

CHEMISTRY, BS

The Bachelor of Science (BS) degree in Chemistry has been designed to prepare undergraduate students for graduate and professional schools or employment in the chemical sciences. The chemistry curriculum includes a core of chemistry, physics, and mathematics courses that will provide the students with skills essential for all chemistry-related careers, and will be combined with directed electives in an area of interest. Students will be prepared for the following professional programs: medical school, dental school, pharmacy school, veterinary school, and physical therapy and physician assistant programs. This curriculum is also designed to prepare students for the following graduate programs:

- chemistry,
- biochemistry,
- public health,
- environmental science,
- and forensic science.

Program Learning Outcomes

Graduates of this program will be able to:

- Demonstrate knowledge of the basic principles of major fields of chemistry.
- Demonstrate a broad range of basic laboratory skills applicable to chemistry, and improved chemical research skills.
- Demonstrate knowledge of technology related to chemistry, including laboratory instrumentation.
- Apply knowledge of physics and mathematics to solve chemical problems.
- Communicate scientific information in a clear and concise manner both orally and in writing.
- Collect, evaluate and interpret scientific data, and employ critical thinking to solve problems in chemistry and supporting fields.
- Collaborate effectively on team-oriented projects.
- Identify and describe the impact of chemistry on society.

Program Requirements

Code	Title	Credit Hours
Core IMPACTS		42
All core curriculum recommendations are shown under the Core IMPACTS section of the Undergraduate Graduation Requirements. (https://nextcatalog.clayton.edu/graduation-requirements/undergraduate-graduation-requirements/core-curriculum/#nonsciencemajorstext)		
Chemistry Major Program Course Requirements		
<i>Field of Study - Chemistry</i>		<i>18</i>
BIOL 1107 & 1107L	Principles of Biology I and Principles of Biology Lab I	4
BIOL 1108 & 1108L	Principles of Biology II and Principles of Biology Lab II	4
CHEM 2411 & 2411L	Organic Chemistry I and Organic Chemistry Laboratory I	4
PHYS 2211 & 2211L	Principles of Physics I and Principles of Physics Lab I	4
CHEM 2900	Chemistry Inquiry	2

<i>Chemistry Program Requirements</i>		<i>29</i>
MATH 1501	Calculus I (1 hour carryover from Core IMPACTS (M))	1
PHYS 2212 & 2212L	Principles of Physics II and Principles of Physics Lab II	4
CHEM 2412 & 2412L	Organic Chemistry II and Organic Chemistry Lab II	4
CHEM 3210 or CHEM 3220 or CHEM 3230	Off-Campus Internship I On-Campus Internship I Introductory Research I	3
CHEM 3311 & 3311L	Inorganic Chemistry and Inorganic Chemistry Laboratory	4
CHEM 3411 & 3411L	Physical Chemistry I: Thermodynamics and Kinetics and Physical Chemistry Laboratory I	4
CHEM 3811 & 3811L	Analytical Chemistry and Analytical Chemistry Lab	4
CHEM 4500	Senior Chemistry Seminar	1
CHEM 4811 & 4811L	Instrumental Analysis and Instrumental Analytical Chemistry Laboratory	4
CHEM 4999A or CHEM 4999E	Senior Evaluation Senior Evaluation	0
<i>Upper Division Chemistry Electives</i>		<i>6</i>
Choose any courses from the CHEM electives list below ²		
CHEM 3202	Introductory Biochemistry	3
CHEM 3202L	Biochemistry Laboratory I	1
CHEM 3412	Physical Chemistry II: Quantum Mechanics	3
CHEM 3412L	Physical Chemistry Laboratory II	1
CHEM 4110	Environmental Chemistry	3
CHEM 4200 or CHEM 4202	Biochemistry I Biochemistry I	3
CHEM 4201	Advanced Organic Chemistry	3
CHEM 4202L	Biochemistry Laboratory	3
CHEM 4203	Biochemistry II	3
CHEM 4203L	Biochemistry Laboratory II	1
CHEM 4205	Medicinal Chemistry	3
CHEM 4206	Polymer Chemistry	3
CHEM 4207	Electrochemistry	3
CHEM 4208	Food Chemistry	3
CHEM 4209	Color Chemistry	3
CHEM 4222	Chemistry Research Practicum	3
CHEM 4230	Chemistry Research Practicum I	3
CHEM 4231	Chemistry Research Pract II	3
CHEM 4232	Chemistry Research Pract III	3
CHEM 4301	Inorganic Chemistry	3
CHEM 4302	Solid State Chemistry	3
CHEM 4311	Advanced Inorganic Chemistry	3
CHEM 4401L	Advanced Laboratory I: Organic Synthesis	2
CHEM 4402L	Advanced Laboratory I: Biochemistry	2
CHEM 4403L	Advanced Laboratory I: Inorganic Synthesis	2
CHEM 4411	Biophysical Chemistry	3
CHEM 4412	Computational Chemistry	3
CHEM 4413	Qual Assurance & Qual Control	3

CHEM 4700	Special Topics in Chemistry	1-3
CHEM 4701	Special Topics in Chemistry II	1-4
CHEM 4702	Special Topics Chemistry III	1-4
CHEM 4812	Spectroscopy	3
CHEM 4900	Biocomputing	3
<i>Upper Division Science Electives</i>		13
Any 3xxx-4xxx level courses with CHEM, PHYS, ASTR, BIOL, MATH, ENVIS, FOSC and CSCI prefixes ^{2,3}		
<i>Free Electives</i> ²		12
Total Credit Hours		120

¹ Course prerequisites that are needed for mathematics requirements will be listed under free electives.

² Students must obtain no less than 39 credits in upper division courses, of which at least 21 credit hours are for upper division chemistry courses.

³ Students are allowed up to 12 total credit hours of experiential learning electives across all prefixes.

⁴ If MATH 1401 Elementary Statistics is taken for Core Impacts (M), MATH 1501 Calculus I must be taken in free electives area.