Chemistry, B.S.

Program Description

The Department of Chemistry and Biochemistry provides American Chemical Society (ACS) approved programs. Students completing a baccalaureate degree that meets the ACS Guidelines will receive an ACS-certified degree. All of the degree concentrations could include the course work and experience necessary to satisfy requirements for ACS certification with proper choice of supporting discipline and elective credits. See an academic advisor or the Chemistry department for more information on the requirements for ACS certification and other aspects of these degree concentrations.

ACS Certified Chemistry Concentration: This concentration is designed to prepare students for graduate school in chemistry or the professional workforce and will satisfy the requirements for American Chemical Society certified bachelor's degree programs.

Integrative Chemistry Concentration: This concentration is designed to allow flexibility in choosing elective credits that support individual career goals and/or a KSU Minor.

Forensic Chemistry Concentration: This concentration is designed to prepare students for graduate school or a career in the forensic field.

Pharmaceutical Chemistry Concentration: This concentration is designed to prepare students for pharmacy school while they work towards a degree in Chemistry. Students may also go to graduate school or work in the pharmaceutical industry after completing this concentration. As pharmacy school prerequisites change, students need to be diligent in ensuring they are meeting the requirements of the pharmacy school they wish to attend. The streamlining of both the requirements for a degree in chemistry and the needed prerequisites is best done in consultation with an academic advisor.

 This program is a part of the College of Science and Mathematics.

Accreditation

This is an American Chemical Society (ACS) approved program.

Admission, Enrollment, and Graduation Policies

Admission Requirements

This program does not have specific admission requirements and only admission to

Kennesaw State University is required. For more information, please visit the Admissions section of the Catalog.

Graduation Requirements

Each student is expected to meet the requirements outlined in Academic Policies 5.0 PROGRAM REQUIREMENTS & GRADUATION.

Program Course Requirements

Core IMPACTS Curriculum (42 Credit Hours)

General Education Core IMPACTS Curriculum

Core IMPACTS Curriculum Requirements Specific to This Major

Science Majors: Must take MATH 1113 or higher in Mathematics & Quantitative Skills and MATH 1179 or higher in Applied Math.

Science and Engineering Majors: Must take two four-hour laboratory sciences in Natural Sciences. Students must choose from CHEM 1211 / 1211L , CHEM 1212 / 1212L , PHYS 1111 / 1111L*, PHYS 1112 / 1112L , PHYS 2211 / 2211L*, PHYS 2212 / 2212L , BIOL 1107 / 1107L , or BIOL 1108 / 1108L.

*Students cannot take both PHYS 1111/L and PHYS 2211/L nor PHYS 1112/L and PHYS 2212/L.

Core Field of Study (18 Credit Hours)

Students must earn a grade of "C" or better in these courses.

- CHEM 1211: Principles of Chemistry I
- CHEM 1211L: Principles of Chemistry Laboratory I
- CHEM 1212: Principles of Chemistry II
- CHEM 1212L: Principles of Chemistry Laboratory II
- CHEM 2800: Quantitative Analytical Chemistry
- CHEM 2800L: Quantitative Analytical Chemistry Laboratory
- MATH 2202: Calculus II
  One (1) credit hour carried over from Applied Math.
  One (1) credit hour carried over from Natural Sciences.

Major Requirements (33 Credit Hours)

Students must earn a grade of "C" or better in these courses.

Lower-Division Major Requirements (11 Credit Hours)

- SCM 2000: Culture and Success in Science and Mathematics
- PHYS 2211: Principles of Physics I
- PHYS 2211L: Principles of Physics Laboratory I
- PHYS 2212: Principles of Physics II
- PHYS 2212L: Principles of Physics Laboratory II
  If taken in Natural Sciences, please consult an advisor on how to fulfill this requirement.

Upper-Division Major Requirements (22 Credit Hours)

- CHEM 3000: Chemical Literature
- CHEM 3105: Inorganic Chemistry
- CHEM 3105L: Inorganic Synthesis
- CHEM 3361: Modern Organic Chemistry I
- CHEM 3361L: Modern Organic Chemistry Lab I
- CHEM 3362: Modern Organic Chemistry II
- CHEM 3362L: Modern Organic Chemistry Lab II
- CHEM 3500: Biochemistry
- CHEM 3601: Quantum Chemistry and Spectroscopy
- CHEM 4310L: Advanced Analytical Chemistry Lab

Major Concentrations (27 Credit Hours)
Students must earn a grade of "C" or better in these courses.

ACS Certified Chemistry Concentration

Required Courses (5 Credit Hours)

- MATH 2203: Calculus III
- CHEM 3500L: Biochemistry Laboratory

Physical Chemistry Lab Course (1 Credit Hour)

Select 1 credit hour from the following list of courses:

- CHEM 3601L: Quantum Chemistry and Spectroscopy Laboratory
- CHEM 3602L: Thermodynamics and Reaction Kinetics Laboratory

Advanced Chemistry Courses (9 Credit Hours)

Select 6 credit hours from the following list of courses. Students interested in graduate school should consider CHEM 3602.

