

Mathematics and Physical Sciences

B.S. in Chemistry

Program Description

The Bachelor of Science in Chemistry is a foundational natural science degree that incorporates knowledge bases in chemistry, physics, mathematics and other related subjects, allowing students to develop the necessary theoretical and practical skills for a successful career in the private or public sectors as well as professional and graduate study. The program creates an educational environment that encourages independent and critical thinking; collegial exchange of ideas; effective reasoning; and communication skills and high ethical standards. The program aims to produce graduates who can:

- Acquire factual and theoretical knowledge of chemistry.
- Develop laboratory knowledge and skills while sustaining a commitment to safety.
- Employ technology to obtain and utilize chemical information.
- Communicate effectively.

Delivery Mode

Traditional (on campus)

Accreditation

The B.S. in Chemistry degree is accredited by the American Chemical Society (ACS).

Curriculum

The following eight-semester schedule of courses provides a recommended framework for completing this program of study in four years.

| Course | Credits |
|--|-----------|
| Freshman Year | |
| First Semester | 17 |
| CHE 101 General Chemistry I | 4 |
| ENG 101 English Composition I | 3 |
| UNI 100 First-Year Seminar | 1 |
| Free Elective (mathematics course, if needed, to prepare for Calculus I) | 3 |
| General Education Courses | 6 |
| | |
| Second Semester | 17 |
| CHE 102 General Chemistry II | 4 |
| CHE 331 Organic Chemistry I | 4 |
| ENG 102 English Composition II | 3 |
| MAT 281 Calculus I | 3 |
| General Education Course | 3 |
| | |
| Sophomore Year | |

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| Course | Credits |
|---|-----------------|
| Third Semester | 15 |
| CHE 104 Introduction to Experimental Chemistry | 3 |
| CHE 306 Inorganic Chemistry | 3 |
| CHE 341 Organic Chemistry II | 3 |
| MAT 282 Calculus II | 3 |
| General Education Course | 3 |
| | |
| Fourth Semester | 14 |
| CHE 320 Analytical/Instrumental Methods | 3 |
| CHE 371 Intermediate Laboratory I | 1 |
| PHY 101 College Physics I | 4 |
| MAT 381 Calculus II | 3 |
| General Education Course | 3 |
| | |
| Junior Year | |
| Fifth Semester | 15 |
| CHE 372 Intermediate Laboratory II | 1 |
| CHE 415 Biochemistry | 4 |
| PHY 202 College Physics II | 4 |
| Free Elective | 3 |
| General Education Course | 3 |
| | |
| Sixth Semester | 13 |
| CHE 461 Physical Chemistry I | 3 |
| CHE 471 Advanced Laboratory I | 1 |
| Free Elective | 3 |
| General Education Courses | 6 |
| | |
| Senior Year | |
| Seventh Semester | 15 or 16 |

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| Course | Credits |
|---------------------------------------|-----------------|
| CHE 462 Physical Chemistry II | 3 |
| CHE 472 Advanced Laboratory II | 1 |
| CHE 491 Research I | 2 |
| Chemistry Required Related Course | 3 or 4 |
| Free Electives | 6 |
| | |
| Eighth Semester | 14 or 15 |
| CHE 492 Research II | 2 |
| Chemistry Required Related Course | 3 or 4 |
| Free Electives | 6 |
| General Education Course | 3 |
| Total | 120 |

Program Notes: 42 total credits must be 300 level and above. At least one elective course (3 credits) must be 300 level and above.

Related Courses (select two; 6 or 7 credits)

- **CHE 381** Environ Chemistry (4 credits)
- **CHE 420** Adv. Analytical Chemistry (3 credits)
- **CHE 421** Adv. Inorganic Chemistry (3 credits)
- **CHE 433** Adv. Organic Chemistry (3 credits)
- **CHE 497** Special Topics (3 credits)

Free Electives (20 or 21 credits)

- Chemistry coursework is strengthened by taking additional courses in science and technology. Students are encouraged to enroll in additional courses in biology (BIO), chemistry (CHE), computer science (CSC), earth science (EAS), electrical engineering technology (EET), environmental science (ENS), industrial technology (ITE), mathematics (MAT) or physics (PHY). Students should work with their assigned advisers to explore possible options for a minor.

Program Webpage

<https://www.calu.edu/academics/undergraduate/bachelors/chemistry/index.aspx>