. HIST 171 Western Civilization
5. MTHSC 101 Calculus of One Variable I
6. Total Semester Hours

Second Semester
1. CH 102 General Chemistry
2. CH 205 Introduction to Inorganic Chemistry
3. ED 105 Orientation to Education
4. ENGL 102 Composition II
5. HIST 173 Western Civilization
6. MTHSC 102 Calculus of One Variable II
7. Total Semester Hours

Sophomore Year

First Semester
1. BIOL 103 General Biology I
2. CH 201 Survey of Organic Chemistry
3. COMM 150 Intro. to Speech Communication
4. COMM 250 Public Speaking
5. ED 301 Principles of American Education
6. MTHSC 301 Statistical Theory and Methods I
7. PHYS 101 Current Topics in Modern Physics
8. Total Semester Hours

Second Semester
1. BIOL 104 General Biology II
2. CH 310 Intro. to Physical Chemistry
3. ED 302 Educational Psychology
4. PHYS 122 Physics with Calculus I
5. PHYS 124 Physics Lab. I
6. Social Science Requirement
7. Elective
8. Total Semester Hours

Junior Year

First Semester
1. ED 305 Adolescent Growth and Development
2. HUM 301 or 302 Humanities
3. PHYS 221 Physics with Calculus II
4. PHYS 223 Physics Lab. II
5. Astronomy Requirement
6. Elective
7. Total Semester Hours

Second Semester
1. ED F (THRI) 315 Integrating Computers into the Classroom
2. ENGL 314 Technical Writing
3. PHYS 224 Physics with Calculus III
4. PHYS 224 Lab. III
5. PHYS 240 Physics of the Weather
6. Literature Requirement
7. Elective
8. Total Semester Hours

Senior Year

First Semester
1. CH 313 Quantitative Analysis
2. CH 314 Quantitative Analysis Lab.
3. EDSEC 427 Teaching Secondary Science
4. READ 498 Secondary Content Area Reading
5. Physics Requirement
6. Social Science Requirement
7. Elective
8. Total Semester Hours

Second Semester
1. ED SP 370 Introduction to Special Education
2. EDSEC 447 Teaching Internship in Sec. Sci.
4. Total Semester Hours
### Junior Year

**First Semester**
- 3 - COMM 150 Intro to Speech Communication
- 3 - COMM 250 Public Speaking
- 3 - ED F 301 Principles of American Education
- 1 - ED F (THRD) 315 Integrating Computers into the Classroom
- 3 - ED F 335 Adolescent Growth and Development
- 3 - ED SP 370 Introduction to Special Education
- 2 - Elective

**Second Semester**
- 3 - ANTH 201 Introduction to Anthropology
- 3 - CPSC 120 Intro. to Information Technology or
- 3 - ED F (AG ED, THRD) 480 Educational Applications of Microcomputers
- 3 - ED F 302 Educational Psychology
- 3 - ENGL 312 Advanced Expository Writing
- 3 - Literature Requirement
- 3 - Teaching Major

18

### Senior Year

**First Semester**
- 3 - EDSEC 428 Teaching Secondary Social Studies
- 3 - READ 498 Secondary Content Area Reading
- 6 - Teaching Major
- 7 - Elective

**Second Semester**
- 9 - EDSEC 448 Teaching Internship in Social Studies
- 3 - EDSEC 458 Secondary Social Studies Capstone Seminar

12

139 Total Semester Hours

1Two years of the same modern foreign language are required.

2See advisor. Select from General Education Requirements.

3Twelve credit hours to be selected from economics 300- and 400-level courses. Must be selected with consent of advisor.

4See advisor. HIST 394 is strongly recommended.

5ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H210.

6EDSEC 428 and READ 498 must be taken concurrently in the semester preceding EDSEC 448. Offered fall semester only.

### TEACHING AREA: ENGLISH

#### Freshman Year

**First Semester**
- 3 - ENGL 101 Composition I
- 3 - MTHSC 101 Introduction to Probability
- 3 - Computer Skills Requirement
- 3 - Foreign Language Requirement
- 4 - Science Requirement

17

**Second Semester**
- 1 - ED 105 Orientation to Education
- 3 - ENGL 102 Composition II
- 3 - HIST 172 Western Civilization
- 3 - MTHSC 102 Intro. to Mathematical Analysis
- 4 - Foreign Language Requirement
- 4 - Science Requirement

18

### Sophomore Year

**First Semester**
- 3 - COMM 150 Intro. to Speech Communication or
- 3 - COMM 250 Public Speaking
- 3 - ED F 301 Principles of American Education
- 3 - ENGL 202 Major Forms of Literature
- 3 - HIST 173 Western Civilization
- 3 - Foreign Language Requirement
- 3 - Social Science Requirement

18

**Second Semester**
- 3 - ED F 302 Educational Psychology
- 3 - ENGL 209 Contemporary Literature
- 3 - ENGL 353 Ethnic American Literature
- 3 - Foreign Language Requirement
- 3 - Social Science Requirement
- 3 - Elective

18

### Junior Year

**First Semester**
- 1 - ED F (THRD) 315 Integrating Computers into the Classroom
- 3 - ED F 335 Adolescent Growth and Development
- 3 - HIST 365 English Cultural History
- 3 - HUM 301 or 302 Humanities
- 6 - Teaching Major

16

**Second Semester**
- 3 - ED F 302 Educational Psychology
- 9 - Teaching Major
- 4 - Elective

16

### Senior Year

**First Semester**
- 3 - EDSEC 424 Teaching Secondary English
- 3 - READ 498 Secondary Content Area Reading
- 9 - Teaching Major
- 3 - Elective

18

**Second Semester**
- 9 - EDSEC 444 Teaching Internship in Sec. Engl.
- 3 - EDSEC 454 Secondary English Capstone Seminar

12

133 Total Semester Hours

1See General Education Requirements.

2Two years of the same language are required.

3Select from courses in ANTH, ECON (including AP EC 202), GEOG, PSYC, PSYCH.

4May be satisfied by completing A A H 210 and MUSIC 210 or 311. In this case, the additional three credit hours will be recorded as electives.

5ENGL 209, 353, and 24 credits of junior and senior English courses as follows: ENGL 386, 400, 403, 465 or 406, 411, 422, 423, 424 or 425, 435, 485.

6To be taken in the semester preceding Directed Teaching. Offered fall semester only.

### TEACHING AREA: HISTORY

#### Freshman Year

**First Semester**
- 1 - ED 105 Orientation to Education
- 3 - ENGL 101 Composition I
- 3 - HIST 101 History of the United States
- 3 - MTHSC 101 Introduction to Probability
- 4 - Foreign Language Requirement
- 4 - Science Requirement

18

**Second Semester**
- 3 - ENGL 102 Composition II
- 3 - HIST 102 History of the United States
- 3 - MTHSC 102 Intro. to Mathematical Analysis
- 4 - Foreign Language Requirement
- 4 - Science Requirement
- 1 - Elective

18

### Sophomore Year

**First Semester**
- 3 - ECON 211 Principles of Microeconomics
- 3 - GEOG 101 Introduction to Geography
- 3 - HIST 172 Western Civilization
- 3 - PO SC 101 American National Government
- 3 - SOC 201 Introduction to Sociology
- 3 - Foreign Language Requirement

18

**Second Semester**
- 3 - ECON 212 Principles of Macroeconomics
- 3 - GEOG 103 World Regional Geography
- 3 - HIST 173 Western Civilization
- 3 - PSYCH 201 Introduction to Psychology
- 3 - Foreign Language Requirement
- 3 - Teaching Major

18

### Junior Year

**First Semester**
- 3 - COMM 150 Intro. to Speech Communication or
- 3 - COMM 250 Public Speaking
- 3 - ED F 301 Principles of American Education
- 3 - ED F (THRD) 315 Integrating Computers into the Classroom
- 3 - ED F 335 Adolescent Growth and Development
- 3 - ED SP 370 Introduction to Special Education
- 3 - Non-Western History Requirement
- 2 - Elective

18

**Second Semester**
- 3 - ANTH 201 Introduction to Anthropology
- 3 - CPSC 120 Intro. to Information Technology or
- 3 - ED F (AG ED, THRD) 480 Educational Applications of Microcomputers
- 3 - ED F 302 Educational Psychology
- 3 - ENGL 312 Advanced Expository Writing
- 3 - Literature Requirement
- 3 - Teaching Major

18
Senior Year
First Semester
1. EDSEC 424 Teaching Secondary Social Studies
2. READ 498 Secondary Content Area Reading
3. Foreign Language Requirement
4. Social Science Requirement
18
Second Semester
9. EDSEC 448 Teaching Internship in Secondary Social Studies
10. EDSEC 458 Secondary Social Studies Capstone Seminar
12
139 Total Semester Hours

Two years of the same modern foreign language are required.
See advisor. Select from General Education Requirements.
See advisor. Select from HIST 300, 301, 302, 304, 305, 307, 312, 313, 316, 325, 330, 331, 339, 340, 351, 352, 154, 155, 161, 163, 169, 170, 172, 173, 174, 175, 176, 191, 400, 418, 440, 450, 460, 470, 471, 493, 494. (HIST 313 is recommended for those planning to teach in South Carolina.)
See advisor. HIST 994 is strongly recommended.
ENG1 201, 202, 203, 204, 205, 206, 207, 208, 209, or H210.
EDSEC 428 and READ 498 must be taken concurrently in the semester preceding EDSEC 448.

TEACHING AREA:
MATHEMATICS

Freshman Year
First Semester
3. ECON 200 Economic Concepts or ECON 211 Principles of Microeconomics
4. ED 105 Orientation to Education
5. ENGL 101 Composition I
6. HIST 172 Western Civilization
7. MTHSCI 106 Calculus of One Variable I
8. Foreign Language Requirement
9. Computer Skills Requirement
10. Foreign Language Requirement
11. Elective
15
18
Second Semester
2. ENGL 102 Composition II
3. MTHSCI 108 Calculus of One Variable II
4. MTHSCI 129 Problem Solving in Discrete Math.
5. Computer Skills Requirement
6. Foreign Language Requirement
7. Elective
18

Sophomore Year
First Semester
1. ED F 315 (THRD) Integrating Computers into the Classroom
2. MTHSCI 266 Calculus of Several Variables
3. Foreign Language Requirement
4. Literature Requirement
5. Science Requirement
6. Elective
18
Second Semester
3. ED F 302 Educational Psychology
4. MTHSCI 208 Intro. to Ord. Diff. Equations
5. MTHSCI 311 Linear Algebra
6. Foreign Language Requirement
7. Science Requirement
17

Junior Year
First Semester
2. COMM 250 Public Speaking
3. ED F 301 Principles of American Education
5. MTHSCI 308 College Geometry
6. Humanities Requirement
7. Social Science Requirement
18
Second Semester
2. ED F 335 Adolescent Growth and Development
3. EDSEC 417 Technology in Secondary Mathematics
4. ENGL 314 Technical Writing
5. HIST 173 Western Civilization
6. MTHSCI 400 Theory of Probability
7. MTHSCI 408 Topics in Geometry
18

Senior Year
First Semester
2. ED SP 370 Introduction to Special Education
3. EDSEC 426 Teaching Secondary Mathematics
4. MTHSCI 412 Introduction to Modern Algebra
5. MTHSCI 451 Advanced Calculus I
6. READ 498 Secondary Content Area Reading
7. Elective
18
Second Semester
9. EDSEC 446 Teach. Internship in Sec. Math.
11. Elective
15
18
140 Total Semester Hours

Two years of the same language are required.
Must be approved by Mathematical Sciences advisor.
EDSEC 426 and READ 498 must be taken concurrently. Offered fall semester only.
EDSEC 446 and 456 must be taken concurrently. Offered spring semester only.

TEACHING AREA:
MODERN LANGUAGES
(French, German, and Spanish)

Freshman Year
First Semester
1. ED 105 Orientation to Education
2. ENGL 101 Composition I
3. MTHSCI 101 Introduction to Probability
4. Foreign Language Requirement
5. Science Requirement
15
Second Semester
2. ENGL 102 Composition II
3. MTHSCI 108 Calculus of One Variable II
4. MTHSCI 129 Problem Solving in Discrete Math.
5. Computer Skills Requirement
6. Foreign Language Requirement
7. Elective
18

Sophomore Year
First Semester
3. ED F 301 Principles of American Education
4. HIST 173 Western Civilization
5. Computer Skills Requirement
6. Foreign Language Requirement
7. Literature Requirement
8. Social Science Requirement
9. Elective
18
Second Semester
3. ED F 302 Educational Psychology
4. Foreign Language Requirement
5. Literature Requirement
6. Social Science Requirement
7. Elective
18

Junior Year
First Semester
3. ED F 335 Adolescent Growth and Development
4. ED SP 370 Introduction to Special Education
5. Social Science Requirement
9. Teaching Major
18
Second Semester
3. COMM 150 Intro. to Speech Communication or COMM 250 Public Speaking
1. ED F (THRD) 115 Integrating Computers into the Classroom
9. Teaching Major
16

Senior Year
(Directed Teaching—Either Semester)
First Semester
3. EDSEC 425 Teaching Sec. Modern Languages
3. HUM 301 or 302 Humanities
3. READ 498 Secondary Content Area Reading
6-9: Teaching Major
15-18
Second Semester
12. EDSEC 412 Directed Student Teaching in Secondary School Subjects
3. Elective
15

132-135 Total Semester Hours

Two years of the same language are required.
See General Education Requirements.
‘ENGL 201, 202, 203, 204, 205, 206, 207, 208, 209, or H210.
‘Select from courses in ANTH, ECON (including AP EC 202), GEOG, PSYC, PSYCH, SOC.
‘Requires 24 credits in French or German, or 27 credits in Spanish as listed.

French—FR 409 and 21 credits arranged as follows:
Group I—FR 100, 305, 307, 109
Group II—Nine credits at the 400 level, including at least one 400-level literature course
German—GER 305, 411, and 18 credits arranged as follows:
Group I—12 credits from GER 101, 102, 305, 316, 412, 416
Group II—Six credits from GER 301, 402, 403, 413
Spanish—27 credits arranged as follows:
Group I—SPAN 201, 211
Group II—SPAN 301, 308
College of Health, Education, and Human Development

Junior College

Group III—SPAN 309, 409, 411
Group IV—Six credits from SPAN 401, 403, 405, 406, 407, 418, 422, 435
*To be taken the semester prior to Directed Teaching.
*May be satisfied by completing A A H 210 and MUSC 210 or 311. In this case, the additional three credits will be recorded as electives.

TEACHING AREA: POLITICAL SCIENCE

Freshman Year

First Semester
1. ED 105 Orientation to Education
2. ENGL 101 Composition I
3. HIST 101 History of the United States
4. MTHSC 101 Introduction to Probability
5. Foreign Language Requirement
6. Science Requirement
Total: 18

Second Semester
1. ED 102 Composition II
2. HIST 102 History of the United States
3. MTHSC 102 Intro. to Mathematical Analysis
4. Foreign Language Requirement
5. Science Requirement
6. Elective
Total: 18

Sophomore Year

First Semester
1. ECON 211 Principles of Microeconomics
2. GEOG 101 Introduction to Geography
3. HIST 172 Western Civilization
4. PO SC 101 American National Government
5. SOC 201 Introduction to Sociology
6. Foreign Language Requirement
Total: 18

Second Semester
1. ECON 212 Principles of Macroeconomics
2. GEOG 103 World Regional Geography
3. HIST 173 Western Civilization
4. PSYCH 201 Introduction to Psychology
5. Foreign Language Requirement
Total: 18

Senior Year

First Semester
1. ANTH 201 Introduction to Anthropology
2. CP SC 120 Intro. to Information Technology or CP SC 121 Applications of Microcomputers
3. ED F (AG ED, THRD) 480 Educational Psychology
4. ENGL 312 Advanced Expository Writing
5. Literature Requirement
6. Teaching Major
Total: 18

Second Semester
9. EDSEC 428 Teaching Secondary Social Studies
10. READ 498 Secondary Content Area Reading
11. Teaching Major
Total: 18

Junior Year

First Semester
1. COMM 150 Intro. to Speech Comm. or COMM 250 Public Speaking
2. ED F 301 Principles of American Education
3. ED F (THRD) 315 Integrating Computers into the Classroom
4. ED F 302 Adolescent Growth and Development
5. ED SP 370 Introduction to Special Education
6. Non-Western History Requirement
7. Elective
Total: 18

Second Semester
1. ED 102 Composition II
2. HIST 102 History of the United States
3. MTHSC 102 Intro. to Mathematical Analysis
4. Foreign Language Requirement
5. Science Requirement
Total: 18

Senior Year

First Semester
*ECON 211 Principles of Microeconomics
*GEOG 101 Introduction to Geography
*HIST 172 Western Civilization
*PO SC 101 American National Government
*SOC 201 Introduction to Sociology
3. Foreign Language Requirement
Total: 18

Second Semester
9. EDSEC 428 Teaching Secondary Social Studies
10. READ 498 Secondary Content Area Reading
11. Teaching Major
Total: 18

TEACHING AREA: PSYCHOLOGY

Freshman Year

First Semester
1. ED 105 Orientation to Education
2. ENGL 101 Composition I
3. HIST 101 History of the United States
4. MTHSC 101 Introduction to Probability
5. Foreign Language Requirement
6. Science Requirement
Total: 18

Second Semester
1. ENGL 102 Composition II
2. HIST 102 History of the United States
3. MTHSC 102 Intro. to Mathematical Analysis
4. Foreign Language Requirement
5. Science Requirement
Total: 18

Sophomore Year

First Semester
1. ANTH 201 Introduction to Anthropology
2. CP SC 120 Intro. to Information Technology or CP SC 121 Applications of Microcomputers
3. ED F (AG ED, THRD) 480 Educational Psychology
4. ENGL 312 Advanced Expository Writing
5. Literature Requirement
6. Teaching Major
Total: 18

Second Semester
9. EDSEC 428 Teaching Internship in Secondary Social Studies
10. READ 498 Secondary Content Area Reading
11. Teaching Major
Total: 18

Junior Year

First Semester
1. COMM 150 Intro. to Speech Comm. or COMM 250 Public Speaking
2. ED F 301 Principles of American Education
3. ED F (THRD) 315 Integrating Computers into the Classroom
4. ED F 302 Adolescent Growth and Development
5. ED SP 370 Introduction to Special Education
6. Non-Western History Requirement
7. Elective
Total: 18

Second Semester
9. EDSEC 428 Teaching Internship in Secondary Social Studies
Total: 12

Junior Total Semester Hours
Two years of the same modern foreign language are required.
*See advisor. Select from General Education Requirements.
Twelve credit hours selected from 300- and 400-level courses in political science, with nine credits drawn from at least three of the following fields:
American Government—PO SC 401, 403, 412, 413, 442
Comparative Politics—PO SC 471, 472, 473, 474
International Relations—PO SC 461, 462, 463, 464
Political Theory—PO SC 450, 453
Public Policy and Administration—PO SC 302, 312
*See advisor. HIST 194 is strongly recommended.
*ENGL 202, 204, 206, 207, 208, 209, or 210.
*EDSEC 428 and READ 498 must be taken concurrently in the semester preceding EDSEC 448. Offered fall semester only.

Junior Year

First Semester
1. COMM 150 Intro. to Speech Comm. or COMM 250 Public Speaking
2. ED F 301 Principles of American Education
3. ED F (THRD) 315 Integrating Computers into the Classroom
4. ED F 302 Adolescent Growth and Development
5. ED SP 370 Introduction to Special Education
6. Non-Western History Requirement
7. Elective
Total: 18

Second Semester
9. EDSEC 428 Teaching Internship in Secondary Social Studies
Total: 12

Junior Total Semester Hours
Two years of the same modern foreign language are required.
*See advisor. Select from General Education Requirements.
Twelve credit hours to be selected from 300- and 400-level psychology courses. Must be selected with consent of advisor.
*See advisor. HIST 194 is strongly recommended.
*ENGL 202, 204, 206, 207, 208, 209, or 210.
*EDSEC 428 and READ 498 must be taken concurrently in the semester preceding EDSEC 448. Offered fall semester only.
### TEACHING AREA: SOCIOLOGY

#### Freshman Year

**First Semester**
1. ED 105 Orientation to Education
2. ENGL 101 Composition I
3. HIST 101 History of the United States
4. MTHSC 101 Introduction to Mathematical Analysis
5. Foreign Language Requirement
6. Science Requirement

**Second Semester**
1. ED 102 Composition II
2. HIST 102 History of the United States
3. MTHSC 102 Intro. to Mathematical Analysis
4. Foreign Language Requirement
5. Elective
6. Elective
7. Elective

#### Sophomore Year

**First Semester**
1. ECON 211 Principles of Microeconomics
2. GEOG 101 Introduction to Geography
3. HIST 172 Western Civilization
4. PSOC 101 Introduction to Political Science
5. SOC 201 Introduction to Sociology
6. Foreign Language Requirement
7. Teaching Major

**Second Semester**
1. ECON 212 Principles of Microeconomics
2. GEOG 103 World Regional Geography
3. HIST 173 Western Civilization
4. PSYCH 201 Introduction to Psychology
5. Foreign Language Requirement
6. Teaching Major

#### Junior Year

**First Semester**
1. COMM 190 Intro. to Speech Comm. or
2. COMM 250 Public Speaking
3. ED F 301 Principles of American Education
4. ED F (THRD) 315 Integrating Computers into the Classroom
5. ED F 335 Adolescent Growth and Development
6. ED SP 370 Introduction to Special Education
7. Non-Western History Requirement
8. Elective

**Second Semester**
1. ANTH 201 Introduction to Anthropology
2. CP SC 120 Intro. to Information Technology or
3. ED F (AG EL) THRD 480 Educational Applications of Microcomputers
4. ED F 302 Educational Psychology
5. ENGL 312 Advanced Expository Writing
6. Literature Requirement
7. Teaching Major

#### Senior Year

**First Semester**
1. ED F (THRD) 428 Teaching Secondary Social Studies
2. READ 498 Secondary Content Area Reading
3. Teaching Major
4. Elective

**Second Semester**
1. ED SEC 448 Teaching Internship in Secondary Social Studies
2. ED SEC 458 Sec. Soc. Studies Capstone Seminar
3. Elective
4. Elective

### 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 Generic Special Education Certification in South Carolina.

#### Freshman Year

**First Semester**
1. ED 105 Orientation to Education
2. ENGL 101 Composition I
4. Foreign Language Requirement
5. Science Requirement
6. Elective

**Second Semester**
1. ED 102 Composition II
2. HIST 172 Western Civilization
3. MTHSC 118 Math. for Elem. School Tchrs. II
4. Foreign Language Requirement
5. Science Requirement

#### Sophomore Year

**First Semester**
1. ED F (THRD) 315 Integrating Computers into the Classroom
2. ED F 334 Child Growth and Development
3. HIST 173 Western Civilization
4. Foreign Language Requirement
5. Literature Requirement
6. Science Requirement

**Second Semester**
1. COMM 150 Intro. to Speech Communication or
2. COMM 250 Public Speaking
3. ED F 302 Educational Psychology
4. ED SP 370 Introduction to Special Education
5. GEOG 101 Introduction to Geography
6. Computer Skills Requirement
7. Foreign Language Requirement

**Junior Year**

**First Semester**
1. ED EL 458 Health Education Methods
2. ED EL 452 Elem. Methods in Math. Teaching
3. ED SP 488 Teaching the Language Arts in the Elementary School
4. ED SP 374 Char. and Ident. of Special Education of Students with Mild Disabilities
5. ED SP 491 Educational Assessment of Individuals with Disabilities
6. Elective

**Second Semester**
1. ED SP 492 Mathematics Instruction for Individuals with Mild Disabilities
2. ED SP 493 Classroom and Behavior Management for Special Educators
3. ED SP 494 Teaching Reading to Students with Mild Disabilities
4. ED SP 496 Special Education Field Experience
5. ED SP 497 Secondary Methods for Individuals with Disabilities

**Senior Year**

**First Semester**
1. ED 105 Orientation to Education
2. ENGL 101 Composition I
4. Foreign Language Requirement
5. Science Requirement
6. Elective

**Second Semester**
1. ED SP 492, 493, 494, 495, and 497 must be taken concurrently during the fall semester of senior year.

1. Two years of the same modern foreign language are required.
2. Three science courses (12 credit hours) composed of both biological and physical sciences are required. Eight of these courses are required. Eight of these courses must be a two semester sequence. PH SC 107 and 108 and BIOL 105 are recommended.
3. "ENGL 201, 202, 203, 204, 205, 206, 207, 208, 209, or H10.
4. "Semester Hours
5. "Two years of the same modern foreign language are required.
6. "Three science courses (12 credit hours) composed of both biological and physical sciences are required. Eight of these courses are required. Eight of these courses must be a two semester sequence. PH SC 107 and 108 and BIOL 105 are recommended.
7. "ENGL 201, 202, 203, 204, 205, 206, 207, 208, 209, or H110.
9. "Must be taken during the fall semester of junior year.
10. "Must be taken during the spring semester of junior year.
11. "ED SP 492, 493, 494, 495, and 497 must be taken concurrently during the fall semester of senior year.
TECHNOLOGY AND HUMAN RESOURCE DEVELOPMENT

Bachelor of Science

The Bachelor of Science degree in Technology and Human Resource Development prepares students for professional teaching positions, as well as occupations in human resource development/industrial training in the private sector. To accomplish this, the curriculum is divided into four concentrations. By the end of the freshman year, each student must select one of the following concentrations: Customized Training and Development, Human Resource Development, Industrial Technology Education, or Vocational-Technical Education. Each curriculum requires 135 semester hours.

CUSTOMIZED TRAINING AND DEVELOPMENT CONCENTRATION

The Customized Training and Development concentration is specifically designed to facilitate the transfer of credit from approved associate degree programs into the Bachelor of Science degree in Technology and Human Resource Development. The curriculum builds upon the technical expertise gained in the associate programs to prepare individuals to become training specialists in business and industry. 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.

Freshman Year

First Semester
3 - ENGL 101 Composition I
3 - Mathematical Sciences Requirement
4 - Science Requirement
3 - Technical Specialty Requirement
3 - Elective
16

Second Semester
3 - ENGL 102 Composition II
3 - Mathematical Sciences Requirement
4 - Science Requirement
3 - Technical Specialty Requirement
3 - Elective
16

Sophomore Year

First Semester
3 - Humanities Requirement E.1
3 - Social Science Requirement
6 - Technical Specialty Requirement
4 - Elective
16

Second Semester
3 - Computer Skills Requirement
3 - Humanities Requirement E.2
3 - Social Science Requirement
6 - Technical Specialty Requirement
15

Junior Year

First Semester
6 - THRD 390 Industrial Cooperative Experience I

Second Semester
3 - PSYCH 364 Industrial Psychology or
3 - PRTM 308 Lead. and Group Proc. in Rec.
3 - THRD 160 Training Programs in Industry
3 - Major Requirement
3 - Technical Specialty Requirement
3 - Writing Intensive Requirement
15

Second Semester
3 - THRD 460 Dev. Training Programs for Ind.
3 - THRD 468 Public Relations
6 - Major Requirement
3 - Technical Specialty Requirement
3 - Elective
15

Sophomore Year

First Semester
3 - ACCT 201 Financial Accounting Concepts
3 - ECON 308 Collective Bargaining
3 - MGT 301 Principles of Management
3 - THRD 484 Comm. Technology II: Systems
3 - Humanities Requirement E.2
3 - Major Requirement
3 - Elective
18

Second Semester
3 - ENGL 314 Technical Writing
3 - MGT 307 Personnel Management
3 - THRD 360 Ind. Organizations and Safety
3 - THRD 430 Const. Tech. II: Practices and Syst.
3 - Major Requirement
3 - Elective
18

Senior Year

First Semester
3 - THRD 440 Power Technology II
3 - THRD 460 Dev. Training Programs for Ind.
3 - THRD 468 Public Relations
3 - Communication Requirement
3 - Major Requirement
3 - Elective
18

HUMAN RESOURCE DEVELOPMENT CONCENTRATION

The Human Resource Development 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.
Second Semester
3 - MGT 416 Mgr. of Human Resources or
3 - MGT 402 Mgr. of Organizational Behavior or
3 - PSYCH 368 Organizational Psychology
3 - PSYCH 364 Industrial Psychology or
3 - PSYCH 454 Psych. of Human Relation. or
3 - PRTM 308 Lead. and Group Proc. in Rec.
3 - THRD 420 Manuf. Tech. II: Mat. and Proc.
3 - THRD 465 Conducting and Evaluating
Training Programs for Industry
3 - THRD 486 Instructional Media Development
3 - Major Requirement
18

135 Total Semester Hours

See General Education Requirements.
ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H210.
COMM 402, PHIL 324, or 344.
See advisor, two technical courses must be represented.
COMM 350, 360, 361, 364, 367, or ENGL 304.
Note: One summer (400 clock hours) of field experience is required following the sophomore year.

INDUSTRIAL TECHNOLOGY EDUCATION CONCENTRATION
The Industrial Technology Education Concentration is designed for students who plan to teach industrial technology in the secondary schools (grades 6-12). Industrial technology is the subject area in the public school system which provides youth with an interpretation of American industry. It is a general education subject designed to give students an exploratory experience in the classroom and laboratory. Majors in this concentration are qualified to seek certification as secondary school teachers of industrial technology.

Freshman Year
First Semester
1 - ED 105 Orientation to Education
3 - ENGL 101 Composition I
3 - THRD 110 Intro. to Industrial Technology
3 - Mathematical Sciences Requirement
4 - Science Requirement

2 - Elective
16

Second Semester
3 - ENGL 102 Composition II
3 - THRD 180 Introduction to Technical
Drawing and Computer-Aided Drafting
3 - Computer Skills Requirement
3 - Mathematical Sciences Requirement
4 - Science Requirement

2 - Elective
18

Sophomore Year
First Semester
3 - HIST 173 Western Civilization
3 - THRD 220 Manufacturing Tech. I: Systems
3 - THRD 230 Construction Tech. I: Materials
3 - Literature Requirement
4 - Science Requirement

1 - Elective
17

Second Semester
3 - COMM 250 Public Speaking
3 - MUSIC 210 Music Appreciation: Music in the Western World
3 - THRD 181 Advanced Technical Drawing and Computer-Aided Drafting
3 - THRD 240 Power Technology I: Production
3 - Social Science Requirement

18

Junior Year
First Semester
3 - ED EL 458 Health Education Methods for the Classroom Teacher
3 - ED F 302 Educational Psychology
3 - THRD 440 Power Technology II
3 - THRD 484 Comm. Tech. II: Systems
3 - Writing Intensive Requirement

2 - Elective
17

Second Semester
3 - A A H 210 Intro. to Art and Architecture
3 - ED F 335 Adolescent Growth and Development
3 - THRD 415 History and Philosophy of Industrial and Vocational Education
3 - ED F 301 Prin. of American Education
3 - THRD 420 Manuf. Tech. II: Mat. and Proc.
3 - THRD 430 Const. Tech. II: Practices and Syst.
3 - Major Requirement

18

Senior Year
First Semester
3 - ED SP 370 Introduction to Special Education
3 - THRD 470 Course Organization and Eval.
3 - THRD 471 Teaching Industrial Subjects
3 - Major Requirement
4 - Elective
16

Second Semester
3 - THRD 371 Mgr. of Industrial Education Labs.
12 - THRD 477 Directed Teaching
15

135 Total Semester Hours

1See General Education Requirements.
2Both biological and physical laboratory sciences must be represented with an eight-credit sequence in one.
3ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H210.

VOCATIONAL-TECHNICAL EDUCATION CONCENTRATION
The Vocational-Technical Education concentration prepares teachers of vocational and technical subjects in senior high schools, career centers, and technical education centers. Teachers graduating from this concentration possess the skills and knowledge required to teach the occupations of family or family occupations in their area of specialization.

Freshman Year
First Semester
3 - ENGL 101 Composition I
3 - Mathematical Sciences Requirement
4 - Science Requirement
3 - Technical Specialty Requirement
3 - Elective
16

Second Semester
3 - ENGL 102 Composition II
3 - Mathematical Sciences Requirement
4 - Science Requirement
3 - Technical Specialty Requirement
3 - Elective
16

Sophomore Year
First Semester
3 - Humanities Requirement E.1
3 - Social Science Requirement
6 - Technical Specialty Requirement

4 - Elective
16

Second Semester
3 - Computer Skills Requirement
3 - Humanities Requirement E.2
3 - Social Science Requirement
6 - Technical Specialty Requirement

15

Summer
6 - THRD 390 Industrial Cooperative Experience I

Junior Year
First Semester
3 - COMM 250 Public Speaking
3 - THRD 370 Motivation and Discipline in Vocational Education
3 - Approved Requirement
6 - Technical Specialty Requirement

15

Second Semester
3 - THRD 371 Mgr. of Industrial Education Labs.
3 - Approved Requirement
6 - Technical Specialty Requirement
3 - Writing Intensive Requirement

15

Summer
6 - THRD 490 Industrial Coop. Experience II
### Senior Year

**First Semester**
- 3 - THRD 470 Course Organization and Eval.
- 3 - THRD 471 Teaching Industrial Subjects
- 3 - THRD 472 Advanced Instructional Methods
- 6 - THRD 478 Internship in Voc. Tech. Ed. I

**Second Semester**
- 3 - THRD 415 History and Philosophy of Industrial and Vocational Education or
- 3 - ED F 301 Prim. of American Education
- 3 - THRD 473 Competency Test in Voc. Subjects
- 6 - THRD 479 Internship in Voc. Technical Ed. II
- 3 - THRD (AG ED, ED F) 480 Educational Applications of Microcomputers

135 Total Semester Hours

1. See General Education Requirements.
2. See advisor. Technical specialties must relate to one of the Trades and Industries programs recognized by the South Carolina Department of Education.
3. See advisor.

### 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, and community and non-profit health agencies.

Plans of study can be arranged in health promotion and education and preprofessional health studies. Students in Health Promotion and Education 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.

Students enrolled in HLTH 402 must have proof of CPR Certification prior to registration.

### HEALTH PROMOTION AND EDUCATION CONCENTRATION

**Freshman Year**

**First Semester**
- 4 - BIOL 103 General Biology I
- 3 - ENGL 101 Composition I
- 3 - HLTH 202 Introduction to Public Health
- 4 - Chemistry Requirement¹
- 3 - Computer Skills Requirement²

**Second Semester**
- 3 - ENGL 102 Composition II
- 4 - Chemistry Requirement¹
- 3-4 - Mathematical Sciences Requirement³
- 3 - Social Science Requirement⁴
- 3 - Social Science Requirement⁴

16-17

### Sophomore Year

**First Semester**
- 4 - BIOSC 222 Human Anatomy and Phys. I
- 3 - HLTH 298 Human Health and Disease
- 3 - PSYCH 201 Introduction to Psychology
- 3 - Philosophy Requirement⁵
- 4 - Elective

**Second Semester**
- 4 - BIOSC 223 Human Anatomy and Phys. II
- 3 - ENGL 304 Business Writing or
- 3 - ENGL 314 Technical Writing
- 3 - HLTH 240 Determinants of Health Behavior
- 3 - Social Science Requirement⁴
- 3 - Statistics Requirement⁶

16

### Junior Year

**First Semester**
- 3 - HLTH 303 Communication in Health Systems
- 3 - HLTH 340 Health Promotion and Education
- 3 - HLTH 380 Epidemiology
- 1 - HLTH 398 Health Appraisal Skills
- 1 - HLTH 419 Hlth. Sci. Internship Prep. Seminar
- 3 - NUTR 203 Principles of Human Nutrition
- 3 - Health Requirement¹

**Second Semester**
- 3 - HLTH 315 Social Epidemiology
- 3 - HLTH 402 Principles of Health Fitness
- 3 - HLTH 490 Res. and Eval. Strat. for Pub. Hlth.
- 3 - PSYCH 340 Lifespan Developmental Psych.
- 3 - Oral Communication Requirement²
- 3 - Social Science Requirement⁴

18

**Summer**
- 4 - HLTH 420 Health Science Internship²

### Senior Year

**First Semester**
- 3 - HLTH 440 Managing Health Service Org
- 3 - HLTH 480 Community Health Promotion
- 3 - HLTH 498 Improving Population Health
- 3 - Cultural and Family Context Requirement⁸
- 3 - Health Requirement¹

**Second Semester**
- 3 - HLTH 450 Applied Health Strategies
- 3 - Concentration Area Requirement¹
- 3 - Humanities Requirement E.I²
- 6 - Elective

15

### PREPROFESSIONAL HEALTH STUDIES CONCENTRATION

**Freshman Year**

**First Semester**
- 4 - BIOL 103 General Biology I
- 3 - ENGL 304 Business Writing or
- 3 - ENGL 314 Technical Writing
- 3 - HLTH 240 Determinants of Health Behavior
- 4 - Concentration Area Requirement³
- 3 - Philosophy Requirement⁴
- 3 - Statistics Requirement⁶

17-18

**Second Semester**
- 4 - BIOL 104 General Biology II or
- 5 - BIOL 111 Principles of Biology II
- 4 - CH 102 General Chemistry II
- 3 - ENGL 102 Composition II
- 3 - Social Science Requirement¹
- 3 - Mathematical Sciences Requirement³

17-18

**Sophomore Year**

**First Semester**
- 4 - BIOSC 222 Human Anatomy and Phys. I
- 3 - HLTH 298 Human Health and Disease
- 3 - HLTH 419 Hlth. Sci. Internship Prep. Seminar
- 4 - PHYS 207 General Physics I
- 3 - Concentration Area Requirement³

17

**Second Semester**
- 3 - HLTH 315 Social Epidemiology
- 3 - HLTH 490 Res. and Eval. Strat. for Pub. Hlth.
- 4 - PHYS 208 General Physics II
- 3 - Concentration Area Requirement³
- 3 - Oral Communication Requirement¹

16

**Summer**
- 4 - HLTH 420 Health Science Internship²

104
Senior Year
First Semester
1. HLTH 440 Managing Health Service Org.
2. HLTH 498 Improving Population Health
3. Concentration Area Requirement 1
4. Cultural and Family Context Requirement 2
5. Elective
Total Semester Hours 12

Second Semester
1. Concentration Area Requirement 1
2. Humanities Requirement E.1
3. Elective
Total Semester Hours 12

133-135 Total Semester Hours

See General Education Requirements.
See advisor.

1CH 223/224 is required for Pre-Med and Pre-Dental students.
2BIOCH 301 is strongly recommended for Pre-Med students.
3A list of recommended internships will be provided by the College of Health, Education, and Human Development.

LANGUAGE AND INTERNATIONAL HEALTH
Bachelor of Science

The Language and International Health program is administered by the College of Architecture, Arts, and Humanities and the College of Health, Education, and Human Development. See page 59 for the curriculum.

NURSING
Bachelor of Science

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, directed 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.

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.

When space is available, a student may change majors into the School of Nursing with a 2.75 cumulative grade-point ratio.

Nursing majors are required to carry, throughout the clinical laboratory period, current and valid student nurse's 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.

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.

Freshman Year
First Semester
1. BIOL 103 General Biology I
2. CH 101 General Chemistry I
3. ENGL 101 Composition I
4. PSYCH 201 Introduction to Psychology
5. SOC 201 Introduction to Sociology
Total Semester Hours 17

Second Semester
1. CH 102 General Chemistry II
2. ENGL 102 Composition II
3. MTHSC 201 Introduction to Probability
4. NURS 203 Principles of Human Nutrition
5. Computer Skills Requirement 1
Total Semester Hours 16

Sophomore Year
First Semester
1. BIOSC 222 Human Anatomy and Phys. I
2. EX ST 301 Introductory Statistics or
   or MTHSC 203 Elem. Statistical Inference
3. MTHSC 205 Introductory Microbiology
4. Humanities Requirement E.1
5. Elective
Total Semester Hours 17

Second Semester
1. BIOSC 223 Human Anatomy and Phys. II
2. Humanities Requirement E.2
3. Elective
Total Semester Hours 14

Junior Year
First Semester
1. NURS 304 Pathophys. for Health-Care Prof.
2. NURS 310 Health Assessment
3. NURS 312 Therapeutic Nursing Interventions
4. NURS 320 Professionalism in Nursing
5. NURS 340 Pharmacotherapeutic Nursing Interventions

Second Semester
1. NURS 303 Nursing of Adults
2. NURS 305 Psychosocial Nursing
3. NURS 311 Intro. to Community Nursing
4. NURS 323 Gerontology Nursing
5. NURS 330 Research in Nursing
Total Semester Hours 15

Senior Year
First Semester
5. NURS 401 Mental Health Nursing
6. NURS 411 Nursing Care of Adults
7. NURS 412 NURS. Care of Women and Families
8. Oral Communication Requirement
Total Semester Hours 18

Second Semester
5. NURS 403 Complex Nursing of Adults
6. NURS 405 Leadership and Mgt. in Nursing
7. NURS 408 Senior Nursing Practicum
8. NURS 415 Community Health Nursing
Total Semester Hours 15

129 Total Semester Hours

1. A minimum grade-point ratio of 2.5 is required in all courses for progression to junior year courses.
2. A minimum grade-point ratio of 2.5 must be achieved in all required nursing courses for progression to the next level.
3. Students may repeat a nursing course only once.
4. Students must pass didactic and clinical component to pass all clinical courses.
5. 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 toward the master's degree in nursing. Registered nurses interested in pursuing a baccalaureate degree should contact the School of Nursing for curriculum requirements.

