

BS IN CHEMISTRY

The Bachelor of Science (B.S.) degree in Chemistry is the professional degree in the field of chemistry and requires a minimum of 120 hours of course work and upon completion, students meet the minimum standards of the American Chemical Society as specified by its Committee on Professional Training. Degree recipients are therefore certified by the American Chemical Society and are eligible for full membership in the world's largest scientific society. The bachelor program in chemistry at UToledo has been continuously certified for over 70 years.

Chemistry majors study the properties, composition and structure of matter- and how matter changes and impacts everyday life. Chemistry is considered a cornerstone of the natural sciences and can lead to a wide range of careers in many different and diverse fields.

The B.S. degree in Chemistry provides students with a strong foundation

- in the traditional subdisciplines of chemistry- analytical, biochemistry, inorganic, organic, and physical
- in laboratory skills emphasizing hands-on training with advanced instrumentation in modern facilities
- in research working with faculty on projects that span the entire field of chemistry and biochemistry

Prepare students to

- continue their studies in graduate school toward the Masters or Ph.D. in chemistry or biochemistry
- enter professional programs such as law, business, medicine, and forensic or veterinary science
- gain employment with significant responsibility in laboratories in the chemical, pharmaceutical, biotech, clinical and allied professional industries.

Students pursuing a chemistry or biochemistry major may not elect the P/NC option in major or related courses, or prerequisites for these courses, except as noted in specific course descriptions. Students pursuing a BS/BA in Chemistry cannot double major with a BS/BA in Biochemistry, or minor in Chemistry. The minor in Green Chemistry and Engineering is permitted.

For the bachelor of science degree in chemistry 44 hours of CHEM courses are required.

The following courses must be included:

CHEM 1230	General Chemistry I
CHEM 1240	General Chemistry II
CHEM 1280	General Chemistry Lab I
CHEM 1290	General Chemistry Lab II
CHEM 2410	Organic Chemistry I
CHEM 2420	Organic Chemistry II
CHEM 2480	Organic Chemistry Laboratory I for Majors: Separations and Elementary Synthesis
CHEM 2490	Organic Chemistry Laboratory II for Majors: Synthesis and Identification
CHEM 3310	Analytical Chemistry
CHEM 3360	Analytical Chemistry Laboratory

CHEM 3510	Biochemistry I
CHEM 3610	Inorganic Chemistry I
CHEM 3730	Physical Chemistry I
CHEM 3740	Physical Chemistry II
CHEM 3860	Advanced Laboratory I
CHEM 3870	Advanced Laboratory II
CHEM 4300	Instrumental Analysis
CHEM 4880	Advanced Laboratory III

Optional advanced chemistry courses include any other 3000 or 4000 level CHEM courses *except* the following: CHEM 3712 CHEM 3722, CHEM 3732, CHEM 3742, CHEM 3910, CHEM 3920, and CHEM 4920

The following related courses are also required:

MATH 1830 and MATH 1840, or MATH 1850 and MATH 1860 (Calculus I and II); MATH 2850 Elementary Multivariable Calculus
PHYS 2130 and PHYS 2140 (Physics I and II)

A minimum cumulative GPA of 2.5 in chemistry courses is required for graduation with this degree.

Below is a sample plan of study. Consult your degree audit for your program requirements.

First Term		Hours
CHEM 1230	General Chemistry I	4
CHEM 1280	General Chemistry Lab I	1
Choose one of the following		4
MATH 1830	Calculus I For Mathematicians, Scientists And Educators	
MATH 1850	Single Variable Calculus I	
ENGL 1110	College Composition I	3
NSM 1000	Natural Sciences & Mathematics	2
Arts/Humanities Core		3
Hours		17

Second Term		Hours
CHEM 1240	General Chemistry II	4
CHEM 1290	General Chemistry Lab II	1
Choose one of the following		4
MATH 1840	Calculus II For Mathematicians, Scientists And Educators	
MATH 1860	Single Variable Calculus II	
CHEM 1910	Survey Of Research	1
ENGL 1130	College Composition II: Academic Disciplines And Discourse	3
Social Sciences Core		3
Hours		16

Third Term		Hours
CHEM 2410	Organic Chemistry I	3
CHEM 2480	Organic Chemistry Laboratory I for Majors: Separations and Elementary Synthesis	2
MATH 2850	Elementary Multivariable Calculus	4
CHEM 3310	Analytical Chemistry	2

PHYS 2130	Physics For Science And Engineering Majors I	5
Hours		16
Fourth Term		
CHEM 2420	Organic Chemistry II	3
CHEM 2490	Organic Chemistry Laboratory II for Majors: Synthesis and Identification	2
CHEM 3360	Analytical Chemistry Laboratory (WAC)	2
PHYS 2140	Physics For Science And Engineering Majors II	5
Social Sciences Core		3
Hours		15
Fifth Term		
CHEM 3510	Biochemistry I	3
CHEM 3730	Physical Chemistry I	3
CHEM 3860	Advanced Laboratory I (WAC)	2
CHEM 3910	Undergraduate Research II	1
Multicultural Non-US Diversity		3
Social Science Core elective		3
Hours		15
Sixth Term		
CHEM 3610	Inorganic Chemistry I	3
CHEM 3740	Physical Chemistry II	3
CHEM 3870	Advanced Laboratory II	2
CHEM 3910	Undergraduate Research II	1
Multicultural Diversity of US		3
Elective		3
Hours		15
Seventh Term		
CHEM 4300	Instrumental Analysis	2
CHEM 4880	Advanced Laboratory III	2
CHEM 4910	Undergraduate Research III	1
Choose One of the Following		3-4
BIOL 2150	Fundamentals Of Life Science: Diversity Of Life, Evolution And Adaptation	
BIOL 2170	Fundamentals of Life Science: Biomolecules, Cells, and Inheritance	
EEES 2010	Introduction To Environmental Studies	
EEES 2100	Fundamentals Of Geology	
EEES 2150	Biodiversity	
Electives		6
Hours		14-15
Eighth Term		
Art/Humanities Core		3
Electives - to reach 120 hours		9
Hours		12
Total Hours		120-121

Electives without recommendation are to be determined by the student using Banner Degree Audit program to determine which courses fulfill requirements and then by student interest of courses presented as satisfying the requirement.

Students in the Chemistry BS degree program must be able to solve, with the appropriate mathematical techniques including the use of Calculus, and analyze any problem from the core areas of chemistry as well as the area of their concentration.

Students in the Chemistry BS degree program must be able to conduct and analyze experimental procedures, with the appropriate mathematical techniques including the use of Calculus, to explain uncertainties associated with the measurements.

Students in the Chemistry BS degree program must be able to describe data and results in both written and oral formats.

See course catalog for pre- and co-requisites.