Junior Year
First Semester
3 - CH 3310 Physical Chemistry
3 - COMM 2500 Public Speaking
3 - MSE 3270 Transport Phenomena
3 - MSE 4150 Intro. to Polymer Sci. and Engineering
1 - MSE 4550 Polymer and Fiber Lab.
3 - Arts and Humanities Requirement or
3 - Social Science Requirement

Second Semester
3 - CH 3320 Physical Chemistry
3 - IE 3840 Engineering Economic Analysis
3 - MATH 3020 Stat. for Science and Engr. or
3 - STAT 2300 Statistical Methods I
3 - MSE 4220 Mechanical Behavior or Materials
3 - MSE 4560 Polymer and Fiber Science II

Senior Year
First Semester
3 - MSE 4580 Surface Phenomena in Materials Science and Engineering
1 - MSE 4600 Surface Phenomena in Materials Science and Engineering Laboratory
3 - MSE 4610 Polymer and Fiber Science III
3 - MSE 4910 Undergraduate Research
3 - Technical Requirement

Second Semester
3 - MSE 4070 Senior Capstone Design
1 - MSE 4450 Practice of Materials Engineering
3 - MSE 4570 Color Science
1 - MSE 4590 Color Science Laboratory
3 - Arts and Humanities Requirement or
3 - Social Science Requirement
3 - Technical Requirement

124 Total Semester Hours

3 - See Policy on Humanities and Social Sciences for Engineering Curricula. Six of these credits must also satisfy the Cross-Cultural Awareness and the Science and Technology in Society General Education requirements.

Sophomore Year
First Semester
1 - ME 2000 Sophomore Seminar
5 - ME 2010 Statics and Dynamics for Mech. Engr.
2 - ME 2220 Mechanical Engineering Lab. I or
3 - MSE 2100 Intro. to Materials Science
4 - MATH 2060 Calculus of Several Variables
3 - PHYS 2210 Physics with Calculus II

Second Semester
1 - ECE 2070 Basic Electrical Engineering
1 - ECE 2080 Electrical Engineering Lab. I
3 - ME 2030 Found. of Thermal and Fluid Systems
3 - ME 2040 Mechanics of Materials
2 - ME 2220 Mechanical Engineering Lab. I or
3 - MSE 2100 Intro. to Materials Science
4 - MATH 2080 Intro. to Ordinary Diff. Equations

Junior Year
First Semester
3 - ENGL 3140 Technical Writing
3 - ME 3050 Model. and Analysis of Dynamic Syst.
3 - ME 3060 Fundamentals of Machine Design
3 - ME 3120 Manufacturing Processes and Their Application
2 - ME 3330 Mechanical Engineering Lab. II or
3 - Statistics Requirement

Second Semester
3 - ME 3040 Heat Transfer
3 - ME 3050 Model. and Analysis of Dynamic Syst.
3 - ME 3060 Fundamentals of Machine Design
3 - ME 3120 Manufacturing Processes and Their Application
2 - ME 3330 Mechanical Engineering Lab. II or
3 - Statistics Requirement

Freshman Year
First Semester
4 - CH 1010 General Chemistry
3 - ENGL 1030 Accelerated Composition
1 - ENGR 1050 Engineering Disciplines and Skills I
1 - ENGR 1060 Engineering Disciplines and Skills II
4 - MATH 1060 Calculus of One Variable I
3 - Arts and Humanities (Non-Lit.) Requirement or
3 - Social Science Requirement

Second Semester
1 - ENGR 1070 Programming and Problem Solving I
1 - ENGR 1080 Programming and Problem Solving II
1 - ENGR 1090 Programming and Problem Solving Applications
2 - ENGR 2080 Engineering Graphics and Machine Design
4 - MATH 1080 Calculus of One Variable II
3 - PHYS 1220 Physics with Calculus I
3 - PHYS 1240 Physics Lab. I
3 - Arts and Humanities (Lit.) Requirement or
3 - Social Science Requirement

103 Total Semester Hours

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, chemical 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 Science and Doctor of Philosophy degrees.

Mechanical Engineering students who have a cumulative grade-point average or cumulative engineering grade-point average (EGPA) below 2.0 are on probation and will have restricted enrollment in classes. Students whose cumulative grade-point average is below 2.0 are subject to the regulations stipulated under Academic Eligibility 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 at www.clemson.edu/me.
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 Chemistry 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; 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.

Notes:
1. Enrollment Policy (see website for Complete Statement of Department Policy). A student is allowed to enroll in any ME course only when all prerequisites, as defined by current official listings for that course, have been passed with a grade of C or higher.
2. No student may exceed three attempts to complete successfully ME 2010, 2030, or 2040. Registration for a third attempt to complete one of these ME courses requires the approval of the undergraduate coordinator in the Department of Mechanical Engineering. A grade of W counts as an unsuccessful attempt at completing the course.
3. For students repeating an ME course, registration preference will be given to students in a degree-granting engineering major whose curriculum requires the course in question.
4. To change majors into the Mechanical Engineering degree program, students must have a minimum cumulative grade-point average of 2.60 or higher at Clemson and earned a C or better in each course in the General Engineering freshman curriculum, EXCLUDING the Arts and Humanities/Social Science requirements.