Freshman Year
First Semester
1. ENGL 101 Composition I
2. PSYCH 201 Introduction to Psychology
3. Computer Skills Requirement 1
4. Science Requirement 1
Total Semester Hours 17

Second Semester
1. ENGL 102 Composition II
2. BIOCH 223 Human Anatomy and Phys. II
3. Humanities Requirement E.2
4. Elective
Total Semester Hours 17

Sophomore Year
First Semester
1. BIOSC 222 Human Anatomy and Phys. I
2. MTHSC 101 Introduction to Probability
3. Humanities Requirement E.1
4. Elective
Total Semester Hours 16
Second Semester
4 - BIOSC 223 Human Anatomy and Phys. II
3 - EX ST 301 Introductory Statistics or
3 - MTHSC 203 Elem. Statistical Inference
3 - Oral Communication Requirement
4 - Elective
14

Junior Year
First Semester
7 - NURS 303 Nursing of Adults
4 - NURS 312 Therapeutic Nurs. Interventions
5 - NURS 401 Mental Health Nursing
5 - NURS 411 Nursing Care of Children
21

Second Semester
3 - NURS 304 Pathophys. for Health-Care Prof.
5 - NURS 307 Family Nursing in the Community
4 - NURS 313 Health Assess. Through Lifespan
3 - NURS 330 Research in Nursing
15

Senior Year
First Semester
5 - NURS 403 Complex Nursing of Adults
3 - NURS 406 Issues in Professionalism
5 - NURS 412 Nurs. Care of Women and Fam.
13

Second Semester
3 - NURS 405 Leadership and Mgt. in Nursing
4 - NURS 415 Community Health Nursing
6 - Departmental Requirement
3 - Elective
16

129 Total Semester Hours

Students are expected to transfer all courses listed in the freshman- and sophomore-year requirements.

See General Education Requirements.

Twelve hours selected from BIOL 103, 104; CH 101, 102.
Biology and chemistry must be represented; two of the courses must be in a sequence.

Students are expected to receive credit by examination.

See advisor.

Notes:
1. All courses used to fulfill the support course requirements must be approved by the School of Nursing.
2. A minimum grade of C must be achieved in all courses for progression to the next level. Students may retake a nursing course one time only.
3. Seniors must have a cumulative grade-point ratio of 3.0 or higher on all college courses attempted to be eligible to enroll in courses numbered 300 or above (subject to approval of form CSE). See advisor for details.
4. To qualify for an undergraduate degree, a student must complete 37 of the last 40 credits at Clemson.

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 social, physical, and biological sciences required to manage leisure service programs and resources, such as those for municipalities, institutions, voluntary and youth-serving agencies, management positions within the travel and tourism industry and as resource 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, 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

Freshman Year
First Semester
4 - BIOL 101 Concepts in Biology I or
3 - GEOL 101 Physical Geology and
1 - GEOL 103 Physical Geology Lab.
3 - ENGL 101 Composition I
3 - PRTM 101 Concepts of Leisure
3 - PRTM (FOR) 209 Professional Application of Microcomputers
3 - Mathematical Sciences Requirement
16

Second Semester
4 - BIOL 102 Concepts in Biology II or
3 - GEOL 112 Earth Resources I and
1 - GEOL 114 Earth Resources Lab.
3 - ENGL 102 Composition II
3 - EX ST 301 Introductory Statistics
3 - PRTM 205 Program and Event Planning
3 - Elective
16

Sophomore Year
First Semester
3 - ACCT 201 Financial Accounting Concepts
3 - PRTM 201 Recreation/Leisure Environment
1 - PRTM 206 Practicum I
3 - PSYCH 201 Introduction to Psychology or
3 - SOC 201 Introduction to Sociology
3 - Literature Requirement
3 - Elective
16

Second Semester
3 - COMM 250 Public Speaking or
3 - COMM 251 Business and Prof. Speaking
3 - ECON 211 Principles of Microeconomics or
3 - ECON 212 Principles of Macroeconomics
1 - PRTM 207 Practicum II
3 - PRTM 308 Leadership and Group Proc. in Rec.
3 - Humanities Requirement E
3 - Elective
16

Junior Year
First Semester
3 - LAW 322 Legal Environment of Business
3 - MKT 301 Principles of Marketing
3 - PRTM 307 Facility Planning and Operations
3 - PRTM 321 Recreation Administration
1 - PRTM 404 Field Training I
3 - Writing Intensive Requirement
16

Second Semester
3 - MGT 307 Personnel Management or
3 - PO SC 427 Public Management
3 - PRTM 254 Introduction to Sport Management
3 - PRTM 305 Safety and Risk Mgt. in PRTM
6 - Approved Requirement
15

Summer
6 - PRTM 405 Field Training II

Senior Year
First Semester
3 - PRTM 403 Elements of Recreation and Park Planning
3 - PRTM 409 Methods of Recreation Research I
3 - PRTM 441 Commercial Recreation or
3 - PRTM 317 Group Initiatives
3 - PRTM 446 Community Tourism Development
6 - Approved Requirement
18

106
Second Semester
1. PRTM 309 Behavioral Concepts in PRTM
3. Elective
4. Approved Requirement
16

135 Total Semester Hours

Eight hour sequence in the same science.
Other General Education Computer Skills courses may be substituted.
See General Education Requirements.
ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H210.
ENGL 304 or 314 is recommended.

Eighteen credit hours in a related minor or 300-400-level courses in a focused program developed with and approved by the advisor.

PARK AND PROTECTED AREA MANAGEMENT CONCENTRATION

Freshman Year

First Semester
1. PRTM 307 Facility Planning and Operations
2. PRTM 321 Recreation Administration
3. PRTM 330 Visitor Services and Interpretation
4. PRTM 404 Field Training I
3. Approved Requirement
4. Writing Intensive Requirement
16

Second Semester
1. PRTM 305 Safety and Risk Mgmt. in PRTM
2. PRTM 309 Behavioral Concepts in PRTM
3. PRTM 320 Recreation Policymaking
4. Elective
5. Approved Requirement
6. Planning Requirement
16

Summer
6. PRTM 405 Field Training II

Senior Year

First Semester
1. PRTM 403 Elements of Rec. and Park Planning
2. PRTM 409 Methods of Recreation Research I
3. Elective
4. Approved Requirement
5. Planning Requirement
16

Second Semester
1. PRTM 411 Methods of Environmental Interpretation
3. Elective
4. Approved Requirement
5. Planning Requirement
16

135 Total Semester Hours

Other General Education Computer Skills courses may be substituted.
See General Education Requirements.
ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H210.
ENGL 304 or 314 is recommended.

Eighteen credit hours in a related minor or 300-400-level courses in a focused program developed with and approved by the advisor.

Sophomore Year

First Semester
1. PRTM 201 Recreation/Leisure Environment
2. PRTM 202 Practicum II
3. PRTM 270 Intro. to Recreation Resources Mgt.
4. PRTM 271 Health and Safety Management
5. Elective
6. Approved Requirement
16

Second Semester
1. PRTM 201 Introduction to Anthropology or
2. GEOG 101 Introduction to Geography
3. COMM 250 Public Speaking or
4. COMM 251 Business and Prof. Speaking
5. PRTM 207 Practicum II
6. PRTM 308 Leadership and Group Proc. in Rec.
7. Elective
8. Approved Requirement
16

Junior Year

First Semester
1. Approved Requirement
2. Elective
3. Summer

Second Semester
1. FD SC 306 Food Service Operations
2. MKT 301 Principles of Marketing
3. PHIL 103 Introduction to Ethics or
4. PHIL 344 Business Ethics
5. PRTM 321 Recreation Administration
6. PRTM 344 Tourism Markets and Supply
7. Writing Intensive Requirement
18

PROFESSIONAL GOLF MANAGEMENT CONCENTRATION

Freshman Year

First Semester
1. BIOL 101 General Biology I
2. ENGL 101 Composition I
3. PRTM 101 Concepts of Leisure
4. PRTM (FOR) 209 Professional Application of Microcomputers
5. Mathematical Sciences Requirement
16

Second Semester
1. BIOL 102 General Biology II
2. ENGL 102 Composition II
3. EX ST 301 Introductory Statistics
4. PRTM 205 Program and Event Planning
5. PRTM 281 Introduction to Golf Management
16

Summer
1. CO-OP 101 Cooperative Education
2. PRTM 206 Practicum I
1

Sophomore Year

First Semester
1. ACCT 201 Financial Accounting Concepts
2. ECON 211 Principles of Microeconomics
3. PRTM 201 Recreation/Leisure Environment
4. PRTM 308 Leadership and Group Proc. in Rec.
5. Literature Requirement

Second Semester
1. ACCT 202 Managerial Accounting Concepts
2. MGT 301 Principles of Management
3. PRTM 309 Behavioral Concepts in PRTM
4. PSYCH 201 Introduction to Psychology or
5. SOC 201 Introduction to Sociology
6. Elective

Summer
1. CO-OP 102 Cooperative Education
2. PRTM 207 Practicum II
1

Junior Year

First Semester
1. CO-OP 103 Cooperative Education
2. Summer
<table>
<thead>
<tr>
<th>Semester</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summer</strong></td>
<td>3 - COMM 250 Public Speaking or 3 - COMM 251 Business and Prof. Speaking 3 - FIN 306 Corporation Finance 3 - MKT 425 Retail Management 3 - Elective</td>
</tr>
<tr>
<td><strong>Senior Year</strong></td>
<td>3 - HORT 208 Landscape Appreciation 3 - MGT 307 Personnel Management 3 - PRTM 305 Safety and Risk Mgr. in PRTM 1 - PRTM 404 Field Training I 3 - PRTM 409 Methods of Recreation Research I 3 - Elective</td>
</tr>
<tr>
<td><strong>Second Semester</strong></td>
<td>0 - CO-OP 104 Cooperative Education 6 - PRTM 405 Field Training II</td>
</tr>
<tr>
<td><strong>Summer</strong></td>
<td>6 - PRTM 405 Field Training II</td>
</tr>
<tr>
<td><strong>Sophomore Year</strong></td>
<td>First Semester 3 - ACCT 201 Financial Accounting Concepts 1 - PRTM 201 Recreation/Leisure Environment 1 - PRTM 206 Practicum I 3 - PRTM 254 Introduction to Sport Management 3 - PSYCH 201 Introduction to Psychology or 3 - SOC 201 Introduction to Sociology 3 - Literature Requirement 16</td>
</tr>
<tr>
<td><strong>Second Semester</strong></td>
<td>3 - COMM 250 Public Speaking or 3 - COMM 251 Business and Prof. Speaking 1 - ECON 211 Principles of Microeconomics or 1 - ECON 212 Principles of Macroeconomics 3 - MGT 301 Principles of Management 3 - PHIL 103 Introduction to Ethics or 3 - PHIL 344 Business Ethics 1 - PRTM 207 Practicum II 3 - PRTM 308 Leadership and Group Proc. in Rec 16</td>
</tr>
<tr>
<td><strong>Junior Year</strong></td>
<td>First Semester 3 - LAW 312 Commercial Law or 3 - LAW 322 Legal Environment of Business 3 - MKT 301 Principles of Marketing 3 - PRTM 321 Recreation Administration 1 - PRTM 404 Field Training I 3 - Approved Requirement 3 - Writing Intensive Requirement 16</td>
</tr>
<tr>
<td><strong>Second Semester</strong></td>
<td>3 - PRTM 305 Safety and Risk Mgr. in PRTM 3 - PRTM 309 Behavioral Concepts in PRTM 6 - Approved Requirement 3 - Business Requirement 3 - Elective 16</td>
</tr>
<tr>
<td><strong>Summer</strong></td>
<td>6 - PRTM 405 Field Training II</td>
</tr>
<tr>
<td><strong>Senior Year</strong></td>
<td>First Semester 3 - HIST 393 Sports in the Modern World or 3 - SOC 441 Sociology of Sport 3 - PRTM 409 Methods of Recreation Research I 3 - PRTM 421 Rec. Financial Resources Mgr. or 3 - FIN 306 Corporation Finance 3 - Approved Requirement 3 - Elective 15</td>
</tr>
<tr>
<td><strong>Second Semester</strong></td>
<td>3 - PRTM 454 Trends in Sport Management 6 - Approved Requirement 3 - Business Requirement 4 - Elective 16</td>
</tr>
<tr>
<td><strong>Junior Year</strong></td>
<td>First Semester 3 - PRTM 321 Recreation Administration 1 - PRTM 404 Field Training I 4 - PRTM 417 Therapeutic Recreation Processes I 3 - PSYCH 483 Abnormal Psychology 3 - Writing Intensive Requirement 3 - Elective 17</td>
</tr>
<tr>
<td><strong>Second Semester</strong></td>
<td>3 - PRTM 305 Safety and Risk Management 4 - PRTM 418 Therapeutic Recreation Processes II 6 - Approved Requirement 3 - Elective 16</td>
</tr>
<tr>
<td><strong>Summer</strong></td>
<td>6 - PRTM 405 Field Training II</td>
</tr>
</tbody>
</table>

**SPORT MANAGEMENT CONCENTRATION**

**Freshman Year**

| First Semester | 4 - BIOL 103 General Biology I 3 - ENGL 101 Composition I 3 - PRTM 101 Concepts of Leisure 3 - PRTM (FOR) 209 Professional Application of Microcomputers 3 - Mathematical Sciences Requirement 16 |
| **Second Semester** | 4 - BIOL 104 General Biology II 3 - ENGL 102 Composition II 3 - EX ST 301 Introductory Statistics 3 - PRTM 205 Program and Event Planning 3 - Elective 15 |
| **Summer** | 6 - PRTM 405 Field Training II |

**Sophomore Year**

| First Semester | 3 - ENGL 301 Composition 1 - PRTM 301 Rec. Financial Resources Mgr. or 3 - PRTM 309 Behavioral Concepts in PRTM 3 - Elective 16 |

**Senior Year**

| First Semester | 3 - PRTM 305 Safety and Risk Mgr. in PRTM 3 - PRTM 309 Behavioral Concepts in PRTM 6 - Approved Requirement 3 - Business Requirement 3 - Elective 16 |

**Summer**

| 6 - PRTM 405 Field Training II |
Senior Year
First Semester
3 - PRTM 409 Methods of Recreation Research I
3 - PRTM 420 Therapeutic Recreation Trends and Issues
6 - Approved Requirement*
3 - Population Specific Course**
1 - Elective

Second Semester
3 - PRTM 309 Behavioral Concepts in PRTM
3 - PRTM 317 Group Initiatives
1 - PRTM 490 Independent Study
3 - Approved Requirement*
3 - Population Specific Course**
3 - Elective

16

135 Total Semester Hours

*Other General Education Computer Skills courses may be substituted.

See General Education Requirements.

18 credit hours in a related minor or 300-400-level courses in a focused program developed with and approved by the advisor.

ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H210.

ENGL 304 or 314 is recommended.

*See advisor.

TRAVEL AND TOURISM
CONCENTRATION
Freshman Year
First Semester
4 - BIOL 101 Concepts in Biology I* or
3 - GEOL 101 Physical Geology* and
1 - GEOL 103 Physical Geology Lab.*
3 - ENGL 101 Composition I
3 - PRTM 101 Concepts of Leisure
3 - PRTM (FOR) 209 Professional Application of Microcomputers*
3 - Mathematical Sciences Requirement*

16

Second Semester
4 - BIOL 102 Concepts in Biology II* or
3 - GEOL 112 Earth Resources* and
1 - GEOL 114 Earth Resources Lab.*
3 - ENGL 102 Composition II
3 - EXST 301 Introductory Statistics
3 - PRTM 205 Program and Event Planning
3 - Elective

16

Sophomore Year
First Semester
3 - ACCT 201 Financial Accounting Concepts
3 - ECON 211 Principles of Microeconomics or
3 - ECON 212 Principles of Macroeconomics
3 - PRTM 201 Recreation/Leisure Environment
1 - PRTM 206 Practicum I
3 - PSYCH 201 Introduction to Psychology or
3 - SOC 201 Introduction to Sociology
3 - Literature Requirement*

16

Second Semester
3 - PRTM 305 Safety and Risk Mgt. in PRTM
3 - PRTM 309 Behavioral Concepts in PRTM
3 - PRTM 344 Tourism Markets and Supply
1 - PRTM 349 Survey of Tourism Sites
3 - Approved Requirement*
3 - Writing Intensive Requirement*

16

Junior Year
First Semester
3 - LAW 312 Commercial Law or
3 - LAW 322 Legal Environment of Business
3 - PRTM 321 Recreation Administration
3 - PRTM 342 Introduction to Tourism
1 - PRTM 404 Field Training I
3 - Approved Requirement*
3 - Elective

16

Second Semester
3 - PRTM 405 Field Training II

Summer
6 - PRTM 405 Field Training II

Senior Year
First Semester
3 - PRTM 343 Spatial Aspects of Tourist Behavior
3 - PRTM 409 Methods of Recreation Research I
3 - PRTM 430 World Geography of Parks and Equivalent Reserves or
3 - PRTM 447 Perspectives on Int. Travel
3 - PRTM 446 Community Tourism Development
3 - Elective

16

Second Semester
3 - PRTM 445 Conference/Convention Planning and Management
9 - Approved Requirement*
3 - Elective

16

135 Total Semester Hours

*Eight hour sequence in the same science.

*Other General Education Computer Skills courses may be substituted.

*See General Education Requirements.

ENGL 202, 203, 204, 205, 206, 207, 208, 209, or H210.

Eighteen credit hours in a related minor or 300-400-level courses in a focused program developed with and approved by the advisor.

ENGL 304 or 314 is recommended.
**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.

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<th>History—not open to Secondary Education—History majors</th>
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<tr>
<td>Adult/Extension Education</td>
<td>Horse Production</td>
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<tr>
<td>Aerospace Studies</td>
<td>Horticulture</td>
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<td>African American Studies</td>
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<td>Agricultural Business Management</td>
<td>International Politics</td>
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<td>Agricultural Mechanization and Business</td>
<td>Legal Studies</td>
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<td>Anthropology</td>
<td>Management</td>
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<td>Athletic Leadership</td>
<td>Mathematical Sciences—not open to Mathematics Teaching or Secondary Education—Mathematics majors</td>
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<tr>
<td>Beef Cattle Production</td>
<td>Microbiology</td>
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<td>Biochemistry</td>
<td>Military Leadership</td>
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<tr>
<td>Bioengineering</td>
<td>Modern Languages—not open to Secondary Education—Modern Languages majors</td>
</tr>
<tr>
<td>Biological Sciences—not open to Science Teaching—Biological Sciences majors</td>
<td>Music</td>
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<tr>
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<td>Communication Studies</td>
<td>Parks, Recreation, and Tourism Management</td>
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<tr>
<td>Communications</td>
<td>Philosophy</td>
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<tr>
<td>Computer Science</td>
<td>Physics—not open to Science Teaching—Physical Sciences majors</td>
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<tr>
<td>Crop and Soil Environmental Science</td>
<td>Plant Pathology</td>
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<tr>
<td>Early Intervention—open to Early Childhood Education, Health Science, and Special Education majors only</td>
<td>Political Science—not open to Secondary Education—Political Science majors</td>
</tr>
<tr>
<td>East Asian Studies</td>
<td>Poultry Science</td>
</tr>
<tr>
<td>Economics—not open to Secondary Education—Economics majors</td>
<td>Psychology—not open to Secondary Education—Psychology majors</td>
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<tr>
<td>Education—open to Health Science; Nursing; and Parks, Recreation, and Tourism Management majors only</td>
<td>Public Policy</td>
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<td>English</td>
<td>Religion</td>
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<td>Entomology</td>
<td>Science and Technology in Society</td>
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<td>Entrepreneurship</td>
<td>Screenwriting</td>
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<td>Environmental Engineering</td>
<td>Sociology—not open to Secondary Education—Sociology majors</td>
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<td>Environmental Science and Policy</td>
<td>Spanish-American Area Studies</td>
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<td>Film Studies</td>
<td>Textiles</td>
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<td>Financial Management</td>
<td>Theatre</td>
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<td>Fine Arts</td>
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<td>Food Science</td>
<td>Urban Forestry</td>
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<td>Forest Products</td>
<td>Wildlife and Fisheries Biology</td>
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<td>Forest Resource Management</td>
<td>Women's Studies</td>
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<td>Geography</td>
<td>Writing</td>
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<td>Geology</td>
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<td>Great Works</td>
<td>See pages 35-38 for details.</td>
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<td>Health Science</td>
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COURSES OF INSTRUCTION

This list of courses includes for each course the catalog number, title, credit hours, class and laboratory hours per week, and the description. Courses numbered 600 and above are graduate courses. Computer skills, oral communication, and writing intensive equivalencies are noted in brackets (e.g., [W3]). Where courses are offered on a schedule, there is a designation E, F, M, or SS following the title, indicating whether the course is offered in the fall, spring, Maymester, or summer school.

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 SRS 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 .................... A S
African American Studies .... A A S
Agricultural and Applied Economics AP EC
Agricultural Education ............. AG ED
Agricultural Mechanization ...... AG M
Agriculture ............................... AGRIC
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 .. A A H
Astronomy ................................. ASTR
Athletic Leadership ................ A L
Biochemistry ............................. BIOCH
Bioengineering .......................... BIO E
Biological Sciences .................. BIOSC
Biog ....................... BIOL
Biostystems Engineering ........... B E
Botany .......................................... BOT
Business ..................................... BUS
Business Administration .. MBA
Calhoun Honors Seminar ........ CH S
Career and Technology Education CTE
Ceramic and Materials Engineering CME
Chemical Engineering ............ CHE E
Chemistry ..................................... CH
Chinese ........................................ CHIN
City and Regional Planning .. CPR
Civil Engineering ..................... C E
Clemson University ................. C U
College of Engineering and Science CESA
Communication Studies .......... COMM
Community and Rural Development C RD
Computer Science .................. CP SC
Construction Science and Management CMS
Crop and Soil Environmental Science CS ENV
Dance .................................. DANCE

Design Studies ......................... DSGN
Early Childhood Education ....... ED EC
East Asian Studies ................. E AS
Economics ................................. ECON
Education ................................. ED
Educational Counseling .......... ED C
Educational Foundations .......... ED F
Educational Leadership .......... ED L
Electrical and Computer Engineering E C E
Elementary Education ............ ED EL
Engineering .................................. ENGR
Engineering Graphics .................. E G
Engineering Mechanics ............. E M
English ........................................ ENGL
Entomology ................................. ENT
Environmental and Natural Resources E N R
Environmental Engineering and Science EE&S
Environmental Science and Policy .. EN SP
Environmental Toxicology .......... ENTOX
Executive Leadership and Entrepreneurship E L E
Experimental Statistics ............ EX ST
Finance ........................................ FIN
Food Science ............................... FD SC
Food Technology ....................... FD TH
Forest and Recreation Resources F & RR
Forest Resources ....................... FOR
French .......................................... FR
Genetics ....................................... GEN
Geography ................................. GEOG
Geology ....................................... GEOL
German ........................................ GER
Government and International Trade G INT
Graduate Studies ..................... G S
Graphic Communications .......... G C
Great Works ................................. GW
Health .......................................... HLTH
Health, Education, and Human Development HEHD
Historic Preservation .............. HP H
History .......................................... HIST
Horticulture ............................... HORT
Human Resource Development .... H R D
Humanities ..................................... HUM
Industrial Engineering .............. I E
Integrated Pest Management .... I PM
Italian .......................................... ITAL
Japanese ....................................... JAPN
Landscape Architecture .......... LARCH
Language ....................................... LANG
Language and International Trade LT & IT
Latin ............................................ LATIN
Law .............................................. LAW
Leisure Skills .............................. LS
Marketing ...................................... MGT
Materials Science and Engineering MS & E
Mathematical Sciences ........... MTH SC
Mechanical Engineering .......... M E
Microbiology ............................... MICRO
Military Leadership ................ M L
Music ............................................. MUSIC
Nonprofit Leadership .............. NPL
Nursing ......................................... NURS
Nutrition ....................................... NUTR
Packaging Science .................. PKG SC
Parks, Recreation, and Tourism Management .................. PRMT
Performing Arts ....................... P A

Philosophy ..................................... PHIL
Physical Science ....................... PH SC
Physics .......................................... PHYS
Plant and Environmental Sciences PES
Plant Pathology ......................... PL PA
Plant Physiology ....................... PL PH
Policy Studies ......................... POS T
Political Science .................... POS C
Polymer and Textile Chemistry .... PTC
Portuguese ................................. PORT
Psychology ................................. PSYCH
Reading ........................................ READ
Real Estate Development .......... RED
Religion ........................................ REL
Rural Sociology .......................... RS
Russian ......................................... RUSS
Secondary Education ............ ED SEC
Sociology ..................................... SOC
Spanish .......................................... SPAN
Special Education ..................... ED SP
Technology and Human Resource Development T H R D
Textile Management .................. TEXT
Theatre .......................................... THEA
Transition to Teaching .............. TTT
Vocational-Technical Education V T E D
Wildlife and Fisheries Biology .... W F B
Women's Studies ....................... WS
Zoology ......................................... ZOOL

ACCOUNTING


ACCT 201, H201 Financial Accounting Concepts 3(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(3.0) Introduction to managerial accounting with emphasis on using accounting information to make decisions.

ACCT 204 Accounting Procedures 1(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(3.0) Application of cost concepts to manufacturing and distributing problems; analysis of behavior characteristics of cost benefits and a study of principles involved in standard cost systems; lectures and problems. Prereq: ACCT 201 and 204 with a C or better.

ACCT 307, H307 Managerial Accounting 3(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. Prereq: ACCT 202.
ACCT 311 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. Prereq: ACCT 201 and 204 with a C or better.

ACCT 312 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 presentation and analysis of accounting information. Prereq: ACCT 311 with a C or better.

ACCT 313 Intermediate Financial Accounting III 3(3,0) Continuation of ACCT 312. In-depth treatment of selected accounting topics, such as investments, cash flows, taxation, retirement benefits, leases, and error corrections. Emphasis is placed on basic theory, valuation, and measurement, as well as presentation and analysis of accounting information. Prereq: 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. Prereq: CPSC 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. Prereq: ACCT 311 with a C or better.

ACCT 399 Internship in Accounting 1-3(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. Prereq: 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. Prereq: 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. Prereq: 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. Prereq: 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. Prereq: 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. Prereq: ACCT 311 and 322 with a C or better.

ACCT 445 Internal Auditing Practice 3(3,0) Expands the students' knowledge of internal auditing practice, including operation audits, organization audits, quality-control audits, and organization theory. Prereq: ACCT 420 with a C or better.

AEROSPACE STUDIES
Professor: E. B. Deluise, Chair; Assistant Professors: D. W. Butler, T. L. Durham, T. E. Livingston

A S 109 Air Force Today I 1(2,1) 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.

A S 110 Air Force Today II 1(2,1) Continuation of A S 109. Leadership laboratory includes drill, ceremonies, and an introduction to Air Force career opportunities.

A S 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 S 210 Development of Air Power II 2(1,2) Continuation of A S 209.

A S 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 S 309 Air Force Leadership and Management I 1(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 individual and group presentations, write reports, participate in group discussions, seminars, and conferences.

A S 310 Air Force Leadership and Management II 4(3,2) Continuation of A S 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
Professor: J. M. Burns

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 1800 to present. Prereq: A A S 301, HIST 311, 312 or 339.

AGRICULTURAL AND
APPLIED ECONOMICS
Professor: D. L. Barkley, L. L. Bauer, M. D. Hamming, Chair; M. S. Henry, E. H. Kaiser, S. E. Miller, J. C. O. Nyankori, C. M. Stevedes, W. M. Smathers, Jr., W. M. Ward, G. J. Wells; Associate Professor: M. Espey; Assistant Professor: S. R. Templeton

AP EC 202 Agricultural Economics 3(3,0) Analytical survey 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 257 Natural Resources, Environment, and Economics 3(3,0)F Economic principles applied to resource allocation problems related to environmental and natural resource issues.

AP EC 302 Economics of Farm Management 3(2,3)F 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. Prereq: AP EC 202 or ECON 211.

AP EC 308 Quantitative Applied Economics 3(3,0)S 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)F 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. Prereq: AP EC 202.
AP EC 313 Principles of Real Estate Appraisal 3(3,0)FES. 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 comparable sales, cost, and income approaches to real estate valuation. Prereq: FIN 307 or consent of instructor.

AP EC 319 Agribusiness Management 3(3,0)F 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. Prereq: AP EC 302 or 309.

AP EC 331 Principles of Advertising 3(3,0)S 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)S 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. Prereq: Junior standing.

AP EC (C R D, HLTH) 361 Introduction to Health-Care Economics 3(3,0) See C R D 361.

AP EC 362, 602 Production Economics 3(3,0)F 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. Prereq: AP EC 308, ECON 314.

AP EC 403, 603 Land Economics 3(3,0)S 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. Prereq: AP EC 202 or ECON 200.

AP EC 409, 609 Commodity Futures Markets 3(3,0)S Introduction to the economic theory, organization, and operating principles of agricultural commodity futures markets in the United States. Emphasis is placed on speculating, hedging, and investing in agricultural commodity futures contracts from the standpoint of the agribusiness entrepreneur. Prereq: 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)S Topics include highest and best use analysis, data collection, and analyses. Advanced appraisal procedures for income, cost, and comparable sales approach to real estate valuation are stressed. Eminent domain, the appraisal of property in transition, and specialized property are covered. Prereq: AP EC 313, FIN 307, or consent of instructor.

AP EC 420, 620 World Agricultural Trade 3(3,0)S Practical considerations of agricultural trade and trade policy analysis are reviewed. The role of international institutions is considered. Special emphasis is placed on concepts of agricultural trade, analysis of trade policies of major trading partners/competitors, and export/import marketing of products. Prereq: AP EC 309, ECON 412, or consent of instructor.

AP EC 421, 621 Globalization 3(3,0) Utilizes basic principles of international economics (comparative advantage, free trade vs. protectionism, exchange rate determination, etc.) to analyze the contemporary problems and issues of the world economy. Emphasizes application of economic principles to current globalization trends. Prereq: ECON 310 or 412 or 413 or consent of instructor.

AP EC (CSENV) 426, 626 Crop Systems Analysis 3(2,2)F See CSENV 426.

AP EC 433, 633 Agricultural Law and Related Environmental Issues 3(3,0)S Introduction to agricultural and agricultural-related environmental legal issues. Topics include a review of laws, agencies, programs, court structure, torts, taxation, biotechnology, land and water use, regulated industry, and environmental liabilities as they relate to agriculture and natural resources. Prereq: LAW 322 or consent of instructor.

AP EC 452, H452, 652 Agricultural Policy 3(3,0)F Review of public agricultural policy programs in the United States and a critical examination of current and proposed governmental policies and programs affecting the agricultural sector of the economy. Economic considerations as related to past and current farm price and income problems are included. Prereq: AP EC 302, 309.

AP EC 456, 456E, 656 Prices 3(3,0)S Review of the basic theory of price under competitive conditions and various modifications: nature, measurement, and causes of daily, seasonal, and cyclical price fluctuations; geometrical price relationships; nature, function, and behavior of futures markets; government price programs. Prereq: AP EC 308, ECON 314, EX ST 462.

AP EC 457, 571 Natural Resource Economic Theory and Policy 3(3,0) Focuses on analysis of actual, efficient, and sustainable use of natural resources. Topics may vary but include land-use change and regulation, water use and marketing, monitoring, ethics or fish on farms, harvesting and developing property rights to open-access resources, renewable versus nonrenewable energy use, and sustainable development. Prereq: MTHSC 102, C R D 357 or ECON 314.

AP EC 460, 660 Agricultural Finance 3(3,0)S 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. Prereq: ACCT 200 or 201, AP EC 202.

AP EC 475, 675 Economics of Wildlife Management and Policy 3(3,0)S 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. Prereq: AP EC 202, ECON 200, FOR 104, W F B 306, or consent of instructor.

AP EC 490 Selected Topics 1-15(0,2-3) Study of topics in applied economics. Topics may include classroom and/or field experience not normally covered in other classes. May be repeated for credit, but only if different topics are covered. Prereq: Junior standing and/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: T. R. Dobie, P. M. Fravel, D. R. King, S. A. Sparace, C. D. White, Sr.; Assistant Professor: K. D. Layfield

AG ED 100 Orientation and Field Experience 1(0,2)S Supervised observations and explanations of vocational agriculture teaching while serving as teacher aides. One full 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 agricultural education organizations. Assists students in understanding the value of professional organizations to agriculture education in the state and nation. Prereq: 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 Microcomputers 3(2,2) [C,3] Overview of microcomputer hardware and software encompassing word processing, spreadsheets, database management, utility, and graphic communications. Also includes specialized farm and agribusiness management and decision-making programs and criteria for evaluating and selecting hardware.

AG ED 201 Introduction to Agricultural Education 3(2,3)F Principles of education, development of agricultural education, 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 4(3,3) 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.
Courses of Instruction

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 fully understand the CDE concepts. Students receive much needed hands-on experience at the state and national levels. Prev: 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 mechanics instruction in the classroom and laboratory setting.

AG ED 400 Supervised Field Experience I 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 Methods in Agricultural Education 3(2,3)S 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. Prev: 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 providers is reviewed with emphasis on extension. Prev: 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. Prev: BIOL 104.

AG ED 406 Directed Teaching 12(0,36)S Guided participation in the professional responsibilities of a teacher of vocational agriculture including intensive study of the problems encountered and competencies developed. Twelve weeks of directed teaching in selected schools are required. Prev: 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. Prev: 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. Prev: AG ED 102.

AG ED 412 Senior Agriculture Leadership Seminar 1(2,0) Emphasizes leadership techniques and policies that affect agriculture. Requires students to conduct research and make presentations on agriculture issues which influence agriculture policy. Prev: AP EC 202, 302.

AG ED 423, 623 Curriculum 2(2,0)S Curriculum goals and related planning for career and continuing education programs.

AG ED 425, 625 Teaching Agricultural Mechanics 2(1,3)S Organizing course content, conducting and managing an agricultural mechanics laboratory, shop safety, microteaching/pornt demonstrations of psychomotor skills, and methods of teaching manipulative abilities.

AG ED 428, 628 Special Studies in Agricultural Education 1-3(1-3,0) 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. Summer school 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. Prev: Junior standing or consent of instructor.

AG ED (ED F, THRD) 480, 680 Educational Applications of Microcomputers 3(2,2) [C.3] 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, R. B. Dodd, Y. J. Han, D. E. Linville; 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 Farm Shop 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 preserving, and heat treatment.

AG M 206 Agricultural Mechanization 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. Prev: MTHSC 105, PHYS 207 or consent of instructor.

AG M 301 Soil and Water Conservation 3(2,3) Water management in agriculture is studied by applying principles of elementary surveying, mathematics, and fluid flow 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. Prev: PHYS 207 or consent of instructor.

AG M 401, 601 Environmental Control for Plants and Animals 1(1,0) Basic concepts of environmental control for plant and animal production and human housing are presented. Elements include heat transfer, psychrometry, heating, cooling, ventilation, and heat/moisture balances. Prev: PHYS 200 or consent of instructor.

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 waste-treatment methods.

AG M 403, 603 Structures for Plants and Animals 2(1,3) Structures for agricultural production systems are planned and designed with regard to function, materials, loads, and component sizing, utilizing the approach of an engineering or construction technologist. Prev: PHYS 200 or consent of instructor.

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 circuitry. Prev: AG M 206, PHYS 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 systems (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. Prev: Junior standing.
AGRIC 452, 652 Farm 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 207 or consent of instructor.

AGRIC 460, 660 Farm and Home Utilities 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: PHYS 208 or consent of instructor, junior standing.

AGRIC 472 Seminar 1(1,0) Introduction to the agribusiness world, professionalism, current topics of special interest, and financial and legal implications of modern agricultural production. Prereq: Senior standing in Agricultural Mechanics and Business or consent of instructor.

AGRIC 473 Special Topics in Agricultural Mechanization 1-3(1-0) 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.

AGRICULTURE
Professors: L. L. Bauer, D. E. Linvill, V. L. Quisenberry, P. A. Skewes; Associate Professor: W. C. Stringer

AGRIC 103 Introduction to Animal Industries 3(0,0)F Fundamental and descriptive aspects of animal industries as applied biology and major segments of food production and distribution systems. Subject matter is presented by Animal and Veterinary Sciences Department. Not open to students who have received credit for AFS 202.

AGRIC 104, H104 Introduction to Plant Sciences 3(3,0)S Fundamental course in plant sciences, including agrologic and horticultural crops of the major agricultural areas of the world and emphasizing the crops of South Carolina.

AGRIC 105 Agriculture and Society 3(0,0)F Examination of the structure, function, and importance of the food and resource base, production, supply, marketing, demand, capital, labor markets, and consumption behavior in the U.S.; economic and sociological issues affecting U.S. agriculture.

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 440, 640 Microclimatology 3(3,0) Study of energy balance in earth's atmosphere and solar and thermal radiation, air and soil temperature, humidity, evaporation and the hydrologic cycle, wind fields. Weather variables to describe microclimates and energy balance of plants, animals, and insects. Modification of microclimates. Rural and urban climates. Prereq: PHYS 243 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 will be arranged.

Agriculture, Forestry, and Life Sciences

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 basic concepts of American Sign Language, its history, and culture. Visual-gestural communication techniques are used.

A S L 102 American Sign Language I 4(3,1) Continuation of A S L 101 and culture to develop further communication 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 conversational and 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. Prereq: A S L 201 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. Prereq: A S L 202 or consent of instructor.

ANIMAL AND VETERINARY SCIENCES


AVS 100 Orientation to Animal, Dairy, and Veterinary Sciences 1(2,0)F Study of the role of animal agriculture in the world today with emphasis on supply and demand of end products and careers available in the animal industry.

AVS 101 Dairy Foods 1(1,0) Production aspects of dairy foods from the farm to the consumer including such products as ice cream, yogurt, and various cheeses; the use of these foods for nutrition 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 Mammalian Reproduction 1(1,0) Physiology and endocrinology of the reproductive processes in male and female mammals with emphasis on farm animals. Control of reproductive cycles, diseases, sexuality, and effects of drugs on reproduction are discussed.

AVS 108 Animal and Dairy Science Techniques 1(0,2)S Basic principles in handling of livestock and techniques of animal industries are discussed. Basics of animal anatomy and equipment and facilities used in animal production are presented.

AVS 110 Avian Pets—Biologist and Owner Responsibilities 1(1,0)F Systematic coverage of the many types of birds that humans keep as social companions. Nutrition, environmental considerations, reproductive habits, health and legal and economic aspects of these pets are considered.

AVS 120 Poultry Techniques 1(0,2)F Basic principles in the handling and production of poultry are discussed and demonstrated. Students receive hands-on experience and visit commercial operations to view equipment, facilities, and production techniques. Prereq: Consent of instructor.

AVS 201 Poultry Husbandry 3(3,0)F Study of the principles of poultry production and marketing and the anatomy and physiology of the economically important poultry and game bird species. Prereq: Consent of instructor.

AVS 202 Introductory Animal Sciences 4(4,0)F 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 1(0,2)F Laboratory demonstrating the basics of breeding, feeding, management of dairy cattle, quality control of milk, and processing of milk and dairy products. Preq: AVS 108.

AVS 204 Horse Care Techniques 1(0,2) Common skills to safely handle, restrain, and work around horses with special emphasis on management strategies to optimize the health, comfort, and productivity of the horse. Preq: AVS 108.

AVS 205 Light Horse Management 2(1,2)F Light horse industry—development of breeds and their uses. Breeding, feeding, and management of light horses. Fundamental instruction in equitation. Preq: AVS 202 and 204 or consent of instructor.

AVS 210 Animal Science Techniques 1(0,2)F Quick reference guide. Important principles and practices related to the animal science industry are discussed. Preq: AVS 108.

AVS 220 Animal Science Principles 1(0,2)F Principles of animal care and management for livestock production are emphasized. Preq: AVS 108.

AVS 230 Principles of Livestock Selection 2(1,2)S Pedigrees, performance records, and visual appraisal techniques are integrated to teach students to identify livestock to be kept for breeding purposes. Students are eligible to compete in intercollegiate selection contests.

AVS 240 Evaluation of Dairy Cattle 2(1,2)S 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 scorecards.

AVS 250 Meat Grading and Selection 2(1,2)S 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-grading contests.

AVS 260 Principles of Equine Evaluation 2(1,3)S Study of conformation as it relates to locomotion, soundness, and breed standards. Includes rules and regulations of performance events and appropriate management of these events. Considerable time is spent judging classes and delivering oral reasons.

AVS 310 Animal Disease and Sanitation 3(2,3)S 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 zoonoses of farm animals are explained. Preq: AVS 202.

AVS 311 Dairy Cattle Selection 2(1,2)S Emphasis is on the selection of dairy cattle for profitable herd operations. Evaluation of herd classification, fitting, showing, and true types is made.

AVS 315 Animal Welfare 3(3,0)S 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. Preq: Junior standing.

AVS 320 Veterinary and Medical Terminology 2(2,0)S Promotes students' understanding and use of basic scientific and medical terminology and concepts, especially those of basic science, biology, anatomy, physiology, and medicine. Preq: BIOL 104.

AVS 323 Poultry and Poultry Products Evaluation 2(0,4)S 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)F Acquaints students with animal pathology including cell injury, inflammation, neoplasia, immunologic disease, and pathology of various organ systems. Preq: AN PH 301 or consent of instructor.


AVS 344 Meats Laboratory 1(0,3)S Selection and grading of meat animals and carcasses. Practical work in slaughtering of animals and in the cutting, curing, and freezing of meats. Emphasis is on the identification of wholesale and retail cuts. Preq: AVS 108, 202.

