

Bachelor of Science with Major in Chemistry

Required 120 credits (36 of which must be numbered 300 or above, and 30 of which must be from a 4-year institution) including:

Major Requirements

41 hours (Option A) or 39 hours (Option B) of Chemistry and Biochemistry including:

Option A. Physical Science Emphasis

I. Essential Studies Requirements (see University ES guidelines and course listings)

II. Chemistry required courses:

Code	Title	Credits
CHEM 101	Orientation to Chemistry	1
CHEM 121 & 121L	General Chemistry I and General Chemistry I Laboratory ¹	4
CHEM 122 & 122L	General Chemistry II and General Chemistry II Laboratory ²	4
CHEM 333 & 333L	Analytical Chemistry and Analytical Chemistry Laboratory	4
CHEM 341 & 341L	Organic Chemistry I and Organic Chemistry I Laboratory	4
CHEM 342 & 342L	Organic Chemistry II and Organic Chemistry II Laboratory	4
CHEM 361	Problem Solving in Organic Chemistry I	1
CHEM 362	Problem Solving in Organic Chemistry II	1
CHEM 441	Instrumental Analysis I - Spectroscopy	2
CHEM 442	Instrumental Analysis II - Electrochemistry	2
CHEM 443	Instrumental Analysis III - Chromatography/Mass Spectrometry	2
CHEM 470 & 470R	Thermodynamics Kinetics and Thermodynamics Kinetics Recitation	4
CHEM 470L	Physical Chemistry Laboratory	1
CHEM 471 & 471R	Quantum Mechanics Spectroscopy and Quantum Mechanics Spectroscopy Recitation	4
CHEM 495	Chemistry Capstone	3
Total Credits		41

¹ Student may select to enroll in CHEM 221 Fundamentals of Chemistry - Concepts and CHEM 221L Fundamentals of Chemistry Laboratory in place of CHEM 121 and CHEM 121L.

² Student may select to enroll in CHEM 254 Inorganic Chemistry I and CHEM 254L Inorganic Chemistry I Laboratory in place of CHEM 122 and CHEM 122L.

III. Requirements in other departments:

Code	Title	Credits
MATH 107	Precalculus	4
MATH 165	Calculus I	4
MATH 166	Calculus II	4
PHYS 251	University Physics I	4
PHYS 252	University Physics II	4
Total Credits		20

Option B. Biochemistry Emphasis

I. Essential Studies Requirements (see University ES guidelines and course listings)

II. Chemistry required courses:

Code	Title	Credits
CHEM 101	Orientation to Chemistry	1
CHEM 121 & 121L	General Chemistry I and General Chemistry I Laboratory	4
CHEM 122 & 122L	General Chemistry II and General Chemistry II Laboratory	4
CHEM 333 & 333L	Analytical Chemistry and Analytical Chemistry Laboratory	4
CHEM 341 & 341L	Organic Chemistry I and Organic Chemistry I Laboratory	4
CHEM 342 & 342L	Organic Chemistry II and Organic Chemistry II Laboratory	4
CHEM 361	Problem Solving in Organic Chemistry I	1
CHEM 362	Problem Solving in Organic Chemistry II	1
CHEM 466	Fundamentals of Physical and Biophysical Chemistry	3
CHEM 466L	Fundamentals of Physical and Biophysical Chemistry Laboratory	1
CHEM 495	Chemistry Capstone	3
Total Credits		30

III. Requirements in other departments:

Code	Title	Credits
BIMD 301	Biochemistry	3
BIMD 401	Advanced Biochemistry	3
BIMD 494	Directed Studies	1-4
BIOL 150 & 150L	General Biology I and General Biology I Laboratory	4
BIOL 151 & 151L	General Biology II and General Biology II Laboratory	4
BIOL 315	Genetics ¹	3
or BIOL 341	Cell Biology	
or BIMD 302 & 302L	General Microbiology Lecture and General Microbiology Laboratory	
MATH 103	College Algebra	3
or MATH 107	Precalculus	
MATH 146	Applied Calculus I ²	3
or MATH 165	Calculus I	
PHYS 211	College Physics I	4
PHYS 212	College Physics II	4
Total Credits		32-35

¹ Students may choose one of the three courses to fulfill requirement. If students select to take BIMD 302 General Microbiology Lecture they must also enroll in BIMD 302L General Microbiology Laboratory.

² If a student would like the option to change into the ACS track or the Physical Science Option at a later date, students should enroll in MATH 165 Calculus I.

Teacher Licensure

Through a partnership with the College of Education and Human Development, the Department of Teaching, Leadership & Professional Practice students may seek secondary licensure in Chemistry. The following program of study must be completed:

I. Chemistry Coursework

1. Chemistry Courses required for a Chemistry degree (B.S. Chemistry or B.S. Chemistry-ACS).
2. Essential Studies coursework.

II. Admission to the Secondary Program i.e., completion of preadmission courses. See College of Education and Human Development for admission and licensing requirements (<https://catalog.und.edu/undergraduateacademicinformation/departmentalcoursesprograms/teachingandlearning/tl-bsed-se/>). Including courses:

T&L 250 Introduction to Education

T&L 251 Understanding Individuals with Different Abilities

III. The program in Secondary Education (see Department of Teaching, Leadership & Professional Practice (<https://catalog.und.edu/undergraduateacademicinformation/departmentalcoursesprograms/teachingandlearning/tl-bsed-se/>))

Chemistry majors seeking secondary licensure must have an advisor in both the Chemistry Department and the Department of Teaching, Leadership & Professional Practice.