Roadmap for BS Degree in Chemistry
American Chemical Society – approved
Department of Chemistry & Biochemistry
2019-2020

This roadmap is a typical 4-year schedule for obtaining a BS in Chemistry which is approved by the American Chemical Society. The degree covers all foundational subdisciplines including Inorganic, Organic, Analytical, Physical and Biochemistry. In addition, in-depth coursework is required in 3 of the 5 subdisciplines.

First Year

Fall Semester	15 credits
CHEM 105X - General Chemistry I	4
MATH 251X – Calculus I	4
WRTG F111X - Writing Across Contexts	3
LS 101X - Library and Information Research	1
GER Social Sciences	3

Spring Semester	14 credits
CHEM 106X - General Chemistry II	4
MATH 252X - Calculus II	4
COJO 131X or 141X - Oral Communication	3
GER Humanities	3

Second Year

Fall Semester	15 credits
CHEM 212 - Chemical Equibrium and Analysis	4
MATH 253X -Calculus III	4
PHYS 103X or 211X - General Physics I	4
WRTG F213X	3

Spring Semester	17 credits
CHEM 202 - Basic Inorganic Chemistry	4
*CHEM 314 - Instrumental Analytical Laboratory	3
PHYS 104X or 212X - General Physics	4
GER Social Sciences	3
GER Arts	3

Third Year

Fall Semester	14 credits
CHEM 321 - Organic Chemistry I	4
CHEM 331 - Physical Chemistry I	4
Elective	3
GER Ethics - see catalog for courses	3
Spring Semester	17 credits
CHEM 325 - Organic Chemistry II	4
CHEM 332 - Physical Chemistry II	4
GER Humanities, Arts or Social Sciences	3
Electives	6

Fourth Year

Fall Semester	16 credits
*CHEM 402 - Inorganic Chemistry	3
or *CHEM 450 Inform & Storage (Biochem)	
CHEM 434 - Chemistry Capstone Lab	3
CHEM 481 - Seminar	1
CHEM 488 - Research	3
Electives	6
Spring Semester	14 credits
Advanced Chem Elective	3
CHEM 351 - General Biochem - Metabolism	3
CHEM 482 - Seminar	2
CHEM 488 - Research (Recommended)	3
Elective	3

***Complete two of the following: 6 credits**

CHEM 314 - Analytical Instrumental Laboratory
CHEM 402 - Inorganic Chemistry
CHEM 450 - Information Storage and Transfer: Molecules and Pathways

Roadmap for BS Degree in Chemistry
Biochemistry Concentration
Department of Chemistry & Biochemistry
2019-2020

This roadmap is a typical 4-year schedule for obtaining a BS in Chemistry with Biochemistry Concentration. Electives must be chosen from courses listed at the bottom. Two categories are represented; Advanced Chemistry electives (4 courses) and Biology electives (10 credits). The following is an example. Consult the catalog and your advisor for course planning.

First Year

Fall Semester	16 credits
CHEM 105X - General Chemistry I	4
MATH 251X – Calculus I	4
WRTG F111X - Writing Across Contexts	3
LS 101X - Library and Information Research	1
BIOL 115X - Fundamentals of Biology I	4

Spring Semester	15 credits
CHEM 106X - General Chemistry II	4
MATH 252X - Calculus II	4
COJO 131X or 141X - Oral Communication	3
BIOL 116X - Fundamentals of Biology II	4

Second Year

Fall Semester	16 credits
CHEM 212 - Chemical Equilibrium and Analysis	4
CHEM 321 - Organic Chemistry I	4
PHYS 103X or 211X - General Physics I	4
*MATH 253X - Calculus III	4

Spring Semester	14 credits
CHEM 325 - Organic Chemistry	4
CHEM 351 - Biochemistry Metabolism	3
PHYS 104X or 212X - General Physics II	4
WRTG 213X - Writing for the Sciences	3

Third Year

Fall Semester	15 credits
CHEM 331 - Physical Chemistry I	4
CHEM 450 - Information and Storage (Biochem)	3
CHEM 488 - Research	2
GER Arts	3
GER Social Sciences	3

Spring Semester	16 credits
CHEM 202 - Inorganic Chemistry	3
CHEM 488 - Research	2
*CHEM 332 - Physical Chem II	4
GER Humanities	3
**BIOL 260 Principles of Genetics	4