AVS 346 Internship 1-12(0,3-36) Off-campus, preplanned, supervised learning opportunity in an area related to animal and 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 coordinating internship.

AVS 370, H370 Principles of Animal Nutrition 3(3,0)S Familiarizes students with nutrients and feeds used in livestock and specialty animal production. Methods of evaluating common feeds are covered along with a survey of the functioning of the various digestive systems. Practical aspect to feeding each species is covered. Preq: AVS 202, CH 102.

AVS 375, H375 Applied Animal Nutrition 2(2,2)S 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. Preq: AVS 202, to be taken concurrently or following AVS 370.

AVS 385 Equine Behavior and Training 2(0,4)S Basic understanding of horse psychology and how it can be modified. Students learn how to safely handle, train, and work with horses in-hand and under saddle. Includes preparation for such diverse events as sales and shows. Preq: AVS 108, 202.

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 coursework. May be repeated for a maximum of four credits. May be taken Pass/Fail only. Preq: Consent of instructor supervising practicum.

AVS 400, 600 Avian Physiology 2(2,0)S Even numbered years. 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 system(s) of their choice using quantitative physiological techniques. Preq: AVS 201, AN PH 301 or consent of instructor.

AVS 401, 601, 602 Poultry Management 4(3,2)F Breeding, feeding, reproduction, and management of poultry are discussed. Emphasis is on production systems integrating disciplines of animal agriculture into management plans and alternatives. Practical applications of poultry production and management practices are also presented. Preq: AVS 202, 370.

AVS 402, 602 Poultry Management 4(3,2)S Emphasizes management, decision making, and application of technology to the commercial production of poultry and pork products.

AVS 403, 603 Laboratory Techniques 3(2,3)F Research and quality control techniques commonly used in dairy science and related agri-sciences. Preq: CH 102.

AVS 404, 604 Dairy Cattle Feeding and Management 4(3,2)F Alternate years. 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, culling, growth, and development of dairy heifers, care and maintenance of the milking herd, and feeding for milk production. Preq: AVS 202, 370.

AVS 405 Advanced Selection and Evaluation 2(0,4)F 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. Preq: AVS 302 or 303 or 304 or 305, 309 or 311 and consent of instructor.

AVS 406 Seminars and Related Topics 2(3,0)S Provides opportunity to prepare and deliver orally technical information not fully covered in classwork, to aid in resume preparation, to introduce interviewing skills, and to acquaint students with industry expectations for Animal and Veterinary Sciences graduates. Preq: COMM 250.

AVS 407, 607 Equine Theriogenology 3(2,2)F 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. Preq: AVS 453.

AVS 408, 608 Pork Production 4(3,2)S 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. Preq: AVS 202, 370.

AVS 409 Selected Topics 1-3(1-3,0)S 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 412, H412, 612 Horse Production 4(3,2)S Feeding, breeding, and management of the horse discussed in relation to health, genetics, reproduction, nutrition, and selection. Prereq: AVS 202, 370.

AVS (BIOSC, MICRO) 414, H414, 614 Basic Immunology 4(3,3) See MICRO 414.


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)S Odd-numbered years. Factors important in the quality of poultry products are considered. The 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)F Alternate years. 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)S Alternate years. 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 451, 651 Poultry Nutrition 2(2,0)F Odd-numbered years. 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(0,3) 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)S Reproductive physiology and endocrinology of mammals with emphasis on farm animals and frequent reference to reproduction in laboratory animals and humans. Prereq: ANH 301, AVS 202.

AVS 455, 655 Animal Reproductive Management 10(0,3)S Physiology and endocrinology of pregnant and nonpregnant cows are discussed. Emphasis is on methods of artificial insemination, pregnancy detection, and computer recordkeeping to achieve a high level of reproductive efficiency in cattle. Prereq: ANH 301, AVS 202; to be taken concurrently or following AVS 453.

AVS 458, 658 Avian Microbiology and Parasitology 3(3,0)F Even-numbered years. Agents causing poultry diseases; the diagnosis, prevention, and treatment of specific diseases and their economic and public health significance.

AVS 461, 661 Physiology of Lactation 2(2,0)S 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, BIOCH 305.

AVS 470, H470, 670 Animal Breeding 3(3,0)S Fundamental principles relating to the breeding and improvement of livestock including variation, heredity, selection, linebreeding, inbreeding, crossbreeding, and other related subjects. Prereq: AVS 202 or consent of instructor.

AVS (BIOSC) 480, 680 Vertebrate Endocrinology 3(3,0) See BIOSC 480.

ANIMAL PHYSIOLOGY
(See also courses listed under Animal and Veterinary Sciences and Endocrinology.)

Professors: G. P. Birkenstock, Jr., A. B. Bodine II, T. Gimenez, T.R. Scott, J. R. Talamo, Jr.; Associate Professors: J. M. Colacino; Adjunct Professor: W. R. Boone; Adjunct Associate Professor: S. Valentin; Adjunct Assistant Professors: H. L. Higdon III, J. T. Wytels.

ANH 301 Physiology and Anatomy of Domestic Animals 4(3,3)F Physiology and associated anatomy of the body systems, including nervous, skeletal, muscular, respiratory, digestive, circulatory, urinary, reproductive, and endocrine systems. Designed primarily for students in Animal and Veterinary Sciences. Prereq: BIOL 104 or 111.

ANH 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

Professor: J. M. Coggeshall; Assistant Professors: E. L. Williams, Y. Zhang

ANTH 201 Introduction to Anthropology 3(3,0) Cross-cultural examinations of contemporary human societies; physical evolution of humans; development of societies in the archaeological record; environmental impact of human societies today.

ANTH 301 Cultural Anthropology 3(3,0) Study of human cultural diversity and current global issues. Examination of 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 people, their cultural diversity at European contact, and the history and influence 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 archaeological 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, prime social behavior, human physiological variations and disease resistance, and human skeletal anatomy and forensics.

ANTH 403, 603 Qualitative Methods 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(1-2,1-12) Group field project in settings selected by the instructor to provide students with a variety of exposures to various cultural contexts. Archaeological 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 403 or 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 151 Collaborative Studio I 4(2,6) [C.1, O.1] Introduction to principles of architectural design. Collaborative studio offering instruction in the specific skills of formal composition, visual communication, oral presentation, and computer literacy. Critical studies of canonical texts and buildings serve as the primary vehicle for design discussions.

ARCH 152 Collaborative Studio II 3(1,6) [O.1] Continuation of ARCH 151. Introduction to an elemental 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 Collaborative Studio III 4(1,9) [C, 0.1]
Architectural analysis and design problems focusing on understanding the context of architecture. Specific investigation of the relationship between buildings and the cityscape and landscape. Instruction on visual communications skills, computer modeling, and oral presentation techniques support design discussions. Prq: ARCH 152.

ARCH 252 Collaborative Studio IV 4(1,9) [C, 1]
Continuation of ARCH 251. Architectural design problems with a focus on fundamental organizational, spatial, structural, and constructive principles and their relationship to contextual situations. Instruction on visual communication skills and computer rendering support the design discussions. Prq: ARCH 251.

ARCH 351 Architecture Studio I 6(1,11) [W, 1]
Synthesizes architectural ideas into form, visual, oral, and written communications; and design projects of increasing scale and complexity. Developing the ability to communicate one's thoughts into architectural form is the ultimate objective. Prq: ARCH 252.

ARCH 352 Architecture Studio II 6(1,11) [W, 1]
Continuation of ARCH 351. Studio dealing with urban-based institution design. Housing issues are also explored. Visual, oral, and written communications are stressed within an environment that strives for synthesis of ideas and architectural form. Prq: ARCH 351.

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. Prq: 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. Prq: 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. Prq: 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. Prq: 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 freehand perspective field drawing of the built and natural environment. Prq: 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. Prq: 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. Prq: 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. Prq: 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. Prq: 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. Prq: 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 applications of color theories to art and architecture. Prq: 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. Prq: 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 graphics as they relate to the design professions—architects/landscape architects. Prq: 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 pre-modern and modern viewpoints 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. Prq: 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.


ARCH 452 Architecture Studio IV 6(0,12) Continuation of ARCH 451. Self-directed design studio. Independent study in which students set the parameters of design issues and complete the studio sequence. Prq: ARCH 451.

ARCH 485, 685 Health Care Facilities 3(3,0) Introduces concepts, organization, and direction of health and health-care services within the context of health-care delivery systems. Special emphasis is placed on mental and physical health-care facilities. Prq: 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. Prq: Consent of instructor.

ARCH 490, 6940 Directed Studies 1-5 Comprehensive study and research of special topics not covered in other courses. Emphasis is on field studies, research activities, and current developments in architecture. May be repeated for a maximum of ten credits. Prq: Consent of instructor.

ARCH 499, 6949 Selected Topics in Architecture 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. Prq: 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 2D 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 two-dimensional art work. Prq: Visual Arts major.

ART 152 Foundations in 3D Art 3(0,6) Intensive introduction to the visual arts and design fundamentals, including the exploration of the history and practical applications of elements and principles of design as they relate to three-dimensional art work. Prq: Visual Arts major.
ART 153 Orientation to Visual Arts I 1(1,0) Introduction to visual arts profession focusing on issues related to various career opportunities, creativity, problem solving methodologies, and current thinking in contemporary art. Prereq: Visual Arts major.

ART 154 Orientation to Visual Arts II 1(1,0) Introduction of professional practices 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 the foundation discipline in the visual arts. Basic materials and approaches associated with drawing are studied and applied through studio practice, augmented by critiques, demonstrations, and lectures. Prereq: ART 103 (non-Art majors); ARCH 152 (Architecture majors); LARCH 152 (Landscape Architecture majors); or consent of instructor.

ART 207 Beginning Painting 3(0,6) Introduction to basic materials, methods, and techniques of painting. Primary medium used is acrylic, and other painting media may also be introduced. Emphasis is on basic skills in painting plus individual creative development. Prereq: ART 151, 153, 205 (Visual Arts majors); ART 103 (non-Art Majors); ARCH 152 (Architecture majors); LARCH 152 (Landscape Architecture majors); or consent of instructor.

ART 209 Beginning Sculpture 3(0,6) Studio course investigating the meaning of sculpture through traditional and nontraditional 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); LARCH 152 (Landscape 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 or three of these techniques. Coursework integrates printmaking 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. 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 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. 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 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. 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 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. Prereq: ART 151, 152 or ARCH 152, or LARCH 152, or consent of instructor.

ART 305 Drawing 3(0,6) Study of human figure drawing with primary emphasis on drawing from live models. Student’s drawing skills and fundamental understanding of the structure and form of the human figure are reviewed through studio practice, augmented by critiques, demonstrations, and lectures. Prereq: 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. Prereq: 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. Prereq: ART 307 or consent of instructor.

ART 319 Beginning Papermaking 3(0,6) 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. Prereq: ART 307 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. 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 322 Art with Computer Research 1 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. Prereq: ART 321 or consent of instructor.
Courses of Instruction

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 a 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 415. 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 5(0,15)
Individual studio project directed by an instructor and determined by the student in consultation with the instructor. Usually focuses on a particular studio area, concept, or theme. May be repeated for a maximum of ten credits. Preq: Senior standing and completion of 300/400 sequence in the studio area in which students choose to complete senior studio, minimum grade-point ratio of 3.0 in focus studio area.

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 on a particular studio area, concept, or theme. May be repeated for a maximum of ten credits. Preq: Senior standing and completion of 300/400 sequence in the studio area in which students choose to complete senior studio, minimum grade-point ratio of 3.0 in focus studio area.

ART 490, 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. Preq: Consent of instructor.

ART AND ARCHITECTURAL HISTORY

Professor: W. W. Lew; Associate Professors: A. V. Feser, J. B. LeBlanc; Assistant Professor: K. Kourdelis

A A H 101, H101 Survey of Art and Architectural History I 3(3,0)
Comprehensive survey of the history of architecture and the visual arts of the Western world 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. Preq: A A H 101.

A A H 102, H102 Survey of Art and Architectural History II 3(3,0)

A A H 203, H203 History and Theory of Architecture I 3(3,0)

A A H 204, H204 History and Theory of Architectural History II 3(3,0)
Second of a two-semester sequence on special topics and issues in the history of architecture. Emphasis is upon the arts of the house, governmental buildings, and sacred architecture. New directions in architectural history. Preq: A A H 203.

A A H 205, H205 History andTheory of Art of the United States 3(3,0)
First of a two-semester sequence on special topics and issues in the history of art. Emphasis is upon the arts of the United States. Preq: A A H 204.

A A H 206, H206 History and Theory of Art of the United States I 3(3,0)
Second of a two-semester sequence on special topics and issues in the history of art. Emphasis is upon the arts of the United States. Preq: A A H 204.

A A H 210, H210 Introduction to Art and Architecture 3(3,0)
One-semester lecture survey that introduces the nonmajor an overview of art and architecture from different time periods and cultures. Students are encouraged to appreciate the contributions to art and architecture made by the masters and to discern different styles, art techniques, and creative traditions.

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 and directions. Preq: A A H 206.

A A H 330 Honors Colloquium 3 Undergraduate honors colloquium with emphasis on interdisciplinary interpretation. Integration of art, architecture, landscape, and city planning. Preq: A A H 204 or 206 or consent of instructor.

A A H 391 Italian Studies Abroad 1-3(3,0)
SS On-site exposure of special works of art and architectural monuments in Italy, coupled with lectures and study problems. May be taught alternately as a compact course during the academic year with a short stay in Italy or during the summer with an extended foreign experience. May not be taken Pass/Fail. Preq: A A H 204 or 206 or consent of instructor.

A A H 392 British Studies Abroad 3(3,0)
On-site exposure to special works of art and architectural monuments in Great Britain, coupled with lectures and study problems. May be taught alternately as a compact course during the academic year with a short stay in Britain or during the summer with an extended foreign experience. May not be taken Pass/Fail. Preq: A A H 204 or 206 or consent of instructor.

A A H 393 French Visual Studies Abroad 1-3(3,0)
On-site exposure to special works of art and architectural monuments in France, coupled with lectures and study problems. May be taught alternately as a compact course during the academic year with a short stay in France or during the summer with an extended foreign experience. May not be taken Pass/Fail. Preq: A A H 204 or 206 or consent of instructor.

A A H 394 Northern European Visual Studies Abroad 1-3(3,0)
On-site exposure to special works of art and architectural monuments in Northern European countries such as Germany, Switzerland, and Poland and coupled with lectures and study problems. May be taught alternately as a compact course during the academic year with a short stay in Northern Europe or during the summer with an extended foreign experience. May not be taken Pass/Fail. Preq: A A H 204 or 206 or consent of instructor.

A A H 395 Special Topics in Visual Studies Abroad 1-3(3,0)
On-site exposure to special works of art and architecture in foreign countries, coupled with lectures and study problems. Different countries may be selected for study at faculty discretion. May be taught as a compact course during the academic year with a short stay in foreign country or during the summer with extended foreign experience. May not be taken Pass/Fail. Preq: A A H 204 or 206 or consent of instructor.

A A H 396 Special Topics in Visual American Studies 1-3(3,0)
On-site exposure to special works of art and architectural monuments throughout the United States, coupled with lectures and study problems. May be taught alternately as a compact course during the academic year with a short trip to areas of interest or during the summer with extended travel. May not be taken Pass/Fail. Preq: 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. 

A A H 412, 612 Directed Research in Art History II 3(3,0) Continuation of A A H 411.

A A H (LARCH) 416 History of Landscape Architecture 3(3,0) Planetary survey of notable examples of mankind's constant efforts to arrange and bring order to his environment by design on the land. Prsg: Junior standing or consent of instructor.

A A H 423, 623 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. Prsg: A A H 204 or 206 or consent of instructor.

A A H 424, 624 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. Prsg: A A H 423.

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 consequence on society. Prsg: A A H 427.

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. Prsg: 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). Prsg: 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. Prsg: 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 Precolombian Art and Architecture 3(3,0) Familiarizes students with the art and architecture of the Western Hemisphere's Precolombian culture in Mexico, Central, and South America. Prsg: A A H 102 or 210 or consent of instructor.

ASTRONOMY

Professors: D. D. Clayton, M. D. Leising, B. S. Meyer; Associate Professors: P. J. Flower, D. H. Hartmann, J. C. King

ASTR 101 Solar System Astronomy 3(3,0) Descriptive survey of the universe, with emphasis on basic physical concepts and the objects in our solar system. Related topics of current interest are included. For nonscience majors. May not be taken by students who have completed ASTR 301.

ASTR 102 Stellar Astronomy 3(3,0) Descriptive survey of the universe, with emphasis on basic physical concepts and galactic and extragalactic objects. Related topics of current interest are included. For non-science majors. May not be taken by students who have completed ASTR 302.

ASTR 103 Solar System Astronomy Laboratory 1(0,2) Optional laboratory to accompany ASTR 101. Demonstrations, laboratory exercises, and planetarium visits supplement the lecture course. Coreq: ASTR 101.

ASTR 104 Stellar Astronomy Laboratory 1(0,2) Optional laboratory to accompany ASTR 102. Demonstrations, laboratory exercises, and planetarium visits supplement the lecture course. Coreq: ASTR 102.

ASTR (GEOL) 220 Planetary Science 3(3,0) See GEOL 220.

ASTR 302 Stellar Astrophysics 3(3,0) Study of the basic physical concepts necessary for understanding the sun, other stars, and their evolution. Topics include star formation, stellar structure and evolution, binary stars, and observational techniques. Prsg: PHYS 221 or consent of instructor.

ASTR 303 Galactic Astronomy 3(3,0) Study of basic physical concepts necessary for understanding the structure of the galaxy, the motions of the stars within it, the nature of the interstellar matter, other galaxies, the large-scale structure of the universe, and the origin of the solar system. Prsg: PHYS 221 or consent of instructor.

ASTR 475 Selected Topics in Astrophysics 1-3(0-3,0-9) Comprehensive study of an area of astrophysics. Topics may include nucleosynthesis and stellar evolution, extragalactic distance scale, structure and evolution of galaxies, and large-scale structure of the universe. May be repeated for a maximum of six credits, but only if different topics are covered. Prsg: ASTR 302 or consent of instructor.

ATHLETIC LEADERSHIP

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. Prsg: Athletic Leadership minor or consent of Athletic Leadership coordinator.

A L 350 Scientific Basis of Coaching II: 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. Prsg: A L 349 or consent of Athletic Leadership coordinator.

A L 352 Scientific Basis of Coaching III: 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. Prsg: A L 349.

A L 353 Theory of Prevention and Treatment of Athletic Injuries 3(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. Prsg: 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. Prsg: A L 349 or consent of Athletic Leadershio 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. Prsg: A L 349 or consent of Athletic Leadership coordinator.

A L 371 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. Prsg: 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. Prsg: 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. Prsg: 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. Preq: 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. Preq: 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, training programs, and equipment appraisal as a means to improve athletic performance. Total program development is also covered as it pertains to specific levels of competition. Preq: 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. Preq: A L 349 or 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 301 Molecular Biochemistry 3(3,0) Introduction to 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 a 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 tissues 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 2(0,4) Experiments selected to illustrate current methods used in biochemical research. Preq: Concurrent enrollment in BIOCH 423 or 431.

BIOCH 434, 634 General Biochemistry Laboratory II 2(0,4) Continuation of BIOCH 433. Preq: Concurrent enrollment in BIOCH 432.

BIOCH 436, 636 Nucleic Acid and Protein Biochemistry 3(2,0) 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 443, 643 Biochemical Basis of Disease 3(3,0) Topics in heritable human metabolic disorders including clinical features and newborn screening, genetic testing, the biochemical basis, and treatment. Preq: GEN 302, BIOCH 301, or consent of instructor.

BIOCH 491, H491 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(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)F Provides engineering, biological, and physical science students with an overview of the replacement of human body parts and the problems related to artificial devices.

BIO E 302 Biomaterials 3(3,0)S 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. Preq: CME 210 or consent of instructor.

BIO E 320 Biomechanics 3(3,0)S 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: EM 304 or consent of instructor.

BIO E 401 Biomedical Design 3(3,0)F 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. For engineering majors only. Preq: BIO E 302, 320, EM 304.

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 Bioengineering 1-4(1-4) 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 (CME) 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 multi-disciplinary teams, patenting and publishing technical and scientific information, and reviewing professional and ethical standards of performance. To be taken Pass/Fail only.
BIOL 101: Frontiers in Biology I (1,1,0) Introduces Biological Sciences majors to recent advances in molecular and cellular biology. Areas covered include genetic engineering, genetics, cell biology and development. Coreq: BIOL 103 or 110 or consent of course coordinator.

BIOL 102: Frontiers in Biology II (1,1,0) Introduces Biological Sciences majors to recent advances in organismal and evolutionary biology. Topics include ecology, evolution, behavior, and organizational biology. Coreq: BIOL 103 or 110 or consent of course coordinator.

BIOS 200: Biology in the News (3,3,0) For non-science majors. Students examine current topics of biology appearing in newspapers and other current media. Uses a problem-based learning approach, with students working as teams and individually on areas of interest identified by the class. Prereq: ENGL 102, General Education Science Requirements.

BIOS 205: Plant Form and Function I (3,3,0) Introductory course for students majoring in plant sciences. Integrates lecture and laboratory and emphasizes fundamental structures and functions of higher plants. Coreq: BIOL 103 or consent of instructor.

BIOS 222: Human Anatomy and Physiology I (4,3,3) Basic introductory course in integrated human anatomy and physiology covering cell and tissue, integumentary, skeletal, muscular, and nervous systems; sensory organs. Physiology is stressed. Structure and function are stressed primarily for nursing and other health-related curricula. Coreq: BIOL 103 or consent of instructor.

BIOS 223: Human Anatomy and Physiology II (4,3,3) Continuation of BIOS 222 covering endocrine, reproductive, cardiovascular, lymphatic, respiratory, urinary, and digestive systems; fluid and electrolyte balance. Physiology is stressed. Coreq: BIOS 222 or consent of instructor.

BIOS 301: Insect Biology and Diversity (3,3,0) See ENT 301.

BIOS 302, H302: Invertebrate Biology (3,3,0) In-depth study and comparison of free-living invertebrate animals emphasizing functional anatomy, development, and evolutionary relationships. Coreq: Introductory two-semester biology sequence with laboratory.

BIOS 303, H303: Vertebrate Biology (3,0) Comprehensive survey of vertebrate animals including their taxonomy, morphology, evolution, and selected aspects of the natural history and behavior. Coreq: Introductory two-semester biology sequence with laboratory.

BIOS 304, H304: Biology of Plants (3,3,0) Survey of the major groups of plants, their biology, diversity, and evolution. Coreq: BIOL 104 or 111 or BIOS 205.

BIOS 305, H305: Biology of Algae and Fungi (3,3,0) Introduction to the biology of the major groups of algae and fungi. Emphasizes how select representatives of the algae and fungi are adapted to their environment through structural, physiological, and life-cycle modifications. Coreq: BIOL 104 or 111 or BIOS 205.

BIOS 306: Invertebrate Biology Laboratory (1,0,3) Survey and comparison of the biology of living invertebrates, examples of which are drawn primarily from the southeastern coast of the United States. Coreq: Introductory two-semester biology sequence with laboratory. Coreq: BIOS 302.

BIOS 307: Vertebrate Biology Laboratory (1,0,3) Comparative and phylogenetic study of the gross morphology of vertebrates. Coreq: BIOS 303.

BIOS 308: Biology of Plants Practicum I (1,0,3) Laboratory exercises that explore the major groups of plants, their biology, diversity, and evolution. Coreq: BIOS 303.

BIOS 309: Algae/Fungi Practicum I (1,0,3) Practical 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. Coreq: BIOS 303.

BIOS (WF B) 313: Conservation Biology (3,3,0) See WFB 313.

BIOS 320: Field Botany (2,2,4) 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 field trips. Coreq: BIOS 104, 111, or BIOS 205, or consent of instructor.

BIOS 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, systematics and phylogenetic inference, fossil record, biogeography, molecular evolution, and human evolution. Prereq: BIOS 302 or equivalent.

BIOS (PL PHI) 340: Plant Medicine and Magic (3,3,0) See PL PHI 340.

BIOS (ENT) 400: H400, 600 Insect Morphology (4,3,3) Even-numbered years. See ENT 400.

BIOS 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. Coreq: BIOL 104 or 111 or BIOS 205 and CH 102. Coreq: BIOS 402.

BIOS 402, 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: BIOS 401.

BIOS 403, H403, 603: Protoczoology (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. Coreq: BIOL 104 or 111.

BIOS 404, H404, 604: Protoczoology Laboratory (1,1,2) Laboratory exercises reinforce the material presented in BIOS 403 and introduce students to techniques used in collection, preservation, and examination of protozoa. Coreq: BIOS 403.

BIOS (GEN) 405, H405, 605: Molecular Genetics of Eukaryotes (3,3,0) See GEN 405.

BIOS 406, H406, 606: Introductory Plant Taxonomy (3,0) Introduction to the basic principles and concepts of plant systematics with emphasis on the plants of South Carolina. Coreq: BIOL 104 or 111 or BIOS 205. Coreq: BIOS 407.

BIOS 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: BIOS 406.

BIOS 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. Coreq: BIOL 104 or 111. Coreq: BIOS 409.

BIOS 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: BIOS 408.

BIOS 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. Coreq: Junior standing in a life science or consent of instructor.

BIOS 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 provide rationale and methods for quantitative analyses of biota, as well as some integrated analyses of whole ecosystems. Coreq: BIOS 410 or 443.

BIOS (ENR) 413: Restoration Ecology (3,0) See ENR 413.

BIOS (AVS, MICRO) 414, H414, 614: Basic Immunology (4,3,3) See MICRO 414.

BIOS (ENT) 415, 615: Insect Taxonomy (3,1,6) Odd-numbered years. See ENT 415.

BIOS (GEN) 416, 616: Recombinant DNA (3,3,0) See GEN 416.

BIOS 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. Coreq: BIOL 104, 111, or consent of instructor.

BIOS (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; neu-
nomuscular 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. Prq. or
Coreq: BIOCH 301 or 305 or consent of instructor.

BIOSC 425, 625 Introductory Mycology 3(3,0)
Introduction to the biology of all the groups of
fungi and some related organisms, with considera-
tions of the taxonomy, morphology, development,
physiology, and ecology of representative forms.
Prq. or Coreq: BIOCH 425.

BIOSC 426, 626 Mycology Practicum 2(1,2)
Application of the principles of mycological tech-
niques, including isolation, culture, identification,
and microscopic study of fungi. Examples from
all major groups of fungi are included. Prq. or
Coreq: BIOCH 425.

BIOSC (ENT, ENTXO) 430, 630 Toxicology
3(3,0) See ENTERO 430.

BIOSC 432, H432, 632 Animal Histology 3(3,0)
Structural and functional study of the basic
tissues of animals and tissue makeup of organs.
Emphasis is on light microscope level with selected
sections studied at the electron microscope level.
Prq. or Coreq: BIOCH 433.

BIOSC 433, H433, 633 Animal Histology Lab-
4atory 2(1,2) Microscopic examination of basic
animal tissue types and the tissue makeup of
organisms which comprise systems. Coreq: BIOCH 432.

BIOSC (ENT) 436, 636 Insect Behavior 3(2,3)F
Odd-numbered years. See ENT 436.

BIOSC 440, H420, 640 Developmental Animal
Biology 3(3,0) Events and mechanisms respon-
sible for the development of multicellular animals.
Gametogenesis, fertilization, embryonic develop-
ment, cellular differentiation, morphogenesis, lar-
val forms and metamorphosis, asexual reproduc-
tion, regeneration, malignancy, and aging are ana-
lyzed in terms of fundamental concepts and con-
trol processes. Prq. or Coreq: BIOCH 450.

BIOSC 441, H421, 641 Ecology 3(3,0) Study of
basic ecological principles underlying the rela-
tionships between organisms and their biotic and
abiotic environments. Includes physiological, pop-
ulation, and community ecology, with applications
to the health of human ecological concerns. Prq. or
Coreq: BIOCH 425 or 625 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. Prq. or Coreq: BIOCH 302
or 303 or 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, es-
tuaries, and marine systems. Prq. or Coreq: 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 BIOCH
441. Students are introduced to field, laboratory
and computer-based analyses of plant and animal
populations and communities. Prq. or Coreq: BIOCH
441.

BIOSC 446, H446, 646 Plant Ecology 3(3,0)
Ecology of plants in relation to their biotic and
abiotic environments. Individual organisms,
populations, and communities are studied with
an emphasis on seed plants in terrestrial
environments. Prq. or Coreq: BIOL 104, 111 or BIOCH 205
or consent of instructor.

BIOSC 447, H447, 647 Plant Ecology Labora-
tory 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. Prq. or
Coreq: BIOCH 446 or consent of instructor.

BIOSC 450, H450, 650 Developmental Biology
Laboratory 2(1,2) Examines a broad range of
topics concerned with the development of multi-
cellular animals such as gametogenesis, fertilization.
embryonic development, cell differentiation,
morphogenesis, larval metamorphosis, and regener-
ation. Laboratory exercises provide the rationale
and methods for the descriptive and experimental
analysis of development in representative in-
vertebrates and vertebrates. Prq. or Coreq: BIOCH
440 or equivalent.

BIOSC 452, H452, 652 Plant Anatomy and Morpho-
logy 3(3,0) Study of the anatomy, reproduction,
and phylogenetic relationships of vascular plants.
Prq. or Coreq: BIOL 104, 111 or BIOCH 205, or consent
of instructor.

BIOSC 453, H453, 653 Plant Anatomy and Morpho-
logy Laboratory 2(1,2) Laboratory focusing on
the anatomy, reproduction, and phylogenetic
relationships of vascular plants. Coreq: BIOCH 452.

BIOSC (ENT) 455, H455, 655 Medical and Vet-
inary Entomology 3(2,3)F Odd-numbered years.
See ENT 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.
Prq. or Coreq: BIOL 104 or 111. Coreq: BIOCH 457.

BIOSC 457, H457, 657 Medical and Veterinary
Parasitology Laboratory 2(1,2) Laboratory to
introduce material presented in BIOCH 456. In-
cludes study of both live and preserved human/
animal parasites. Also introduces techniques used
in collection, preservation, and examination of

BIOSC 458, H458, 658 Cell Physiology 3(3,0)
Study of the chemical and physical principles of
cell function emphasizing bioenergetics and mem-
brane phenomena. Prq. or Coreq: BIOCH 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. Prq. or Coreq: BIOCH 459.

BIOSC 460, H461, 661 Cell Biology 3(3,0) In-
depth analysis of how and where intracellular and
extracellular molecules control general and spe-
cific cellular functions such as gene expres-
sion, secretion, motility, signaling, cell-cycle control
and differentiation. Taught and graded at a level
where students are expected to infer and in-
tegrate cellular events. Prq. or Coreq: BIOCH 301 or
consent of instructor.

BIOSC 462, 662 Cell Biology Laboratory 2(1,2)
Accompanies BIOCH 461; focuses on molecular
and microscopic analysis of eukaryotic cells.
Coreq: BIOCH 461.

BIOSC 464, 664 Mammalogy 3(2,3) Origin, ev-
duction, distribution, structure, and function of
mammals, with laboratory emphasis on the mam-
mals of South Carolina. Field collection required.
Prq. or Coreq: BIOCH 303 or consent of instructor.

BIOSC (GEN, HORT) 465, 665 Plant Molecu-
lar Biology 3(3,0) See HORT 465.

BIOSC 466, 668 Herpetology 3(2,3) Systemat-
ics, life history, distribution, ecology, and current
literature of amphibians and reptiles. Laboratory
study of morphology and identification of wild
families and U.S. genera, as well as all southeast-
ern species. Field trips are required. Prq. or Coreq:
BIOCH 303 or consent of instructor.

BIOSC (ENT, W F B) 469, H469, 669 Aquatic
Insects 3(1,6)S Odd-numbered years. See ENT
469.

BIOSC 470, H470, 670 Animal Behavior 3(3,0)
Historical and modern developments in animal
behavior emphasizing the evolutionary and eco-
logical determinants of behavior. A synthesis of
ethology and comparative psychology. Prq. or
Coreq: BIOCH 302 or 303 or consent of instructor.

BIOSP 471, 671 Animal Behavior Laboratory
1(0,3) Laboratory exercises that explore the be-
havior of animals. Emphasis is on behavioral
observation and analysis and presentation of
findings in a report format. Prq. or Coreq: BIOCH
470 or consent of instructor.

BIOSC 472, 672 Ornithology 4(3,3) Biology of
birds: their origin and diversification, adaptations,
phylogeny, classification, structure and function,
behavior, ecology, and biogeography. Field iden-
tification is emphasized, and field trips are required.
Prq. or Coreq: BIOCH 303 or consent of instructor.
BIOSC 475, 1475, 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. Prereq: One year each of biology, chemistry, and physics or consent of instructor.

BIOSC 476, 1476, 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 function. Prereq or 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. Prereq: BIOSC 303 or consent of instructor.

BIOSC 480, 680 Vertebrate Endocrinology 3(3,0) Introduction to the basic principles of neuro-endocrine integration and homeostatic maintenance in vertebrates. Comparative morphology and physiology of various endocrine tissues and hormone chemistry and modes of action are considered. Prereq: BIOSC 303, organic chemistry, or consent of instructor.

BIOSC 486 Natural History 3(3,0) Interdisciplinary examination, through readings and critical discussion, of concepts of nature and biodiversity in relation to human endeavors. Course seeks to achieve a balanced perspective from which to seek compromises between conflicting views of nature. Prereq: BIOSC 441, 443, or 446, or equivalent, or consent of instructor.

BIOSC 490 Selected Topics in Biological Sciences 1-4(1-4,0-9) Comprehensive study of selected topics not covered in other course offerings. May be repeated for a maximum of eight credits, but only if different topics are covered. Prereq: Junior standing or consent of instructor.

BIOSC 491, 691 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. Prereq: Junior or Senior standing or consent of instructor.

BIOSC 493 Senior Seminar 2(2,0) Analysis and discussion of papers from the primary literature of the biological sciences. Students select the primary literature, present and analyze selected readings. Prereq: Senior standing and either ENGL 314 or COMM 250 or consent of instructor.

BIOL 101 Concepts in Biology I 4(3,3) First in a two-semester general education sequence covering fundamental biological concepts. Emphasizes the process of scientific inquiry applied to evolution, cell structure and function, genetics, and metabolism. Develops biological literacy by applying concepts to important issues in everyday life. Not open to students who have received credit for BIOL 110/111 or BIOL 103/104.

BIOL 102 Concepts in Biology II 4(3,3) Continuation of BIOL 101, emphasizing the process of scientific inquiry applied to biodiversity, animal and plant structure and function, ecology, and human impact on the environment. Develops practical biological literacy by applying concepts to important issues in everyday life. Not open to students who have received credit for BIOL 110/111 or BIOL 103/104. Prereq: BIOL 101.

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 110/111 or BIOL 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 BIOL 103/104, dependent on the requirements for the major. Prereq: BIOL 103.

BIOL 109 Introduction to Life Science 4(3,3) Survey of topics in botany, zoology, microbiology, and ecology emphasizing comprehensiveness 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 explanations 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. Prereq: BIOL 110.

BIOL 201 Biotechnology and Society 3(2,0) 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. Prereq: BIOL 102 or equivalent, or consent of the instructor.

BIOSYSTEMS ENGINEERING

Professors: W. H. Allen, Chair, D. E. Brune, R. B. Dodd, Y. J. Han, D. E. Linvill, Associate Professors: C. M. Drapcho, T. H. Walker, Assistant Professor: T. O. Owino

B E 214 Fabrication and Manufacturing Methods 2(1,3) Introduction to machine and structure fabrication for biosystems. Topics include metallurgy, arc and gas welding, fasteners, plastics, and protective coatings. Prereq: M 201. Coreq: E G 209.

B E 221 Surveying for Soil and Water Resources 2(1,3) Fundamentals of land measurement and traverse computations. Surveying practice in traverse and topographic surveys preliminary to design of techniques and construction for structures resources management. Prereq: MTHSC 106.

B E 322 Small Watershed Hydrology and Sedimentology 3(3,0) [W] 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.

B E 333 Environmental Modification 2(2,0) Principles of environmental modification and control including energy exchange, psychrometrics, heat and moisture balance, biological interactions, control systems, and basic elements of heating, ventilation, and air conditioning. Prereq: PHYS 221, M E 310 or consent of instructor.

B E 350, H350 Microcomputer Controls in Biosystems 2(1,3) Microcomputer interfacing and digital control are studied for application to agriculture, aquaculture, biotechnology, and other biosystems. Topics include digital electronic circuits and components, microcomputer architecture and interfacing. Prereq: E C E 307, MTHSC 208.

B E 357 Machine Unit Operations 2(2,0) Unit operations of machines useful to biosystems engineers are studied from a functional and applications approach. Machine cost analysis is included. Prereq: B E 214, M E 201, or consent of instructor.

B E 362, H362 Energy Conversion for Biosystems 3(2,3) Topics include energy requirements of biosystems, direct energy conversion methods, characteristics of energy sources, and economics. Energy conversion methods used in biosystems and their limitations are presented. Prereq: M E 310.
B E 364 Non-Point Source Pollution Management and Control 3(2,3) Fundamentals of environmental engineering includes quantification of environmental impacts and ecosystem management related to non-point source environmental contaminants and nutrients and planning and design of waste management systems. Prig: One year of chemistry, junior standing or consent of instructor.

B E 370 Practicum 1-3 Preplanned internship with an approved employer involved with biosystems engineering endeavors. A minimum of 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. Prig: Junior standing and departmental consent.

B E (CSENV) 408, 608 Land Treatment of Wastewater and Sludges 3(3,0) See CSENV 408.

B E 416, H416, 616 Biosystems Engineering Capstone Design 3(2,3) Fundamentals of mechanical design with applications to biosystems, biomaterials, and bioproducts. Approved design project is required. Prig: All required 300-level engineering courses except E E 384 and B E 364.


B E (CH E) 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 genetics and engineered enzymes, and design and control of microorganisms. Prig: Virology and Genetic Engineering, and consent of instructor. Coreq: E E 394, 450 (for Chemical Engineering majors).

B E 430, 630 Problem Solving Methods and Models in Biosystems Engineering 3(3,0) Fundamentals of mathematical and computer modeling of physical, chemical, and biological phenomena applied to biosystems engineering. Topics include the modeling process, problem solving methods, numerical techniques, modeling model coefficients, validation, and classic models used in biosystems, biomedical, environmental, and agricultural engineering. Prig: B E 430, B IOCH 301, MICRO 305 (for Biosystems Engineering majors); Coreq: CH E 312, 450 (for Chemical Engineering majors).

B E 442, 642 Properties and Processing of Biological Products 2(1,3) Study of engineering properties of biological materials and their uniqueness as design constraints on systems for handling, processing, and preserving biological products. Prig: B E 333, C E 341, E M 304, M E 310.

B E 450, H450, 650 Instrumentation for Biosystems Engineers 3(2,3) (C E) Overview of modern instrumentation techniques for biosystems. Laboratory use of equipment is emphasized. Topics include performance characteristics of instruments, analog-signal conditioning, transducer theory and applications, and digital systems for data acquisition and control. Prig: B E 350, familiarity with computer programming, or consent of instructor.

B E (EE&S, FOR) 451, H451, 651 Newman Seminar and Lecture Series in Natural Resources Engineering 10(2,0) 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. Prig: Senior standing, consent of instructor.

B E 471 Engineering Research and Management 2(1,3) [W] Research project is conducted on a biosystems engineering problem. Engineering economics, engineering creativity, and project management are incorporated in addition to communication skills. Prig: Senior standing in an engineering curriculum.

B E 473 Special Topics in Biosystems Engineering 1-3(1-3) Pass/Fail comprehensive study of special topics not covered in other courses. Emphasis is on development of in-depth investigations. May be repeated for a maximum of six credits, but only if different topics are covered. Prig: Senior standing and consent of department.

B E (EE&S, I 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 resources, marketing, operations, and financial functions of global businesses. To be taken Pass/Fail only.

CERAMIC AND MATERIALS ENGINEERING


C M E 210 Introduction to Materials Science 3(3,0) Beginning 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 structures easily visible to the eye through electronic structure of atoms. Prig: CH 102, MTHSC 108.

C M E 221 Materials Processing I 3(3,0) Introduction into the principles underlying the processing/manufacturing of ceramic, polymeric, and metallic materials. Coreq: C M E 225.

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. Prig: C M E 221; 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 physical and chemical performance of materials. Prig: CH 102, PHYS 122, MTHSC 108.
CME 226 Thermodynamics of Materials 3(3,0) Introduction to physical laws that govern the equilibrium products of chemical and thermal reactions. Covers the three laws of thermodynamics, phase equilibria, energy requirements for reactions, material corrosion, and environmental stability. Preq: CH 102, MTHSC 108; Coreq: PHYS 221.

CME 227 Transport Phenomena 3(3,0) Kinetic aspects of mass, heat, and fluid transport as they relate to the processing and performance of materials. Preq: CME 226; Coreq: MTHSC 208.

CME 228 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/degredation during use. Preq: CME 226.

CME 241 Metrics Laboratory 1(0,3) Provides basic knowledge of statistical techniques and testing procedures used to evaluate materials. Sampling procedures, calculation of averages, confidence intervals, Weibull statistics, precision and accuracy to enable quality decision making are included. Coreq: CME 221.

CME 242 Fabrication and Microscopy Laboratory 2(0,6) [O.1] 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. Preq: CME 225, 241; Coreq: CME 222.