SCIENCE PROGRAMS

The College of Engineering and Science 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 in Chemistry, Computer Science, 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 opportunity for students to pursue a minor or secondary area of interest.

Bachelor of Arts Curricula

The curricula leading to the Bachelor of Arts degree are designed to meet the needs of students who desire a broad general education. They require a minor (or a second major) as well as the major concentration. A major requires a minimum of 24 credits from courses above the sophomore level, including or in addition to courses specified by the major department. In some major disciplines, certain prescribed courses at the sophomore level are counted toward the 24-credit requirement.

Students have a large degree of flexibility and responsibility in selecting a minor from those listed on page 113. Courses for these minors are to be selected in consultation with the appropriate department.

CHEMISTRY

Bachelor of Science

First Semester

1. CH 1410 Chemistry Orientation
2. ENGL 1030 Accelerated Composition
3. MATH 1080 Calculus of One Variable I
3. Arts and Humanities Requirement
3 - Social Science Requirement
15

Second Semester

1. CH 2270 Organic Chemistry Lab.
2. CH 2280 Organic Chemistry Lab.
3. MATH 2060 Calculus of Several Variables
3. PHYS 2210 Physics with Calculus II
1 - PHYS 2230 Physics Lab. II
2 - Foreign Language Requirement
16

Sophomore Year

First Semester

1. CH 2230 Organic Chemistry
2. CH 2270 Organic Chemistry Lab.
3. MATH 2060 Calculus of Several Variables
3. PHYS 2210 Physics with Calculus II
1 - PHYS 2230 Physics Lab. II
1 - Foreign Language Requirement
16

Second Semester

1. CH 3400 Physical Chemistry Lab.
2. CH 4110 Instrumental Analysis
3. CH 4120 Instrumental Analysis Lab.
3. Arts and Humanities (Literature) Requirement
15

Senior Year

First Semester

1. CH 4020 Inorganic Chemistry
2. CH 4430 Research Problems
3. Arts and Humanities Requirement or Social Science Requirement
3. Chemistry Requirement
15
3 - Elective
15

Second Semester

1. CH 4200 Advanced Synthetic Techniques
2. CH 4440 Research Problems
3. CH 4500 Chemistry Capstone
1 - CH 4520 Chemistry Communication I
3. Arts and Humanities Requirement or Social Science Requirement
3. Chemistry Requirement
15
122 Total Semester Hours

One semester (through 1020) in any modern foreign language is required.

3See advisor.

1STHEM 3050 may be substituted for CH 3600.

CHEMISTRY

Bachelor of Arts

Freshman Year

First Semester

1. CH 1010 General Chemistry
2. CH 1410 Chemistry Orientation
3. ENGL 1030 Accelerated Composition
4. MATH 1080 Calculus of One Variable I
3. Arts and Humanities Requirement or Social Science Requirement
15

Second Semester

1. CH 1020 General Chemistry
2. CH 1520 Chemistry Communication I
3. MATH 1080 Calculus of One Variable II
3. PHYS 1220 Physics with Calculus I
3. Arts and Humanities Requirement or Social Science Requirement
16

Sophomore Year

First Semester

1. CH 2230 Organic Chemistry
2. CH 2270 Organic Chemistry Lab.
3. MATH 2060 Calculus of Several Variables
3. PHYS 2210 Physics with Calculus II
1 - PHYS 2230 Physics Lab. II
1 - Foreign Language Requirement
16

Second Semester

1. CH 2270 Organic Chemistry Lab.
2. CH 2280 Organic Chemistry Lab.
3. MATH 2060 Intro. to Ordinary Diff. Equations
3. PHYS 2220 Physics with Calculus III
1 - PHYS 2240 Physics Lab. III
1 - Foreign Language Requirement
16

Junior Year

First Semester

1. CH 3130 Quantitative Analysis
2. CH 3150 Quantitative Analysis Lab.
3. CH 3310 Physical Chemistry
1. CH 3390 Physical Chemistry Lab.
3. ENGL 3410 Technical Writing
3 - Elective
15

Second Semester

1. CH 3320 Physical Chemistry
2. CH 3400 Physical Chemistry Lab.
3. CH 3600 Chemical Biology
3. CH 4110 Instrumental Analysis
2 - CH 4120 Instrumental Analysis Lab.
3. Arts and Humanities (Literature) Requirement
15

Senior Year

First Semester

1. CH 4020 Inorganic Chemistry
2. CH 4430 Research Problems
3. Arts and Humanities Requirement or Social Science Requirement
3. Chemistry Requirement
15
3 - Elective
15

Second Semester

1. CH 4200 Advanced Synthetic Techniques
2. CH 4440 Research Problems
3. CH 4500 Chemistry Capstone
1 - CH 4520 Chemistry Communication I
3. Arts and Humanities Requirement or Social Science Requirement
3. Chemistry Requirement
15
122 Total Semester Hours

One semester (through 1020) in any modern foreign language is required.

3See advisor.

1STHEM 3050 may be substituted for CH 3600.