

¹See Policy on Humanities and Social Sciences for Engineering Curricula. Six of these credit hours must also satisfy General Education Cross-Cultural Awareness and Science and Technology in Society Requirements. These requirements may be filled in any order.

²Both are required but may be taken in either semester.

³Select from MATH 3020 or STAT 4110

⁴See advisor. Select from department-approved list.

Notes:

1. Enrollment Policy (see Web Site 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 112. 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 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.

Freshman Year

First Semester

- 4 - CH 1010 General Chemistry
- 1 - CH 1410 Chemistry Orientation
- 3 - ENGL 1030 Accelerated Composition
- 4 - MATH 1060 Calculus of One Variable I
- 3 - Arts and Humanities Requirement¹ or
3 - Social Science Requirement¹
- 15

Second Semester

- 4 - CH 1020 General Chemistry
- 2 - CH 1520 Chemistry Communication I
- 4 - MATH 1080 Calculus of One Variable II
- 3 - PHYS 1220 Physics with Calculus I
- 3 - Arts and Humanities Requirement¹ or
3 - Social Science Requirement¹
- 16

Sophomore Year

First Semester

- 3 - CH 2230 Organic Chemistry
- 1 - CH 2270 Organic Chemistry Lab.
- 4 - MATH 2060 Calculus of Several Variables
- 3 - PHYS 2210 Physics with Calculus II
- 1 - PHYS 2230 Physics Lab. II
- 4 - Foreign Language Requirement²
- 16

Second Semester

- 3 - CH 2050 Introduction to Inorganic Chemistry
- 3 - CH 2240 Organic Chemistry
- 1 - CH 2280 Organic Chemistry Lab.
- 4 - MATH 2080 Intro. to Ordinary Diff. Equations
- 3 - PHYS 2220 Physics with Calculus III
- 1 - PHYS 2240 Physics Lab. III
- 15

Junior Year

First Semester

- 3 - CH 3130 Quantitative Analysis
- 2 - CH 3150 Quantitative Analysis Lab.
- 3 - CH 3310 Physical Chemistry
- 1 - CH 3390 Physical Chemistry Lab.
- 3 - ENGL 3140 Technical Writing
- 3 - Elective
- 15

Second Semester

- 3 - CH 3320 Physical Chemistry
- 1 - CH 3400 Physical Chemistry Lab.
- 3 - CH 3600 Chemical Biology⁴
- 3 - CH 4110 Instrumental Analysis
- 2 - CH 4120 Instrumental Analysis Lab.
- 3 - Arts and Humanities (Literature) Requirement¹
- 15

Senior Year

First Semester

- 3 - CH 4020 Inorganic Chemistry
- 3 - CH 4430 Research Problems
- 3 - Arts and Humanities Requirement¹ or
3 - Social Science Requirement¹
- 3 - Chemistry Requirement³
- 3 - Elective
- 15

Second Semester

- 2 - CH 4030 Advanced Synthetic Techniques
- 3 - CH 4440 Research Problems
- 3 - CH 4500 Chemistry Capstone
- 1 - CH 4520 Chemistry Communication II
- 3 - Arts and Humanities Requirement¹ or
3 - Social Science Requirement¹
- 3 - Chemistry Requirement³
- 15

122 Total Semester Hours

¹See General Education Requirements. Six of these credit hours must also satisfy the Cross-Cultural Awareness and Science and Technology in Society Requirements.

²One semester (through 1020) in any modern foreign language is required.

³See advisor.

⁴BCHM 3050 may be substituted for CH 3600.

CHEMISTRY

Bachelor of Arts

Freshman Year

First Semester

- 4 - CH 1010 General Chemistry
- 1 - CH 1410 Chemistry Orientation
- 3 - ENGL 1030 Accelerated Composition
- 4 - MATH 1060 Calculus of One Variable I
- 3 - Arts and Humanities Requirement¹ or
3 - Social Science Requirement¹
- 15

Second Semester

- 4 - CH 1020 General Chemistry
- 2 - CH 1520 Chemistry Communication I
- 4 - MATH 1080 Calculus of One Variable II
- 3 - PHYS 1220 Physics with Calculus I
- 3 - Arts and Humanities Requirement¹ or
3 - Social Science Requirement¹
- 16

Sophomore Year**First Semester**

- 3 - CH 2230 Organic Chemistry
 - 1 - CH 2270 Organic Chemistry Lab.
 - 4 - MATH 2060 Calculus of Several Variables
 - 3 - PHYS 2210 Physics with Calculus II
 - 4 - Foreign Language Requirement²
- 15

Second Semester

- 3 - CH 2050 Introduction to Inorganic Chemistry
 - 3 - CH 2240 Organic Chemistry
 - 1 - CH 2280 Organic Chemistry Lab.
 - 6 - Arts and Humanities Requirement¹ or
6 - Social Science Requirement¹
 - 4 - Foreign Language Requirement²
- 17

Junior Year**First Semester**

- 3 - CH 3130 Quantitative Analysis
 - 1 - CH 3170 Quantitative Analysis Lab.
 - 3 - CH 3310 Physical Chemistry
 - 3 - Arts and Humanities Requirement¹ or
3 - Social Science Requirement¹
 - 3 - Foreign Language Requirement²
 - 3 - Minor Requirement
- 16

Second Semester

- 3 - CH 3320 Physical Chemistry
 - 3 - ENGL 3140 Technical Writing
 - 3 - Arts and Humanities (Literature) Requirement¹
 - 3 - Foreign Language Requirement²
 - 3 - Minor Requirement
- 15

Senior Year**First Semester**

- 3 - Arts and Humanities Requirement¹ or
3 - Social Science Requirement¹
 - 3 - Chemistry Requirement³
 - 3 - Minor Requirement
 - 6 - Elective
- 15

Second Semester

- 3 - CH 4500 Chemistry Capstone
 - 1 - CH 4520 Chemistry Communication II
 - 3 - Chemistry Requirement³
 - 6 - Minor Requirement
- 13

122 Total Semester Hours

¹See General Education Requirements. Six of these credit hours must also satisfy the Cross-Cultural Awareness and Science and Technology in Society Requirements.