CME H300 Honors Seminar 1(1,0) Acquaints students enrolled in the Departmental Honors Program with current research issues in the discipline. This assists students in preparing a research proposal for the Senior Thesis. To be taken Pass/Fail only. Preq: Junior standing, admission to departmental honors program.

CME 303 Noncrystalline Materials 3(3,0) Basic course on the fundamentals of the noncrystalline state. Topics include cooling kinetics and effects on formation, as well as physical properties of noncrystalline substances, in metallic, polymeric, and ceramic systems. Preq: CME 228, 320.

CME 320 Mechanical Behavior of Materials 3(3,0) Covers the microstructural basis of deformation and fracture in ceramic, metallic, and polymeric systems. Preq: CME 225; MTHSC 208.

CME 321 Characterization of Materials 3(3,0) Provides students with an overview of the common used materials characterization techniques, including x-ray diffraction, thermal analysis, microscopy, and surface analysis. Preq: CME 225; Coreq: CME 341.

CME 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. Preq: CME 227, 228; Coreq: CME 341.

CME 323 Combustion Systems and Environmental Emissions 3(3,0) 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. Preq: CME 226, 322.

CME 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. Preq: CME 227; Coreq: CME 342.

CME 341 Analytical Methods and Phase Development 2(0,6) [O.1] 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. Preq: CME 242; Coreq: CME 321.

CME 342 Structure/Property Laboratory 2(0,6) [W1] 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. Preq: CME 341, 320.

CME 361 Processing of Metals and Their Composites 3(3,0) Examines the control of microstructure-property relationships in metallic materials and their composites through development and selection of innovative manufacturing methods. Preq: CME 222, 227, 320.

CME H395 Honors Research I 3(0,9) Individual research under the direction of a Ceramic and Materials Engineering faculty member. Preq: CME 222, 227, 228.

CME 402, 602 Solid State Materials 3(3,0) Discussion of the properties of solids as related to structure and bonding with emphasis on electronic materials. Band structure theory, electronic, and optical properties are treated. Preq: CME 225; PHYS 221, MTHSC 208.

CME 407 Senior Capstone Design 3(1,6) [C.1, O.1, W1] Work with industrial partners who have materials related processes or product problems. Emphasizes interdisciplinary team 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. Preq: CME 441, 1E 384.

CME 416, 616 Electrical Properties of Materials 3(3,0) Covers a range of topics dealing with electrical and magnetic materials. Topics include metal and polymer conductors, insulators, ceramic and polymer materials for dielectric applications, and ferroelectric, piezoelectric, pyroelectric, and optoelectronic materials. Metal and ceramic magnetic materials are also discussed.

CME 418, 618 Process Control 3(3,0) 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. Preq: CME 303, 330, 361.

CME 424, 624 Optical Materials and Their Applications 3(3,0) 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. Preq: CME 303, 402.


CME 431, 631 Advanced Ceramic Processing 3(3,0) Provides advanced study of ceramic forming processes. Focus is on the many types of ceramic forming processes, such as slip casting, extrusion, dry pressing, filter pressing, and plastic forming. Preq: CME 330.

CME 432 Manufacturing Processes and Systems 3(3,0) 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. Preq: CME 418, 431.

CME 441 Manufacturing Laboratory 1(0,3) [W1] 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. Preq: CME 342; Coreq: CME 418.

CME 460, 660 Metals and Their Composites 3(3,0) Examines the control of microstructure-property relationships in metallic materials and their composites through development and selection of appropriate thermal processing procedures. Preq: CME 322, 342.

CME E (BIO E) 480, 680 Research Principles and Concepts 1(1,0) See BIO E 480.

CME 490, H490, 690 Special Topics in Ceramic Engineering 1-3(1-3,0) 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. Preq: Consent of instructor.

CME H495 Honors Research II 3(0,9) Individual research under the direction of a Ceramic and Materials Engineering faculty member. Preq: CME H395.

CME H497 Honors Thesis II 1(1,0) Preparation of honors thesis based on research conducted in CME H395 and H495. Preq: CME H495.
CHEMICAL ENGINEERING


**CHE 211 Introduction to Chemical Engineering** 4(3,2) Introduction to fundamental concepts of chemical engineering, including mass and energy balances, PV T relationships for gases and vapors, and elementary phase equilibria; problem-solving and computer skills are developed in lab. Preq: CH 102, ENGR 120, PHYS 122.

**CHE 220 Chemical Engineering Thermodynamics I** 3(3,0) Topics include first and second laws of thermodynamics, ideal gases, PV T properties of real fluids, energy balances with chemical reactions, and thermodynamic properties of real fluids. Preq: CH 211, MTHSC 206.

**CHE H300 Honors Seminar 1(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. Preq: Admission to Departmental honors program, Junior standing.

**CHE 307 Unit Operations Laboratory I** 3(2.3) [O.1, W.1] Laboratory work in the unit operations of fluid flow, heat transfer, and evaporation. Stress is on the relation between theory and experimental results and the statistical interpretation of those results and on report preparation and presentation. Preq: CH 220, 311, E G 209. Coreq: EX ST 411 or MTHSC 302.

**CHE 311 Fluid Flows** 3(3,0) Fundamentals of fluid flow and the application of theory to chemical engineering unit operations, such as pumps, compressors, and fluidization. Preq: CH 211, MTHSC 206.

**CHE 312 Heat and Mass Transfer** 3(3,0) Study of the basics of heat transmission and mass transport. Special emphasis is placed on theory and its application to design. Preq: CH 220, 311.

**CHE 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. Preq: CH 211. Coreq: CH 223, CH 220.

**CHE 321 Chemical Engineering Thermodynamics II** 3(3,0) Continuation of CH 220. Topics include thermodynamics of power cycles and refrigeration/liquefaction, thermodynamic properties of homogeneous mixtures, phase equilibria, and chemical reaction equilibria. Preq: CH 220, MTHSC 208.

**CHE 344 Chemical Engineering Junior Seminar 1(1,0)** Preparation of junior 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. Preq: CH 312, Junior standing in Chemical Engineering.

**CHE E 353 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. Preq: CH E 311, MTHSC 208.

**CHE E H395 Honors Research I** 3(0,9) Individual research under the direction of a Chemical Engineering faculty member. Preq: CHE H300 or consent of department honors coordinator.

**CHE E 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. Preq: CH E 312, MTHSC 208.

**CHE E 407 Unit Operations Laboratory II** 3(1.6) [O.1, W.1] Continuation of CH E 307 with experiments primarily on the differential operations. Additional laboratory material on Yas on writing and general techniques for experimental measurements and analysis of data, including statistical design of experiments. Preq: CH E 307, 312.

**CHE E 412, 612 Polymer Engineering** 3(3,0) Design-oriented course in synthetic polymers. Topics include reactor design used in polymer production, effect of step versus addition kinetics on reactor design, epoxy curing reactions, polymer solubility, influence of polymerization and processing conditions on polymer crystallinity. Preq: CH E 224 and 332 or consent of instructor.

**CHE E 413 Separation Processes** 3(3,0) [C.1] Study of gas-liquid and liquid-liquid separation techniques with emphasis on gas absorption, distillation, and liquid-liquid extraction. Preq: CH 332, CH E 312, 321.

**CHE (B E) 428, 628 Biochemical Engineering** 3(3,0) See B E 428.

**CHE E 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. Preq: CH E 307, 312. Coreq: CH E 413.

**CHE E 432 Process Development, Design, and Optimization of Chemical Engineering Systems II** 5(1,12) [O.1, W.1] Continuation of CH E 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. Preq: CH E 321, 353, 407, 413, and 450 or consent of department chair.

**CHE E 443 Chemical Engineering Senior Seminar 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. Preq: CH E 312, Senior standing in Chemical Engineering. Coreq: CH E 431.

**CHE E 444 Chemical Engineering Senior Seminar II** 1(1,0) Preparing for chemical engineering practice in the real world. Preq: CH E 443.

**CHE E 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. Preq: Consent of instructor.

**CHE E 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. Preq: CH E 312, 321, CH 332.

**CHE E 491, 491 Special Projects in Chemical Engineering I** 3(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. Preq: CH E 312 or 313, CH 332.

**CHE E H495 Honors Research II** 3(0,9) Individual research under the direction of a chemical engineering faculty member. Preq: CH E H395.

**CHE E H497 Honors Thesis I** 1(1,0) Preparation of honors thesis based on research conducted in CH E H395 and H494. Preq: CH E H495.

CHEMISTRY


**CHE 101, 101 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. Preq or Coreq: MTHSC 105 or higher placement in MTHSC.

**CHE 102, 102 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. Preq: CH 101 with a C or better.
CH 101 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 science 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 101 or 105.

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 102 or 106. 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 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: CH 102 or consent of instructor.

CH 205 Introduction to Inorganic Chemistry 2(2,0) One-semester treatment which emphasizes the properties and reactions of the more common chemical elements. Prereq/Coreq: 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 10(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: Registration in CH 223.

CH 228 Organic Chemistry Laboratory 10(0,3) Continuation of CH 227. Credit toward a degree will be given for only one of CH 226 or 228. Prereq: CH 227 and registration in CH 224.

CH 229 Organic Chemistry Laboratory 10(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 certain 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, 333 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 CHE 220.

CH 340 Physical Chemistry Laboratory 1(0,3) Continuation of CH 339. Prereq: Registration in CH 332.

CH 402, 404, 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 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 spectrometries, radiochemistry, and separation science. Prereq: CH 331, 332.

CH 412 Instrumental Analysis Laboratory 2(0,5) Reinforcement of principles of chemical instrumentation 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, 414, 613 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, 421, 621 Advanced Organic Chemistry 3(3,0) Survey of modern organic chemistry with an emphasis on synthesis and mechanisms. Prereq: CH 224, 312, 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, 447, 627 Organic Spectroscopy 3(3,2) 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 spectrometry, optical rotatory dispersion and circular dichroism. Prereq: One year each of organic chemistry and physical chemistry.

CH 435, 435, 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, 444 Research Problems 3(0,9) 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. Prereq: Senior standing in Chemistry or consent of instructor.

CH 444, 444 Research Problems 3(0,9) Continuation of CH 443.

CH 451, 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 multi-disciplinary technology. Prereq: CH 221, 224, 227, 415 or consent of instructor.

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 Professors: 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 and language 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 spoken and written Chinese common to the Chinese-speaking business communities, with emphasis on business practices and writing/translation of business letters and professional documents. Cross-cultural references are provided for comparative analyses of American and Chinese business behavior. Classes are conducted in Chinese. Preq: CHIN 202, 305 (or concurrent enrollment) or consent of department chair.

CHIN 398 Directed Reading 3(3,0) Directed readings in Chinese literature, language, society, and culture. Taught in Chinese. May be repeated for a maximum of six credits. Preq: Consent of department chair.

CHIN 416 Chinese for International Trade II 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 (ANTH) 418 Chinese Culture and Society 3(3,0) Examines basic cultural values and the patterns of Chinese social life. Focus is on Chinese social organization and interpersonal dynamics, including the family system, gender identities, social exchanges and networks. All readings and discussions are in English. May not be used to satisfy general foreign language requirements.

CHIN 499 Selected Topics in Chinese Culture 3(3,0) Examination of various social and cultural topics including art and literature, philosophical and religious traditions, health and healing, folk and popular cultures. May be repeated for a maximum of six credits, but only if different topics are covered. Readings and discussions are in English. May not be used to satisfy general foreign language requirements.

CITY AND REGIONAL PLANNING

Professors: J. B. London, M. Lauria, D. J. Nadeneck, Chair; B. C. Nocks; Associate Professors: M. G. Cunningham, J. T. Farris, S. L. Spy, Visiting Assistant Professor: C. A. Schively; Lecturer: R. W. Bainbridge; Adjunct Professor: G. A. Vander Mey

C R 401, 601 Introduction to City and Regional Planning 3(3,0) Introduces students from other disciplines to City and Regional Planning. Spatial and nonspatial areas of discipline are explored through a wide ranging reading/seminar program. Preq: Consent of instructor.

C R 402, 602 Human Settlement 3(3,0) Overview of forces and trends affecting community growth and change—historical, ecological, economic, demographic, design, and development—pertaining to human settlement patterns and their interrelationship in the urbanization process, especially at the national, regional, urban, and neighborhood scale. Team-taught from various perspectives. Intended as a foundation course for Master's in Real Estate Development, City and Regional Planning, and Landscape Architecture. Preq: Consent of instructor.

C R 403, 603 Seminar on Planning Communication 3(3,0) [W] 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 (E N R) 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 200 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: EM 201. Cor: CE 253.

C E 251 Analysis Techniques in Civil Engineering 3(2,3) [C] 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. Cor: MATH 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 spatial and associated attribute data including geographic information systems.

C E 201 Structural Analysis 3(2,2) 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. Preq: C E 200 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 concerns. Public transit systems are covered. Preq: 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. Preq: C E 200, 253.

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. Preq: Junior standing.
C E 341 Introduction to Fluid Mechanics 4(3,3) Introduction to fluid mechanics, including properties of static and dynamic situations. Problem-solving skills are emphasized, including the principles of mass, momentum, and energy conservation. Special topics include conduit flows and pump systems. Laboratory experiments familiarize students with laboratory techniques and instrumentation. Prereq: CE 253, EM 202, Junior standing.

C E 342 Applied Hydraulics and Hydrology 3(3,0) Concepts covered are pipe network design, precipitation, evapotranspiration, runoff, hydrograph analysis, flood routing, hydrologic design, open channel flow, design of stable channels, and groundwater hydraulics. A design project involving hydrologic system analysis and design is assigned. Prereq: CE 341, EX ST 301.

C E 350 Economic Evaluation of Projects 3(3,0) [0.1] 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 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 H387 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 H388 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 H389 Honors Research Skills 1(1,0) Research problem selection, research tools, research report organization. Prereq: C E H388.

C E 401 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: CE 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: CE 301 or consent of instructor.

C E 404, 604 Wood and Masonry Structural Design 3(3,0) Introduction to design of structural elements for masonry buildings. Lintels, walls, shears 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: CE 402 or consent of instructor.

C E 405, 605 Structural Systems Design 3(3,0) Study of the structural design process including structural requirements, structural systems and materials, specification of loads, and the preliminary design and costing of structural components and systems. Prereq: CE 301 or consent of instructor.

C E 406 Structural Steel Design 3(3,0) Introduction to the design of structural steel 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, through reference is made to the ASD Specification with comparisons made where appropriate. Prereq: CE 301 or consent of instructor.

C E 407, 607 Wood Design 3(3,0) Introduction to wood design and engineering properties of wood and wood-based materials, design of beams, columns, walls, roofs, panel systems, and connections. Prereq: CE 300 and 402 or 406.

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: CE 311.

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: CE 311.

C E 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: CE 311.

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: CE 321.

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, earthfills, dams, and earth retaining structures. Prereq: CE 321 or GEOL 320 or equivalent.


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: CE 331 or equivalent.

C E 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, and engineering: organizational support features and typical implementation procedures. Prereq: CE 331, EX ST 301.

C E 446, 646 Flood Hazards and Protective Design 3(3,0) Study of flood hazards and methods of protective design of the built environment. Floodplain 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.

C E 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. Prereq: CE 342; Coreq: EE/S 401 or consent of instructor.

C E 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. Prereq: CE 341 and 342 or consent of instructor.

C E 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, transients, spillways, small dams, and pond design. Field trips to actual hydraulic structures may be included. Prereq: CE 341 and 342 or consent of instructor.
C E 455, 655 Properties of Concrete and Asphalt Properties of aggregate, concrete, and asphalt are discussed. Concrete and asphalt mix designs are conducted in the laboratory. Prereq: C E 200, 351, EX ST 301 or MTHSC 302.

C E 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. Prereq: All required 300-level C E courses and the Technical Design Requirement.

C E 462, 662 Coastal Engineering I 3(3,0) Introduction to coastal and oceanographic engineering principles, including wave mechanics, wave-structure interaction, coastal water-level fluctuations, coastal processes, and design considerations for coastal structures and beach nourishment projects. Prereq: C E 341 or E M 320.

C E 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. Prereq: C E 341. Coreq: E E E S 401.

C E H 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. Prereq: Senior standing in Civil Engineering Senior Departmental Honors Program.

C E H 488 Honors Research I 1-3 Individual research under the direction of a Civil Engineering faculty member. Prereq: C E H 389.

C E H 489 Honors Research II 3(3,0) Individual research under the direction of a Civil Engineering faculty member. Prereq: C E H 488.

C E 490, 690 Special Projects 1-3(1-3,0) Studies or laboratory investigations on special topics in the civil engineering field 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. Prereq: Senior standing.

C E 491, 691 Selected Topics in Civil Engineering 1-6(1-6,0) Structured 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. Prereq: Consent of instructor.

COLLEGE OF ENGINEERING AND SCIENCE

CES 101 Introduction to Engineering and Science 1(0,2) Introduction to the engineering and science professions to assist students in their selection of a major. In addition, inventories are used to assess career interests and learning styles. Students also complete and demonstrate several minor 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 for the purpose of assisting students in the selection of a major. Students use laptop computers 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.

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.

COMMUNICATION STUDIES


COMM 150 Introduction to Speech Communication 3(2,2) [0.3] 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. Prereq: COMM 162.

COMM 201 Introduction to Communication Studies 3(3,0) Introduces and prepares students for continued study in their major by familiarizing them with the evolution of the communication discipline. Students are exposed to those major theoretical approaches and traditional research practices that characterize contemporary communication scholarship.

COMM 250 H 250 Public Speaking 3(3,1) [0.3] 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 251 Business and Professional Speaking 3(3,0) [0.3] Skills-intensive course for researching, organizing, and delivering speeches for business and professional settings.

COMM 256 Introduction to Public Relations 3(3,0) Students learn the context and techniques of public relations (PR), a form of corporate communication. Types of PR work, theories of PR, the four-part structure of PR, and the history of the field.

COMM 268 Voice and Diction 3(3,0) Practical work to improve vocal clarity and tonal quality of students' speech. Corrects such voice and diction problems as improper pronunciation and extreme dialects.

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. Prereq: COMM 150, 250, or consent of instructor.

COMM 301 Speech Communication Theories 3(3,0) Various theories and models of communication characterizing the field of speech communication. Focuses on how communication is conceptualized from different theoretical perspectives.

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.

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 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 first-hand as participants on a weekly on-campus television news program.

COMM 325 Sports Communication 3(3,0) Fundamentals of communicating in a 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.

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.

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.
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.

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 developmental strategies for intra- and intercultural relationships.

COMM 349 Communication and Aging 3(3,0)
Major theories and concepts concerning communication and between members of aging populations. Focuses on communication factors that affect the elderly and implications for the creation and maintenance of satisfying relationships within and between generations.

COMM 350 Small Group and Team Communication 3(3,0)
Examines the principles and skills involved in effective small-group communication.

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. Preq: Junior standing.

COMM 360 Persuasion 3(3,0) Theories of persuasion and propaganda. Practical instruction in analysis and construction of persuasive messages. Preq: COMM 250.

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. Preq: Consent of instructor.

COMM 363 Oral Interpretation of Literature 3(3,0) Analysis and oral interpretation of selected poetic and prose; training in development of effective tone production.

COMM 364 Organizational Communication 3(3,0) Examination of the process, theories, and techniques of communications within small groups and other organized bodies.

COMM 366 Special Topics in Speech 3(3,0)
Consideration of select major areas of study in speech. May be repeated for a maximum of 15 credits with consent of department chair.

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.

COMM 368 Organizational Communication Simulation 3(3,0)
Students develop and apply communication skills which are useful in a variety of organizational settings: role-playing and conducting interviews, group decision making, and oral reporting. Discusses communication processes and provides personal and professional development. Preq: COMM 250 or consent of instructor.

COMM 369 Political Communication 3(3,0)
Examination of American political rhetoric after 1920, focusing on such notable speakers as Franklin D. Roosevelt, John F. Kennedy, and Martin Luther King, Jr.

COMM 390 Speech and Communication Studies Internship 3(9,0)
Prepared, supervised, 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. Preq: Junior standing, consent of faculty advisor.

COMM (LANG) 400 Phonetics 3(3,0) See LANG 400.

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.

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. Preq: COMM 325 or consent of instructor.

COMM 435 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.

COMM 456, 656 Crisis Communication 3(3,0)
In-depth examination of the use of communication in planning, managing, and responding to organizational crisis. Preq: Senior standing or consent of instructor.

COMM 460 Communication and Conflict Management 3(3,0) Introduces the study of communication conflicts in situations involving various personal and professional settings. Emphasis is on the central role of communication in the understanding and management of conflict. Preq: COMM 150 or 250 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. Preq: COMM 364 or consent of instructor.

COMM 470, 670 Communication and Health 3(3,0) Considers interpersonal and health care communication issues as well as the relationship between social issues, communication, and health.

COMM 480 Intercultural Communication 3(3,0)
Introduces the process of communication between and among individuals from different cultures and subcultures. Emphasis is on the effect of cultural practices within various communication relational contexts such as interpersonal, small group, and organizational communication. Preq: COMM 150 or 250 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 Prospective Project 1(1,0)
Completion of an honors project proposal and a prospective meeting with a faculty committee. First in a three-course sequence with H494 and H496.

COMM H494 Honors Field Research 3(3,0,9)
Students studying majoring in Communication Studies pursue field work within 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 H494. Preq: COMM H493.

COMM H495 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. Preq: COMM 301, 310.

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. Preq: COMM H493, H494.

COMM 499 Independent Study 1-3(1-3,0)
Tutor work for students with special interests or projects in speech communication outside the scope of existing courses. Preq: Consent of department chair.

COMMUNITY AND RURAL DEVELOPMENT
(See also courses listed under Agricultural and Applied Economics.)
Professors: D. L. Barkley, M. S. Henry, J. C. O. Nyankori, C. M. Sievert, Associate Professor: M. Espey; Assistant Professor: S. R. Templeton

C R D (SOC) 235 Introduction to Leadership 3(3,0) See SOC 235.

C R D 335 Leadership in Organizations and Communities 3(3,0)
Students present leadership models, principles, skills, negotiation techniques, and practices to improve effectiveness in organizations and communities; use current theory and research findings to evaluate effective leadership; demonstrate the role of effective leadership in shaping future organizations and social structures in public and private sectors. Preq: Introductory course in a social science. (Sociology is recommended.)

C R D 336 Community Development Methods 3(3,0)
Research methodology is applied to community, leadership, and economic development. Steps include problem identification, data collection, analysis, and interpretation. Special attention is given to case study approach, applied research design, data collection options, and computer-based analysis of community-based data to generate findings and implications for policy change. Preq: C R D 335, EXST 101 or equivalent.

C R D 357 Natural Resources Economics 3(3,0,9)
Principles and problems involved in the use of soil, water, forest, and mineral resources, with special emphasis on economic aspects of alternative methods of resource utilization. Preq: AP EC 202, ECON 200 or 211.
C R D (AP EC, HLTH) 361 Introduction to Health-Care Economics 3(3,0)F
Introductory course in which students learn the basic economics of the institutions comprising the health-care industry. Topics include the underlying supply, demand, and institutional factors impacting health-care availability and cost of health care.

C R D (AP EC) 411, 611 Regional Impact Analysis 3(3,0) Techniques for analysis of the growth and decline of regions including economic-base theory, shift share, regional input-output, regional econometric models, and fixed impact models. Preq: AP EC 202 or ECON 211 and 212.

C R D (AP EC) 412, 612 Regional Economic Development Theory and Policy 3(3,0)S 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. Preq: 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 agribusiness 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. Preq: 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. Preq: C R D 336 and consent of instructor.

COMPUTER SCIENCE


CP SC 101, H101 Computer Science I 4(3,2) [C,3] 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. Preq: MTHSC 105 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. Continued emphasis 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. Preq: 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 program 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) [C,3] Introduction to computer programming and its use in solving problems, intended primarily for technical majors. Basic instruction in programming techniques is combined with tools use and discussions of ethical issues arising from the impact of computing on society.

CP SC 111 Elementary Computer Programming in C/C++ 3(3,2) [C,3] 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 use and discussions of ethical issues arising from the impact of computing on society.

CP SC 120 Introduction to Information Technology 3(2,2) [C,3] Introduction to 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 computer 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) [C,3] 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) [C,3] 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 210 and 211. 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 space 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 in 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 files. 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 problems models. Emphasis is placed on applications development in database and spreadsheet environments. Current software products are used. Preq: CP SC 120 or MG 218 or equivalent experience.

CP SC 221 Introduction to a Computer Organization 4(2,2) Introduction to the systems programing 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 210 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 computer 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 1(1,0) Impact of computer use on society is considered. Ethical use of software and protection of intellectual property rights are discussed. The professionalism, 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 212, or consent of instructor.

CP SC 330 Computer Systems and Networks 3(3,0) Introduction to the structure of computer systems and networks. Various hardware/software configurations are explored and presented. Topics include basic computer organization, input/output organizations, interrupt processing, system software, standard network architectures and network protocols. Preq: CP SC 212, 215, 231, and ECE 201 with a C or better.

CP SC 332 Computer Systems 3(3,0) Introduction to design, integration, and use of hardware and software components in standard computer systems. Emphasis is placed on computer organization at the component level, interfacing, basic operating system functions, and system utilities. Credit may not be received for both CP SC 332 and 422. 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 fundamentals 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 360 Distributed and Network Programming 3(3,0)
Introduction to basic concepts in distributed systems. Network programming methods are considered. Data communications such as protocols, basic hardware components, performance and limitations are reviewed. Preq: CP SC 212 and 215 with a C or better.

CP SC 361 Data Management Systems Laboratory 10(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 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 electromagnetic- 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 422, 622 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 332 and 422. Preq: CP SC 231, 360 with a C or better.

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 332 or 422 with a C or better.

CP SC 428, 628 Design and Implementation of Programming Languages 3(3,0) Overview of programming language structures 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 and 360 with a C or better.

CP SC 429, 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, 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 is 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. Fundamentals of 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 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 11(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 professional'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: G. R. Corley, C. A. Piper, R. K. Schneider, Assistant Professors: D. C. Bausman, S. M. Clarke

C SM 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 SM 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 or Architecture major, or consent of department chair.
C S M 202 Structures II 3(3,0) Study of force distribution and behavior in statically determinate wood and steel structural components and systems. Includes shear and moment stress, combined loading/stress, conditions and deflections. Preq: C S M 201, Construction Science and Management or Architecture major, or consent of department chair.

C S M 203 Materials and Methods of Construction I 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 or Architecture major, or consent of department chair. Preq or Coreq: A A H 210, ARCH 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 masonry and concrete. Preq: C S M 204, 205, PHYS 208, Construction Science and Management or Architecture major, or consent of department chair.

C S M 301 Structures III 3(3,0) Analysis and design of basic and intermediate concrete 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 3(2,3) Study of various types of soils and foundations including soil testing, borrow, compaction, stability, and function as they relate to the construction process. Preq: C S M 202, Construction Science and Management or Architecture major, or consent of department chair.

C S M 304 Environmental Systems I 3(3,0) Theory and practice of heating, 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 3(2,3) 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. Preq or Coreq: B E 221, C S M 303.

C S M 352 Construction Scheduling 3(2,2) Analysis of construction projects with emphasis on 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 3(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 301, 304, 351, Construction Science and Management major, or consent of department chair. Coreq: C S M 352.

C S M 411 Safety in Building Construction 3(3,0) Study of construction safety, management and controls. Preq: Construction Science and Management major or consent of department chair. Coreq: C S M 455.

C S M 420 Highway Construction and Contracting 3(3,0) Study of construction and contracting of highways, including selection and use of equipment, construction of pavements, bridges, drainage structures, and related processes. Preq: C S M 303, 352, 353.

C S M 453 Construction Project Management 3(2,2) Study of construction business organization, methods of project delivery, field organization, policy, ethics, project management, control systems, labor management regulations, and productivity. Preq: C S M 352, 353, LAW 222 (or concurrent enrollment), MGT 307 (or concurrent enrollment). Construction Science and Management major, or consent of department chair. Coreq: C S M 454.

C S M 454 Construction Capstone 6(3,12) Students develop a capstone project that entails the knowledge obtained in all previous courses in the Construction Science and Management Program. Consists of a case study of an actual construction project covering technical, managerial, and professional skills and knowledge 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, 491 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 491 Construction Science and Management Internship and Examination 0 Eight hundred hours of verifiable construction-related experience. Verification of having taken the Certified Professional Constructor Examination.

C S M 498 Current Topics in Construction 1-3(1-3,0) Study of current topics in the construction industry not currently covered in other construction science courses. Specific titles and course descriptions are 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


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.

CSENV 202 Soils 3(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 GEO 101, or consent of instructor.

CSENV 350 Practicum 1-3 Preplanned internship undertaken with an approved agency concerned with agronomic practices. Restricted to minors in Crop and Soil Environmental Science. Maximum of three credits allowed. Preq: 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. Preq: CSENV 202 or consent of instructor.

CSENV 404, 604 Soils and Land Use 2(1,3)F Soils interpretations for agricultural practices and facilities. Emphasis is on use of modern soil surveys and properties of soils important in nonfarm land uses. Not open to Crop and Soil Environmental Science minors or to students who have taken CSENV 202.

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 cytogenetic basis of plant breeding, mode of reproduction, techniques in selection and crossing, methods of breeding, inheritance in the major crops, and biometrical methods. Preq: GEN 302 or equivalent.
CSENV 406 Special Problems 1-3(0,3-9) Acquires students with the scientific method. Literature investigation, planning, and execution of an experiment are integral parts of the course. Not open to AGRIC 1491 and 1492 students. Maximum of six credits allowed. Prq: Senior standing as a minor in Crop and Soil Environmental Science and consent of department chair.

CSENV 407, H407, 607 Introductory Weed Science 3(2,2)F Weed management in crops and pastures 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. Prq: CSENV 104 or consent of instructor.

CSENV 408, 608 Land Treatment of Wastewater and Sludges 3(3,0)S Principles for designing environmentally acceptable land application systems using municipal and industrial wastewater and sludges are presented. Topics include land-liming constituent analysis; soil-plant interactions; system equipment and design; system operation and management; public acceptance, social, and regulatory issues. Case studies and field trip(s) are planned. Prq: Senior standing in Agriculture or Engineering or consent of instructor.

CSENV 417, H417 Weed Morphology and Ecology 3(2,2)F Study of the morphological characteristics of weed plants of economic importance in row crops, pastures, and turf of South Carolina. Topics include reproduction, dissemination, distribution, competition, and allelopathy. Prq: CSENV 104 or consent of instructor.

CSENV 421, 621 Principles of Field Crop Production 3(3,0)F Principles for production of field crops. Topics include selection and physiology, tillage, harvesting, storage, and crop quality. Principles are illustrated using examples from various crops. Prq: CSENV 104 or equivalent introductory plant science, CSENV 202.

CSENV 422, 622 Major World Crops 3(3,0)S Examine the distribution, adaptation, production, and utilization of major agronomic crops of the world. Emphasis is on irrigated crops important to U.S. agriculture. Specific crops discussed include corn, rice, soybeans, cotton, tobacco, and peanuts. Prq: CSENV 104 or equivalent introductory plant science, CSENV 202.

CSENV 423, H423, 623 Field Crop—Forages 3(3,0)S 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: CSENV 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)S Even-numbered years. Topics include seed development, germination, dormancy, pathology, storage, and deterioration. Seed testing and commercial production of seed are also covered. Emphasis is on practical applications of seed science knowledge. Prq: CSENV 104, BIOSC 205.

CSENV (AP EC) 426, 626 Cropping Systems Analysis 3(2,2)F Application of agronomic and economic principles of integrated production and marketing of agronomic crops. Major portion of the course is a case study in which detailed analysis of a farm, agribusiness or environmental situation is made with students forming formal written and oral presentations of results. Prq: AP EC 202, CSENV 104, Junior standing.

CSENV (HORT) 433, 633 Integrated Weed Management for Agronomic and Horticultural Crops 3(2,2)S See HORT 433.

CSENV 446, 646 Soil Management 3(3,0)S 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. Emphasis is on erosion, no-tillage, compaction, irrigation, leaching, waste application, and sad-management, and orchard establishment. Prq: CSENV 202.

CSENV 452, 652 Soil Fertility and Management 3(3,0)S 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)S Evaluation and interpretation of soil fertility production. Prq: CSENV 202 or consent of instructor.

CSENV 455 Seminar 1(1,0)S Study of current agronomic topics of special interest in crop production appearing in recent scientific journals and other publications. Prq: CSENV 202 or consent of instructor.

CSENV 475, H475, 675 Soil Physics and Chemistry 3(2,3)S Study of the principles of soil physics and chemistry and their applications. Topics include soil texture, structure, compaction, water relations, solute movement, mineral composition, adsorption phenomenon, and soil acidity. Prq: CSENV 202, CH 101, PHYS 207.

CSENV 490, 690 Beneficial Soil Organisms in Plant Growth 3(3,0)S Aspects of biological nitrogen fixation, mycorrhizal fungi, microbial-pesticide interactions, bioremediation, nutrient cycles, and biological pest control related to plant growth, soil/environmental quality, and sustainable agriculture are covered. Students who desire laboratory experience in these topics may register for CSENV 490 after consultation with instructor. Prq: CSENV 202, MICRO 305, PL FA 401, or consent of instructor.

DANCE

DANCE 130 Tap Dance I 1(0,3) Introduction to the fundamentals 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 six 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 six credits, with a maximum of six 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 six credits, with a maximum of six 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. May be repeated for a maximum of six credits, with a maximum of six credits of dance applied toward a degree. Applied dance fee will be assessed.

DESIGN STUDIES


DSIGN 321 Wood Shop Practices, Materials, Tools, and Equipment 3(1,6)S 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

ED EC 220 Family, School, and Community Relationships 3(3,0)S 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)S 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 kindergarten. Prereq: 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. Prereq: ED EC 336; concurrent enrollment in ED EC 420, 430, 440, 450, and 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. 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. Prereq: General Education mathematical sciences requirement; admission to the professional level. Coreq: ED EC 430, 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). Uses language arts as an approach for teaching social studies content, techniques, and methods in primary schools. Prereq: Admission to the professional level. Coreq: ED EC 440, 430, 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; examine the implementation of activities, experiences, and play-based program models. Prereq: Admission to the professional level. Coreq: ED EC 450, 420, 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. Prereq: ED EC 400, 450, ED EL 321, 488, READ 459, admission to the professional level, consent of area committee chair.

EAST ASIAN STUDIES

E A S 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.

ECONOMICS


ECON 200 Economic Concepts 3(3,0) One semester survey of basic economic concepts that offers an overview of both microeconomics and macroeconomics. Not intended for business majors or other students seeking a comprehensive introduction to economic analysis and its applications. Credit will not be given to students who previously have completed ECON 211 or 212.

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 businesses. Particular 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.

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. Prereq: 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, and the impact of labor unions. May not be used to satisfy requirements for a degree in Economics. Prereq: 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 monetary theory and current problems of monetary policy. May not be used to satisfy requirements for a degree in Economics. Prereq: ECON 212 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. Prereq: 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. Prereq: 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. Prereq: ECON 211 or consent of instructor.

ECON 310 International Economics 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. Prereq: 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. Prereq: ECON 211 or consent of instructor.

ECON 315, H315 Intermediate Macroeconomics 3(3,0) Macroeconomic problems of inflation and unemployment are the 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. Prereq: 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. Prereq: 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. Prereq: ECON 326 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. Prereq: 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. Preq: 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. Preq: 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? Course applies both economic and philosophical analysis to these questions. Emphasis is placed on the causes, consequences, and morality of the distribution of wealth and income in a free-market system. Preq: 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. Preq: 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 taken three times.

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 choice, compensating wage differentials, organizational wage structures and incentive systems, unemployment, and discrimination. Preq: 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. Preq: 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. Preq: 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. Preq: 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. Preq: 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. Preq: 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. Preq: 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 examined. Preq: 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. Preq: ECON 315.

ECON 419 Economics of Defense 3(3,0) Examines the American defense establishment in terms of organizations utilized, alternative uses, and the contribution to the national economy and scientific progress generated by resources in a defense use. Discusses economic problems inherent in shifting resources between defense and nondefense uses and alternative defense uses. Preq: 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. Preq: 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 to policy are developed against a background of monetary history and institutions. Preq: ECON 314 and 315 or consent of instructor.

ECON 424 Organization of Industries 3(3,0) [W,2] Empirical, historical, and theoretical analysis 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. Preq: 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. Preq: ECON 309 or 314 or consent of instructor.

ECON 426, H426, 626 Seminar in Sports Economics 3(3,0) 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 project is cornerstone of course. Preq: 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 405. May be taken concurrently with ECON 314. Preq: 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 rivals. Basic theoretical aspects of games are discussed and applied to such topics as bargaining, voting, auctions, and oligopoly. Preq: 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. Preq: ECON 314, 315, senior standing.

ECON H492 Senior Honors Thesis Writing 3(3,0) Writing and oral presentation of the Senior Honors Thesis. Preq: 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. Preq: 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. Preq: 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 do directed research on a particular topic. Preq: Consent of instructor.
EDUCATION


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 Early Childhood, Elementary, and Secondary Education, Mathematics, Teaching, and Science Teaching. 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 skills in listening, decision making, communicating, 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. Preq: HIST 172 or 173; or consent of the instructor.

ED 438 Selected Topics in Education 1-3(1-3,0) Specific educational 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 their honors 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. Preq: ED F H301, H302, departmental honors course specified by major area.

EDUCATIONAL COUNSELING

ED C 234 Introduction to Addictions: Basic Education and Prevention 3(3,0) Basic review of addictions and chemical dependency; gives future educators skills in the identification of chemical abuse, techniques for intervention, and methods of prevention education. SOC 396 and 397 are recommended as follow-up courses for those interested in pursuing the topic.

ED C 390 Student Development, Leadership, and Counseling for University Paraprofessionals 3(3,0) Introduction to theoretical and practical applications of student development and leadership on the university campus. Skills assisting students with leadership development, problem solving, conflict resolution, confrontation, and referral are developed. Legal and ethical issues for practitioners and learning effective utilization of resources available on the campus are explored.

EDUCATIONAL FOUNDATIONS

Professors: D. E. Barrett, W. R. Fisk, Chair; R. P. Green, Jr., Associate Professors: G. C. Delicio, C. L. Peters, D. M. Switzer, C. G. Weatherford; Assistant Professor: S. N. Rosenblith; Lecturer: J. S. Wright; Visiting Instructors: R. W. Buxton, E. C. Crowther

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. Preq: 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. Preq: Minimum grade-point ratio of 2.0.

ED F (THRD) 315 Integrating Computers into the Classroom 10(0,2) Students learn how to use microcomputers to supplement the classroom curriculum and to enhance classroom management. Preq: Admission to a Teacher Education Program; ED F 301, 302; General Education computer skills requirement, minimum grade-point ratio of 2.0; or consent of instructor.

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. Preq: ED 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 on the physical, social, emotional, and cognitive characteristics of the 12-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 (AG ED, THRD) 480, 680 Educational Applications of Microcomputers 3(2,2) [C3] 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. Preq: 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. Preq: ED F 480, 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. Preq: Minimum grade-point ratio of 2.0.

ELECTRICAL AND COMPUTER ENGINEERING


ECE E 201, H201 Logic and Computing Devices 3(2,2) Study of logic with an introduction to Boolean algebra; number systems; representation of information; use of integrated circuits to implement combinational and sequential logic functions and computing elements; organization and structure of computing systems. Preq: MTHSC 108, PHYS 122.


ECE 211 Electrical Engineering Laboratory I (0,2) 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: ECE 202.

ECE 212 Electrical Engineering Laboratory II (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. Prev: ECE 202, 211. Coreq: ECE 262.

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. Prev: ECE 202, MTHSC 206, PHYS 221. Coreq: ECE 212, MTHSC 208.

ECE 263 Circuit Analysis Problems II 1(0,2) 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, programs, control, processing units, I/O organization, arithmetic, main-memory organization, peripherals, microprocessor families, RISC architectures, and multiprocessors. Prev: ECE 201 and CP SC 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 provides 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. Prev: MTHSC 206, PHYS 221. Coreq: ECE 309.

ECE 308 Electronics and Electromechanics 2(2,0) Continuation of ECE 307. Energy conversion systems are considered, as well as basic electronics. Prev: 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) [W:1] Measurements and characteristics of electronic devices and circuits; use of manual and automated instruments to acquire data; oral and written engineering reports. Prev: ECE 262, MTHSC 208, PHYS 221. Coreq: ECE 320.


ECE 320 Electronics I 3(3,0) [W:1] 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. Prev: 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. Prev: 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; microprogrammed computer design using bit-slice microprocessors; current hardware topics related to computer design; hands-on design experience and use of logic analyzers for system debugging. Prev: 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 systems and their relationship to computer organization. Engineering science background for computer systems design. Prev: CP SC 102 or 210; CP SC 340 or 212; ECE 272.

ECE 330, H330 Signals, Systems, and Transforms 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. Prev: CP SC 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 transformers, electric power transmission, and distribution systems, DC motors, and induction motors. Prev: ECE 262, PHYS 221.

ECE 371 Microcomputer Interfacing 4(1-3,1-3) [W:1] Design of microcomputers 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. Prev: ECE 262, 272. Coreq: ECE 320.

ECE 380 Electromagnetics 3(3,0) Basic concepts of electric fields and potentials, dielectrics, capacitance, resistance, magnetic field, forces, work and energy, inductance, time-varying fields, and Maxwell's equations. Prev: ECE 262, PHYS 221, MTHSC 206.