- CHEM 3030: Pharmaceutical Analytical Chemistry
- CHEM 3602: Thermodynamics and Reaction Kinetics
- CHEM 3800: Forensic Analytical Chemistry
- CHEM 4300: Instrumental Analytical Chemistry

  and

  Select 3 credit hours of 3000-4000 level CHEM coursework not already used as a requirement in the major or concentration.

Applied Chemistry Courses (3 Credit Hours)

Select 3 credit hours from the following list of courses:

- CHEM 3398: Internship
- CHEM 3601L: Quantum Chemistry and Spectroscopy Laboratory
- CHEM 3602L: Thermodynamics and Reaction Kinetics Laboratory
- CHEM 4100: Directed Applied Research
- CHEM 4120L: Research Methods Laboratory

University Electives (9 Credit Hours)

In accordance with KSU Graduation Policy, students must earn a grade of "D" or better in these courses while maintaining a minimum 2.00 cumulative GPA.

Upper-Division Electives (3 Credit Hours)

Select 3 credit hours of 3000-4000 level coursework from the University Catalog.

Free Electives (6 Credit Hours)

Select 6 credit hours of 1000-4000 level coursework from the University Catalog.

Integrative Chemistry Concentration

Advanced Chemistry Courses (6 Credit Hours)

Select 3 credit hours from the following list of courses:

- CHEM 3030: Pharmaceutical Analytical Chemistry
- CHEM 3800: Forensic Analytical Chemistry

  and

  Select 3 credit hours of 3000-4000 level CHEM coursework not already used as a requirement in the major or concentration.

- CHEM 4300: Instrumental Analytical Chemistry

University Electives (21 Credit Hours)
In accordance with KSU Graduation Policy, students must earn a grade of "D" or better in these courses while maintaining a minimum 2.00 cumulative GPA.

Upper-Division Electives (12 Credit Hours)
Select 12 credit hours of 3000-4000 level coursework from the University Catalog. Courses may be taken from any department, but it is recommended for students to integrate their chemical interests and career goals. This area could be used for credit toward a KSU Minor.

Free Electives (9 Credit Hours)
Select 9 credit hours of 1000-4000 level coursework from the University Catalog.

Forensic Chemistry Concentration
Required Courses (1 Credit Hour)

- CHEM 3500L: Biochemistry Laboratory

Advanced Chemistry Courses (6 Credit Hours)

Select 6 credit hours from the following list of courses:

- CHEM 3030: Pharmaceutical Analytical Chemistry
- CHEM 3800: Forensic Analytical Chemistry
- CHEM 4300: Instrumental Analytical Chemistry

Applied Chemistry Courses (2 Credit Hours)

Select 2 credit hours from one of the following courses:

- CHEM 3398: Internship
- CHEM 4100: Directed Applied Research
- CHEM 4120L: Research Methods Laboratory

Supporting Discipline Courses (18 Credit Hours)

- CRJU 1101: Foundations of Criminal Justice
- SOCI 4432: Criminology

- CRJU 3301: Research Methods in Criminal Justice
  or
- CRJU 3320: Criminal Investigation
  Select 3 credit hours of 3000-4000 level STAT coursework

University Electives (6 Credit Hours)
In accordance with KSU Graduation Policy, students must earn a grade of "D" or better in these courses while maintaining a minimum 2.00 cumulative GPA.

Upper-Division Electives (6 Credit Hours)
Select 6 credit hours of 3000-4000 level coursework from the University Catalog. Courses may be taken from any department, but it is recommended for students to integrate their chemical interests and career goals.

Pharmaceutical Chemistry Concentration
Required Courses (4 Credit Hours)

- CHEM 3010: Medicinal Chemistry
- CHEM 3500L: Biochemistry Laboratory

Pharmaceutical Chemistry Elective Course (3 Credit Hours)
Choose 3 credit hours from the following list of courses. Students interested in pharmacy school should consider CHEM 3030.

- CHEM 3030: Pharmaceutical Analytical Chemistry
- CHEM 3800: Forensic Analytical Chemistry
- CHEM 4300: Instrumental Analytical Chemistry

University Electives (20 Credit Hours)
In accordance with KSU Graduation Policy, students must earn a grade of "D" or better in these courses while maintaining a minimum 2.00 cumulative GPA.

Upper-Division Electives (10 Credit Hours)
Select 10 credit hours of 3000-4000 level coursework from the University Catalog. Courses may be taken from any department, but it is recommended for students to integrate their chemical interests and career goals. This area could be used for credit toward a KSU Minor.

Free Electives (10 Credit Hours)

Select 10 credit hours of 1000-4000 level coursework from the University Catalog.

Program Total (120 Credit Hours)