

Bachelor of Science in Chemistry Degree Requirements
Department of Chemistry & Biochemistry
College of Natural Sciences and Mathematics
The University of Toledo

I. Chemistry Major Requirements

A. Required Courses in the Major

Course	Credit Hrs	Prerequisites*/Corequisites	Semester(s) Offered
CHEM 1230 General Chemistry I	4	1090 or Placement Test	F,S,Su
CHEM 1280 General Chemistry Lab I	1	1230	F,S,Su
CHEM 1240 General Chemistry II	4	1230	F,S,Su
CHEM 1290 General Chemistry Lab II	1	1280, 1240	F,S,Su
CHEM 2410 Organic Chemistry I	3	1240	F,S,Su
CHEM 2480 Organic Chemistry Laboratory I for Majors: Separations and Elementary Synthesis	2	1290, 2410	F
CHEM 2420 Organic Chemistry II	3	2410	F,S,Su
CHEM 2490 Organic Chemistry Laboratory II for Majors: Synthesis and Identification	2	2480, 2420	S
CHEM 3310 Analytical Chemistry	2	1240	F
CHEM 3360 Analytical Chemistry Lab	2	1290, 3310	S
CHEM 3510 Biochemistry I	3	2420	F
CHEM 3610 Inorganic Chemistry I	3	2420	S
CHEM 3730 Physical Chemistry I	3	2420, 2490, MATH 2850, PHYS 2140	F
CHEM 3740 Physical Chemistry II	3	3730	S
CHEM 3860 Advanced Laboratory I	2	2420, 2490, 3730	F
CHEM 3870 Advanced Laboratory II	2	3860, 3740	S
CHEM 4300 Instrumental Analysis	2	3310, 3360, 3730	F
CHEM 4880 Advanced Laboratory III	2	3870, 4300	F

B. Required Courses in Related Fields

MATH 1830 Calculus I	4	None	1830: F
Or MATH 1850			1850: F, S, Su
MATH 1840 Calculus II	4	1840: MATH 1830	1840: S
Or MATH 1860		1860: MATH 1850	1860: F, S, Su
MATH 2850 Calculus III	4	MATH 1840 or 1860	F, S, Su
PHYS 2130 Physics for Sci/Eng I	5	MATH 1830 or 1850	F, S, Su
PHYS 2140 Physics for Sci/Eng II	5	PHYS 2130	F, S, Su

*Prerequisites must be completed before taking a course; corequisites may be completed before or concurrently with a course. Beginning with the Fall 2017 Semester, students will only be able to enroll in MATH and 1000-level CHEM courses, if they have earned a grade of C or better in the prerequisite MATH or CHEM course. To enroll in 2000-4000 level CHEM courses, students must earn a C- or better in the prerequisite course. Students with a catalog year prior to Fall 2017 may request an override of this requirement from the instructor if they earned a grade of D- or above in the prerequisite course.

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II. College of Natural Sciences and Mathematics Core Curriculum (B.S.)

NSM 1000: Orientation (not required for transfer students)

English Composition I and II (Grade of C or better)

Calculus I and II (satisfied by Required Courses in Related Fields)

Two Writing Across The Curriculum courses
(satisfied by CHEM 3360/3860)

Three Science/Math Courses (9 credit hours) from 3 different disciplines outside of major

The Math and Physics courses required for the B.S. in Chemistry count for two of these courses – a third course must be chosen from either Biology or Environmental Sciences. Your degree audit will list courses that satisfy this requirement.

III. University of Toledo Core Curriculum

*English Composition I and II

*Mathematics (3 hours)

Social Sciences (6 hours – 2 disciplines)

Arts and Humanities (6 hours -2 disciplines)

*Natural Sciences (6 hours)

*Electives (Math, Social Sciences, Humanities or Natural Sciences) (9 hours)

Multicultural Courses: US Diversity (3 hours), Non-Western (3 hours)

(One or both multicultural course may count in a second area)

*Satisfied by Completion of Major or NSM Requirements in I and II

IV. General Information

A. 124 Credit Hours Required

At least 124 credit hours are required for your degree, and most students will need to take additional courses beyond the Major, College and University requirements to reach this number, as well as to maintain a full-time courseload. These may be advanced chemistry courses, other science courses, or non-science courses. Check the online course catalog and course schedule for which of these courses are offered in a given semester/year and prerequisites/corequisites.