ECE 381 Fields, Waves, and Circuits 3(3,0) Foundation of circuit theory, transmission lines and circuits, plane-wave propagation, fiber optics, radiation and antennas, coupled circuits. Prev: ECE 380, MTHSC 208.

ECE 404, 404A 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. Prev: ECE 320. Coreq: MTHSC 311 or 434.

ECE 405 Design Projects in Electrical and Computer Engineering 1-3(0,2-6) Independently 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. Prev: ECE 330 or 409, consent of project supervisor.


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. Prev: 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. Prev: 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. Prev or Coreq: ECE 360 or 419.

ECE 417, 617 Elements of Software Engineering 3(3,0) [W:1] Foundation of software design, reasoning about software, the calculus of programs, verification of formal specification techniques and design languages. Prev: ECE 329, 352, MTHSC 419.
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. Prereq: 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. Prereq: ECE 321, 360, 380. Coreq: MTHSC 434 or consent of instructor.

ECE 422, 622 Electronic System Design I 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. Prereq: 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, and communications link budget analysis. Prereq: 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. Prereq: CPSC 230 or ECE 250 or 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. Prereq: 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. Prereq: ECE 421. 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. Prereq: ECE 421. 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 RF/Microwave passive/active networks. Fabrication of typical circuits. Prereq: ECE 381 or equivalent. Coreq: MTHSC 311 or 434.

ECE 438, 638 Computer Communications 3(3,0)
Digital data transmission techniques, modems and communications channels, telecommunications software and protocols, multiprocessors and distributed processing; concurrency and cooperation of dispersed processors. Prereq: 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. Prereq: ECE 381. Coreq: MTHSC 434 or consent of instructor.

ECE 440, 640 Performance Analysis of Local Computer Networks 3(3,0)
Introduction to 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. Prereq: 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. Prereq: 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. Prereq: ECE 330, 381 or 436, MTHSC 311 or 434.

ECE 449 Computer Network Security 3(1,4)
Hands-on practical in the administration and security of modern network service with emphasis on intrusion prevention techniques, detection, and recovery. Prereq: Senior standing in Computer Engineering.

ECE 453 Software Practicum 3(1,6)
Students design and implement a software system that satisfies both requirements and specifications documentation. The resulting system is tested for compliance. Prereq: ECE 329, 352.

ECE (M) 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 semicustom 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. Prereq: 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. Prereq: 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. Prereq: 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), codes, digital circuit power management, real time scheduling, and embedded operating systems. Lab work consists of projects on embedded hardware (e.g., PC-104+). Prereq: CPSC 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 492, 692 Special Problems 1-3(0,2)
Special assignment in electrical or computer engineering. Some typical assignments include computer programs, term papers, technical literature searches, hardware projects, and design project management. May be taken only once for credit.

ECE 493, 693 Selected Topics 1-3(1-3,0)
Course 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. Prereq: Consent of instructor.

ECE 495 Integrated System Design I 2(1,3)
[M1] Engineering design of systems is conducted 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. Prereq: 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)
[M1] 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 an appreciation for individual and creative thinking as well as team effort. Prereq: ECE 321, 330, 360, 371, 381, 429, 495.
ELEMENTARY EDUCATION

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. Prq: Junior standing, admission to the professional level.

ED EL 401 Elementary Field Experience 3(9,0) 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. Prq: ED F 334, concurrent enrollment in ED EL 488 and 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. Prq: Elementary Education science requirements; concurrent enrollment in ED EL 401, 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 the development of understanding, skills, and attitudes in the elementary curriculum with focus on strategies, techniques, and materials for teaching elementary mathematics. Prq: General Education mathematics requirement; admission to the professional level.

ED EL 458 Health Education Methods for the Classroom Teacher 3(3,0) [W.1] 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. Prq: 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. Prq: ED EL 321, 401, 451, 452, 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. Prq: 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) [W.1] 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. Prq: ENGL 102, 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

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) [C.1] 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. Prq: ENGR 101, MTHSC 106. Coreq: PHYS 122.

ENGR 130 Engineering Fundamentals 2(1,2) Provides students with experience in the design, construction, testing, analysis, and presentation of a team-based project. Project work includes dimensional analysis, statistics, advanced spreadsheet applications (conditional statements, functions), and sketching of designs. Additional activities include laptop-based instrumentation use in solving problems and graphical representation of various physical phenomena.

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. Prq: Enrollment in General Engineering or consent of instructor.

ENGR 180 Computers in Engineering 2(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. Prq: Engineering major, knowledge of a computer language. Coreq: MTHSC 106.

ENGINEERING GRAPHS

Lecturers: C. A. Balch, L. C. Cleveland, R. A. Finert

E G 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 theory of orthographic projections, descriptive modeling, and computer graphics. Credit toward a degree will be given for only one of E G 208 or 209. Prq: ENGR 120.

E G 209 Introduction to Engineering/Computer Graphics 2(1,3) [C.1] 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 E G 208 or 209. Prq: ENGR 120 or consent of instructor.

E G 412, 612 Interactive Computer Graphics 3(3,0) Graphics hardware and display technology; reduction and presentation of engineering data; techniques of geometric transformations, perspective, and model manipulation; methodology of computer-aided design; application of higher-level software to engineering problems. Prq: E G 208 and MTHSC 208 or consent of instructor.

E G 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. Prq: Consent of instructor.

ENGINEERING MECHANICS

Professors: S. C. Anand, S. B. Bigger, R. H. Brown, J. M. Kennedy, E. H. Law, Associate Professor: 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 rigorous physical analysis is emphasized. Prq: PHYS 122, MTHSC 206 (or concurrent enrollment).

E M 202, H202 Engineering Mechanics: Dynamics 3(3,0) Continuation of E M 201. Principal topics include kinematics and kinetics of particles and rigid bodies of finite size. Techniques of vector mathematics are employed. Prq: E M 201, MTHSC 206.

E M 304, H304 Mechanics of Materials 3(3,0) The 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.

E M 320, H320 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).
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. 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 The Study of English 1(1,0) Orientation to the study of English language and literature and to the sources and methods of literary research. Required of all English majors and 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. Preq: ENGL 102.

ENGL 208, H208 Survey of World Literature II 3(3,0) Translations of continental and worldwide literature. 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 H210 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 specialties present to students. Preq: ENGL 102.

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 102.

ENGL 231 Introduction to Journalism 3(3,0) Instruction and practice in writing for mass media; editorial responsibilities. Preq: ENGL 102.

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) [W3] Introduction to business writing: memos, letters, reports, research methods. Preq: Junior standing.

ENGL 310 Critical Writing about Literature 3(3,0) [W2] 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 Expository Writing 3(3,0) [W3] Workshop in practical writing focusing on principles and style. Preq: Sophomore literature or consent of instructor.

ENGL 314, H314 Technical Writing 3(3,0) [W3] Intensive training in the fundamentals of technical writing: reports, letters, and memos. Preq: Junior standing.

ENGL 316 Writing and International Trade 3(3,0) [W3] Students complete projects demonstrating 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 330 Approaches to Technical Communication 3(3,0) Overview of major conceptual and theoretical approaches to technical communication. Preq: ENGL 211.

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) [W3] 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) [W3] 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) [W3] 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) [W3] Introduction to the creative writing and critical study of poetry. Preq: ENGL 310 or consent of instructor.

ENGL (THEA) 347 The Structure of Drama 3(3,0) See THEA 347.

ENGL 348 The Structure of the Screenplay 3(3,0) [W3] Introduction to the creative writing and critical study of the screenplay. Screenplays vary from semester to semester. May be repeated once for credit with consent of instructor. Preq: ENGL 310 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 American Folklore 3(3,0) Study of American folklore with an emphasis on such considerations as the folktales, folk songs and ballads, folk heroes, and folk superstitions and remedies. Preq: ENGL 310 or consent of instructor.

ENGL 353 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 355 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 356 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 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 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 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 from semester to semester. May be repeated for a maximum of nine credits. Preq: ENGL 310 or consent of instructor.

ENGL 380 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 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 385 Children's Literature 3(3,0) Reading and analysis in a wide range of authors, illustrators, and genres appropriate for children from preschool through eighth grade, classic as well as modern. Critical approaches include historical, thematic, and social. Preq: ENGL 310 or consent of instructor.

ENGL 386 Adolescent Literature 3(3,0) [W.2] 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 387 Book History 3(3,0) Examines the material and theoretical constructions of the book. Covers both historical and contemporary dimensions of dissemination, reception, artistry, and influence of books. Preq: ENGL 102.

ENGL 400, 600 The 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 examining the impact structural grammar has had on traditional grammar. Recommended for English teachers. Preq: ENGL 310 or consent of instructor.

ENGL 403 The Classics in Translation 3(3,0) Examination of Homer's Iliad and Odyssey, Virgil's Aeneid, and Ovid's Metamorphoses. A short primer on classical Greek and Roman authors may also be read. Preq: ENGL 310 or consent of instructor.

ENGL 404 Classical Drama 3(3,0) Selected reading in the dramatic literature of classical Greece and Rome. Preq: ENGL 310 or consent of instructor.

ENGL 405, 605 Studies in English Literature to 1700 3(3,0) Selected reading in English literature from the beginnings to 1700, with emphasis on social and intellectual backgrounds. Preq: ENGL 310 or consent of instructor.

ENGL 406, 606 Studies in English Literature Since 1700 3(3,0) Selected readings in English literature from 1700 to present, with emphasis on social and intellectual backgrounds. Preq: ENGL 310 or consent of instructor.

ENGL 407, 607 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 408, 608 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 409, 609 The Earlier English Renaissance 3(3,0) Tudor and Elizabethan poetry, prose, fiction, translations, essays, and criticism. Preq: ENGL 310 or consent of instructor.

ENGL 410, 610 Drama of English Renaissance 3(3,0) Selected readings in non-Shakespearian dramatic literature of the 16th and 17th centuries. Preq: ENGL 310 or consent of instructor.

ENGL 411, 611 Shakespeare 3(3,0) Study of selected tragedies, comedies, and history plays of Shakespeare. Required of all English majors. Preq: ENGL 310 or consent of instructor.

ENGL 412, 612 Studies in Shakespeare 3(3,0) Special topics in Shakespeare as selected by instructors. May be repeated once with department chair's consent. Preq: ENGL 310 or consent of instructor.

ENGL 413, 613 Later English Renaissance 3(3,0) Nondramatic poetry and prose from Ben Jonson, John Donne, and Francis Bacon through Marvell and John Bunyan, excluding Shakespeare and Milton. Preq: ENGL 310 or consent of instructor.

ENGL 414, 614 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. 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) Readings 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 422, 622 American Literature I 3(3,0) Major American authors and movements from the Colonial period to the Civil War. Preq: ENGL 310 or consent of instructor.

ENGL 423, 623 American Literature II 3(3,0) Major American authors and movements from the Civil War to the early 20th century. Preq: ENGL 310 or consent of instructor.

ENGL 424, 624 American Literature III 3(3,0) Major American authors and movements of the 20th century. Preq: ENGL 310 or consent of instructor.

ENGL 425, 625 The American Novel 3(3,0) Survey of the most significant forms and the American novel from its beginnings to 1900. Preq: ENGL 310 or consent of instructor.

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. Preq: ENGL 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. Preq: ENGL 310 or consent of instructor.

ENGL 430, 630 Modern Drama 3(3,0) Principles and progress of drama from Ibsen to the present, from the analysis of representative plays; critical reports, discussion of trends in contemporary drama. Preq: ENGL 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. Preq: ENGL 310 or consent of instructor.

ENGL 432, 632 Modern Fiction 3(3,0) American and British novels and short stories of the 20th century. Preq: ENGL 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. Prereq: ENGL 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 19th- and 20th-century England and America. Prereq: ENGL 310 or consent of instructor.

ENGL 435, 635 Literary Criticism 3(3,0) Major critical approaches to literature. Prereq: ENGL 310 or consent of instructor.

ENGL 436, 636 Feminist Literary Criticism 3(3,0) Introduction to the seminal works of feminist literary theory and criticism. Outlines the development of modern literary criticism by studying feminist versions of the major critical methodologies. Prereq: ENGL 310 or consent of instructor.

ENGL 437, 637 Directed Studies 1-3(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. Prereq: ENGL 310 or consent of instructor.

ENGL H438 Departmental Honors Research 3(3,0) Research for the preparation of a senior honors project. Prereq: ENGL 310 or consent of instructor.

ENGL H439 Departmental Honors Project 3(3,0) Preparation of an honors project. Prereq: ENGL 310 or consent of instructor.

ENGL 440, 640 Literary Theory 3(3,0) Examination of the major theoretical approaches to the study of literature, such as Marxism, psychoanalysis, Modernism, postmodernism, and postcolonialism. Prereq: ENGL 310 or consent of instructor.

ENGL 441 Literary Editing 3(3,0) Examination of the theories and practices of literary editing. Prereq: Sophomore literature.

ENGL 445, 645 Fiction Workshop 3(3,0) Workshop in the creative writing of short fiction. May be repeated once for credit. Prereq: ENGL 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. Prereq: ENGL 310 or consent of instructor.

ENGL (THEA) 447, 647 Playwriting Workshop 3(0,3) [W.3] See THEA 447.

ENGL 448, 648 Screenwriting Workshop 3(3,0) [W.3] Workshop in the creative writing of screenplays. May be repeated once for credit. Prereq: ENGL 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 nontraditional genres, genre irony, genre theory, and historical evolution of genres. Topics vary. Prereq: ENGL 310 or consent of instructor.

ENGL 451, 651 Film Theory and Criticism 3(2,3) Advanced study into the theory of film/video making with an emphasis on 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. Prereq: ENGL 310 or consent of instructor.

ENGL 452, 652 Great Directors 3(2,3) Intensive study of one to three film directors with an emphasis on 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. Prereq: ENGL 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. Prereq: ENGL 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. Prereq: ENGL 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. Examines the Holocaust's role in the arts and culture of the 20th century. Prereq: ENGL 310 or consent of instructor.

ENGL 459, 659 Advanced Special Topics in Language, Literature, or Culture 3(3,0) Advanced study in topics not central to other English courses, such as certain authors, works, genres, or areas of knowledge and culture. Specific topics are announced when offered. May be repeated once for credit with department chair's consent. Prereq: ENGL 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. Prereq: Sophomore literature; ENGL 211 or consent of instructor.

ENGL 470 Views of Literacy 3(3,0) Examines what it means to or become literate from perspectives of literature, composition, classics, education, anthropology, linguistics, psychology, history. Prereq: Sophomore literature; one 300-level writing course.

ENGL 475, 675 Writing for Electronic Media 3(3,0) Hands-on workshop in new forms of writing and hypernetwork 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 African American cultural life in general. Prereq: ENGL 310 or consent of instructor.

ENGL 483, 683 African American Poetry, Drama, and Film 3(3,0) Studies in the various forms, themes, and genres of African American poetry, drama, and film 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 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 function 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 practice. 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 490 Practicum in Writing 3(3,0) Supervised entomological learning opportunity providing highly individualized experiences to complement other programs and courses. Must be prearranged at least two months in advance. Must file written reports midway during enrollment period and at its conclusion. Must appear for oral evaluation at the end of the period. Prereq: Junior standing and consent of instructor.

ENT (GEN) 495, 695 Insect Biotechnology 3(3,0) Even-numbered years. Considers many unique generic features exhibited by insects and describes the applications of biotechnology to enhance useful products from insects and to affect the control of destructive insects. Prereq: ENT 301, GEN 302.

ENVIRONMENTAL AND NATURAL RESOURCES

Professors: J. D. Culin, J. W. Follet, R. L. Hedden, P. A. Layton, J. R. Sweetney, Coordinator; G. W. Wood, T. E. Wooten; Associate Professors: M. Espey, V. B. Shellburne; Assistant Professors: J. D. Lanham, C. J. Post

E N R 101 Introduction to Environmental and Natural Resources I 1(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(1,0) Continuation of E N R 101 with continuing 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(2,3) Introduction to measurement 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: EXST 301.

E N R (BIOC) 413 Restoration Ecology 3(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 (CRP) 434 Geographic Information Systems for Landscape Planning 3(1,6) See CRP 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 (BIOC) 313 or consent of instructor.
ENVIRONMENTAL ENGINEERING AND SCIENCE

E&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. Prq: Junior standing in engineering or consent of instructor. Coreq: C E 341, Che 311, E M 320, or consent of instructor.

E&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. Integration to the integration of unit operations and processes into water and waste treatment systems. Prq: E C E 341, CHE 311, E M 320 or consent of instructor.

E&S 410, 610 Environmental Radiation Protection 1 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. Prq: Consent of instructor.

E&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. Prq: E&S 410 or consent of instructor.

E&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. Prq: Senior standing in engineering or physical sciences.

E&S (B E, FOR) 451, 6451, 651 Newman Seminar and Lecture Series in Natural Resources Engineering 1(0,2) See B E 451.

E&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. Prq: E&S 401 or consent of instructor.

E&S (B E, EE) 484, 684 Municipal Solid Waste Management 3(3,0) Introduction to the problems, regulations, collection, handling, recycling, and disposal of municipal solid wastes in the urban and rural sectors. Emphasis is on integrated waste-management system with resource recovery, composting, incineration, landfill disposals and their costs. Prq: Senior standing in engineering or science or consent of instructor.

E&S 485, 685 Hazardous Waste Management 3(3,0) Introduction to the problems, regulations, treatment, and ultimate disposal of hazardous and toxic materials. Sludge cleanup, groundwater transport, land disposal, incineration, and treatment technologies are discussed. Prq: EN SP 200 or E&S 401 or consent of instructor; two semesters of general chemistry.

E&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. Prq: Senior standing in College of Engineering and Science.

E&S 490, 6940, 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. Prq: Consent of the instructor.

E&S 491 Selected Topics in Environmental Engineering 1-3 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. Prq: 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. Prq: Sophomore standing and two semesters of either freshman chemistry or biology.

EN SP (AGRIC) 315, 6315 Environment and Agriculture 3(3,0) See AGRIC 315.

EN SP 400 Studies in Environmental Science 3(3,0) Study of historical perspectives, attitudes, and government policy within the framework of environmental case studies to illustrate the interaction between human and natural factors as they mutually affect the environment and man's ability to deal with that environment. Prq: EN SP 200 or consent of instructor.

EN SP 471, 6711 Man and His Environment 2(2,0) The interaction of man with his environment is surveyed. Factors such as urbanization, population growth, pathogens, disease vectors, ionizing radiation, sewage disposal, and noise control are considered. Effects of environmental contacts with air, water, food, and solid and liquid wastes are emphasized. Prq: Consent of instructor.

EN SP 472, 672 Environmental Planning and Control 2(2,0) Application of planning and control to effective environmental quality improvements. Water supply and treatment, wastewater treatment and disposal, solid waste disposal, air pollution abatement, and land use and zoning are considered from the standpoint of control. Not intended for graduate students in engineering. Prq: Consent of instructor.

ENVIRONMENTAL TOXICOLOGY
Professors: S. J. Klaine, C. D. Rice, J. H. Rodgers; Assistant Professors: W. W. Bowerman, E. R. Carraway, A. R. Johnson, M. A. Schaumann, P. van den Hark

ENTOX 400, 6400, 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 wastes, industrial waste, and oil releases are discussed. Prq: Introduction to Toxicology, organic chemistry, one year of general biology, W EF 350 or consent of instructor.

ENTOX 421, 6421, 621 Chemical Sources and Fate in Environmental Systems 3(3,0) Chemical cycles in the environment are discussed on global and microscopic scales. The dependence of fate processes on physical and chemical properties and environmental conditions is examined. Breakdown, movement, and transport of selected toxicants are illustrated to illustrate the mechanisms that govern chemical fate. Prq: Organic and analytical chemistry or consent of instructor.

ENTOX (BIOEC, ENT) 430, 630 Toxicology 3(3,0) Old-numbered years. 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. Prq: Organic Chemistry, one year of general biology, or consent of instructor.

EXECUTIVE LEADERSHIP AND ENTREPRENEURSHIP
E L E 301 Executive Leadership and Entrepreneurship 1(2,3) Comprehensive, cross-disciplinary fundamentals of entrepreneurship and executive leadership. Team taught by faculty from various disciplines. Prq: Sophomore standing, nomination and selection by faculty.

E L E (MKT) 314 New Venture Creation I 3(3,0) See MKT 314.

E L E (MGT) 315 New Venture Creation II 3(3,0) See MGT 315.

E L E (ECON) 321 Economics of Innovation 3(3,0) See ECON 321.

E L E (PO, PSYCH, SOC) 356 Social Science of Entrepreneurship 3(3,0) See SOC 356.
FINANCE

Professors: J. C. Alexander, Jr., R. B. McElreath, Jr., Charr, 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 and risk of the role in insurance in risk management from an individual and business viewpoints. Topics include probability, theory of the firm under uncertainty, insurance carriers and contracts, underwriting, and regulation. Preq: 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. Preq: 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. Preq: 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 on specifics of real estate brokerage, property rights, and ownership; making real estate investment decisions; and financing real estate investments. Preq: 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 exchange futures. Credit may not be received for 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. Preq: 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. Preq: FIN 311 or 306 with a C or better and approval of Finance Department advisor.

FIN 399 Financial Internship 1-3(1-3,0) Pre-planned, preapproved, 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. Preq: 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. Preq: 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. Preq: 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. Preq: 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. Preq: FIN 307 with a C or better or consent of instructor.

FOOD SCIENCE


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. Preq: Food Science major or consent of instructor.

FD SC 250 Culinary Science Internship 0(0,99) Students experience the science and art of food preparation, with the ultimate object 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. Preq: 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 science and food safety. Preq: 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(0,99) Summer internship offered by Food Science and Human Nutrition Department by 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. Preq: FD SC 214 or consent of instructor.

FD SC 401, 601, 602 Food Chemistry 1(4,3,3) Even-numbered years. The basic composition, structure, and properties of food and the chemistry of changes occurring during processing utilization. Preq: BIOL SC 305 or consent of instructor.

FD SC 402, 602 Food Chemistry II 4(3,3) Odd-numbered years. Application of theory and procedures for quantitative and qualitative analysis of food ingredients and food products. Methods for proteins, moisture, lipid, carbohydrate, ash, fiber, tannic acid, color, and vitamin analyses and tests for functional properties of ingredients are examined. Preq: BIOL SC 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 1(1,0) Laboratory exercises on preservation methods, equipment utilized, and processes followed in food manufacture. 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, MTH SC 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 current food science topics.

FD SC 418 Seminar 1(1,0) Literature research and oral presentation of current food science topics.

FD SC 420, 620 Special Topics in Science 1-3(1-3,1) 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, 621 Special Problems in Food Science 1-4(0,3-12) 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.

FOREST AND RECREATION RESOURCES

F&RR (HIST) 392 History of the Environment of the United States 3(3,0) See HIST 392.

FOREST RESOURCE MANAGEMENT


FOR 101 Introduction to Forestry 1(1,0)F Informative sketch of forestry, forests, and forestry tasks of the nation; education and career opportunities for foresters.

FOR 102 Introduction to Forestry 1(1,0)S Continuation of FOR 101.
FOR 205  Botany 3(2,3)F 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 in the Piedmont and surrounding areas. Prereq: BIOL 103 or consent of instructor.

FOR 206  Forestry Ecology 3(2,3)S Study of the nature of forests and forest trees, how they grow, reproduce, and their relationships to physical and biological environment. Prereq: BIOL 103, CSENV 202, FOR 205 or consent of instructor.

FOR (PRMT) 209  Professional Application of Microcomputers 3(1,4)[G.3] See PRMT 209.

FOR 221  Wood Properties 3(2,3)F Formation of wood in forest trees, gross and minute characteristics of wood, defects in wood, variability in wood. Prereq: BIOL 103 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 stand, soil type, and other appropriate aspects of site classification. Prereq: 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. Prereq: 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 an emphasis on those products and processes of some distinction or special interest. Prereq: FOR 205 or consent of instructor.

FOR 255  Christmas Tree Production 2(2,0)F Theory and practice of establishing, managing, and marketing trees with an emphasis on Christmas tree production in the South. Prereq: Consent of instructor.

FOR 302  Forest Biometrics 3(2,3)S Application of statistical methods to forest problems including sampling theory and methods, growth measurements and prediction, and application of microcomputing to analysis of forest data. Prereq: FOR 253. Coreq: EX ST 301 or consent of instructor.

FOR 304  Forest Resource Economics 3(3,0)F Economic problems and principles involved in the utilization of forest resources and distribution of forest products; analysis of integrated forest operations. Prereq: ECON 200 or consent of instructor.

FOR 305  Woodland Management 3(2,2)ES 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. Prereq: BIOL 103 or consent of instructor.

FOR 308  Remote Sensing and GIS in Forestry 2(1,3)F Introduction to remote sensing, aerial photo interpretation, computer mapping, aerial photo timber estimating, and geographical information systems. Prereq: 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. Prereq: 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. Prereq: 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. Prereq: Senior standing.

FOR 406  Forested Watershed Management 2(2,0) Basic discussion of processes and measurement of water flow on forested watersheds. Forest land management is stressed to assure adequate water quantity and quality. Role of water in nutrient cycling and forest growth is also discussed. Prereq: CSENV 202 and FOR 315, or consent of instructor.

FOR 413, 613  Integrated Forest Pest Management 4(3,3)F Nature and control of pests of forest trees and products. Focuses on the relation of pests to silviculture, management, and natural forest ecosystems. Prereq: 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 the use of appropriate silvicultural practices in association with other techniques is evaluated. Prereq: Consent of instructor.

FOR (E N R) 416, 616  Forest Policy and Administration 2(1,2)F 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. Prereq: FOR 302, 304, 308, and Forestry summer camp.

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. Prereq: FOR 304 or consent of instructor.

FOR 419  Senior Problems 1-3(1,3,0) Problems chosen with faculty approval in selected areas of forest. With department chair's approval, may be repeated once for credit. Prereq: Senior standing.

FOR 421, 621  Biology and Silviculture of Hardwood Forests 2(1,2)F Study of life, 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. Prereq: FOR 205, 206 or consent of instructor.

FOR 423, 623  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. Prereq: 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. Prereq: FOR 417 or consent of instructor.

FOR 426, 426  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. Prereq: 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. Prereq: Junior standing or consent of instructor.

FOR 431, 631  Recreation Resource Planning in Forest Management 2(1,3)S Odd-numbered years. 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 applications 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). Prereq: Senior standing or consent of instructor.

FOR 434, 634  Geographic Information Systems for Landscape Planning 3(2,3) Develops competence in geographic information systems (GIS) technology and its application to 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 P (E N R) 434, FOR 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. Prereq: 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. Prereq: Consent of instructor.

FOR 443, 643 Manufacture of Wood Products II 3(3,0) Manufacture of particleboard, flakeboard, oriented-strand board, fiberboard, and paper products. Includes their physical, mechanical, and chemical properties and their applications. Prereq: FOR 221 or 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. Prereq: FOR 442 or 443 or consent of instructor.

FOR 447, 647 Special Problems in Forest Products 1-3(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. May be repeated for a maximum of three credits, but only if different topics are covered. Prereq: 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. Prereq: BESC 401 or FOR 460 or consent of instructor.

FOR (B E, EE&S) 451, H451, 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. Prereq: 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 credits, students must be enrolled in FOR 460 and earn a B or better in both courses. Prereq: 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. Prereq: 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 credits, students must be enrolled in FOR 462 and earn a B or better in both courses. Prereq: Junior standing and approval of Department of Forest Resources. Coreq: FOR 462.

FOR 480 Selected Topics in Urban Forestry 1(3-1,0) Study of selected and varied topics, problems, and issues in urban forestry and arboriculture through readings, class discussion, and individual and group projects. Prereq: FOR (HORT) 427.

FOR H491 Senior Honors Thesis I 3(3,0) Individual research for students in the Forestry Honors program that focuses on developing a plan of research under the direction of a faculty advisory committee. Prereq: Senior standing, participation in Honors Program, and approval of Department of Forest Resources.

FOR H492 Senior Honors Thesis II 3(3,0) Individual research for students in the Forestry Honors program that focuses on data collection, analysis, report writing, and oral presentation. Prereq: FOR H491.

FOR 493 Selected Topics in Forest Resources 1-15(1-15,2-30) Specialized topics not covered in other classes 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. Prereq: Junior standing or consent of instructor.

FRENCH

Professors: J. C. Bednar, D. J. Calvez, K. M. Smurlo; Associate Professor: D. Lepetit; Assistant Professor: C. B. Cephas; Instructor: R. R. Willingham; Lecturers: B. M. Giesnet-Levine, M. Kirsch.

FR 101 Elementary French 4 3(1,4) Multimodal course for beginners that combines video, audio, and print to teach the fundamentals of the French language and culture. Emphasis is on communicative proficiency (listening comprehension and speaking, reading, and writing).

FR 102 Elementary French 4 3(1,1) Continuation of FR 101; three hours a week of classroom instruction and one hour a week in the language laboratory.

FR 151 French for Graduate Students 3 3(0,0) 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. Prereq: Graduate standing.


FR 202, H202 Intermediate French 3 3(1,1) Emphasis is on reading non-technical French prose more rapidly. Writing, speaking, and listening skills continue to be developed. Includes literary and cultural perspectives. Prereq: FR 201.

FR 299 Foreign Language Drama Laboratory 10 3(0,3) Participation in foreign language 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. Prereq: Consent of instructor directing the play.

FR 300 Survey of French Literature 3 3(0,0) Study of selected masterpieces of French literature in their artistic, cultural, and historical context. May include theme and genre studies. Prereq: FR 202 or consent of department chair.

FR 305 Intermediate French Conversation and Composition 3 3(0,0) Practice in the spoken language, with stress on vocabulary building, pronunciation, intonation, and comprehension; written work to increase accuracy; assignments in the language laboratory. Prereq: FR 202 or consent of department chair.

FR 307 French Civilization 3 3(0,0) Study of significant aspects of French culture from its origins to the present. Prereq: FR 202 or consent of department chair.

FR 309 French Linguistics 3 3(0,0) Study of the fundamental structures of the French language: phonetics, syntax, and semantics. Prereq: FR 202 or consent of department chair.

FR 312 Writing in French 3 3(0,0) Study of the vocabulary, syntax, and stylistics in short compositions and creative papers in French, on both fiction and non-fiction topics. Prereq: FR 202 or consent of department chair.

FR 316 French for International Trade 3 3(0,0) 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 for comparative and contrastive analyses of American and French cultural patterns in a business setting. Prereq: FR 202, 305 (or concurrent enrollment), or consent of department chair.

FR 317 Contemporary French Civilization 3 3(0,0) Study of significant aspects of France today: the country, its economy, government, society. Taught in French. Prereq: FR 202 or consent of department chair.

FR 320 Studies in French Theatre 3 3(0,0) 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. Prereq: FR 202 or consent of department chair.

FR (PO SC) 383 French Foreign Language News 1 1(0,0) See PO SC 383.

FR H391 Survey of French Literature (Honors) 1 1(0,0) 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. Coreq: FR 300, membership in Calhoun Honors College Program.

FR 398 Directed Reading 1-3 1-3(1-3,0) Directed study of selected topics in French literature, language, and culture. May be repeated for a maximum of six credits. Prereq: Consent of department chair.

FR 400 Modern French Literature 3 3(0,0) Study of selected works of 20th-century French literature in their artistic, cultural, and historical context. Prereq: 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. Prereq: Senior standing or consent of department chair.

FR 410 Francophone Literature 3(3,0) Study of selected works of francophone literature, with an emphasis on Africa and the Caribbean, in their artistic, cultural, historical, and political contexts. Prereq: 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. Prereq: 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. Prereq: 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. Prereq: 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. Prereq: FR 316.

FR 417 The French Corporation 3(3,0) Examination of the organization, structure, functioning, and economic role of the French business enterprise. Prereq: 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 to 1815) in which France occupied the center stage of world history and its modern institutions came into being. Emphasis is on 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 H438 French Honors Research 3(3,0) Individual honors research conducted under direction of the 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 Program.

FR H439 French Honors Thesis 3(3,0) Individual honors research conducted and thesis completed under 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 Program.

FR H491 Modern French Literature (Honors) 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 Program.

FR H492 The French Corporation (Honors) 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 Program.

FR 498 Independent Study 1-3(1-3,0) Directed study of selected topics in French literature, language, and 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
Professors: A. G. Abbott, R. H. Hinkleman, Chair; G. L. Powell, W. M. Surver, Associate Professor; W. R. Marcotte, Jr., Assistant Professor; W. Cao, F. C. Chen, J. K. Frugoli, D. S. Main, B. D. Moore, J. C. Morris, K. S. Smith, S. A. Srapace, J. F. Tomkins

GEN 300 Fundamental Genetics 3(3,0) Introductory course covering fundamental principles of genetics in prokaryotes and eukaryotes. Emphasis is given to Mendelian genetics, physical and chemical basis of heredity, and population genetics. Prereq: BIOL 104 or consent of instructor.

GEN 302, H302 Molecular and General Genetics 3(3,0) Rapidly-paced course covering Mendelian 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 Introductory 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, and long-term regulation of gene expression and evolution. Prereq: GEN 302 or equivalent and one semester of biochemistry, or consent of instructor.

GEN 410, H410, 610 Fundamentals of Genetics I 3(3,0) In a two-semester sequence in genetics, covering Mendelian genetics, topics in cytogenetics, extranuclear inheritance, quantitative, evolution, conservation, and population genetics. Prereq: CP SC 102 (or equivalent), EX ST 301, GEN 302, or consent of instructor.

GEN 411 Fundamentals of Genetics I 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.
GEOGRAPHY

Associate Professor: J. A. Miller; Assistant Professor: C. A. Smith; Lecturers: L. F. Howard

GEOG 101 Introduction to Geography 3(3,0)
Survey of the nature of geography, with emphasis on the discipline's organizing themes of earth science, relations between people and their environments, interrelations between places, locational analysis, and area studies.

GEOG 103 World Regional Geography 3(3,0)
Systematic and descriptive survey of the major regions of the world, including their physical and cultural features. Provides a global context for courses in the social sciences and humanities.

GEOG 106 Geography of the Physical Environment 4(3,3) Exames the condition of the physical environment, especially the earth's surface and the processes that act on it. Topics range from earth-sun relations to the evolution of landscapes; human habitats and human alteration of the environment.

GEOG 301 Political Geography 3(3,0) Geographic basis of states: sovereignty, territory, power within states, relations between states. The geography of international affairs. Preq: GEOG 101 or 103 or consent of instructor.

GEOG 302 Economic Geography 3(3,0) Spatial analysis of economic activity, with an emphasis on regional economics and development. Topics include world population; technology and economic development; principles of spatial interaction; and geography of agriculture, energy manufacturing, and tertiary activities. Preq: GEOG 101 or 103 or consent of instructor.

GEOG 303 Urban Geography 3(3,0) Historical and contemporary survey of the urban world, with particular attention paid to the relationship between people and urban places. Topics include the rise of cities, urban hierarchies, urban land use, and the social geography of cities. Preq: GEOG 101 or 103 or consent of instructor.

GEOG 305 Cultural Geography 3(3,0) Broad examination of the basic cultural variables in the human occupation of the earth. Ecological, spatial, regional, and historical approaches; topics vary but may include cultural areas and distributions, cultural change, cultural landscape, and cultural ecology. Preq: GEOG 101 or 103 or consent of instructor.

GEOG 306 Historical Geography 3(3,0) Exploration of geographical change and the varied patterns of past human activities and people's relationships with the physical environment. Case studies from around the world are used to emphasize key themes in historical geography. Preq: GEOG 101 or 103 or consent of instructor.

GEOG 330 Geography of the Middle East and North Africa 3(3,0) Thematic survey of a world region extending from Morocco to Afghanistan. Emphasis is on climate, environment, social geography, historical development of the regional culture of Islam, and common problems facing the area today. Preq: GEOG 101 or 103, or consent of instructor.

GEOG 340 Geography of Latin America 3(3,0) Introduction to the physical, economic, political, and human/cultural geography of Latin America. Special focus on regional unity and diversity and the historical interaction of man and environment.

GEOG 360 Geography of Africa 3(3,0) Study of how tropical, or sub-Saharan, Africa functions in the modern world. Africa's physical environments, peoples and cultures, and colonial and post-colonial history, and ideologies of economic development. Five basic themes are covered: population, natural resources, environmental quality, political organization, and economic development. Preq: GEOG 101 or 103 or consent of instructor.

GEOG 401, 601 Studies in Geography 3(3,0) Intensive study of the geography of a selected world region, such as North America, Europe, or the Middle East, or of the geography of a topic, such as the geography of oil or the geography of underdevelopment. May be repeated once for credit with departmental consent. 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 socio-economic contexts. 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

Professors: A. W. Eberman, Director; R. W. Falta, Jr., F. J. Mol. J. B. Wagner, R. D. Warner; Associate Professors: J. W. Castle, R. A. Christopher, C. M. Lee, L. C. Murdock; Assistant Professors: S. E. Brame, Research Associate; E. R. Carraway, M. A. Schlauchman, P. M. Reppert; Lecturer: L. R. Krause

GEOG 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.

GEOG 101, H101 Physical Geology 3(3,0) Study of the minerals and rocks which compose the earth's crust, their origins and transformations. Emphasizes geological processes, both internal and external, by which changes are produced on or in the earth.

GEOG 102 Historical Geology 4(3,3) Survey of the earth's geologic history emphasizing how the continents and ocean basins have evolved through geologic time. Evolution of life from the beginning of the fossil record through the present; identification of fossil plants and animals and interpretation of earth's past through study of geologic maps. Field trips illustrate principles. Preq: GEOG 101, 103.

GEOG 103, H103 Physical Geology Laboratory 1(0,2) Laboratory to accompany GEOG 101. Instruction is provided in the identification of minerals and rocks and in the interpretation of geologic processes through study of topographic maps. Field trips provide direct observation of processes and results. Coreq: GEOG 101.

GEOG 112 Earth Resources 3(3,0) Survey of earth's mineral, energy, water, and land resources and environmental and societal impacts associated with the use of these resources. Preq: GEOG 101.

GEOG 114 Earth Resources Laboratory 1(0,2) Laboratory to accompany GEOG 112. Instruction is provided in the identification of ore and gem minerals and in the understanding of the geologic importance of mineral resources. Land and water resources are explored through the use of topographic maps, aerial photographs, remotely sensed images, and field trips. Preq: GEOG 103. Coreq: GEOG 112.

GEOG 210 Geology of the National Parks 3(3,0) Survey of selected national parks and monuments emphasizing the dynamic geological processes which have shaped the landscapes of these areas. Special attention is focused on parks exhibiting recent geological activity related to volcanoes, earthquakes, and glaciers. Guides and films are used to highlight specific geological features.

GEOG (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 of our solar system, as revealed by recent space missions, are described.

GEOG 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. Preq: GEOG 101 or consent of instructor.

GEOG 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. Preq: GEOG 102 or consent of instructor.

GEOG 306 Mineralogy 4(3,3) Introduction to fundamental concepts of crystallography, crystal chemistry, and mineral optics. Topics include crystal symmetry, principles of crystal structures, composition and stability of minerals, and optical properties. Laboratory exercises emphasize recognition of crystallographic features, identification of minerals from their physical properties, and introduction to study of minerals with polarizing microscope. Preq: GEOG 101, 103 or consent of instructor.
GEOL 310 Optical Mineralogy 3(1.5) Involves techniques of mineral identification with polarizing microscope. Criteria are provided for the determination of optical properties using oil immersion grain mounts. Students are also introduced to the study of minerals and rocks in thin section. Lecture topics explore mineral optics theory. Preq: GEOL 306.

GEOL 314 Sedimentary Petrology 3(2,3) Origin, composition, and texture of sediments and sedimentary rocks, including both siliciclastic and chemical varieties. Interpretation of textural settings, depositional systems, tectonic relationships, and diagenesis. Laboratory involves description and classification of hand specimens and thin sections and analytical methods. Preq: GEOL 306 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. Not open to students who have received credit for GEOL 309. Preq: GEOL 306, 310 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 intercalations, solubility, mobility, and bioavailability in relation to redox, pH and complexation; biogeochemical cycles of selected elements. Preq: GEOL 101 and CH 102 or consent of instructor.


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. Preq: GEOL 101 or consent of instructor.

GEOL 401, 601 Applied Geophysics 3(2,2) Introduction to the most important methods of geophysical exploration and their application to the investigation of subsurface groundwater and mineral resources. Emphasis is on the principles, techniques, interpretations and limitations of magnetic, gravimetric, electrical, electromagnetic, radiometric, and seismological surveys. Preq: GEOL 101 or consent of instructor; PHYS 208 or 221 recommended.

GEOL 403, 603 Invertebrate Paleontology 3(2,3) Study of life of past geologic ages as shown by fossilized remains of ancient animals, with emphasis on the invertebrates. Preq: GEOL 101 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 of change. Laboratory emphasizes the geologic, climatic, and tectonic forces. Preq: GEOL 101, 102, or consent of instructor.

GEOL 408, 608 Geochemistry and Geophysics 3(3,0) Study of the hydrologic cycle, aquifer characteristics, theory of groundwater movement, mechanics of well flow, experimental methods, and subsurface mapping. Preq: GEOL 101, 102.

GEOL 411, H411 Research Projects 1-3(0,3-9) Field, laboratory, or library study of an approved topic in geology. Topic would be one not normally covered in formal courses, but may be an extension of a course. Taught either semester. May be repeated for a maximum of six credits. Preq: 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 on traditional lithostratigraphy but also on modern seismic stratigraphy, biostratigraphy, magnetostratigraphy, and surface stratigraphic issues. Preq: GEOL 314 or consent of instructor.

