

³Select from MATH 3020 or STAT 4110

⁴See advisor. Select from department-approved list.

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

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

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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

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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 I¹
- 3 - ENGL 1030 Accelerated Composition
- 3 - MATH 1020 Intro. to Mathemat. Analysis² or
- 4 - MATH 1060 Calculus of One Variable I²
- 4 - Natural Science Requirement³
- 1 - Elective²
- 15

Second Semester

- 4 - CPSC 1020 Computer Science II¹
- 3 - MATH 2070 Multivariable Calculus² or
- 4 - MATH 1080 Calculus of One Variable II²
- 3 - Arts and Humanities (Non-Lit.) Requirement⁴
- 3 - Natural Science Requirement³
- 3 - Social Science Requirement⁴
- 1 - Elective²
- 17

Sophomore Year**First Semester**

- 3 - CPSC 2070 Discrete Structures for Computing⁵
- 4 - CPSC 2120 Algorithms and Data Structures
- 3 - Arts and Humanities (Literature) Requirement⁴
- 3 - Oral Communication Requirement⁶
- 3 - Social Science Requirement⁴
- 16

Second Semester

- 3 - CPSC 2150 Software Development Foundations
- 4 - CPSC 2310 Intro. to Computer Organization
- 1 - CPSC 2910 Seminar in Professional Issues I
- 3 - MGT 2010 Principles of Management
- 3 - STAT 3090 Introductory Business Statistics⁷
- 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 Requirement⁸
- 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 Requirement⁹
- 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 Requirement¹⁰
- 3 - Computer Science Requirement⁹
- 15

Second Semester

- 3 - MGT 3120 Decision Models for Management
- 3 - MKT 3010 Principles of Marketing
- 3 - Business Requirement¹⁰
- 3 - Computer Science Requirement⁹
- 3 - Information Systems Requirement¹¹
- 15

122 Total Semester Hours

¹The sequence of CPSC 1110 and 2100 will be accepted in place of CPSC 1010 and 1020.

²Select either the MATH 1020/2070, 1060/2070 or 1060/1080 sequence. Students who select the 1060/1080 sequence will have satisfied the two elective credits in the freshman year.

³Select 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.

⁴See General Education Requirements.

⁵MATH 1190 may be substituted.

⁶Select from: COMM 1500, 2500, HON 2230; or the cluster of courses AS 3090, 3100, 4090, 4100; or ML 1010, 1020.

⁷MATH 3020 or STAT 3300 may be substituted.

⁸Select from: ENGL 3040, 3120, 3140, 3150, 3160, 3330; AS 3090, 3100, 4090, 4100; ML 3010, 3020, 4010, 4020.

⁹Select from 3000-level or higher CPSC courses or DPA 3070. No more than three credits of CPSC 3990 or 4810 may be applied to this requirement, and no more than six credits of CPSC 4820 may be applied. Up to three credits of approved ECE 3000-level or higher courses; or MATH 3650; or MATH 4000-level courses may be substituted.

¹⁰Select from FIN 3060 and MGT 3900, 4000.

¹¹Select from MGT 4520, 4540, 4550, 4560, or any 4000-level CPSC course. CPSC 4810 may not substitute.

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.

Combined Bachelor's/Master's Plan

The School of Computing allows students to count up to nine hours of graduate credit (6000- and 8000-level courses) toward both the bachelor's and master's degrees. Students participating in this program must have a minimum grade-point average of