B. GPA/Level Requirements

2.5 GPA in CHEM coursework must be maintained (2.0 overall)

A total of 32 credits must be completed at the 3000-4000 level

A total of 64 credits must be completed at the 2000-4000 level

V. Departmental Honors Requirements

- Meet with an honors advisor to declare your intention to pursue departmental honors and at least once a year thereafter to go over your progress towards graduating with honors
- Maintain 3.3 cumulative overall GPA and 3.5 cumulative GPA in chemistry courses
- At least six hours of honors CHEM courses at the 3000 level or above in at least two different areas (biochemistry analytical, inorganic, organic, physical chemistry)
- Complete at least one semester of CHEM 4910 (Undergraduate Research) and write and present an Honors Thesis based on your original research before graduation.

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VI. Sample Schedule of Courses for B.S. Chemistry Majors

First Year		Third Year	
<u>Fall Semester</u>		<u>Fall Semester</u>	
CHEM 1230 General Chemistry I	4	CHEM 3510 Biochemistry I	3
CHEM 1280 General Chemistry Lab I	1	CHEM 3730 Physical Chemistry I	3
MATH 1850 Calculus I	4	CHEM 3860 Advanced Laboratory I	2
NSM 1000 Orientation	1	<i>CHEM 3910 Undergraduate Research</i>	2
ENGL 1110 Composition I	3	BIOL or EEES NSM requirement	3
University Core Humanities	3	University Core Humanities	3
Total	16	Total	16
<u>Spring Semester</u>		<u>Spring Semester</u>	
<i>CHEM 1910 Survey of Research*</i>	1	CHEM 3610 Inorganic Chemistry I	3
CHEM 1240 General Chemistry II	4	CHEM 3740 Physical Chemistry II	3
CHEM 1290 General Chemistry Lab II	1	CHEM 3870 Advanced Laboratory II	2
MATH 1860 Calculus II	4	<i>CHEM 3910 Undergraduate Research</i>	2
ENGL 1130 Composition II	3	University Core Social Science	3
University Core Social Science	3	<i>Electives/Minor</i>	3
Total	16	Total	16
Second Year		Fourth Year	
<u>Fall Semester</u>		<u>Fall Semester</u>	
CHEM 2410 Organic Chemistry I**	3	CHEM 4300 Instrumental Analysis	2
CHEM 2480 Organic Lab for Majors I: Organic Separations and Elementary Synthesis	2	CHEM 4880 Advanced Laboratory III	2
CHEM 3310 Analytical Chemistry	2	<i>CHEM 4910 Undergraduate Research</i>	2
MATH 2850 Multivariable Calculus	4	<i>Advanced CHEM Elective</i>	4
PHYS 2130 Physics I	5	University Core U.S. Diversity	3
Total	16	<i>Electives/Minor</i>	3
<u>Spring Semester</u>		<u>Spring Semester</u>	
CHEM 2420 Organic Chemistry II**	3	<i>Advanced CHEM Elective</i>	4
CHEM 2490 Organic Lab for Majors II: Synthesis and Identification of Organic Compounds	2	<i>CHEM 4910 Undergraduate Research</i>	2
CHEM 3360 Analytical Chemistry Lab	2	<i>Electives/Minor</i>	3
PHYS 2140 Physics II	5	<i>Electives/Minor</i>	3
University Core Multicultural Diversity	3	Total	16
Total	15		

Full-time students must be registered for 12-16 credit hours.

Courses in italics are not specifically required for the degree but may be required to reach 124 credit hours

*CHEM 1910 is not required but is a 1 credit hour Pass/No Credit course useful for learning about undergraduate research, which is a required component of Departmental Honors.

**CHEM 2410/2420 can be taken during the summer between Year 1 and Year 2.