GEOL 415 Analysis of Geological Processes 3(3,0) Introduction to methods of analyzing geologic 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. Preq/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. Preq: Senior standing, strong computer skills.

GEOL 451, 651 Selected Topics in Hydrogeology 3(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. Preq: 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. Preq: GEOL 302 and 306, or consent of instructor.

GERMAN

GERMAN 101 Elementary German 4(3,1) Course for beginners in which, through conversation, composition, 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.

GERMAN 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.

GERMAN 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.

GERMAN 202, H202 Intermediate German 3(3,1) Brief review of GER 101 and 102, with conversation, composition, and dictation, and the reading of more serious German prose in short stories and plays. Includes literary and cultural perspectives. Preq: GER 102.

GERMAN 301 Twentieth-Century German Drama 3(3,0) Selected works from major German-speaking dramatists of the 20th century, including Brecht, Durrenmatt, and Frisch. Required of German majors. Preq: GER 202 or consent of department chair.

GERMAN 302 Twentieth-Century German Prose and Poetry 3(3,0) Selected prose and poetry from major 20th century German-speaking authors, including Rilke, Mann, Hesse, Kafka, and Boell. Required of German majors. Preq: GER 202 or consent of department chair.

GERMAN 305 Intermediate German Conversation and Composition 3(3,0) Practice in the spoken language, with emphasis on vocabulary, pronunciation, and comprehension; written exercises for accuracy. Required of German majors. Preq: GER 202 or consent of department chair.

GERMAN 308 German Civilization 3(3,0) Study of significant aspects of the culture of the German-speaking peoples from their origins to 1945. Preq: GER 202 or consent of department chair.
GER 309 Modern German Culture 3(3,0) Study of modern German culture from 1945 to the present with particular emphasis on the Federal Republic of Germany and significant aspects pertaining to the German Democratic Republic. Preq: GER 202 or consent of department chair.

GER 310 Summer Immersion Program 6(6,0) Conducted 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 I 3(3,0) Spoken and written German common to the German-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 German cultural patterns in a business setting. Preq: GER 251 or 202 and 305 (or concurrent enrollment); or consent of department chair.

GER 398 Directed Reading 1-3(1-3,0) Directed study of selected topics in German literature, language, and culture. May be repeated for a maximum of six credits. Preq: Consent of department chair.

GER 400 Goethe and His Age 3(3,0) Study of the most significant period of German literature, with readings from works by Goethe, Schiller, and the Romantics. Supplementary materials may include audio visuals and documents on the music, art, and science of the period. Recommended for German majors. Preq: GER 301, 302, or consent of department chair.

GER 401 Studies in German Literature I 3(3,0) Selected topics in German literature from the beginning to 1852. Preq: GER 301, 302, or consent of department chair.

GER 402 Studies in German Literature II 3(3,0) Study of selected topics in 19th or 20th century German literature. Preq: GER 301, 302, or consent of department chair.

GER 403 Studies in German Literature III 3(3,0) Study of a major theme in German literature within a chosen time period or in the work of one major author. Themes may be subject- or genre-oriented. Preq: GER 301, 302, or consent of department chair.

GER 411 Studies in the German Language 3(3,0) Advanced training in the spoken and written language with emphasis on vocabulary, syntax, and stylistics. Preq: GER 305 or consent of department chair.

GER 412 Studies in the German Language II 3(3,0) In-depth study of terminology and syntax for specific subject areas in business, in the liberal arts, and in the sciences. Preq: GER 301, 302, 305, or consent of department chair.

GER 413 Studies in German Culture 3(3,0) Intensive study of selected topics concerning cultural phenomena of the German-speaking nations. Preq: GER 301, 302, 305, or consent of department chair.

GER 416 German for International Trade II 3(3,0) Study of language and cultural environment of the German-speaking markets of the world, including linguistic and cultural idioms which support global marketing in general and the international marketing of textiles, agricultural products, and tourism in particular. Preq: GER 316.

GER 417 German for International Trade III 3(3,0) Examination of the cultural and economic aspects of reconstructing eastern Germany's economy since the 1990 German unification. Preq: GER 316; One German course at the 300 level or consent of department chair.

GER 498, 698 Independent Study 1-3(1-3,0) Supervised study of selected topics in German literature, language, or culture. May be repeated for a maximum of six credits. Preq: Consent of department chair.

GRAPHIC COMMUNICATIONS

Professors: S. T. Ingram, Chair; J. M. Leininger; Assistant Professors: J. B. Simmons, R. M. Snyder; Assistant Professors: E. M. Weisenmiller, N. L. Woolbright; Instructors: E. D. Gilbert, G. R. Oliver; Lecturers: R. M. Carter, K. T. Cox, C. D. Jones, N. W. Leininger, L. H. O'Hara, K. K. Osborne, P. G. Rose; Visiting Professors: J. P. Crouch, E. T. Simon, W. E. West; Adjunct Professor: S. E. Edleman; Adjunct Associate Professor: L. W. Evans; Visiting Lecturer: S. Edleman; Adjunct Lecturer: G. 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 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, prepress, and electronic copy preparation, reproduction photography, offset lithography, color management, printing, and finishing operations. Focus of the visual, 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 whose broads 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. G C 207 and THRD 180 or consent of instructor.

G C 310, H310 Alternative Approaches to Imaging 4(2,6) In-depth study of computer applications in graphic design and digital printing. Emphasis is placed on attributes which are most desirable for successful entry and advancement up a variety of career ladders.

G C 350 Graphic Communications Internship I 1(0,3) Supervised study of selected topics in German literature, language, or culture. May be repeated for a maximum of six credits. Preq: Consent of department chair.

G C 405, H405, 605 Package and Specialty Printing 2(2,0) Problems and processes for printing in package, label, and specialty printing industries. Flexographic preparation, printing, die making, die cutting, transfer printing, screen printing, and bar code production are covered. New developments and trends are discussed. To be taken concurrently with G C 406. Preq: G C 245, 310, 350; or consent of instructor.

G C 406, H406, 606 Package and Specialty Printing Laboratory 2(2,6) Laboratory in techniques for printing and converting in package, label, and specialty printing industries. Emphasis on flexographic process, printing, die design, die making, die cutting 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 color, preparation of plate systems, ink mixing and color matching, testing of films and foils, analysis of process development, and prediction of future markets. Preq: G C 406 or consent of instructor.

G C 440, H440, 640 Commercial Printing 5(2,9) Emphasizes the development of printing processes and the knowledge to large format press. Students work from the design conception stage through all aspects of preparation, 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 press and communications, gravure color quality control and analysis. Preq: G C 405, 406, 440.
G C 445, 446 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. Prereq: G C 207 or consent of instructor.

G C 446, 447 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. Prereq: G C 405, 406 or 440, or consent of instructor.

G C 448, 448B, 448C 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. Prereq: G C 350, 405, 406, 440, 450 or consent of instructor.

G C 450 Graphic Communications Internship I 1(0,3) Internship for students in the graphic communications industry. Gives BASIC work during the summer and field work experience in the fall and spring semesters. Prereq: G C 350, 405, 406, 440 or 450, consent of instructor. Coreq: CO OP 102.

G C 451, 451B Special Projects in Graphic Communications I-6(0,3-18) Advanced projects covering theory and/or practice beyond the scope of regular coursework. Written project proposal required before registering. May be repeated with advisor's approval. Prereq: Junior standing, three graphic communications courses completed, or consent of instructor.

G C 455 Advanced Graphic Communications Internship I 1(0,3) Full-time employment in an industry directly or indirectly related to printing. Work site and job must be approved in advance. Prereq: 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. Prereq: G C 450.

G C 490, 490B 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. Prereq: Consent of instructor.

GREAT WORKS

G W (ENGL) 301, 301B 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. Prereq: Sophomore literature (ENGL 207 or 208 strongly recommended).

G W 402, 402B Great Works of Science 3(3,0) An understanding of science in terms of its history and its approach to problem-solving through study of selected great works. Emphasis is on developing students' abilities to reflect on the problems and methodologies encountered in the scientific method.

G W 403, 403B 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. Prereq: Sophomore literature.

HEALTH


HLTH 201 History and Philosophy of Public Health and Medicine 2(2,0) Explores the evolution of public health and medicine, the social and technological factors and historical turning points in their development, the philosophies and major issues of public health and medicine including beliefs about the nature and causes of health and illness, and the protection and management of community health.

HLTH 202 Introduction to Public Health 3(3,0) Examination of the forces that have influenced current health delivery systems, health practices, and trends. General systems theory is introduced. Health majors and minors will be given enrollment priority.

HLTH 203 Overview of Health Care Systems 3(3,0) Introduction to the Health Care Delivery System including public health and health care components. Examines and discusses individual and public expectations of need and demand for health care and delivery of public health and health care services.

HLTH 240 Determinants of Health Behavior 3(3,0) Analysis of health behaviors based on psychological, social, cultural, and environmental factors. Introduction to health behavior theories. Coreq: Health Science major.

HLTH 250 Health and Fitness 3(3,0) Study of interpersonal relationships between health and fitness. Emphasis is on the cardiovascular system and benefits of exercise.

HLTH 298 Human Health and Disease 3(3,0) Study of good health practices. Emphasis is on lifestyles and measures of health. Health majors and minors will be given enrollment priority.

HLTH 303 Public Health Communication 3(3,0) Introduction to the use of health and communication theory and social marketing strategies to create effective, evidence-based, culturally appropriate health communication messages and campaigns. Prereq: HLTH 240, 298.

HLTH 305 Body Response to Health Behaviors 3(3,0) Positive benefits and the negative impact of certain behaviors at cellular, organ, and body-system levels are examined. The pathways of selected injury and disease are explored. Expected physiological changes are applied in identifying strategies for promoting health in the presence (or absence) of disease. Health majors and minors will be given enrollment priority. Coreq: BIOSC 223 or consent of instructor.

HLTH 310 Women's Health Issues 3(3,0) Exploration of specific health needs of women, with emphasis on understanding and preventing problems of women's health. Health majors and minors will be given enrollment priority. Prereq: Two-semester sequence in science or consent of instructor.

HLTH 315 Social Epidemiology 3(3,0) Exploration of the current problems and issues associated with the health of population groups. The relationships of biological, socio-cultural, behavioral, environmental, political, and economic risk factors and the health and illness patterns of those in population groups are examined. Prereq: HLTH 298, 380 or consent of instructor.

HLTH 320 Health Maintenance for Men 3(3,0) Exploration of specific health maintenance needs of men, with emphasis on understanding and preventing problems of men's health. Health majors and minors will be given enrollment priority. Prereq: Two-semester sequence in science or consent of instructor.

HLTH 340 Health Promotion Program Planning 3(3,0) Students develop skills to conduct community health needs assessments and to plan and evaluate theoretically grounded health promotion intervention programs for diverse populations. Best practices for specific health behavior change interventions are identified. Prereq: HLTH 240, 298.

HLTH 350 Medical Terminology and Communication 3(3,0) Skills in building, analyzing, defining, pronouncing, and applying medical terms related to the human body are taught and applied through electronic communication. Prereq: Junior standing or consent of instructor.

HLTH (AP EC, C R D) 361 Introduction to Health-Care Economics 3(3,0) See CR D 361.

HLTH 380 Epidemiology 3(3,0) Introduction to epidemiological principles and methods used in the study of the origin, distribution, and control of disease. Health majors and minors will be given enrollment priority. Coreq: Approved statistics course.

HLTH H395 Honors Research Seminar 3(3,0) Students review basic steps in the development of an honors research proposal and develop a draft of the proposal under the supervision of a faculty mentor. Students are also required to attend research presentations of senior department honors students. Prereq: HLTH 380, Junior standing, statistics course, or consent of instructor.

HLTH 398 Health Appraisal Skills 1(0,3) Utilizes laboratory experiences to measure health risk, interpret laboratory health data, and design personal health programs. Restricted to Health Science majors. Prereq: HLTH 298.

HLTH 400, 600 Selected Topics in Health 1-3(3,0) Topics selected to meet special and individualized interest of students in health. May be repeated for a maximum of six credits, but only if different topics are covered. Prereq: Junior standing, consent of instructor.

HLTH 401, 601 Health Consumerism 3(3,0) Exploration of consumer decisions regarding health products and services with emphasis on strategies for decision making. Health majors and minors will be given enrollment priority. Prereq: Two-semester sequence in science or consent of instructor.
HLTH 402 Principles of Health Fitness 3(3,0)
Students apply current theories concerning physiological effects of exercise to select new populations; understand the relationship between exercise and various chronic diseases; and design, execute, and evaluate exercise programs in terms of safety and effectiveness. Coreq: BIOCSC 223.

HLTH 410, 610 Maternal and Child Health 3(3,0) Focuses on key issues concerning the health status and needs of mothers and children. Topics include primary health care, measurement and indicators of health status, health of minorities, role of families, and major programmatic interventions towards the health needs of these two groups.

HLTH 411, 611 Health Needs of High Risk Children 3(3,0) Analysis and evaluation of health needs of high risk families and special needs children from the prenatal period to age six. Emphasis is on health prevention and early intervention strategies. Early Intervention minors will be given enrollment priority. Prog: HLTH 410.

HLTH 415, 615 Public Health Issues in Obesity and Eating Disorders 3(3,0) In-depth review of prevalence, risk factors, consequences, and treatments of obesity and other eating disorders. Focuses on the public health importance of cultural norms, prevention, and early intervention related to obesity and eating disorders. Prog: Junior standing in Health Science or consent of instructor.

HLTH 419 Health Science Internship Preparation Seminar 1(1,0) Preparation for internship experience including topics such as résumé development, interviewing skills, internship agency selection, and responsibilities of student, department, and agency. Prog: Prog: Junior standing in Health Science.

HLTH 420, 620 Health Science Internship 1-6(0-3-18) Under supervision in an approved agency, students have an opportunity for on-the-job experiences. Students are placed in an agency and develop personal/professional goals and objectives appropriate to the setting, population, and health issues. Students create a comprehensive exit portfolio in a digital format. May be repeated for a maximum of six credits. Prog: HLTH 419, minimum grade-point ratio of 2.0, Junior standing in Health Science.

HLTH 430, 630 Health Promotion of the Aged 3(3,0) Focuses on analysis and evaluation of health issues and health problems of the aged. Emphasis is on concepts of positive health behaviors. Health majors and minors will be given enrollment priority. Prog: Developmental psychology; two-semester sequence in science; consent of instructor.

HLTH 431 Public and Environmental Health 3(3,0) Principles of environmental health, with emphasis on understanding various health concerns created by the interactions of people with their environment. Students evaluate the impact of environmental factors on public health policy decisions. Meets specific area of need in environmental health issues.

HLTH 440 Managing Health Service Organizations 3(3,0) Provides the conceptual and theoretical foundation of management and organizational theory of health service organizations. Focus is on role of health services managers and how they modify and maintain organizations.
HIST 101 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 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 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, and social history of the modern world from the 19th century to the present.

HIST 198 Current History 1(1,0) Examination of the 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 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 Pre-law Internship 3 SS 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. To be taken Pass/Fail only. Prereq: History major or minor and HIST 328 or 329 (with consent of internship coordinator).

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 on the movement toward 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 motivation 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 1860s and 1930s. Emphasizes the effects of industrialization and urbanization on the American people.

HIST 305 The United States in the Age of the World Wars 3(3,0) Examination of the changes in the American experiences through two world wars, a depression, the Prohibition era, and the assumption of international responsibilities.

HIST 307 Recent America 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 311 African Americans to 1877 3(3,0) Study of the African-American experience in the United States from the African 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) [W.2] 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) [W.2] 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) [W.1] 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) [W.1] 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 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) Origins 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 the 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 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 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) [W.2] 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 special emphasis on city life and the causes of its decline.

HIST 361 History of England to 1688 3(3,0) [W.2] 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) [W.2] 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) [W.2] 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 peacetime 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 Europe's 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, 1870-1918, 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. Emphasizes the post-war history of 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 imperial 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 evolution of the communists, political and social systems, with attention given to culture and diplomacy.

HIST 387 The Russian Revolution 3(3,0) [W.2] 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 the revolution in Russia, 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&R) 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 an emphasis on the linkage of sports structure and performance to the larger social context.

HIST 394 Non-Western History 3(3,0) Examination of the important trends in world history since 1500—including imperialism, capitalization, nationalism, migration, and imperialism—with a focus on non-Western regions. (Prep. HIST 173.)

With departmental consent, any 400- or 600-level course in history may be repeated once for credit. The 400-level 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 420 History and Film 3(2,3) Analyzes the role of the cinema in the construction and dissemination of history.

HIST 426, 628 A Famous American Triumphant in History 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.) Prep: HIST 328 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 an almost 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, class 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 do directed research on a particular topic. Seminar topics vary from section to section and from semester to semester. Prereq: Senior standing 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. Prereq: 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. Prereq: HIST H497.

HIST 499 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.

HORTICULTURE
Professors: W. V. Band, D. W. Braskaw, M. T. Haque, L. B. McCarty, T. Whitwell, Chair; Associate Professors: J. D. Caldwell, H. Liu; Assistant Professors: J. W. Adelberg, J. E. Faust, C. E. Wells

HORT 101 Horticulture 3(3,0) Environmental factors and horticultural practices affecting optimum production of floral, fruit, ornamental, and vegetable crops. Survey of the various areas of horticulture and their importance to society.

HORT 202 Selected Topics 1-3(1-3,0) Introduction to developing trends/concepts/technologies in horticulture. May be repeated for a maximum of three credits or a maximum of three credits in combination with HORT 400, but only if different topics are covered. Prereq: Consent of instructor.

HORT 208 Landscape Appreciation 3(3,0) Deepens students’ appreciation of natural and built environments through a study of landscape elements, styles, and professions. Landscapes ranging in scale from residential to regional are critiqued, and design principles and landscape ethics are discussed.

HORT 212 Introduction to Turfgrass Culture 3(3,0) Studies of the introductory principles associated with the art and science of turfgrass culture. Develops an understanding of the history and evolution of turfgrass and turfgrass culture. Explores career potentials in turfgrass management. Explains the basic scientific principles and techniques associated with the propagation and establishment of turf grasses. Prereq: BIOSC 205, 206.

HORT 213 Turfgrass Culture Laboratory 4(2,0,2) Provides hands-on activities and understanding of basic principles and techniques in turfgrass culture. Students learn all phases of turfgrass management including identification, turfgrass culture, common turfgrass pest identification and control. Coreq: HORT 212.

HORT 271 Internship 1-6(0.2-12) Preplanned, practical, supervised work experience to give beginning students on-the-job learning opportunities that support classroom experience. Students submit monthly reports and present a departmental internship seminar. Undergraduates may accumulate a maximum of six credits for participation in HORT 271 and/or 471. Prereq: Consent of instructor.

HORT 303 Plant Materials 3(2.3)F Woody, ornamental plants and their aesthetic and functional uses in landscape developments. Study covers habit of growth, ultimate size, texture effect, period of bloom, color, and cultural requirements.

HORT 304 Annuals and Perennials 3(2.3)S Annual and perennial flowers’ aesthetic appeal and functional uses and needs. Color, texture, bloom time, form, size, and growth requirements as they relate to designing, planting, and maintaining colorful landscapes. Prereq: HORT 208, 303, or consent of instructor.

HORT 305 Plant Propagation 3(2,3)S All phases of plant propagation from seeds, bulbs, divisions, layers, cuttings, budding, and other types of grafting are comprehensively treated. Timing, manner, and material for making cuttings; temperature and media requirements and propagation structures for rooting cuttings of ornamental and fruit trees, shrubs, and indoor plants are studied.

HORT 306 Plant Propagation Techniques Laboratory 1(0.3) Techniques of plant propagation including sexual methods: germination, scarification, and stratification. Asexual methods including grafting, budding, cuttings, layering, tissue culture techniques, and propagations. Local nurseries are visited. Coreq: HORT 305.

HORT 308 Landscape Design 4(3,3)F Landscape planning of residential and public properties in order to achieve best use and most enjoyment from a given piece of ground. Prereq: HORT 208, 303, or consent of instructor.

HORT 310 Greenhouse Crop Physiology 3(2,3)S Physiology, growth, and development of floriculture crops in fully or semi-controlled environments, including manipulation of flowering, chemical and environmental light regulation, fertility in artificial substrates, scheduling, cost analysis, and pest management. Prereq: CSENV 202, HORT 101, or consent of instructor.

HORT 316 Floral Design 3(2,3)F Topics include simple arrangements (history, containers, mechanical aids, etc.), arrangements for specific occasions, church arrangements, funeral designs, bride’s bouquets, dried arrangements and flower preservation, corsage work, foliage arrangements, bonsai, terrarium, Christmas wreaths, and foliage plant identification.

HORT 400 Selected Topics 1-3(1-3,0) In-depth examination of developing trends/concepts/technologies in horticulture. May be repeated for a maximum of three credits or a maximum of three credits in combination with HORT 202, but only if different topics are covered. Prereq: Junior standing or consent of instructor.

HORT 406, 606 Nursery Technology 3(2,3)S Principles and techniques in handling nursery crops. Prereq: HORT 303, 305.

HORT 408 Special Problems in Horticulture 1-3(0.3-9) Independent investigation in horticulture. Emphasis is on organizing a quality proposal, conducting the investigation, and reporting findings at a professional society meeting and/or in a professional publication. Cumulative maximum of three credits. Prereq: Minimum of 75 hours completed and consent of instructor.

HORT 409 Seminar 1(1,0)S Recent research work on various phases of horticulture, methods of conducting investigations, and preparation of report of investigations.

HORT 412, 612 Turfgrass Management 3(2,3)F Study of warm and cool season turfgrasses in relation to turf quality, use, regional adaptation, establishment, soils, and cultural practices. Influence of environmental, cultural, and genetic factors on turf quality and serviceability. Identification of grass and weed species and discussion of programs for the management of lawns, parks, roadways, and golf courses. Prereq: BIOL 103 or equivalent.

HORT 420, 620 Contemporary Issues in Turfgrass Science and Management 3(3,0) Focuses on contemporary issues in turfgrass science and management. Provides the most current status of the development of the turfgrass industry, environmental stewardship, and turfgrass research. Prereq: HORT 212, 213.

HORT (FOR) 427, 627 Urban Tree Care 3(3,0) See FOR 427.
HORT (CSENV) 433, 633 Integrated Weed Management for Agronomic and Horticultural Crops 3(2,2)S Weed management systems consisting of cultural, chemical, and biological methods are studied for the major agronomic and horticultural crops of South Carolina with problem-solving methodology and herbicide injury diagnosis. Preq: CSENV 407 or equivalent introductory weed science.

HORT 455, 655 Small Fruit Crops 3(2,3)F In-depth survey of taxonomical, morphological, and physiological characteristics of small fruit crops as they relate to the study of horticultural characteristics, culture, production, harvesting, and handling of both commercial and home-grown grapes, blueberries, strawberries, brambles, and kiwifruit. Preq: HORT 101 or consent of instructor.

HORT 456, 656 Vegetable Crops 3(3,0) Principles and practices employed in commercial growing and marketing of vegetable crops with emphasis on plant characteristics, cultivars, management practices, harvest, quality factors and grading, storage, economic importance, and areas of production.

HORT 461, H461, 661 Problems in Landscape Design 4(3,3)S Landscape planning for larger residential properties, schools, industrial plants, real estate developments; detailed finished plans; further study of materials used; original problems; field study. Preq: HORT 308, 407, or consent of instructor.

HORT (BIOSC, GEN) 465, 665 Plant Molecular Biology 3(3,0) Study of fundamental plant processes at both the cellular and molecular levels. Topics include genome structure and organization (both nuclear and organelar); regulation of gene expression and its role in cellular and whole-plant processes; transposable genetic elements; applications for biotechnology. Preq: Junior standing or consent of instructor; BIOSC 304 or 305; GEN 302.

HORT 471, 671 Advanced Internship 1-6(0,2,12) Preplanned work experience under competent supervision in approved agency dealing with horticultural endeavors. Gives advanced students on-the-job learning opportunities to apply acquired knowledge and skills. Monthly reports and final departmental seminar required. Undergraduates may accumulate a maximum of six credits for participation in HORT 271 and/or 471. Preq: Junior standing and consent of instructor.

HORT 472, 672 Garden Experiences in Youth Development 2(1,3) Exploration of the role of gardening and related outdoor experiences in enhancement of educational development, self-esteem, and pro-social behavior in elementary school children. Preq: Senior standing and consent of instructor.

HUMANITIES

Professor: S. K. Eisminiger; 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, M. S. Leonard; Associate Professors: B. R. Cho, W. G. Ferrell, J., S. Firestein, B. J. Molloy; Assistant Professor: M. E. Kurz

IE 201 System Design I 4(3,3) 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. Preq: ENGR 120.

IE 210 Design and Analysis of Work Systems 4(3,3) Facilities planning and design, workplace design, ergonomics of workplace design, performance measurement, and methods engineering.

IE 220 Design of Information Systems in Industrial Engineering 3(3,0) [C-2] 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 flows. Preq: MTHSC 206.

IE H300 Junior Honors Seminar 1(1,0) Aquaints 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. Preq: Junior standing, admission to Departmental Honors Program.

IE 361 Industrial Quality Control 3(3,0) Quality engineering techniques focusing on process control using statistical methods including control charts and acceptance sampling. Preq: MTHSC 302.

IE 368 Professional Practice in Industrial Engineering 1(1,0) Seminar to orient students to issues of professional development and professional practice of industrial engineering. Preq: IE 201.

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. Preq: MTHSC 208 and 302 or consent of instructor.


IE 386 Production Planning and Control 3(3,0) Fundamentals of forecasting demand, scheduling production, and controlling the movement and storage of material associated with production are studied. State-of-the-art manufacturing techniques are discussed. A design project is required. Preq: IE 280, 384.

IE 440, 640 Systems and Information 3(3,0) Design and analysis of information-based production and service systems, issues in networked data, design and knowledge tools. Preq: IE 220.

IE (MGT) 444 International Perspectives in Industrial Management 3(3,6,6) 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. Preq: MTHSC 206 and 302 or consent of instructor.

IE 456, 656 Supply Chain Design and Control 3(3,0) Industrial engineering aspects of supply chains including design and control of material and information systems. Preq: IE 386 or equivalent.

IE 460, 660 Quality Improvement Methods 3(3,0) Study of modern quality improvement techniques presented in an integrated, comprehensive context. Preq: 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. Preq: IE 361.

IE 465, 665 Facilities Planning and Design 3(3,0) Study of the principles and techniques of plant layout. Economic selection of materials handling equipment and integration of this equipment into the layout plans to provide effective product flow. Quantitative techniques for evaluation of facilities plans. A design project is required. Preq: IE 210 and 280 or consent of instructor.

IE 467 Systems Design II 3(2,3) Provides students with the challenge of integrating and synthesizing 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. Preq: All engineering courses at the 200 and 300 level in the Industrial Engineering curriculum.

IE 482, 682 Systems Modeling 3(3,0) Modeling of discrete industrial systems using a digital computer. The purpose, theory, and techniques of system modeling are presented. Preq: IE 381 and MTHSC 302 or consent of instructor.

IE (B, 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. Preq: IE 280 and 381 or consent of instructor.
E 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.

E 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: E 210 or consent of instructor.

E 491, 691, 691 Selected Topics in Industrial Engineering 1-3(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.

E 492, 692, 692 Design Topics in Industrial Engineering 1-3 Comprehensive study of any timely or special design topic in industrial engineering. 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) Origins, 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 401, or consent of instructor.

ITALIAN
Associate Professor: B. M. Zacek; 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 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 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 498 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 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 I 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 406 Introduction to Japanese Literature 3(3,0) Students read contemporary Japanese narrative fiction, poetry, and drama in their historical and social 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 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. Nadeneck, Chair; Associate Professor: U. Yilmaz; Visiting Assistant Professors: M. P. Durgan, R. R. Hewitt, A. V. Rov; Lecturers: R. W. Bainbridge, C. L. K. Martin

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: LARCH 151. Coreq: LARCH 154.

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 Basic Design III 6(1,10) Studio focused on design concepts, planning, and project development at the abstract level. Lectures, demonstrations, and exercises support basic landscape architectural design and theory. Prereq: LARCH 152.

LARCH 252 Basic Design IV 6(1,10) Studio devoted to the methodology of the process. Transition from the abstract to more landscape-specific applications. Lectures, demonstrations, and exercises support basic landscape architectural design and theory. Prereq: LARCH 251.

LARCH 262 Landscape Architectural Technology I 3(2,2) Introduction to landscape architecture technologies, methods and construction documents including site information gathering and analysis, elementary problems in site grading and drainage, methods for estimating cut and fill, and principles of stormwater management. Explorations in hand and computer graphics techniques used in construction drawings. Prereq: B E 221, sophomore standing in construction studios.

LARCH 293 Field Studies Internship 1-3(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 Landscape Architecture Design Studio I 6(1,10) Studio work with adjunct lectures focused on site-specific design solutions for two or three projects of modest scale. Projects typically involve one property and one use, with an emphasis on published case studies, site analysis, synthesis, and concept development. Introductory experiences in verbal and graphic presentation techniques. Prereq: LARCH 252.

LARCH 352 Landscape Architecture Design Studio II 6(1,10) Studio work and adjunct lectures featuring problems of greater use complexity than those found in LARCH 351. Projects begin with problem and planning issues and proceed to a design resolution. Additional skill building in graphic and oral presentations. Prereq: LARCH 351.

LARCH 362 Landscape Architectural Technology II 3(2,3) Intermediate course in landscape architecture construction documents and methods including horizontal and vertical alignment of roadways, complex site grading, and storm water management problems. Prereq: LARCH 262. Junior standing in design studios.

LARCH (A A H) 416 History of Landscape Architecture 3(3,0) See A A H 416.

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 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 portfolio work in black and white and color. May be repeated for a maximum of six credits. Prereq: Consent of instructor.

LARCH 451 Landscape Architecture Design III 6(1,10) Studio work of substantial scale or complexity such as multiple building complexes, neighborhoods, campus masterplans, research or business parks, or residential communities. Projects may be undertaken on a simultaneous basis to simulate professional practice. Projects may include the integration of computer technologies. Site construction technology issues may be introduced. Prereq: LARCH 352.

LARCH 452 Landscape Architecture Design IV 6(1,10) Studio work on projects of substantial scale or complexity. Topics may include public service projects which vary in nature (urban design, town planning, codes and regulations). Emphasis is on professional responsibilities in community service, on-site case study analysis, graphic and verbal communication. Prereq: LARCH 451.

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 1-9(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. Prereq: Consent of instructor.

LARCH H491 Honors Research Methods for Landscape Architecture 1-3(1,3) Students investigate various research methodologies in landscape architectural design or related areas and apply to student generated projects(s). Students generate a proposal for landscape Architecture Honors Research. Prereq: Junior standing; membership in Calhoun Honors College Program, consent of Department Honors Program Advisor.

LARCH 493 Professional Office Internship I 1-3(1,3-9) 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. Prereq: 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. Prereq: LARCH H491; membership in Calhoun Honors College Program.

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. Prereq: LARCH H494.

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. Prereq: LARCH 452.
LANG 455 Hispanic Film: Documentary and Feature 3(0,3) Overview of theory and discourse on Hispanic film. Through lectures, discussions, and films, students become acquainted with film as a vehicle for understanding the Hispanic world. Taught in English. Films are in Spanish with English subtitles. Prq: Sophomore standing or consent of department chair.

LANGUAGE AND INTERNATIONAL TRADE

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. Prq: L&IT 316, GER 202, 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. Prq: L&IT 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. Prq: 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. Prq: LATIN 201 or equivalent.

LAW
Associate Professor F. L. Edwards, Assistant Professor M. P. Howley, V. S. Ward-Vaughan, Lecturer J. R. Jahn

LAW 312 Commercial Law 3(3,0) Introduction to business law with primary attention given to contracts, agency, and negotiable instruments. Prq: 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. Prq: 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. Prq: 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. Prq: Junior standing or consent of instructor.

LAW 405, 605 Construction Law 3(3,0) Provides a practical knowledge of legal principles applied to the construction process and legal problems likely to be encountered by practicing construction professionals. Topics include construction contracting, liability, claims and warranties, documentation, and responsibility and authority of contracting parties. Prq: 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, formation and operation of multinational businesses. Prq: 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. Prq: Senior standing and consent of instructor.
LEISURE SKILLS
Professor: J. R. Pope, Jr; Assistant Professor: M. H. Wynn; Lecturer: B. W. Stevens
LS 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.
LS 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, mountaineering, hang-gliding, ballooning, and other challenge activities.
LS 111 Lapidary Arts 1(0,3) Students learn the techniques used to transform raw materials such as gemstones, minerals, gold, and silver into objects of art—primarily jewelry.
LS 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/recreation/shock are also discussed.
LS 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.
LS 145 Camping and Backpacking 1(0,3) Basic camping and backpacking skills including map and compass reading, outdoor cooking, camping hazards and safety, site selection, and trip planning.
LS 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.)
LS 149 Snowboarding 1(0,1) Basic snowboarding instruction including equipment selection; safety, conditioning, and skills such as stopping, techniques 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.
LS 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.
LS 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 white-water kayaking. Prereq: Basic swimming skills.
LS 165 Inland Kayak Touring 1(0,3) Introductory course which teaches the basic skills necessary to safely enjoy flat-water (non-tidal waters: lakes, slow moving rivers) kayak touring. 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, jibbing, 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 100 yards and tread water for five minutes.
LS 175 Fish Flying 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) Students are taught basic open water diving techniques and are prepared to complete the 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 1(0,3) Basic instructional program on techniques of bowling.
LS 189 Tennis 1(0,3) Fundamental course stressing rules, strokes, and strategy, with ample opportunity for practice.
LS 194 Racquetball 1(0,3) Basic skills, knowledge of rules, strategy, and basic strokes.
LS 198 Golf 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 shag, 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, foxtrot, 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 belly roll, sugar foot, slide step, tip toe 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 1(0,3) Practical study of officiating for various sports. Includes studies and practical application of officiating rules and mechanics. Sports studied include football, baseball, softball, soccer, and introductions to a variety of other team sports.
LS 347 Advanced Alpine Skiing 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 this 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 3(2,2) Provides a model for successfully working with persons from the marketing, operations, accounting, finance, and engineering functions. Students operate on a cross-functional team and explore concepts and tasks associated with managing effectively for high performance. Prereq: Pre Business major, ECON 211, consent of the instructor.
MGT 218, H218 Management Personal Computer Applications 3(0,6) Personal computer applications that support managers. Students learn from hands-on work rather than lecture. To be taken Pass/Fail only. Prereq: CP/SC 120 or consent of instructor.
MGT 301, H301 Principles of Management 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 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 3(3,0) See ECON 306.
MGT 307, H307 Personnel Management 3(3,0) Principles, concepts, and techniques concerned with effective and efficient utilization of personnel. Emphasis is on 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, EX ST 301.

MGT 310, H310 Intermediate Business Statistics 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 EX ST 311. Prereq: EX ST 301 or MTHSC 301.

MGT 312, H312 Decision Models for Management 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 E) 315 New Venture Creation II 3(3,0) Second of a two-part series examining entrepreneurship. Using opportunity analysis developed in MKT (E E) 314, course focuses on designing and managing an organization capable of effectively pursuing the opportunity. Topics include organization strategy and design, start-up activities, operations and sourcing issues, leadership, team building, and management of rapid growth. Prereq: MKT (E E) 314.

MGT 317 Logistics Management 3(3,0) Management of physical distribution and supply systems with emphasis on design concepts, cost determinants, and control. Prereq: Junior standing.

MGT 390 Operations Management 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 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 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 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 process 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 theory, tools, and techniques to organize, plan, and control individuals, teams, quality, and operations while conducting a project. Prereq: EX ST 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) Case studies for seniors. Various methods 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 301; Senior standing.

MGT 416 Management of Human Resources 3(3,0) Recent developments in the management of human resources with emphasis on the need for research into the motivation, development, of human resources. Prereq: MGT 307 and 400 with a C or better, consent of instructor.

MGT 418 Management Information Systems 3(3,0) Use of data processing concepts as an aid in implementing managerial functions. Electronic data processing terminology, software, hardware, computer operations and techniques, systems analysis, and the principles of management information systems design and implementation are emphasized. Prereq: MGT 218 or consent of instructor.

MGT 422 Small Business Management 3(3,0) Study of the management of the small independently owned and operated business. Emphasis is on analyzing new business opportunities, planning and establishing a growing concern, and managing the small business environment. Field experience in consulting with small businesses enhances students' understanding of the unique problems and opportunities at the small business level. Prereq: MGT 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 system. 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 ocean and air freight transport. International transportation legislation and policies are also analyzed. Prereq: Senior standing or consent of instructor.

MGT 425 Compensation Management 3(3,0) Examination of management 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. Emphasis is on 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 systemic approach to selecting improvement areas, determining how to improve, plan, and manage the improvement process. Topics include selecting performance measurements, using teams to achieve breakthrough change, 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 the opportunity to relate their academic studies to real-world problems. A 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 (I E) 444 International Perspectives in Industrial Management 3-6(3-6,0) Provides an international perspective to industrial management via organized plant visits to businesses in a foreign country and lectures by and 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 unambiguous documentation. Preq: 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). Students design and develop a system using various platforms. Focus is on the logical and physical system design. Preq: 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. Focus is on the understanding, effective deployment, and impact of these technologies on business outcomes. Preq: 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. 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(0,9) Pre-planned, approved, 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) Emphasis is on promotion as the communication function of marketing. Attention is given to communication theory and promotion’s relation to mass and interpersonal communication. Factors affecting the 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 market 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 qualifications of marketing 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 the firm’s product or service offerings. Topics include new product screening, evaluation, and development; product line and mix analysis, abandonment decisions, brand management’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, MKT 301, MTHSC 315; or consent of instructor.

MKT 433 Sport Marketing Strategy 3(3,0) Provides students with basic knowledge about brand management as it applies to sport. Addresses basic principles and guiding precepts of how sport-based organizations build strong brands. Preq: MKT 321 or consent of instructor.

MKT 434 Sport Promotion 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 utilizing the tools of promotion within a sport context. Integrated Marketing Communication provides the theoretical and managerial framework on which 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 brief 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.
MTHSC 101 Introduction to Probability 3(3,0)
Introductory study of randomness and probability. Major topics include descriptive techniques for data, basic probability concepts, permutations and combinations, discrete distributions, and the central limit theorem. Prereq: Satisfactory score on the Clemson Mathematics Placement Test or consent of department.

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. Prereq: 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. Prereq: MTHSC 102 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(5,1)
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 Calculus of One Variable I 4(4,0)
Topics include analytic geometry, introduction to derivatives, computation and application of derivatives, integrals, exponential and logarithmic functions. Prereq: MTHSC 103 or satisfactory score on the Clemson Mathematics Placement Test or consent of department.

MTHSC 107 Co-Calculus 1 1(0,2)
Reception style 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 limits, differentiation, and techniques of integration. Prereq: MTHSC 106.

MTHSC 109 Co-Calculus 1 1(0,2)
Reception style course to accompany MTHSC 108. Reinforces precalculus and calculus topics covered in MTHSC 108 and provides additional instruction and practice. Prereq: Satisfactory score on the Clemson Mathematics Placement Test or consent of department.

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, and composite numbers, divisibility, common factors and multiples. 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. Manipulatives 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. Prereq: MTHSC 104 or satisfactory score on the Clemson Mathematics Placement Test or consent of instructor.

MTHSC 117 Mathematics for Elementary School Teachers I 4(4,0)
Problem-solving strategies, logic, algebraic thinking, sets, relations, functions, number systems, whole numbers, integers, number theory, fractions, decimals, applications of percent, real numbers with their computational algorithms and properties are explored. The content, according to the state standards, is taught with appropriate methodology for teaching K-8. Prereq: MTHSC 104 or satisfactory score on the Clemson Mathematics Placement Test or consent of instructor.

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, volume, transformation, symmetries; and simple probability and descriptive statistics are explored. Prereq: MTHSC 104 or satisfactory score on the Clemson Mathematics Placement Test or consent of instructor.

MTHSC 199 Introduction to Discrete Methods 3(3,0)
Topics include logic and methods of proof, sets, relations, functions, mathematical induction, graphs and trees, counting techniques, recurrence equations. Prereq: Satisfactory score on the Clemson Mathematics Placement Test or consent of department.

MTHSC 203 Elementary Statistical Inference 3(3,0)
Survey course in fundamental statistical principles with applications. Topics include estimation, tests of hypotheses, simple linear regression and correlation, analysis of count data, and nonparametric statistics. Prereq: Satisfactory score on the Clemson Mathematics Placement Test or consent of instructor.

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. Prereq: Satisfactory score on the Clemson Mathematics Placement Test or consent of instructor.

MTHSC 208, H208 Introduction to Ordinary Differential Equations 4(4,0)

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 and 102 or 106.

MTHSC 216 Geometry for Elementary School Teachers 3(3,0)
Informal treatment of the basic concepts of geometry. 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) Lectures and discussions on the mathematical sciences disciplines: applied mathematics, computing science, core mathematics, management science, operations research, and statistics. Preq: MTHSC 106.

MTHSC 301, H301 Statistical Theory and Methods I 3(3,0) Principal topics include elementary probability theory, discrete and continuous random variables, expected values, normal distribution, chi-square distribution, t-distribution, F-distribution, tests of hypotheses, point and interval estimation, curve fitting. Credit toward a degree will be given for only one of EX ST 301, MTHSC 301, 302, 309. 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 microcomputer software is used. Credit toward a degree will be given for only one of EX ST 301, MTHSC 301, 302, 309. Preq: MTHSC 226.