²Four semesters (through 2020) of the same modern foreign language are required.

³See advisor.

COMPUTER INFORMATION SYSTEMS**Bachelor of Science**

The Computer Information Systems degree program is oriented toward computer applications in management-related problems. The program emphasizes functional areas of management, including accounting, production, marketing, and finance

and the applications of computers in these areas. The curriculum is designed to prepare students for careers in areas such as systems design and analysis, applications programming, database administration, and information retrieval, as well as for continued study toward an advanced degree.

Students who change majors into Computer Information Systems must have a cumulative grade-point average of 2.0 or higher.

Additional information can be found at www.cs.clemson.edu.

Freshman Year**First Semester**

- 4 - CPSC 1010 Computer Science I
 - 3 - ENGL 1030 Accelerated Composition
 - 3 - MATH 1020 Intro. to Mathemat. Analysis¹ or
4 - MATH 1060 Calculus of One Variable I¹
 - 4 - Natural Science Requirement²
 - 1 - Elective¹
- 15

Second Semester

- 4 - CPSC 1020 Computer Science II
 - 3 - MATH 2070 Multivariable Calculus¹ or
4 - MATH 1080 Calculus of One Variable II¹
 - 3 - Arts and Humanities (Non-Lit.) Requirement³
 - 3 - Natural Science Requirement²
 - 3 - Social Science Requirement³
 - 1 - Elective¹
- 17

Sophomore Year**First Semester**

- 3 - CPSC 2070 Discrete Structures for Computing
 - 4 - CPSC 2120 Algorithms and Data Structures
 - 3 - Arts and Humanities (Literature) Requirement³
 - 3 - Oral Communication Requirement⁴
 - 3 - Social Science Requirement³
- 16

Second Semester

- 3 - CPSC 2150 Software Development Foundations
 - 4 - CPSC 3210 Intro. to Computer Organization
 - 1 - CPSC 2910 Seminar in Professional Issues I
 - 3 - MGT 2010 Principles of Management
 - 3 - STAT 3090 Introductory Business Statistics⁵
- 14

Junior Year**First Semester**

- 3 - ACCT 2010 Financial Accounting Concepts
 - 3 - CPSC 2200 Microcomputer Applications
 - 3 - CPSC 3220 Introduction to Operating Systems
 - 3 - CPSC 3720 Intro. to Software Engineering
 - 3 - Writing Requirement⁶
- 15

Second Semester

- 3 - ACCT 2020 Managerial Accounting Concepts
 - 3 - CPSC 3600 Networks and Network Program.
 - 3 - CPSC 3710 Systems Analysis or
3 - MGT 4520 Systems Analysis and Design
 - 3 - ECON 2110 Principles of Microeconomics
 - 3 - Computer Science Requirement⁷
- 15

Senior Year**First Semester**

- 3 - CPSC 4200 Computer Security Principles or
3 - CPSC 4240 System Admin. and Security
 - 3 - CPSC 4620 Database Management Systems
 - 3 - CPSC 4910 Seminar in Professional Issues II
 - 3 - Business Requirement⁸
 - 3 - Computer Science Requirement⁷
- 15

Second Semester

- 3 - MGT 3120 Decision Models for Management
 - 3 - MKT 3010 Principles of Marketing
 - 3 - Business Requirement⁸
 - 3 - Computer Science Requirement⁷
 - 3 - Information Systems Requirement⁹
- 15

122 Total Semester Hours

¹Select either the MATH 1020/2070, 1060/2070 or 1060/1080 sequences. Students who select the 1060/1080 sequence will have satisfied the two elective credits in the freshman year.

²Select from courses in BIOL, BCHM, CH, GEOL, MICR, PHYS; or ENSP 2000. At least one course must include a laboratory and satisfy the Natural Science General Education Requirement.

³See General Education Requirements.

⁴Select from: COMM 1500, 2500, HON 2230; or the cluster of courses AS 3090, 3100, 4090, 4100; or ML 1010, 1020.

⁵MATH 2060 and 3020, or STAT 2300 and 3300 may be substituted.

⁶Select from: ENGL 3040, 3120, 3140, 3150, 3160, 3330; AS 3090, 3100, 4090, 4100; ML 3010, 3020, 4010, 4020.

⁷Select from 3000-level or higher CPSC courses. No more than three credits of CPSC 3990 or 4810 may be used, and no more than six credits of CPSC 4820 may be used.

⁸Select from MGT 3900, 4000 and FIN 3060.

⁹Select from MGT 4520, 4540, 4550, 4560, or any 4000-level CPSC course. CPSC 4810 may not be used.

Notes:

1. For graduation, a candidate for the BS degree in Computer Information Systems must have earned a grade of C or better in each CPSC course applied to the non-elective requirements of the degree.

2. A grade of C or better must be earned in all prerequisite courses (including CPSC and MATH courses) before enrolling in the next CPSC course.

3. General Education Cross-Cultural Awareness and Science and Technology in Society requirements must be satisfied.

COMPUTER SCIENCE**Bachelor of Science**

The Computer Science program is oriented toward design, implementation, and application of software systems to solve information processing problems. Emphasis areas outside computer science allow students to tailor the program to their individual needs and interests. 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 (CAC) of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012; telephone: (410) 347-7700. Additional information can be found at www.cs.clemson.edu.

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