Fourth Year

Fall Semester	15 credits
*CHEM 314 - Analytical Instrumental Lab	3
*CHEM 420 - Applications NMR	3
GER Social Sciences	3
CHEM 481 - Seminar	1
CHEM 488 - Research (Capstone)	2
**CHEM 474 Neurochemistry	3

Spring Semester	15 credits
GER - Ethics	3
GER - Humanities, Arts, or Social Sciences	3
CHEM 482 - Seminar	2
CHEM 488 - Research (Capstone)	3
BIOL 310 Animal Physiology	4

Electives:

Select four (4) of the following:

*CHEM 314 – Analytical Instrumental Lab
*CHEM 332 – Physical Chemistry II
*CHEM 402 – Inorganic Chemistry
*CHEM 420 – Applications of NMR Spectroscopy
*Math 253 – Calculus III

Select ten (10) credits of the following:

**CHEM 360 – Cell and Molecular Biology
**CHEM 455 - Environmental Toxicology
**CHEM 470 - Cellular and Molecular Neurosci
**CHEM 474 - Neurochemistry
**BIOL 240 - Beginnings in Microbiology
**BIOL 260 - Principles of Genetics
**BIOL 310 - Animal Physiology
**BIOL 342 - Microbiology
**BIOL 402 - Biomedical and Research Ethics
**BIOL 417 - Neurobiology
**BIOL 462 - Infectious Disease
**BIOL 465 - Immunology

Roadmap for BS Degree in Chemistry
Environmental Chemistry Concentration
Department of Chemistry & Biochemistry
2019-2020

This roadmap is a typical 4-year schedule for obtaining a BS in Chemistry with Environmental Concentration. The pathway is similar to the ACS-approved degree, with the exception that four environmentally-related courses are required in addition to the core chemistry courses. See the catalog for a list of environmental courses to choose from. Students desiring an ACS-approved degree should also take CHEM 402 Inorganic Chemistry or CHEM 450 Information and Storage (Biochemistry).

First Year

Fall Semester	15 credits
CHEM 105X - General Chemistry I	4
MATH 251X – Calculus I	4
WRTG F111X - Writing Across Contexts	3
LS 101X - Library and Information Research	1
GER Social Sciences	3

Spring Semester	14 credits
CHEM 106X - General Chemistry II	4
MATH 252X - Calculus II	4
COJO 131X or 141X - Oral Communication	3
*Environmental Elective lower level - see catalog	3

Second Year

Fall Semester	15 credits
CHEM 212 - Chemical Equilibrium and Analysis	4
MATH 253X -Calculus III	4
PHYS 103X or 211X - General Physics I	4
WRTG F213X	3

Spring Semester	17 credits
CHEM 202 - Basic Inorganic Chemistry	4
CHEM 314 - Analytical Instrumental Laboratory	3
PHYS 104X or 212X - General Physics II	4
*Environmental Elective lower level - see below	3
GER Social Sciences	3

Third Year

Fall Semester	14 credits
CHEM 321 - Organic Chemistry I	4
CHEM 331 - Physical Chemistry I	4
GER Arts	3
GER Ethics	3

Spring Semester	17 credits
CHEM 325 - Organic Chemistry II	4
CHEM 332 - Physical Chemistry II	4
GER Humanities, Arts or Social Sciences	3
GER Humanities	3
Elective	3

Fourth Year

Fall Semester	16 credits
**Environmental Elective upper level - see below	3
Electives	6
CHEM 434 - Chemistry Capstone Lab	3
CHEM 481 - Seminar	1
CHEM 488 - Research	3

Spring Semester	14 credits
Elective	3
CHEM 351 - General Biochem - Metabolism	3
CHEM 482 - Seminar	2
CHEM 488 - Research (recommended)	3
**Environmental elective upper level - see below	3

***Complete two of the following: 7-8 credits**

ATM 101X - Weather and Climate of Alaska
BIOL 115X - Fundamentals of Biology I
BIOL 116X - Fundamentals of Biology II
GEOS 101X -The Dynamic Earth
GEOS 262 - Rocks and Minerals

****Complete two from the following: 6-7 credits**

ATM 401 - Intro to Atmospheric Sciences
BIOL 342 - Microbiology
CHEM 406 - Atmospheric Chemistry
CHEM 455 - Environmental Toxicology
GEOS 417 - Introduction to Geochemistry
NRM 380 - Soils and the Environment