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 MGSC 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 for only 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 I 1(1,0) Weekly seminar to prepare students in Departmental Honors Program for independent 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 402 or equivalent.

MTHSC 405, 605 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, multivariable analysis of variance, experimental design. Computation and interpretation of results are facilitated through use of statistical 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 410 Number Theory 3(3,0) Introduction to theory of integers and related number systems. Topics include historical development, principal 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 3(3,0) Applies theoretical concepts of sets, functions, binary relations, graphs, Boolean algebras, propositional logic, semigroups, groups, homomorphisms, and permutation groups to computer characteristics and design, words over a finite alphabet and concatenation, binary group codes, and other communication or computer problems. Preq: MTHSC 311.

MTHSC 430 Actuarial Science Seminar I 1(1,0) Problem-solving seminar designed to prepare students for the examination on the Society of Actuaries' and Casualty Actuarial Society's Course 1 (Mathematical Foundations of Actuarial Science). Preq: MTHSC 400 or consent of instructor.

MTHSC 431 Theory of Interest 3(3,0) Comprehensive treatment of the theory of interest includ- ing from a calculus-based continuous viewpoint. Topics include simple and compound interest and discount, nominal and effective rates, force of interest, basic and general annuities, yield rates, amortization and sinking funds, applications to bonds, mortgages, and other securities. Preq: MTHSC 206.

MTHSC 432 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 441, H441, 641 Introduction to Stochastic Models 3(3,0) Introductory treatment of stochastic processes, finite-state Markov chains, queueing, dynamic programming, Markov decision processes, reliability, decision analysis, and simulation. Both theory and applications are stressed. Preq: MTHSC 400.

MTHSC 450 Introduction to Mathematical Models 3(3,0) Study of the modeling process which includes translation of practical problems into mathematical models, solution of the mathematical models, and interpretation of the solution back into practical problems. Examples are chosen from the physical, biological, social, and management sciences. Preq: CP SC 110, MTHSC 208.

MTHSC 453, H453, 653 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 454, H454, 654 Advanced Calculus II 3(3,0) Continuation of MTHSC 453. Transformations, multiple integrals, line and surface integrals, infinite sequences and series, and improper integrals. Preq: MTHSC 453.
ME 221 Mechanical Engineering Laboratory I
10(3,0) Discovery of mechanical engineering principles and phenomena. Introduction to laboratory safety practices, instrumentation, calibration techniques, data analysis, and report writing. Prereq: ME 202 (or concurrent enrollment), 203 (or concurrent enrollment), PHYS 221.

ME 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. Prereq: CH 102, E M 304 (or concurrent enrollment).

ME 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. Thermochromical equilibria. Prereq: M E 203.

ME 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. Prereq: E M 302, M E 203.

ME 305 Modeling and Analysis of Dynamic Systems 3(3,0) Techniques for developing and analyzing physical and mathematical models of mechanical and electromechanical systems presented. Transient and frequency response are determined using analytical and numerical methods. Basic feedback systems are introduced. Prereq: E C E 307, E M 202, M E 202, 205, MTHSC 208.

ME 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. Prereq: E M 304.

ME 310 Thermodynamics and Heat Transfer 3(3,0) Introduction to thermodynamics and heat transfer for non-majors: 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. Prereq: Junior standing in an engineering curriculum.

ME 322 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. Prereq: E M 304 (or concurrent enrollment), 320 (or concurrent enrollment), M E 303 (or concurrent enrollment), M E 221, MTHSC 208.

ME 323 Mechanical Engineering Laboratory III
2(1,3) Continuation of ME 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. Prereq: E M 301 (or concurrent enrollment), 304 (or concurrent enrollment), 305 (or concurrent enrollment), M E 322, MTHSC 202 or EX ST 411.

ME 400 Senior Seminar (1,0) Seminars address the problems encountered by engineering graduates in professional practice. Invited lecturers as well as faculty provide the lecture and demonstrations. Prereq: All required 300-level E C E, E M, and M E courses or consent of instructor.

ME 401 Mechanical Engineering Design 3(3,0)
[O.1, W.2] 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. Prereq: M E 301, 303, 304, 305, 306 (Concurrent enrollment in one of these courses is permitted with departmental approval).

ME 402 Internship in Engineering Design 3(1,6)
[O.2, W.1] 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 member. Students present results to the faculty and sponsor through written reports and oral presentations addressing University written/oral competency goals. Prereq: M E 401, 404 (or concurrent enrollment).

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, 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. Prereq: M E 301, 303, 304, 305, 306, 323.

ME 405 Kinematics and Dynamics of Machinery 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. Prereq: 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, flow of fluids, energy exchange by radiation and mass transfer. Applications in heat-exchanger design with emphasis on economics and variation of operating conditions from the design point. Prereq: M E 304, consent of instructor.

ME 415, H 415 Undergraduate Research 1-3 Individual research projects conducted under the direct supervision and guidance of a faculty member. May be repeated for a maximum of six credits. Prereq: Consent of instructor.
M E 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. Prereq: M E 305.

M E 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. Prereq: M E 305 or consent of instructor.

M E 418 Finite Element Analysis in Mechanical Engineering Design 3(2,3) Introduction to the finite element method. Introduction to solid modeling, finite element modeling and analysis using commercial codes. Analysis strategies using finite elements. Applications to heat transfer, fluid flow, and structures. Prereq: E M 304, 320, M E 205, 304, or consent of instructor.

M E 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. Prereq: M E 303, 304.


M E 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 retrofitted gas turbine for regenerative operation are presented. Design projects are used to illustrate the procedures. Prereq: E M 320.

M E 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. Prereq: E M 320.

M E 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 report writing. Prereq: M E 301, 303, 304, 305, 306, 323; M E 404 (or concurrent enrollment).

M E 429, 629 Thermal Environmental Control 3(3,0) Mechanical vapor compression refrigeration cycles, refrigerants, thermoelectrical cooling systems, cryogenics, thermodynamic properties of air, psychometric charts, heating and cooling coils, solar radiation, heating and cooling loads, insulation systems. Prereq: E M 320, M E 303.

M E 430, 630 Mechanics of Composite Materials 3(3,0) Fundamental relationships for predicting the mechanical and thermal response of multi-layered materials and structures are developed. Micromechanical and macromechanical 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. Prereq: E M 304.

M E 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, head loss, flow capacities, piping networks, flow measurement, pumps, control valves, and hydraulic and pneumatic components. Prereq: E M 320, M E 322.

M E 432, 632 Advanced Strength of Materials 3(3,0) Topics in strength of materials not covered in E M 304. 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. Prereq: E M 304.

M E 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 wastage prevention, including especially engineering design and materials selection approaches. Structural metallic alloys are emphasized; however, technically important ceramics and polymers are also discussed. Prereq: M E 301, 306.

M E 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 and whirlind of rotating shafts, dynamic balancing, and multi-degree of freedom systems with lumped parameters. Prereq: E M 202, 304, MTHSC 208.

M E 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, railway vehicles, and magnetically levitated vehicles. Prereq: M E 205, 305, or consent of instructor.

M E 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 employed as appropriate. Prereq: M E 306 or consent of instructor.

M E 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, robotic systems, knowledge-based systems and concepts of flexible product manufacture. Prereq: M E 301, 306, 404 (or concurrent enrollment), or consent of instructor.

M E (E C E) 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 geometry, kinematics, dynamics, and control. Familiar machine structures are emphasized, including methods using computer analysis. Application considerations include the design and operation of robot systems for manufacturing and material handling. Prereq: M E 305, 416 (or concurrent enrollment), or consent of instructor.

M E 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 the 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.

M E 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 100 Microbes and Human Affairs 1(1,0) Explanation of the roles of microorganisms in today's world and the significance of microbes to the future of mankind.

MICRO 205 Introductory Microbiology 4(3,3) Basic concepts of microbiology, introduced through classroom and laboratory experiences. Emphasis is placed 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 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, 601 Advanced Bacteriology 4(2,6) Metabolism, nutrition, growth, and death of bacteria; microbiological assays and industrial fermentation; emphasis on laboratory procedures for the identification of the more common taxonomic groups. 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 plants and microorganisms, interactions of microorganisms with 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 cytoplasm, 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: CIU 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 (BIOC, 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: BIOC 301, MICRO 305, or consent of instructor.

MICRO 491 Special Problems in Microbiology 1-3(0,3-9) Research problems in areas of microbiology which introduce undergraduate students to the planning and execution of research experimentation and the presentation of research findings. May be repeated with advisor approval. Prereq: BIOC 301.

MICRO H491 Honors Special Problems in Microbiology 3(0,9) Research problems in areas of microbiology which introduce undergraduate students to the planning and execution of research experimentation 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 Program, consent of instructor.

MILITARY LEADERSHIP

Professor: W. R. Hanson, Chair; Assistant Professors: B. E. Griffin, M. D. Mitchiner, B. S. Moore, W. M. Parker, G. J. Walker

M L 101 Leadership Fundamentals 1(2,1) Study of leadership focused at the individual level. Students learn effective communication 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.

M L 102 Leadership Development II 2(2,1) Continuation of 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.

M L 103 Becoming a Leader 3(3,0) Study of basic leadership, covering leadership theory and skills, organizational systems, methods and practices of leadership, and communication skills. Includes lectures, practical exercises, and guest speakers.

M L 201 Leadership Development I 1(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.

M L 202 Leadership Development II 2(2,1) Continuation of study of leadership at the team and small group levels. Focuses on moral leadership, leadership, and the Army as a profession. Leadership laboratory training includes small unit tactics, armament operations, and weapons firing. Students lead teams throughout the semester.

M L 210 Leaders' Training Course 4(2,6) Eight-week leadership training course conducted on an Army post. Students' pay and expenses are provided by the U.S. Army. Emphasis is on leadership development. No military obligation is incurred. Completion of this course qualifies students for entry into the Army ROTC Advanced Course.

M L 211 Cadet Field Leadership Training 1-6 Eight-week program of instruction conducted by the U.S. Military Academy to develop leadership skills of officer candidates. Seven weeks of the course are held at Fort point with one week at Fort Knox, KY, for Mounted Maneuver Training. To be taken Pass/Fail only. Prereq: M L 202.

M L 301 Advanced Leadership I 3(2,2) Study of leadership focused on decision making, planning, communicating, and executing. Addresses motivational techniques, the role of a leader, and performance assessment. Provides students with leadership management tools and methodology. Students are responsible for training, developing, and mentoring Basic Course students. Students apply learned techniques in leadership laboratory. Prereq: M L 202 or 210.

M L 302 Advanced Leadership II 3(2,2) Continuation of leadership study focusing on collective skills training, tactics, and small group instruction. Synthesizes various components of training, leadership, and team-building learned during the Basic Course and M L 301. Final step in students' progression prior to the National Advanced Leadership Camp.

M L 401 Organizational Leadership I 3(2,2) Preparation for leadership study in preparation for commissioning as an Army officer. Students continue exercising leadership and management skills as senior cadet leaders. Leadership instruction focuses on coordinating activities with staffs, communicating effectively, counseling and mentoring subordinates, training management, and ethical leadership. Prereq: M L 302, National Advanced Leadership Camp.

M L 402 Organizational Leadership II 3(2,2) Continuation of M L 401. Focuses on the continued study of moral, ethical, and legal issues faced by leaders. Includes instruction in administrative and logistical management. Requires students to apply their knowledge individually and collectively to solve problems and improve the organization. Prereq: M L 401.

MUSIC


MUSIC 101 Beginning Class Piano I 1(0,2) Introduction to basic keyboard skills including solo and ensemble repertoire, technique, applied keyboard theory, and performance. Applied music fee is assessed. Prereq: Consent of instructor.
MUSIC 102 Beginning Class Piano II 1(0,2) Continued work on keyboard skills, applied keyboard theory, solo and ensemble repertoire, and performance. Applied music fee is assessed. Prereq: MUSIC 101 or consent of instructor.

MUSIC 111 Beginning Class Guitar 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. Prereq: 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. Prereq: Consent of instructor.

MUSIC 131 Beginning Instrumental Class I 1(0,2) Introduction to basic instrumental skills in a class setting, including proper playing position, tone production, intonation, and ensemble playing. Includes brief history and usage of the given instruments. 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 will be assessed. Prereq: 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. Prereq: 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. Prereq: MUSIC 151.

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. Prereq: Performing Arts major (Music Concentration) and consent of instructor, based upon 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. Prereq: MUSIC 153, consent of instructor.

MUSIC 180 Introduction to Music Technology 3(2,3) [C.2] Introduction to music notation, sequencing, digital audio, sound reinforcement, analog and digital recording, and other current music technologies. Prereq: Performing Arts major or consent of instructor

MUSIC 205 Music Theory I 3(2,2) Terminology and notation of traditional music are reviewed, and the techniques of sight-singing and melodic dictation are practiced. Harmonic practices are studied, relating to the principal diatonic triads in all inversions. Prereq: Consent of instructor, based upon musical literacy.

MUSIC 206 Music Theory II 3(2,2) Continuation of MUSIC 205 with emphasis on diatonic triads and seventh chords in all inversions, non-chord tones, and basic elements of musical form. Practice in sight singing, melodic dictation, and harmonic dictation is included. Prereq: MUSIC 205.

MUSIC 210, H210 Music Appreciation: Music in the Western World 3(3,0) Deepens students' appreciation of their 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. Prereq: 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. Prereq: MUSIC 251, consent of instructor.

MUSIC 253 Applied Music for Majors 1(0,1) Continuation of MUSIC 154. May be repeated for credit on other performance media with departmental approval. Jury required. Applied music fee is assessed. Prereq: MUSIC 154, consent of instructor.

MUSIC 279 Music Laboratory 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. Prereq: Consent of instructor.

MUSIC 301 Survey of Music History 3(3,0) Comprehensive survey of the Western art music tradition from the Middle Ages to the present. Prereq: 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 the use of the keyboard. Prereq: By audition.

MUSIC 322 Principles of Piano Performance II 3(3,0) Continuation of MUSIC 321. Prereq: 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 and accompany choral groups and/or applied music students. Prereq: Consent of instructor.

MUSIC 325 GU Carillonneurs 1(0,2) Group study in playing the 47-bell University carillon. One two-hour meeting each week for which a minimum of two hours of individual practice is required. Participation in a recital is required. Prereq: Musical keyboard experience, consent of the 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. Enrollment in simultaneous sections is allowed. Prereq: 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 enrollment in multiple sections is allowed. Prereq: Consent of director.

MUSIC 332 Woodwind Quintet 1(0,3) Ensembles devoted to the study of woodwind chamber music. One one-hour class meeting each week, for which a minimum of two hours of ensemble practice is required. Prereq: By audition only; concurrent enrollment in MUSIC 362.

MUSIC 333 String Quartet 1(0,3) Ensembles devoted to the study of string quartet repertoire. Two 90-minute meetings each week for which a minimum of two hours of practice is required. Prereq: By audition only; coreq: MUSIC 369, Applied Music.

MUSIC 334 Flute Choir 1(0,3) Ensembles: study of flute ensemble literature. One 60-minute meeting each week for which a minimum of two hours of practice is required. Prereq: 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. Prereq: Consent of director.
MUSIC 341 Men’s Breakout Ensemble (1,0,2) Smaller ensembles: study of a cappella/popular music on an advanced level. Coreq: MUSIC 370 or 371 or consent of instructor.

MUSIC 342 Women’s Breakout Ensemble (1,0,2) Smaller ensembles: study of women’s a cappella popular vocal music on an advanced level. Enrollment is limited, and priority will be given to students who 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) Smaller ensembles: study of male a cappella/popular, barbershop, and nostalgic 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, 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 differing performance media. Applied music fee is assessed. Prereq: 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 for credit with departmental approval of differing performance media. Applied music fee is assessed. Prereq: 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 within departmental approval. Jury is required. Applied music fee is assessed. Prereq: 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. Juried half-recital performance is required. Applied music fee is assessed. Prereq: 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. Prereq: 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. Prereq: 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. Prereq: 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. Prereq: 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. Prereq: 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. Prereq: 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. Prereq: 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. Prereq: 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 in addition to the minimum rehearsal time. Prereq: Consent of director.

MUSIC 398 Special Topics in Music 3(0,0) Consideration of select areas of study in music not addressed by other music courses. May be repeated once for credit. Prereq: 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 musical 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.

This course may be repeated with a maximum of 16 hours of ensemble credit allowable toward a degree.

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.

NURSING


NURS 140 Computer Applications in Health Care 3(3,0) [C-3] Introduction to the application of computers 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 300 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 Nursing of Adults 7(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. Preq: NURS 304, 310, 312, 340. Preq or Coreq: NURS 320.

NURS 304 Pathophysiology for Health-Care Professionals 3(3,0) Focuses on disease mechanisms and recognition of the manifestations of these mechanisms in body systems. Discussion also includes pharmacologic and mechanical interventions commonly associated with specific disease processes and application to patient-care situations. Preq: BIOSC 223.

NURS 305 Psychosocial Nursing 3(3,0) Lifespan approach to examine psychosocial, developmental, family, and cultural factors that influence individuals from diverse populations and their families in the promotion, maintenance, and restoration of health. The use of the nursing process, critical thinking, therapeutic communication, and psychosocial nursing interventions is explored. Preq: Junior standing in Nursing.

NURS 307 Family Nursing in the Community 5(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 context of the community. Emphasis is on strategies to assist individuals in achieving or maintaining wellness in the family, home, and community environment. Preq: 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. Preq: NURS 310, 312, 320. Preq 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. Preq: All required non-nursing courses and electives.

NURS 313 Health Assessment Through the Lifespan 4(3,2) Expands on RNs' knowledge of health assessment. Focuses on physical and psychosocial assessment for the well client throughout the lifespan. Interviewing techniques are included. Preq: 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. Preq: PSYCH 201, SOC 201, or consent of instructor.

NURS 320, 330 Professionalism in Nursing 2(2,0) [W,1] Application of critical thinking skills in the professional nursing role 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. Preq: 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. Preq: NURS 310, 312, PSYCH 201, SOC 201. Preq or Coreq: NURS 304, 340.

NURS 330, 332 Research in Nursing 3(3,0) [W,1] Introduction to conceptual frameworks, models, and theories related to nursing. Analysis of research in nursing and related disciplines. Ethical, moral, and legal issues are discussed in relation to nursing research. Preq: 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. Preq: All required non-nursing courses and electives.

NURS (PHIL) 350 Technology and Philosophy in Nursing 3(3,0) Analysis of the influence of the increasing application of scientific technology to health-care delivery and concomitant ethical issues. Preq: 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. Preq: All required 300-level nursing courses.

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. Preq: All required 300-level nursing courses.

NURS 403 Complex Nursing of Adults 5(3,4) Focuses on the biological, psychological, philosophical, and socio-cultural influences on complex health problems related to acute and chronic conditions. Emphasizes the concepts of circulation, oxygenation, homeostasis, and compensation in acutely ill adults. Preq: NURS 401, 411, 412.

NURS 405, 440 Leadership and Management in Nursing 3(2,2) [W,1] 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. Preq: NURS 401, 411, 412, or admission to RN/BS program.

NURS 406 Issues in Professionalism 3(3,0) [W,1] 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. Preq: 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. Licensure preparation, techniques to maintain 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. Preq: 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. Emphasis is on biological, pathophysiological, psychological, and socio-cultural 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. Preq: All required 300-level Nursing courses.

NURS 412 Nursing Care of Women and Their Families 5(3,4) Emphasis is on biological, psychological, and socio-cultural concepts. Identification of appropriate nursing strategies that enhance individual capacity to achieve or maintain wellness in the family, home, community, and hospital environment. Preq: 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. Preq: 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. Preq: 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. Preq: Senior Honors standing, NURS H403, 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. Preq: Completion of at least one adult health and one pathophysiology course or consent of instructor.

NURS 499 Independent Study 1-4(1-4,0-9) 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. Preq: 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 NUTR 401.

NUTR 210 Nutrition and Physical Activity 3(3,0)
Topics include role of carbohydrates, fats, and proteins in 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. Prq: BIOL 102 or equivalent.

NUTR 401, H401, 601 Fundamentals of Nutrition 3(3,0)
Biochemical and physiological fundamentals of nutrition applicable to domestic animals and man. Digestive processes and absorption and metabolism of carbohydrates, lipids, proteins, water, minerals, and vitamins are considered. Energy metabolism and comparative anatomy and physiology of digestive systems are discussed. Prq: BIOL 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. Prq: Senior standing or consent of instructor.

NUTR 421 Special Problems in Nutrition 1-4 (0-3,12)
Independent research investigation in nutrition. Special emphasis is on developing a 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. Prq: 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, gastrointestinal disorders, metabolic and renal disorders. Prq: BIOSC 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, muscularkeletal, and neoplastic disorders; consideration of sociocultural and ethnic aspects of food consumption and alternative nutrition therapies. Prq: BIOSC 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. Prq: NUTR 451 or equivalent or consent of instructor.

NUTR 451, H451, 651 Human Nutrition 3(3,0)
Essentials of nutrition and principles of nutritional deficiency conditions. Factors affecting adequacy of dietary intake, methods of determining nutritional status, development of nutrition standards, and recent advances in human nutrition. Prq: BIOC 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. Prq: NUTR 451 and BIOC 305 or 423 or 406 or consent of instructor.

PACKAGING SCIENCE

Professors: J. H. Marcondes, R. L. Thomas, Chair; P. J. Vergano, Associate Professors: D. K. Cooksey, R. M. Kimmel, Assistant Professors: H. P. Barr, T. G. Wiegand, W. S. Whiteside; Adjunct Professors: R. C. Cooksey; Adjunct Associate Professors: H. J. Park, J. J. Song; Adjunct Instructor: R. R. Peruca; Adjunct Lecturers: L. R. Byrne, R. J. Giangregorio

PKGSC 101 Packaging Orientation 1(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 consumer, manufacturer, and society as a whole. Prq: PKGSC 101 or consent of instructor.

PKGSC 202 Packaging Materials and Manufacturing 4(3,3) Detailed study of packaging materials including glass, metal, metal foils and sheets, wood, paper, cardboard, plastics, composites, adhesives, coatings, cushioning media; their functional properties in packaging application; laminating and combining of different packaging materials. Prq: PKGSC 102 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. Prq: 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. Prq: PKGSC 204 (or concurrent enrollment).

PKGSC 366, H368 Packaging and Society 3(3,0) Study of the role of packaging in modern-day society. Responsibilities of the packager to protect people and the environment. Packaging guidelines recommended by civilian and government agencies. Prq: 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. Prq: 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, TAPPI) of determining these properties. Evaluation of functional properties of packages including shock and vibration isolation. Prq: PHYS 207, PKGSC 204, or consent of instructor.

PKGSC (FD SC) 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 3(2,3) 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. Prq: PKGSC 204, 206; CH 201 or 223; PHYS 207; or consent of instructor.

PKGSC 420, 620 Package Design and Development 3(3,0) Relationship between packaging and the marketing of consumer goods. Study of various principles and methods practiced in developing packages, methods used to coordinate package development activities including interfacing with product development, manufacturing, marketing, and purchasing. Prq: PHYS 207, PKGSC 404, or consent of instructor.

PKGSC 421 Special Problems in Packaging Science 1-4(0,3-12) Independent research investigations in packaging science related to researching 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. Prq: Consent of instructor.

PKGSC 422 Selected Topics in Packaging Science 1-3(1-3,0) 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. Prq: Consent of instructor.

PKGSC 430, 630 Converting for Flexible Packaging 3(2,3) Study of materials, methods, processes, and equipment used in converting web materials for flexible packaging. Laboratory provides hands-on experience preparing and operating pilot-scale converting equipment. Prq: PKGSC 416 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. Prq: 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. Prq: PKGSC 404 or consent of instructor.
PKSC 464, H464, 664 Food Packaging Systems 3(0,3) Characteristics and application of various materials and systems used in the packaging of foods. Engineering properties of the materials and methods used to measure properties are emphasized. Consideration is given to packaging systems for specific food applications. Prereq: Consent of instructor.

PKSC 466, 666 Food Packaging Systems Laboratory 1(0,3) Laboratory and field exercises on food packaging operations and packaging materials. Methods to evaluate the physical and chemical properties of packaging materials are emphasized. Prereq: Consent of instructor.

PKSC 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. Emphasis is on the relationship between structure, processing, and properties. Prereq: PKSC 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. Overview of 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(0,3) 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. Prereq: PRTM 101.

PRTM 206 Practice 1 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 Practice 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 209 Professional Application of Microcomputers 3(1,4) Basic competencies in and professional applications of the following areas are realized: GUL, word processing, databases, spreadsheets, graphs, 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 socio-economic 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) Community recreation is examined conceptually to include the history and structure of public and private non-profit recreation agencies with an emphasis on programs and services, career opportunities, funding mechanisms, the role of government, and current trends and issues impacting the 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 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 behavior, resources, and programming in public and private organizations which serve the public. 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 3(3,0) rotates on safe services, facilities, and activities in the parks, recreation, and tourism domain are studied through the application of German 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) A study of planning and operations of facilities. Design, planning, financing, construction, 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 recreation; team development, 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 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 profession and the various 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 Tourist 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. Studies examine the strategies used in developing markets. Prereq.: 2.0 cumulative grade-point ratio.

PRTM 349 Survey of Tourism Sites I(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 390 Independent Study in Parks, Recreation, and Tourism Management 1-3(1-3,0) Comprehensive studies and investigation of special 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 2-3(2-3,0) In-depth examination of developing 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 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(1,0) Preparation for field training experience including topics such as resume development, interviewing techniques, internship, agency selection, 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 6(0,18) 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 research design, the application of descriptive statistics to research design, 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 proposal 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 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 process 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 how tours of different types and scale are planned, organized, marketed, and operated. Prereq.: PRTM 342, 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.

PRTM 453 Sports Information and Event Management 3(3,0) Introduction to basic techniques, tools, and procedures associated with sports information and event management activities. Focuses on the application of sports information and event management activities building upon knowledge from personal interviews, selected readings, event management brochures and field experience. Prereq: PRTM 254, 2.0 cumulative grade-point ratio, consent of instructor.

PRTM 454 Trends in Sport Management 3(3,0) Examination of trends in the sport management area that allows PRTM majors to obtain an updated knowledge base of the field. Students are able to relate their academic studies to the current trends, problems, and management strategies confronting and being used within the sport management industry. Prereq: PRTM 254, 2.0 cumulative grade-point ratio, consent of instructor.

PRTM 474, H474 Advanced Recreation Resources Management 3(3,0) Advanced topics in recreation resource management focusing on management strategies and techniques for addressing common resource and social problems in recreation resource management. Case studies and problem analysis are emphasized. Prereq: Senior standing, 2.0 cumulative grade-point ratio.

PRTM 483 Golf Club Management and Operations 3(0,9) Focuses on activities related to merchandising, purchasing and selling, inventory management, vendor selection, pricing strategies, strategies for monitoring sales and inventory related to financial control and customer service. Students are exposed to the responsibilities of a golf professional at a full-service golf club facility. Prereq: Concurrent enrollment CO-OP 104, 105.

PRTM 490 Senior Independent Study 1-3(1-3,0) In cooperation with and under supervision of a faculty member, students develop and execute a field study or community project. May be repeated twice for a maximum of three credits. Prereq: Senior standing in Parks, Recreation, and Tourism Management or consent of instructor.

PERFORMING ARTS


PA 101 Introduction to Performing Arts 3(2,3) Overview of performing arts including performance, careers, technology, production, management, community outreach, safety, sales, and marketing. Prereq: Performing Arts major.

PA 201 Performing Arts Seminar I 1(0,3) Study of selected performing arts topics. Includes seminars and masterclasses with faculty and visiting artists and concert and theater attendance and evaluation. Emphasis is placed on written communication skills. Prereq: PA 101, Sophomore standing.

PA 279 Performing Arts Laboratory 1(0,3) Practical work on performing arts presentations including backstage technical work, multimedia support, and arts management. May be repeated for a maximum of four credits. Prereq: PA 101.

PA 301 Performing Arts Seminar II 1(0,3) Continuation of PA 201 with added focus on critical and ethical analysis of performing arts. Emphasis is placed on oral communication skills. Prereq: PA 201, Junior standing.

PA 399 Internship 1-3(0,9) Provides performing arts majors an opportunity to apply technical, managerial, and artistic concepts in a performing arts environment through a preplanned, preappraised, faculty-supervised internships. Minimum of 45 hours of work per credit hour. May be repeated for a maximum of six credits. To be taken Pass/Fail only. Prereq: PA 279 and consent of Internship Program Coordinator.

PA 401 Senior Project Research I 1(0,3) Performing Arts students research a substantial project for the community. Interdisciplinary performing arts group generates a proposal for PA 402. May be repeated for a maximum of two credits. Prereq: PA 301, Senior standing.

PA 402 Senior Project 3(0,9) Capstone course for Performing Arts majors. Preparation, execution, and assessment of a substantial group performing arts project for the community. Students, with faculty guidance, manage all aspects of the project. Prereq: PA 401 with a B or better, Senior standing.

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.). Question is pursued throughout the semester with active student involvement. Questions may vary from semester to semester.

PHIL 201 Responsibilities in Leadership 3(3,0) Exploration of the responsibilities leaders have to those who are being led, to those on whose behalf they are leading, to those affected by leadership decisions and actions. Focuses on the relationship between responsibility and authority and the role of judgment in 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. Topics include correlation and confirmation, natural laws, natural kinds, scientific explanation, causal inference, and experimental methods.

PHIL 303 Philosophy of Religion 3(3,0) Critical consideration 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 origins 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, Confucianism, 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 contrasts and convergences in philosophical approaches. Topics may vary.

PHIL 315 Ancient Philosophy 3(3,0) Origins and development of rationalism 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 with emphasis on selected works of philosophers such as Kant, Hegel, Marx, Nietzsche, and Kierkegaard.

PHIL 318 Twentieth-Century Philosophy 3(3,0) Study of the dominant movements in Western philosophy today, particularly existentialism and analytical philosophy. The object is to acquire sufficient background for reading current philosophical or philosophically-influenced literature.

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 particular 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 323 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, and 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 determination 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) Explanation 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 dealings with the rest of nature and of how they relate to ethics in general. Representative topics 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 (NURS) 350 Technology and Philosophy in Nursing 3(3,0) See NURS 350.

PHIL 355 Philosophy of Mind and Cognitive Science 3(3,0) Critical examination of philosophical and scientific theories of mental phenomena and of the relationship between mental and material phenomena. Theories of mind-body dualism, Monism, Functionalism, Eliminative and Reductive Materialism, Connectionism, and the status of folk psychology versus cognitive neuroscience are studied.

PHIL 360 Symbolic Logic 3(3,0) Introduction to the basic concepts of modern symbolic logic, including the symbolism of statements and arguments and the techniques of formal proof.

PHIL 370 Philosophy of War 3(3,0) Examines war from both ethical and strategic perspectives: the nature of a just war, the aims of war, and the kinds of general strategies appropriate for achieving those aims.

PHIL 375 Minds and Machines 3(3,0) Examines controversial questions in artificial intelligence and the Computational Theory of Mind. Topics: "Can machines think?" "What's involved in being able to think?" "Can machines reason, understand, be conscious, be self-aware, learn, be creative, have emotions, and use natural language?" Focus is on manmade computers and the mind as computer.

PHIL (REL) 393 Science and Religion 3(3,0) See REL 393.

PHIL 401, 601 Studies in the History of Philosophy 3(3,0) In-depth study of a selected philosopher, philosophical school, or movement. Topics vary. With departmental consent, may be repeated once for credit. Current topics and course descriptions are available in the department's course offering brochure. Prerq: Consent of instructor.

PHIL 402, 602 Topics in Philosophy 3(3,0) Thorough examination of a particular philosophical topic, issue, or problem. Topics vary. May be repeated once for credit with departmental consent. Current topics and course descriptions are available in the department's course offering brochure. Prerq: Consent of instructor.

PHIL 406, 606 Continental Philosophy for Architects 3(3,0) Examines contemporary Continental philosophy over the course of the 20th century with the goal of offering the proper theoretical background to architecture students who use such theory in their studies and design work.

PHIL 425, 625 Philosophy of Psychology 3(3,0) Detailed examination of psychology as an autonomous science. Issues include explanation in psychology and cognitive neuroscience, psychology naturalized as a "special science" comparable to biology and geology, evolutionary psychology, philosophy and psychopathology, and moral issues in psychology. Prerq: Nine hours of psychology or consent of instructor.

PHIL (A A H) 433, 633 Issues in Contemporary Art and Philosophy 3(3,0) Examines the intersections between recent developments in art and those in philosophy and critical theory. Course content varies, for example, Postmodernism in Art and Philosophy, Themes of Resistance in Contemporary Culture.

PHIL 485, 685 Topics in Philosophy of Biology 3(3,0) Detailed analysis of a selected topic in philosophy of biology/theoretical biology. Topics may include the levels of selection debate, sociobiology, genetic explanation and genetic causation, the species question, and the history and sociology of biology. Prerq: Eight credit hours of biology or consent of instructor.

PHIL 499 Independent Study 1-3(1-3,0) Course of study designed by the student in consultation with a faculty member who agrees to provide guidance, discussion, and evaluation of the project. Student must confer with the faculty member prior to registration. May be repeated for a maximum of six credits. Prerq: Consent of instructor.

PHYSICAL SCIENCE

PHIL SC 107 Introduction to Earth Science 4(3,3) Survey of topics in geology, meteorology, astronomy, and oceanography emphasizing comprehension and practical application of earth science concepts to experiments and activities appropriate for the elementary school classroom. Enrollment priority will be given to Early Childhood and Elementary Education majors.

PHIL SC 108 Introduction to Physical Science 4(3,3) Survey of topics in chemistry and physics emphasizing comprehension and practical application of physical science concepts to experiments and activities appropriate for the elementary school classroom. Enrollment priority will be given to Early Childhood and Elementary Education majors.
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, relativativity, 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. Includes vector calculus, laws of motion, conservation principles, rotational motion, oscillations, and gravitation. Credit for a degree will be given for only one of PHYS 122, 200, or 207. Coreq: MTHSC 108.

PHYS 124 Physics Laboratory I
1(0,3) Introduction to physics experimentation with emphasis on mechanical systems, including oscillatory motion and resonance. Computers are used in the experimental measurements 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 122 but may be substituted for PHYS 207, only with the approval of the Department of Physics and Astronomy. Credit for a degree will be given for only one of PHYS 122, 200, or 207. Coreq: MTHSC 105 or equivalent.

PHYS 207 General Physics I
4(3,2) Introduc- tor course for students who are not majoring in physical science or engineering. Covers such topics as mechanics, waves, fluids, and heat. Credit for a degree will be given for only one of PHYS 122, 200, or 207. Coreq: Course that includes algebra and trigonometry.

PHYS 208 General Physics II
4(3,2) 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. Coreq: PHYS 207.

PHYS 221, H221 Physics with Calculus II
3(3,0) Continuation of PHYS 122. 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 208 or 221. Coreq: PHYS 208.

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 221.

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, physics of hearing, etc.

PHYS 290 Physics Research
1-3(0,3-9) 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 student's ability to carry out research. May be repeated for a maximum of six credits. Coreq: 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. Coreq: 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. Coreq: PHYS 222 or consent of instructor.

PHYS 321, H321 Mechanics I
3(3,0) Statics, motions of particles and rigid bodies, vibratory motion, gravitation, properties of matter, flow of fluids. Coreq: PHYS 221.

PHYS 322, H322 Mechanics II
3(3,0) Dynamics of particles and rigid bodies, Lagrangian and Hamiltonian formulations, vibrations of strings, wave propagation. Coreq: 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 (Stern-Gerlach, Zee) 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. Coreq: PHYS 222, MTHSC 206, or consent of instructor.

PHYS 401, H401 Senior Thesis
1-3(1-3) Semi-technical, experimental, or computational research project performed under the direction of a faculty member. Fields available include astrophysics, astrophysics, atmospheric physics, biophysics, high energy physics, relativistic, statistical physics, and statistical mechanics. May be repeated for a maximum of six credits. Coreq: 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. Coreq: MTHSC 206, PHYS 221, or consent of instructor.

PHYS 420, 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. Coreq: 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. Coreq: PHYS 221.

PHYS 441, H441, 641 Electromagnetics I
3(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. Coreq: 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, electromagnetics, special theory of relativity, and plasma physics. Coreq: PHYS 441 or consent of instructor.

PHYS 446, H446, 646 Solid State Physics
3(3,0) Introductory treatment of the crystal structure of solids and the properties of solids which depend on crystal structure, free electron model of metals, band theory of solids, Brillouin zones, crystal-line defects, and diffusion. Coreq: PHYS 222 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
3(3,0) Discussion of solution of the Schroedinger equation for free particles, the hydrogen atom, and the harmonic oscillator. Coreq: PHYS 322 and 441, or consent of instructor.
POLITICAL SCIENCE

Professors: W. Lasser, Interim Chair, M. A. Morris, B. W. Ramson, S. H. Waris, J. D. Woodard; Associate Professors: X. Hu, L. R. Olson; Assistant Professors: M. D. Groston, R. W. Smith, A. L. Warner; Visiting Instructors: J. A. Hetherington, V. Matic, J. R. Willand-Pillard

PO SC 101, H101 American National Government 3(3,0) Introduction to American national government and politics examining topics such as the Constitution, federalism, political institutions, political behavior, and political participation. Preq: Six hours of physics beyond PHYS 222 or consent of instructor.

PO SC 102, H102 Introduction to International Relations 3(3,0) Overview of both theory and practice in contemporary global politics. Topics include the structure of and primary actors in the international system; reasons conflict occurs; and roles of international institutions, law, and policy. Preq: PO SC 101, or consent of instructor.

PO SC 104, H104 Introduction to Comparative Politics 3(3,0) Introduction to the study of comparative politics in the post-Cold War era, with emphasis on theories and applications. Topics include democratic and nondemocratic systems, ideology, political culture, party systems, and legislative, executive, and judicial structures. Preq: Restricted to Political Science majors.

PO SC 301 Foundations of Political Science 3(3,0) Introduction to the study of political science, including an examination of key concepts in the discipline, methods and approaches to research in various subfields, and skills and techniques of importance to the political science student. Preq: Restricted to political science majors.

PO SC 302 State and Local Government 3(3,0) Introduction to American state and local governments, including an examination of nature and scope of non-national governments and their interaction with the U.S. federal system. Emphasis is on structural features, functions, and policies of non-national governments.

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. Preq: 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. Preq: 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. Preq: Consent of instructor.

PO SC 321 Public Administration 3(3,0) Introduction to public administration including the elements of organization, personnel and financial management, administrative law, and administrative responsibility. Preq: PO SC 101, Junior standing, or consent of instructor.
PO SC 381 African American Politics 3(3,0) Examination of African American political thought, interests and agenda setting, and dynamics of African Americans’ 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, social, economic, 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) 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 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 Colhoun 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 Colhoun 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 relationship 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 421, 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 427, 627 Public Management 3(3,0) Examination of emerging management problems and issues facing federal, state, and local government and the application of management principles, practices, and techniques of public administration. Prereq: PO SC 101, Junior standing, or consent of instructor.

PO SC 428, 628 National Security Policy 3(3,0) National security threats and policy decision making. Issues covered include weapons of mass destruction, terrorism, organized crime, narcotics, arms control, intelligence, and homeland security. Students deliberate and assess threat priorities and crisis management. Prereq: PO SC 102 or 104, Junior standing, or consent of instructor.

PO SC 429, 629 Global Security Threats 3(3,0) Analysis, assessment, and management of the principal threats facing global security today. Topics include rogue nations, regional superpowers, alliances, organized crime, illegal weapons proliferation, and corruption. Emphasis is on the strategies available to the international community for dealing with these threats. Prereq: PO SC 102 or 104, Junior standing, or consent of instructor.

PO SC 430 Public Policy Evaluation 3(3,0) Discussion of the role of policy analysis in government. Applications of analytical and computer tools to substantive policy areas such as transportation, economic/community development, education, poverty, and health. Students focus on assessing policy from a set of options based on analytic criteria as well as developing policy alternatives. Prereq: MTHSC 301 or PO SC 341 or equivalent.

PO SC 432, 632 American Constitutional Law: Structures of Government 3(3,0) Examination and analysis of Supreme Court decisions and other legal materials in the areas of national power, federalism, the separation of powers, and the role of the judiciary. Prereq: Junior standing or consent of instructor.

PO SC 433, 633 American Constitutional Law: Rights and Liberties 3(3,0) Examination and analysis of Supreme Court decisions and other legal materials in the areas of civil rights and civil liberties, with an emphasis on freedom of speech, freedom of religion, equal protection of the laws, and privacy rights. Prereq: Junior standing or consent of instructor.

PO SC 442, 642 Political Parties and Elections 3(3,0) Study of the distinctive features of the American two-party system with emphasis on presidential elections. Parties are examined as formal organizations, coalitions of voters and interest groups, and the role of political parties. Prereq: PO SC 101, Junior standing, or consent of instructor.

PO SC 450 Political Theory 3(3,0) Moral concepts central to political life, including equality, freedom, community, and individualism. Emphasis is placed on the ideologies that express these concepts, including democracy, liberalism, conservatism, socialism, and fascism. Philosophers covered range from Plato to Foucault. Prereq: PO SC 101 or 102 or 104, 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 the 1770s. 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 such as war and Reconstruction. 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, multilateral 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 blocks 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 international 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 analytical studies 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 nationalist violence, 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 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 multifunctional compounds of the types encountered in the textile industry. Prereq: 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 reaction mechanisms. Prereq: PTC 303.

