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.

**Bachelor of Science Curricula**

The curricula leading to the Bachelor of Science degree is 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. Some majors, 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 those 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

**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 curricula leading to the Bachelor of Science 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. Some majors, 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 those 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
**Second Semester**
- 3 - CH 2050 Introduction to Inorganic Chemistry
- 3 - CH 2240 Organic Chemistry
- 1 - CH 2280 Organic Chemistry Lab.
- 6 - Arts and Humanities Requirement\(^1\) or
  - 6 - Social Science Requirement\(^1\)
- 4 - Foreign Language Requirement\(^2\)

**Junior Year**

**First Semester**
- 3 - CH 3310 Quantitative Analysis
- 1 - CH 3170 Quantitative Analysis Lab.
- 3 - CH 3310 Physical Chemistry
- 3 - Arts and Humanities Requirement\(^1\)
- 3 - Social Science Requirement\(^1\)
- 3 - Foreign Language Requirement\(^2\)
- 3 - Minor Requirement

**Second Semester**
- 3 - CH 3320 Physical Chemistry
- 3 - ENGL 3140 Technical Writing
- 3 - Arts and Humanities (Literature) Requirement\(^1\)
- 3 - Foreign Language Requirement\(^2\)
- 3 - Minor Requirement

**Senior Year**

**First Semester**
- 3 - Arts and Humanities Requirement\(^1\) or
  - 3 - Social Science Requirement\(^1\)
- 3 - Chemistry Requirement\(^1\)
- 3 - Minor Requirement
- 6 - Elective

**Second Semester**
- 3 - CH 4500 Chemistry Capstone
- 1 - CH 4520 Chemistry Communication II
- 3 - Chemistry Requirement\(^1\)
- 6 - Minor Requirement

**Sophomore Year**

**First Semester**
- 3 - CPSC 2070 Discrete Structures for Computing\(^4\)
- 4 - CPSC 2120 Algorithms and Data Structures
- 3 - Arts and Humanities (Literature) Requirement\(^4\)
- 3 - Oral Communication Requirement\(^6\)
- 3 - Social Science Requirement\(^4\)

**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 Statistics\(^3\)

**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 Requirement\(^8\)

**Second Semester**
- 3 - ACCT 2020 Managerial Accounting Concepts
- 3 - CPSC 3600 Networks and Network Program.
- 3 - CPSC 3710 Systems Analysis or
  - 3 - GMGT 4520 Systems Analysis and Design
- 3 - ECON 2110 Principles of Microeconomics
- 3 - Computer Science Requirement\(^6\)

**Second Semester**
- 3 - MGT 3120 Decision Models for Management
- 3 - MKT 3010 Principles of Marketing
- 3 - Business Requirement\(^10\)
- 3 - Computer Science Requirement\(^6\)
- 3 - Information Systems Requirement\(^11\)

122 Total Semester Hours

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

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

\(^3\)See advisor.

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**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\(^1\)
- 3 - ENGL 1030 Accelerated Composition
- 4 - MATH 1020 Intro. to Mathemat. Analysis or
  - 4 - MATH 1060 Calculus of One Variable I\(^1\)
- 4 - Natural Science Requirement\(^3\)
- 1 - Elective\(^2\)

**Second Semester**
- 4 - CPSC 1020 Computer Science II\(^1\)
- 3 - MATH 2070 Multivariable Calculus or
  - 4 - MATH 1080 Calculus of One Variable II\(^1\)
- 3 - Arts and Humanities (Non-Lit.) Requirement\(^4\)
- 3 - Natural Science Requirement\(^3\)
- 3 - Social Science Requirement\(^4\)
- 1 - Elective\(^2\)

**Sophomore Year**

**First Semester**
- 3 - CPSC 2070 Discrete Structures for Computing\(^4\)
- 4 - CPSC 2120 Algorithms and Data Structures
- 3 - Arts and Humanities (Literature) Requirement\(^4\)
- 3 - Oral Communication Requirement\(^6\)
- 3 - Social Science Requirement\(^4\)

**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 Statistics\(^3\)

**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 Requirement\(^8\)

**Second Semester**
- 3 - ACCT 2020 Managerial Accounting Concepts
- 3 - CPSC 3600 Networks and Network Program.
- 3 - CPSC 3710 Systems Analysis or
  - 3 - GMGT 4520 Systems Analysis and Design
- 3 - ECON 2110 Principles of Microeconomics
- 3 - Computer Science Requirement\(^6\)

**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 Requirement\(^10\)
- 3 - Computer Science Requirement\(^6\)

**Second Semester**
- 3 - MGT 3120 Decision Models for Management
- 3 - MKT 3010 Principles of Marketing
- 3 - Business Requirement\(^10\)
- 3 - Computer Science Requirement\(^6\)
- 3 - Information Systems Requirement\(^11\)

122 Total Semester Hours

\(^1\)The sequence of CPSC 1110 and 2110 will be accepted in place of CPSC 1010 and 1020.

\(^2\)Select 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.

\(^3\)Select from courses in BIOL, BCHM, CH, GEOL, MICR, PHYS; or ENSP 2020. At least one course must include a laboratory and satisfy the Natural Science General Education Requirement.

\(^4\)See General Education Requirements.

\(^5\)MATH 1190 may be substituted.

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

\(^7\)MATH 3020 or STAT 3300 may be substituted.

\(^8\)Select from: ENGL 3304, 3310, 3410, 3610, 3710, 4330, AS 3090, 3100, 4090, 4100; ML 3010, 3020, 4100, 4020.

\(^9\)Select from CPSC 3010 or higher courses or DPA 3070. No more than three credits of CPSC 3990 or 4980 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.

\(^10\)Select from FIN 3060 and MGT 3090, 4000.

\(^11\)Select from CPSC 4520, 4540, 4550, 4560, or any 4000-level CPSC course. CPSC 4580 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 toward their bachelor’s and master’s degrees. Students participating in this program must have a minimum grade-point average of 3.0 or higher.