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 3(2,3) Development of modern textile printing systems is studied. In addition, colloidal requirements of colorants, thickener compositions, rheology of printing pastes, and various physical properties necessary for a successful printing system in a modern plant are examined. Prereq: 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 Science and Engineering 3(3,0) Chemistry of monomers and polymers and the chemical and physical properties of polymers are discussed emphasizing fiber forming, synthetic polymers. Includes molecular characterization, structure, morphology, and mechanical properties as they relate to the design of polymer systems for end uses in textiles, geotextiles, plastics, and fiber-reinforced composite materials. Prereq: CH 201 and 330 or 224, PTC 304, or consent of instructor.

PTC 416, 616 Chemical Preparation of Textiles 3(2,3) Chemicals used in the preparation of fabric for dyeing and finishing. Oxidizing and reducing agents and their control and effect on various fibers. Collodial and surface active properties of various compounds and the fundamental factors influencing these properties.

PTC 417 Polymer and Fiber Laboratory 1(0,3) High molecular weight polymers are prepared from monomers, and their chemical and physical properties are measured as functions of critical end use parameters using instrumental and physical methods. Coreq: PTC 415.

PTC 457, H457, 657 Dyeing and Finishing I 3(3,0) Understanding of chemical, physical, and mechanical principles underlying the application of dyes 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.

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 adsorption of dyes and dyeing rates and the general thermodynamic relationships applicable to dyeing operations. Fiber properties such as dyeability, dye site densities, relative amorphous area available are included.

PTC 459 Dyeing and Finishing Laboratory I 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 Laboratory II 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.

PORT 102 Elementary Portuguese 4(3,1) Continuation of PORT 101. Prereq: 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. Prereq: PORT 102 or consent of instructor.

PORT 202 Intermediate Portuguese 3(3,0) Continuation of PORT 201. Prereq: PORT 201 or consent of instructor.

PSYCHOLOGY


PSYCH 201, H201 Introduction to Psychology 3(3,0) Introduction to the study of behavior. Analysis of the biological bases of behavior, learning, thinking, motivation, perception, human development, social behavior, and the application of basic principles to more complex phenomena such as education, personal adjustment, and interpersonal relations.

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 300 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 308 Women and Psychology 3(3,0) Explores the wide variety of psychological issues that concern women. Empirical research on topics such as motherhood, sex differentiation, motivation, and psychological disorders is emphasized. Prereq: PSYCH 201 with a C or better or consent of instructor.

PSYCH 309 Introductory Experimental Psychology 4(3,2) Introduction to the analysis of data from experimental and correlational research in psychology. Emphasis is placed on the applications and logical nature of statistical reasoning. Laboratory periods stress the techniques of data analysis using microcomputers. Prereq: 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. Prereq: 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. Prereq: 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. Prereq: PSYCH 201 with a C or better or consent of instructor.

PSYCH 325 Physiological Psychology Laboratory 10(3,2) 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 motives. Prereq: 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. Prereq: PSYCH 201 with a C or better or consent of instructor.

PSYCH 334 Laboratory in Cognitive Psychology 10(2) Selected experiments and demonstrations are conducted to reveal phenomena related to human perception, memory, reasoning, problem solving, and high-level mental processes. Prereq: 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 345 Adulthood and Aging 3(3,0) Special consideration of the major psychological processes of aging as they relate to individual behavior and adaptation. Includes the influences of aging on the body, learning and psychomotor skills, thinking and intelligence, employment and productivity, personality, and psychopathology. Opportunity for contact with institutionalized and noninstitutionalized elderly persons is provided. Prereq: PSYCH 201 with a C or better or consent of instructor.

PSYCH 352, H352 Social Psychology 3(3,0) Survey course analyzing human social behavior from the perspective of the individual as a participant in social relationships. Major emphasis is on the study of such contemporary social processes as attitude formation and change, interpersonal relations, conformity, conflict resolution, aggression and violence, social communication, and group phenomena. Prereq: PSYCH 201 with a C or better or consent of instructor.

PSYCH 355 Environmental Psychology 3(3,0) Consideration of the influences of the physical environment on human behavior. Topics include perception of and adaptation to the environment, effects of physical design on behavior, and individual reactions to environmental stressors. Prereq: PSYCH 201 with a C or better or consent of instructor.

PSYCH (E L E, PS CO, SOC) 356 Social Science of Entrepreneurship 3(3,0) See SOC 356.

PSYCH 364 Industrial Psychology 3(3,0) Reviews perception of work from the pre-industrial revolution to the present. Comparative approaches to motivation, development, maintenance, and attraction of successful work behaviors are discussed. Topics include the organization's responsibilities to the community, implementing a disease- and accident-free workplace, and the effects of consumerism. Prereq: PSYCH 201 with a C or better or consent of instructor.

PSYCH 368 Organizational Psychology 3(3,0) Analysis of individual behavior for the purpose of investigating problems in organizations and increasing organization effectiveness. Topics include psychological factors affecting communication, decision making, conflict, leadership, work stress, power, and organizational change. Prereq: PSYCH 201 with a C or better or consent of instructor.

PSYCH 369 Leadership in Organizational Settings 3(3,0) Broad survey of theory and research on leadership in formal organizations. A detailed explanation and critical evaluation of major theories (including participative and charismatic leadership) are bridged with helpful remedies and prescriptions for effective leadership in organizations. Prereq: PSYCH 201.

PSYCH 370 Personality 3(3,0) Historical and contemporary views of individual differences in behavior, affect, health, coping, and motivation. Topics such as personality development and structure, personality assessment, cross-cultural issues, and applications of personality psychology are covered. 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 H385 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 H390 Honors Seminar in Psychology 3(3,0) Variable topic 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 415 Systems and Theories of Psychology 3(3,0) Study of the development of psychology particularly during the last 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. Preq: 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 physiopsychological techniques of measurement and sensory and perceptual processes related to vision, hearing, and the other senses. Preq: 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. Preq: 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. Preq: PSYCH 324 or consent of instructor.

PSYCH 435 Human Factors Psychology 3(3,0) Analyses 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. Preq: 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. Preq: PSYCH 201 with a C or better and PSYCH 345, 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, eudemonic, and cross-cultural alternatives to these ideas. Preq: 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. Preq: 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. Preq: 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. Preq: 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. Preq: 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. Preq: 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. Preq: 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. Preq: 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. Preq: 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(4-2,0) Preparation and defense of a research proposal. Proposed project should be empirical, historical, or theoretical in nature. Preq: Junior standing, consent of department chair.

PSYCH H491 Senior Division Honors Research II 2(2-4,0) Completion of the proposed research project resulting in a written thesis. Preq: 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. Preq: 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. Preq: 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. Preq: 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. Preq: 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. Preq: Six credits in psychology, a course in research methods, and consent of the instructor.

READING
Professor: K. S. Headley, Associate Professors: P. J. Dunston, V. G. Ridgeway; Assistant Professor: L. F. Medford; Lecturers: J. M. Roper, N. S. Wilkinson

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. Preq: Admission to the professional level.
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, Voodoo, Santeria, and Candomble.

REL 314 Buddhism in China 3(3,0) Study of Bud- dhism 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 once for credit. Preq: Consent of instructor.

REL 459, H459 Teaching Reading in the Early Grades: K-3 3(3,0) [W, I] 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. Preq: ED EC 336, ED F 301, 302; admission to the professional level. Coreq: ED EC 400 for Early Childhood majors.

REL 460, H460 Teaching Reading in the Inter- mediate Grades: 4-8 3(3,0) Provides Elementary Education majors an understanding of teaching reading in the elementary school setting in grades four through eight. Students investigate general principles of language and literacy development and learn methods for teaching and assessing children's literacy. Preq: ED F 301, 302, 334. Coreq: ED EL 401 (Elementary Education majors), admission to the professional level.

REL 498, H498 Secondary Content Area Reading 3(2,2) Designed for pre-service 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. Preq: Admission to professional level.

RELIGION

Professors: S. E. Crosby, 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, Voodoo, 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 once for credit. Preq: Consent of instructor.

REL 459, H459 Teaching Reading in the Early Grades: K-3 3(3,0) [W, I] 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. Preq: ED EC 336, ED F 301, 302; admission to the professional level. Coreq: ED EC 400 for Early Childhood majors.

REL 460, H460 Teaching Reading in the Inter- mediate Grades: 4-8 3(3,0) Provides Elementary Education majors an understanding of teaching reading in the elementary school setting in grades four through eight. Students investigate general principles of language and literacy development and learn methods for teaching and assessing children's literacy. Preq: ED F 301, 302, 334. Coreq: ED EL 401 (Elementary Education majors), admission to the professional level.

REL 498, H498 Secondary Content Area Reading 3(2,2) Designed for pre-service 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. Preq: Admission to professional level.

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.

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. Preq: 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. Continuing 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)F Demographic concepts, theory, and research methods for vital statistics, migration, and population distribution and projections. Collection and processing of demographic data and organization of demographic data systems. Preq: ANTH 201 or SOC 201 or R S 301.

R S (SOC) 495 Field Experience 3(1,8) See SOC 495.

R S (SOC) 498 Independent Study 3(1,6) See SOC 498.
SECUNDARY EDUCATION

EDSEC 412 Directed Student Teaching in Secondary School Subjects 12(1,33) 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 selected 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. Prereg: 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)F Development of instructional practices and materials appropriate for secondary English; familiarization with curriculum materials; includes field experiences in local schools in preparation for student teaching. Prereg: 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)F Development of instructional practices and materials appropriate for secondary modern languages; familiarization with curriculum materials; includes field experiences in local schools. Prereg: 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)F Development of instructional practices appropriate for secondary mathematics; familiarization with curriculum materials; planning, and implementation of lessons; includes field experiences in local schools. Prereg: 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)F Development of instructional practices and materials for teaching secondary science school (biological, earth, and physical sciences); familiarization with secondary science curriculum materials; includes field experiences in local schools. Prereg: 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)F Development of instructional practices and materials appropriate for secondary social studies; familiarization with curriculum materials; includes field experiences in local schools in preparation for student teaching. Prereg: 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 studies content knowledge exam, concurrent enrollment in READ 498.

EDSEC 437, 637 Technology in Secondary Mathematics 3(0,2) 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. Prereg: Second semester Junior standing, admission to the professional level.


EDSEC 454 Secondary English Capstone Seminar 3(2,3)S 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. Prereg: EDSEC 424. Coreq: EDSEC 444.


SOCIOLGY


SOC 201, H201 Introduction to Sociology 3(0,0) Sociological perspective: the study of contemporary groups, organizations, and societies in terms of human social behavior, social change, social structure, and social institutions.

SOC 202 Social Problems 3(0,0) 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 (CR D) 235 Introduction to Leadership 3(0,0) 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 (RS) 303, H303 Methods of Social Research 1(0,3) Introduction to methods of research: research design, sampling, measurement, reliability, and validity; the relationship between theory and research. Coordinated laboratory introduces students to computer literacy through research. Required of all Sociology majors. Prereg: CPSC 120, MTHS 201 or 301 or EXST 301, SOC 201.

SOC 310, H310 Marriage and Intimacy 3(0,0) Examination of mate selection, living together, marital relations, family planning, conflict resolution, divorce and remarriage, family life, and singlehood as a lifestyle in the United States. Prereg: SOC 201 or consent of instructor.

SOC 311 The Family 3(0,0) 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, family formation and dissolution, division of labor, intergenerational relationships, family violence, and policy. Analyses of race, class, and gender are incorporated. Prereg: SOC 201 or consent of instructor.

SOC 330 Work and Careers in Society 3(0,0) Introduces changes in the structure of work from pre-industrial to post-industrial periods. Topics include the effects of stratification on career decisions, career paths and implications for life changes, social effects of scientific management of work, unification, globalization, the rise of multinational corporations, and cross-cultural comparisons of management styles. Prereg: SOC 201 or consent of instructor.

SOC 331 Urban Sociology 3(0,0) 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. Prereg: SOC 201.

SOC 350 Self and Society 3(0,0) 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. Prereg: SOC 201.
SOC 351 Collective Behavior 3(3,0) Spontaneous, transitory, and sporadic group behavior: crowds, panics, riots, fads, and social movements. Preq: SOC 201.

SOC (E L E, PO SC, 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. Preq: SOC 201 or (C R 1) 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. Preq: 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. Preq: 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 the interagency relationship with courts and prosecution. Preq: SOC 201.

SOC 391 Sociology of Deviance 3(3,0) Patterns of deviant behavior: subcultures, careers, and lifestyles of deviants; deviance theory and research. Preq: 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. Preq: 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. Preq: 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. Preq: 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. Students who have taken SOCI 395 may not receive credit for SOC 396. Preq: 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. Students who previously have taken SOC 395 may not receive credit for SOC 397. Preq: SOC 201 or consent of instructor.

SOC (R S) 401, 601 Human Ecology 3(3,0) See R S 401.

SOC 404, 604 Sociological Theory 3(3,0) Survey of the development of sociological theory. Required of all Sociology majors. Preq: SOC 201 and Junior standing or consent of instructor.

SOC H408 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. Preq: H303, H310, honors status.

SOC H409 Honors Thesis Research II 3 Research and writing related to the senior honors thesis. Preq: 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 efforts on the outcomes of policy formation, social planning, and implementation. Preq: SOC 201 and Junior standing or consent of instructor.

SOC 430 Sociology of Organizations 3(3,0) Analysis of administrative organizations and voluntary associations; applied analysis of the formal and informal group relations, communications, and effectiveness. Preq: 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. Preq: 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. Preq: 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. Preq: 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; relationships between work and leisure. Preq: 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 sports; emerging social issues in contemporary sports. Preq: SOC 201 and Junior standing or consent of instructor.

SOC (R S) 459, 659 The Community 3(3,0) See R S 459.

SOC 460, 660 Race, Ethnicity, and Class 3(3,0) Investigation of sociological perspectives on race, ethnic relations, and social stratification. Analysis of the impact of social class on minority movements. Not open to students who have taken SOC 431. Preq: SOC 201 and Junior standing 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. Preq: 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. Preq: 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 as sex, race, and class; cross-cultural comparisons; research-based, with applied orientation. Preq: SOC 201, Junior standing.

SOC (R S) 471, H471, 671 Demography 3(3,0) See R S 471.

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. Preq: 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. Not open to students who have taken SOC 383. Preq: 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; definition controversies; social policy and legal considerations; therapeutic approaches for children and their caretakers; child maltreatment and the judicial system. Preq: 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. Preq: 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. Preq: SOC 390 or consent of instructor.

SPAN 221 Accelerated Spanish II 6(6,0) Accelerated intermediate course that may be taken in lieu of SPAN 201 and 202. Through conversation, 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. Preq: SPAN 102, 121, or consent of department chair.

SPAN 299 Foreign Language Drama Laboratory 10(0,3) Participation in foreign language 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 total of three credits. Preq: Consent of instructor directing the play.

SPAN 301 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. Preq: SPAN 202.

SPAN 302 Intermediate Spanish Grammar and Composition 3(3,0) Intensive review of Spanish structure, verbs, adjectives, and vocabulary with an introduction to syntax and stylistics through controlled and free composition. Preq: SPAN 202 or consent of department chair.

SPAN 303 Survey of Spanish Literature 13(3,0) Literary movements, authors, and representative works, discussions. Preq: SPAN 202 or consent of department chair.

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 and confidence in the language laboratory. Preq: 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. Preq: 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. Preq: 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. Preq: 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 and culture practice. May be repeated for a maximum of six credits. Preq: Consent of department chair.

SPAN 401 New Spanish Fiction 3(3,0) Study of selected readings by popular emerging and established authors of Spanish, with emphasis on current literary trends. Readings include, but are not limited to, detective novels, regional fiction, and fiction from marginalized groups in Spain. Preq: SPAN 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 socio-political contexts. Preq: 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 century to the early 20th century. Preq: 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. Preq: Spanish 300-level literature or culture course or consent of department chair.

SPAN 406 Spanish Narrative Fiction 3(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. Preq: Spanish 300-level literature or culture course or consent of department chair.

SPAN 407 Hispanic Film 3(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, film as propaganda, film as "blockbuster," and the cinematic depiction of social, cultural, and historical realities of Hispanic nations. Preq: Spanish 300-level language, literature, or culture course or consent of department chair.

SPAN 409 Comprehensive Writing in Spanish 3(3,0) Study of stylists in addition to grammar review; writing paragraphs, short compositions, and creative papers in Spanish on both fiction and non-fiction topics. Preq: Any 300-level Spanish course or consent of department chair.

SPAN 411 Advanced Spanish Conversation and Composition 3(3,0) Continuation of SPAN 305 with emphasis on greater fluency and sophistication in oral and written expression. Preq: SPAN 305 or consent of department chair.

SPAN 415 Spanish for Health Professionals 3(3,0) Medical concepts and terminology in Spanish; designed for students who plan to work in professions related to public health care. Preq: Six credits in Spanish at the 300-400 level.

SPAN 416 Spanish for International Trade II 3(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. Preq: SPAN 316.

SPAN 417 Professional Communication 3(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. Preq: Spanish 300-level course or consent of department chair.

SPAN 418 Technical Spanish for Health Management Professionals 3(3,0) Technical health communication course in Spanish with emphasis on managerial and business aspects of the international health industry. Preq: SPAN 415 and six additional credits in SPAN at the 300-400 level.

SPAN 419 Health and the Hispanic Community 3(3,0) Study of cultural aspects of health and health services in Hispanic populations. Taught in Spanish. Preq: SPAN 415 and six additional credits in SPAN at the 300-400 level.

SPAN 422 The Contemporary Spanish-American Novel 3(3,0) New trends in the development of the Spanish-American novel from the 1940s to the present. Preq: Spanish 300-level literature course or consent of department chair.

SPAN 435 Contemporary Hispanic Culture 3(3,0) Study of social, political, economic, and artistic manifestations of contemporary Hispanic culture. Preq: Spanish 300-level civilization or culture course or consent of department chair.

SPAN H438 Spanish Honors Research 3(3,0) Individual honors research conducted under direction of the 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. Preq: Junior standing, membership in Calhoun Honors College Program.

SPAN H439 Spanish Honors Thesis 3(3,0) Individual honors research conducted and thesis completed under direction of Language Department faculty member. 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. Preq: Junior standing. Preq: SPAN 438, membership in Calhoun Honors College Program.

SPAN H491 Spanish Narrative Fiction (Honors) 1(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 Program.

SPAN H492 Contemporary Latin American Novel (Honors) 1(1,0) One-hour independent study to allow honors students to pursue supervised research in the literary and cinematographic images of magic realism. Coreq: SPAN 422, membership in Calhoun Honors College Program.

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. Preq: 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 total of six credits, but only if different topics are covered. Preq: Consent of department chair.

SPECIAL EDUCATION
Professor: A. Katayanni; Associate Professors: M. J. Hodge, P. M. Stecker; Assistant Professors: R. W. Buford, P. J. Riccomini, D. Zhang; Lecturer: S. N. Wilson

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. Preq: Minimum grade-point ratio of 2.0.

ED SP 371 Characteristics of the Mildly Handicapped 3(3,0) Surveys the characteristics which distinguish the mildly/moderately handicapped from the more severely handicapped. Preq: Minimum grade-point ratio of 2.0.

ED SP 372 Characteristics and Identification of Individuals with Learning Disabilities 3(3,0) In-depth coverage of characteristics and identification procedures for individuals with learning disabilities. Effective instructional strategies are addressed. Preq: ED SP 370; admission to professional level.

ED SP 373 Characteristics and Identification of Individuals with Mental Retardation 3(3,0) In-depth coverage of characteristics and identification procedures for individuals with mental retardation. Effective instructional strategies are addressed. Preq: ED SP 370; admission to professional level.

ED SP 374 Characteristics and Strategies for Individuals with Emotional/Behavioral Disorders 3(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. Preq: ED SP 370; admission to professional level.

ED SP (PRTM) 414, 614 Recreation and Leisure for Special Populations 3(3,0) See PRTM 414.

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. Required for students seeking certification in critical-need teaching areas. May be repeated for a maximum of 12 credits. To be taken Pass/Fail only. Preq: ED SP 371, 491, 493, 494, 496; application approved by department.

ED SP 468 Early Intervention for Infants and Children with Special Needs 3(3,0) Provides students with a working knowledge of the history of early intervention, legal precedent for providing early intervention services, and effective instructional techniques for working with infants and young children with disabilities and their families. Preq: ED SP 370.
ED SP 469, 669 Characteristics of Individuals with Emotional and Behavioral Disorders 3(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 behavior 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(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. Prereq: 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-focused approach to program planning provides the framework. Prereq: 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. Prereq: 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. Prereq: 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. Prereq: 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. Prereq: 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. Prereq: ED SP 473; completion of student teaching.

ED SP 491 Educational Assessment of Individuals with Disabilities 3(2,2)S Introduction to assessment process (verification) in special education. Includes procedures, forms, and standardized procedures, issues in assessment, psychometric properties of standardized tests, and administration, scoring, and interpretation of selected instruments. Prereq: ED SP 372, 373.

ED SP 492 Mathematics Instruction for Individuals with Mild Disabilities 3(3,0)F Prepares students to develop explicit instruction in mathematics for individuals with mild disabilities. Students learn to systematically assess, analyze, and teach mathematics. Prereq: 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 to foster self-management skills, and develop preventive strategies and classwide systems for managing academic and social behavior. Prereq: 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)F Emphasizes the knowledge and skills necessary for teaching reading to students with mild disabilities. Prereq: 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)S Examines strategies to enhance special education teachers' collaboration with parents, regular educators, public and private agencies. Prereq: ED SP 492, 493, 494, 496; concurrent enrollment in ED SP 416 or 498.

ED SP 496 Special Education Field Experience 3(0,9)F Supervised practical experience prior to Directed Teaching for special education teachers preparing to teach individuals with mild/moderate disabilities. Prereq: 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)F 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. Prereq: ED SP 374, 491; concurrent enrollment in ED SP 492, 493, 494, 496.

ED SP 498 Directed Teaching in Special Education 3(1,3)S 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. Prereq: ED SP 492, 493, 494, 496, 497; concurrent enrollment in ED SP 495.

TECHNOLOGY AND HUMAN RESOURCE DEVELOPMENT

Professors: L. W. Harvis, C. A. Hulse, G. O. Lyvedahl; W. D. Paine; Associate Professors: C. C. Lummel; Assistant Professors: G. E. Evans; C. H. McClellan; Visiting Instructors: M. V. Crenshaw, W. B. Davis

THRD 110 Introduction to Industrial Technology 3(3,0) Examines the philosophy and structure of industrial technology education in the public school system and the philosophy and organization of human resource development in industry. Students are given an overview of the major thrusts in Technology and Human Resource Development and an overview of the principles of technology.

THRD 160 Training Programs in Industry 3(3,0) Introduction and first-hand experience in industry training programs. Emphasis is on observing and participating in actual training situations as well as communications and media usage in industry. Prereq: THRD 110.

THRD 180 Introduction to Technical Drawing and Computer-Aided Drafting 3(1,6) Introduces 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. Prereq: 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. Prereq: THRD 110 or consent of instructor.


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. Prereq: THRD 110 or consent of instructor.
THRD 240 Power Technology I: Production 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. Prereq: 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. Prereq: Junior standing in Early Childhood or Elementary Education or consent of instructor.

THRD (ED F) 315 Integrating Computers into the Classroom 1(0,2) See ED F 315.

THRD 360 Industrial Organizations and Safety 3(3,0) Study of the relationship of training and safety personnel to the kinds of tasks they are asked to perform in industrial situations. Emphasis is on safety knowledge, and on techniques which may be used in industrial safety training.

THRD 370 Motivation and Discipline in Vocational 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 occupational education settings.

THRD 371 Management of Industrial 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 Industrial Cooperative Experience I 6(0,18) SS Full-time work experience in industry. Students are required to register with the instructor on the first day of the summer in which they plan to enroll. Prereq: Vocational-Technical Education concentration 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. Prereq: Consent of instructor.

THRD 413, 613 Contemporary Technological Problems 3(3,0) Provides students with an understanding of the problems and contributions of technology. Examples of these relationships are taken from historical accounts and from analyses of contemporary technological intervention both in industrialized and nonindustrialized countries.

THRD 415, 615 History and Philosophy of Industrial and Vocational Education 3(3,0) Study of industrial and vocational education programs with the intent of developing a sound individual philosophy of industrial and vocational education. General topics covered are history, local, state, and federal legislation, types of vocational-technical programs, professional organizations, manpower utilization, vocational guidance, and training, industry, labor, and school relationships.

THRD 420, 620 Manufacturing Technology I: Materials and Processes 3(2,3) Continuation of THRD 220 with emphasis on materials and processes of manufacturing. Attention is given to specific materials separating, forming, and combining, principles and equipment and on the competitive aspects of manufacturing. Prereq: 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. Prereq: THRD 230.

THRD 440, 640 Power Technology II: Transmission and Control Systems 3(2,3) Continuation of THRD 240. Instruction 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. Prereq: 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 electricity and electronics. Prereq: 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, learning and demonstration planning, written instructional materials development, trainee evaluation, and program training schedules. Prereq: Senior standing in Human Resource Development concentration or consent of instructor.

THRD 465, 665 Conducting and Evaluating Training Programs for Industry 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. Prereq: THRD 160, 460 or consent of instructor.

THRD 468, H468, 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 Industrial Subjects 3(3,0) Effective methods and techniques of teaching industrial subjects. Emphasis is given to class organization, preparation of lesson outlines, and audio-visual aids. Prereq: ED F 335.

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. Prereq: THRD 471 or one year of teaching experience.

THRD 473, 673 Competency Testing in Vocational Subjects 3(3,0) Study of competency testing in vocational 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. Prereq: THRD 371, 471, 2.0 cumulative grade-point ratio.

THRD 478 Internship in Vocational Technical Education 1(0,18) Supervised observation and teaching in cooperation with selected vocational centers, high schools, and technical colleges to provide experience in teaching specified trades and industrial subjects. Prereq: THRD 371, consent of instructor.

THRD 479 Internship in Vocational Technical Education II 6(0,18) Continuation of THRD 478. Prereq: THRD 478, consent of instructor.

THRD (AG ED, ED F) 480, 680 Educational Applications of Microcomputers 3(2,2) [C,3] 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 Industrial Education 3(1,6) Study of the major aspects of architectural drawing, such as plot, floor, and foundation plans; wall sections; and elevations. Prereq: 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 industry personnel and public school students is emphasized. Prereq: 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.
TEXTILE MANAGEMENT

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 structural, physical, 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 special 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. Prereq: 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. Prereq: 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. Prereq: 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. Prereq: Sophomore standing or consent of instructor.

TEXT 333 The Textile Arts 3(2,1) Surveys development of the hand loom from prehistoric times to the present. Studio work in the elements of hand-woven fabrics, their design, analysis, and production of four-harness counterbalance and jack looms. Prereq: 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 fibrous material properties and processing dynamics to the fiber assemblies produced is studied. Prereq: TEXT 201.

TEXT 411 Fabric Development III 3(2,2) Study of specifications andloom 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. Warp and dressing plans are developed for the weaver and the slasher. Prereq: 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) Nonwoven fabric structures, their manufacture, properties, and applications. Methods of nonwoven fabric formation, resultant material characteristics and end-use applications are examined. Prereq: TEXT 201.

TEXT 421, 421H 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; methods of measuring these properties; and how these 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 and control as applied in the textile industry; static and dynamic characteristics of measurement devices; transistor 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. Prereq: 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 1-3(1-3,0) Special topics in textile, fiber, and polymer sciences. A co-enrollment for similar courses in other departments such as for those students involved in CAE Eff. Projects and CH E 445. There may be different sections in terms of different topics. May be repeated up to a maximum of nine credits but only if different topics are covered. Prereq: Consent of instructor.

TEXT 460, 660 Textile Processes 3(3,0) Survey of machinery and processes of textile manufacturing from fiber formation through finish. For students with a non-textile background.

TEXT 470 Textile Costing and Inventory Control 3(3,0) Study of the principles of costing as they apply to the manufacture of textiles. Allocation of cost of materials, labor, and overhead: determining the unit cost of yarns, fabrics, and finishes. Inventory systems, storage, materials handling, and profiles. Prereq: 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. Prereq: 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. Prereq: 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, formation and finishing systems, evaluation methods, distribution, and end-use applications are examined. Prereq: TEXT 201, 202, or consent of instructor.
THEATRE


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)
Study of practical 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 Laboratory 10(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 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 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. Preq: Consent of instructor.

THEA (ENGL) 347 The Structure of Drama 3(3,0) Introduction to the creative writing and critical study of drama. Preq: ENGL 310 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 vocal 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 intellectual 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 proscenium 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 10(0,3) Performance opportunities in the area of theatre for young audiences. Students are members of a theatrical touring troupe 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) Select area of study in theatre not addressed by other theatre course offerings. May be repeated once. Preq: Consent of instructor.

THEA (ENGL) 447 Playwriting Workshop 3(3,0) [W3] 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 revise original work, consider theory and research of contemporary scholars, and develop approaches to literature and 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 371 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 375 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 FB 101 Introduction to Wildlife and Fisheries Biology 1(1,0)F Informative sketch of aquaculture, fisheries science, and wildlife management. Introduces principles, resources, professional organizations, and careers in these fields. Preq: Major in Wildlife and Fisheries Biology or consent of instructor.

W FB 102 Methods of Wildlife and Fisheries Biology 10(2,0)F Introduction to methodology used in aquaculture, fisheries science, and wildlife management. Students are introduced to terminology, techniques, laws, and legislations. Skills with dimensions, units, computations, and technical communications as applied to aquaculture, fisheries, and wildlife. Open only to Wildlife and Fisheries Biology majors. Coreq: W FB 101.

W FB 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 FB 301 Wildlife Biology Laboratory 1(0,3)P 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. Open only to Wildlife and Fisheries Biology majors. Coreq: W FB 300.

W FB 306 Introduction to Wildlife Conservation 2(2,0)F S Examines the fundamental thinking upon which modern conservation programs have been built.

W FB 307 Hunting and Wildlife Management 1(1,0)S 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 wild populations, safety, and ethics are discussed. Preq: Junior standing or consent of instructor.

W F B (BIOSC) 313 Conservation Biology 3(3,0) Study of the biological bases for the conservation of flora, fauna, and habitats. Biological factors that influence the decision making process are also addressed. Preq: One year of general biology or consent of instructor.
W F B 350 Principles of Fish and Wildlife Biology 3(3,0)F 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 412, H412, 612 Wildlife Management 3(2,3)S Basic principles and general practices of wildlife management and conservation are covered. Major concerns are 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)S 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: FOR 415 or W F B 412.

W F B 416, 616 Fishery Biology 3(2,3)F 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)S 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)F 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)S Basic principles and general practices of non-game wildlife management are covered. Emphasis is placed on the 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 450, 650 Aquaculture 3(3,0)F Basic aquacultural techniques applied to freshwater and marine organisms; past and present culture of fish and shellfishes around the world; principles underlying fish production, water quality, feeding, and nutrition as they influence production of cultivated aquatic organisms. Prereq: One year of general biology, Junior standing.

W F B 460, 660 Warmwater Fish Diseases 2(2,0)F 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, H462, 662 Wetland Wildlife Biology 3(3,0)F 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. Prereq: BIOL 101/104 or 110/111.

W F B 463 Directed Research in Aquaculture, Fisheries, and Wildlife Biology 1(0,3)F Research problems in selected areas of aquacultural, fisheries, or wildlife science introduced 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 (BIOSC, ENT) 469, H469, 669 Aquatic Insects 3(1,6)S Odd-numbered years. See ENT 469.

W F B 490 Field Training in Aquaculture, Fisheries, and Wildlife Biology 6(0,18)F Eight to ten-week program in which students observe aquaculture, fisheries, or wildlife management. Students have supervised management responsibility. Total of 270 hours required. Must be arranged at least two months 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)S Specialized topics which explore current areas of research and management in aquaculture, fisheries science, or wildlife management are examined in lecture/seminar format. May be repeated for a maximum of ten credits, but only if different topics are covered. Prereq: Junior standing, consent of instructor.

W F B 499 Wildlife Biology and Fisheries Seminar 1(1,0)S Exploration of current literature and research in fisheries and wildlife sciences. Students participate in the analysis of research findings, utilizing skills acquired in their undergraduate programs. May be repeated once for credit.

WOMEN'S STUDIES

Professor: J. M. Melton; Associate Professor: E. K. Sparks; Assistant Professor: M. Shockey; Lecturer: S. Watts

W S 301 Introduction to Women's Studies: Women's Lives 3(3,0)F Interdisciplinary course exploring the unique features of women's lives from childhood to old age. Content is based on new research in many disciplines, including psychology, sociology, history, literature, and the arts. Prereq: Sophomore standing.

W S 459, 659 Selected Topics in Women's Studies 1-3(1-3,0)F Topics change from semester to semester and are announced prior to registration. May be repeated for a maximum of six credits, but only if different topics are covered.

W S 498 Advanced Studies in Women's Studies 3(3,0)F Focuses on the theoretical foundations for women's studies, with particular emphasis on how women's studies research and theory influence institutions and governmental policies. Readings include essays on such central women's studies issues as work, family, children, health care, legislation, and government policies. Prereq: W S 301 or consent of instructor.
ABBOTT, Albert G., Professor, Genetics, Biochemistry, and Life Science Studies. BS, University of Connecticut, 1976; PhD, Brown University, 1980.

ABERCROMBIE, John G., Lecturer, Biological Sciences. BS, Fuman University, 1995; MS, Clemson University, 2001.

ABRAMOVITCH, Rudolph A., Professor, Chemistry. BS, Alexandria University (Egypt), 1950; PhD, 1953, 18 C, 1964, University of London (England).

ACOCK, Basil, Adjunct Professor, Horticulture. BS, Reading University (England), 1962; MS, Clemson University, 1963; PhD, Nottingham Trent University (England), 1967.

ADAMS, Clementina R., Professor, Languages. BA, Atlantic University (Colombia), 1969; MS, 1974, PhD, 1984, Florida State University.

ADAMS, Leroy Shealy, Lecturer, Development. BS, Clemson University, 1969.

ADAMS, Ross, Adjunct Assistant Professor, Forestry and Natural Resources. BS, 1977, MS, 1979, North Carolina State University, PhD, Clemson University, 1992.

ADAMS, Warren P., Professor, Mathematical Sciences. BS, Lewis Washington University, 1979, MS, 1981, PhD, 1984, Virginia Polytechnic Institute and State University.

ADELBERG, Jeffrey W., Research Associate/Assistant Professor, Horticulture. BS, 1982, MS, 1987, Rutgers University, PhD, Clemson University, 1993.


ALEXANDER, John C., Jr., Bioregional Professor, Financial Planning. BBA, 1984, MBA, 1985, Stetson University, PhD, Florida State University, 1991.

ALEXANDER, Kim E., Lecturer, Center for Safety Research and Education. MS, 1988, MED, 1992, Clemson University.

ALLEN, Benjamin L., Jr., Adjunct Professor, Bioengineering. Chief of Staff, Greenville Unit, Greenville Hospital System, BS, Wofford College, 1962, MD, Duke University, 1964.

ALLEN, Craig R., Assistant Professor, Forestry and Natural Resources and Biological Sciences. BS, University of Wisconsin, 1989; MS, Texas Technical University, PhD, 1993, University of Florida.

ALLEN, Dennis M., Adjunct Professor, Forestry and Natural Resources. BS, Hobart College, 1972; MS, 1974, PhD, 1978, Lehigh University.

ALLEN, Lawrence R., Dean, College of Health, Education, and Human Development; Professor, Parks, Recreation, and Tourism Management. BS, West Chester State University, 1970, MS, 1974, PhD, 1979, University of Maryland.

ALLEN, William H., Department Chair and Professor, Agricultural and Biological Engineering. BS, 1966, PhD, 1969, Clemson University; PhD, University of Tennessee, 1972.


ALLEY, Thomas R., Professor, Psychology. BA, 1975, BS, Pennsylvania State University, 1975; MA, 1979, PhD, 1981, University of Connecticut.

ALLISON, David J., Associate Professor, School of Architecture. BS, 1978, MArch, 1982, Clemson University.

ALVORD, David B., Professor, Entomology, Soils, and Plant Sciences. BS, 1968, MS, 1976, Clemson University; PhD, University of Georgia, 1979.

AMIRKHANIAN, Serj N., Professor, Civil Engineering. BS, 1979, MS, 1981, Tennessee Technological University; PhD, Clemson University, 1987.

AN, Yuchui, Assistant Adjunct Professor, Bioengineering MD, Harbin Medical University (China), 1983; MM, Beijing Medical University (China), 1986.

ANAND, Subhash C., Professor, Civil Engineering. BS, Banaras Hindu University (India), 1955; MS, 1965, PhD, 1966, Northwestern University; PE.

ANDERSON, Denise Marie, Assistant Professor, Parks, Recreation, and Tourism Management. BS, Illinois Wesleyan University, 1992; MS, Eastern Illinois University, 1993; PhD, University of Illinois-Urbana-Champaign, 2000.

ANDERSON, Paul Christopher, Assistant Professor, History. BA, University of North Carolina, 1990, MA, 1994, PhD, 1998, University of Mississippi.

ANDREW, John R., Jr., Assistant Professor, History. BA, University of North Carolina, 1987; MA, Clemson University, 1993; PhD, University of Georgia, 1997.


ANDRUS, Ronald D., Assistant Professor, Civil Engineering. BS, 1983, MS, 1986, Brigham Young University; PhD, University of Texas, 1994.

APOTEL, Kristi D., Lecturer, English. BA, Tococa Falls College, 1996; MA, Clemson University, 2002.

APPLING, Jeffrey R., Associate Professor, Chemistry. BS, 1980, PhD, 1985, Georgia Institute of Technology.

ARBENA, Joseph L., Professor, History. AB, George Washington University, 1961; PhD, University of Virginia, 1970.

ARYA, Dev Priva, Assistant Professor, Chemistry. BS, University of Delhi (India), 1996; PhD, Northeastern University, 1996.


ASKWELL, George R., Director, Belle W. Baruch Forestry Science Institute; Professor, Forest Sciences. BS, 1976, MS, 1978, PhD, 1981, Clemson University.

ASPLAND, J. Richard, Professor, Materials Science and Engineering. BS, 1958, MS, 1960, University of Leeds (England); PhD, Manchester University (England), 1964.

ATKINSON, George J., Visiting Associate Professor, Parks, Recreation, and Tourism Management; Counselor, Counseling Center. BA, Rhodes College, 1982, MS, 1984, PhD, 1988, University of Memphis.

AUSTIN, Eric M., Assistant Professor, Mechanical Engineering. BS, 1980, MS, 1982, University of Illinois-Urbana-Champaign; PhD, Virginia Polytechnic Institute and State University, 1998.

AZIZ, Hadi M., Department Chair and Professor, Civil Engineering. BSCE, 1978, MS, 1980, PhD, 1994, University of Mississippi.

BACH, William C., Professor, Horticulture. BS, University of North Carolina, 1976; MA, Miami University, 1979; PhD, University of Virginia, 1983.

BALAKRISHNAN, Nagraj, Professor, Management. BE, University of Madras (India), 1981; MS, University of Kentucky, 1983; PhD, Purdue University, 1987.

BACH, Clarence A., Lecturer, General Engineering. BS, California State Polytechnic University-Pomona, 1959.

BALLARD, Robert E., Professor, Biological Sciences. BS, 1966, MA, 1968, Miami University; PhD, University of Iowa, 1975.

BALLATO, John M., Associate Professor, Materials Science and Engineering. BS, 1993, MS, 1995, PhD, 1997, Rutgers University.

BANKS, Scott A., Adjunct Assistant Professor, Bioengineering. BS, 1983, MS, 1988, Case-Western Reserve University; PhD, Massachusetts Institute of Technology, 1992.

BARCZWESKI, Stephanie L., Acting Department Chair and Associate Professor, History. BA, Columbia University, 1990; PhD, Yale University, 1996.

BAREFOOT, Susan E., Chief Operating Officer, Agricultural Experiment Station; Associate Dean and Program Director, Food Safety and Nutrition; Professor, Food Science and Human Nutrition. BS, 1971, MS, 1979, PhD, 1985, North Carolina State University.

BARFIELD, Rayford E., Jr., Professor, English. AB, Louisiana College, 1961; MA, University of Georgia, 1963; PhD, University of Tennessee, 1969.

BARGER, Jefferson D. III, Adjunct Assistant Professor, Agricultural and Biological Engineering. BS, North Georgia College and State University, 1969; MS, 1972, PhD, 1989, Clemson University.

BARKER, James E., President, School of Architecture. BA, Clemson University, 1970; MArch, Washington University, 1973; FAIA.

BARKLEY, David L., Professor, Applied Economics and Statistics. BA, Fuman University, 1969; MA, University of Georgia, 1972; PhD, Iowa State University, 1976.

BARMORE, Charles R., Adjunct Professor, Food Science and Human Nutrition. BS, Clemson University, 1966; MS, 1969, PhD, 1972, University of Florida.

BARNES, Peter A., Department Chair and Professor, Physics and Astronomy. BA, 1963, MS, 1964, PhD, 1969, University of Waterloo (Canada).

BARNSHARDT, Kelley D., Lecturer, English. BA, University of North Carolina, 1998; MA, Appalachian State University, 2003.

BARRATT, David E., Professor, Teacher Education. BA, Wesleyan University, 1969; MS, 1973, PhD, 1974, University of Southern California.

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