

# CHEMISTRY B.S.

## Program Requirements

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## American Chemistry Society-approved Minimum Requirements for Chemistry B.S.: 120 credits

Students must earn a C- grade or better in each course.

Code	Title	Credits
<b>General</b>		
Complete the general university requirements. ( <a href="http://catalog.uaf.edu/bachelors/#gurbachelorsdegreestext">http://catalog.uaf.edu/bachelors/#gurbachelorsdegreestext</a> )		
<b>General Education Requirements</b>		
Complete the general education requirements. ( <a href="http://catalog.uaf.edu/bachelors/#generaleducationrequirementstext">http://catalog.uaf.edu/bachelors/#generaleducationrequirementstext</a> )		36-40
As part of the general education requirements, complete the following:		
MATH F251X	Calculus I	
PHYS F123X and PHYS F124X	College Physics I and College Physics II	
or PHYS F211X and PHYS F212X	General Physics I and General Physics II	
<b>B.S. Degree Requirements</b>		
Complete the B.S. degree requirements. ( <a href="http://catalog.uaf.edu/bachelors/#bachelorofsciencetext">http://catalog.uaf.edu/bachelors/#bachelorofsciencetext</a> )		16
As part of the B.S. requirements, complete the following:		
MATH F252X	Calculus II	
<b>Chemistry Program Requirements</b>		
Complete the following:		
CHEM F105X	General Chemistry I	4
CHEM F106X	General Chemistry II	4
CHEM F202	Basic Inorganic Chemistry	3
CHEM F212	Chemical Equilibrium and Analysis	4
CHEM F321	Organic Chemistry I	4
CHEM F325	Organic Chemistry II	4
CHEM F331	Physical Chemistry I	4
CHEM F332	Physical Chemistry II	4
CHEM F434	Chemistry Capstone Laboratory <sup>1</sup>	3
CHEM F449	General Biochemistry: Metabolism	3
CHEM F481	Seminar <sup>1</sup>	1
CHEM F482	Seminar <sup>1</sup>	2
MATH F253X	Calculus III	4
Complete one of the following:		3-4
CHEM F288 and CHEM F488	Introduction to Chemical Research and Undergraduate Chemistry and Biochemistry Research (2 credits each)	
CHEM F488	Undergraduate Chemistry and Biochemistry Research (3 credits) <sup>1</sup>	
Complete two of the following:		6

CHEM F314	Analytical Instrumental Laboratory
CHEM F402	Inorganic Chemistry
CHEM F450	Information Storage and Transfer: Molecules and Pathways

### Electives

General Electives 10-15

**Total Credits** 120

<sup>1</sup> Fulfills the baccalaureate capstone requirement.

**Note:** Upon completing the required curriculum and fulfilling all general university requirements, students will receive a certificate from the American Chemical Society indicating approval of their degree program.

## Optional Concentrations: Biochemistry, Environmental Chemistry

### BIOCHEMISTRY

#### Minimum Requirements for Degree: 120 credits

Students must earn a C- grade or better in each course.

Code	Title	Credits
<b>General University Requirements</b>		
Complete the general university requirements. ( <a href="http://catalog.uaf.edu/bachelors/#gurbachelorsdegreestext">http://catalog.uaf.edu/bachelors/#gurbachelorsdegreestext</a> )		
<b>General Education Requirements</b>		
Complete the general education requirements. ( <a href="http://catalog.uaf.edu/bachelors/#generaleducationrequirementstext">http://catalog.uaf.edu/bachelors/#generaleducationrequirementstext</a> )		36-40
As part of the general education requirements, complete the following:		
MATH F251X	Calculus I	
PHYS F123X and PHYS F124X	College Physics I and College Physics II	
or PHYS F211X and PHYS F212X	General Physics I and General Physics II	
<b>B.S. Degree Requirements</b>		
Complete the B.S. degree requirements. ( <a href="http://catalog.uaf.edu/bachelors/#bachelorofsciencetext">http://catalog.uaf.edu/bachelors/#bachelorofsciencetext</a> )		16
As part of the B.S. requirements, complete the following:		
MATH F252X	Calculus II	
<b>Chemistry Program Requirements</b>		
Complete the following:		
BIOL F115X	Fundamentals of Biology I	4
BIOL F116X	Fundamentals of Biology II	4
CHEM F105X	General Chemistry I	4
CHEM F106X	General Chemistry II	4
CHEM F202	Basic Inorganic Chemistry	3
CHEM F212	Chemical Equilibrium and Analysis	4
CHEM F321	Organic Chemistry I	4
CHEM F325	Organic Chemistry II	4
CHEM F331	Physical Chemistry I	4
CHEM F449	General Biochemistry: Metabolism	3
CHEM F450	Information Storage and Transfer: Molecules and Pathways	3

CHEM F481	Seminar	1
CHEM F482	Seminar	2
CHEM F488	Undergraduate Chemistry and Biochemistry Research	3
Complete four of the following: <sup>2</sup>		12-14
CHEM F314	Analytical Instrumental Laboratory	
CHEM F332	Physical Chemistry II	
CHEM F402	Inorganic Chemistry	
CHEM F420	Applications of NMR Spectroscopy	
CHEM F434	Chemistry Capstone Laboratory	
MATH F253X	Calculus III	
Complete 10 credits from the following: <sup>2</sup>		10
BIOL F240X	Beginnings in Microbiology	
BIOL F260	Principles of Genetics	
BIOL F310	Animal Physiology	
BIOL F342	Microbiology	
BIOL F402	Biomedical and Research Ethics	
BIOL F417	Neurobiology	
BIOL F462	Infectious Diseases	
CHEM F360	Cell and Molecular Biology	
CHEM F455	Environmental Toxicology	
CHEM F470	Cellular and Molecular Neuroscience	
CHEM F474	Neurochemistry	
<b>Total Credits</b>		<b>121-127</b>

<sup>2</sup> Courses selected under these areas must meet baccalaureate degree requirements for 39 upper-division credits.

**Note:** This degree is intended for students interested in careers in biochemistry or pre-professional students, providing extra depth in biological sciences. The selection of optional courses will determine if the curriculum conforms to the American Chemistry Society-approved chemistry degree. Students desiring an ACS-approved chemistry degree should consult with their advisor about optional courses that will meet ACS requirements.

## ENVIRONMENTAL CHEMISTRY

### Minimum Requirements for Degree: 120 credits

Students must earn a C- grade or better in each course.

Code	Title	Credits
<b>General University Requirements</b>		
Complete the general university requirements. ( <a href="http://catalog.uaf.edu/bachelors/#gurbachelorsdegreestext">http://catalog.uaf.edu/bachelors/#gurbachelorsdegreestext</a> )		
<b>General Education Requirements</b>		
Complete the general education requirements. ( <a href="http://catalog.uaf.edu/bachelors/#generaleducationrequirementstext">http://catalog.uaf.edu/bachelors/#generaleducationrequirementstext</a> )		36-40
As part of the general education requirements, complete the following:		
MATH F251X	Calculus I	
PHYS F123X and PHYS F124X	College Physics I and College Physics II	
or PHYS F211X and PHYS F212X	General Physics I and General Physics II	

<b>B.S. Degree Requirements</b>		
Complete the B.S. degree requirements. ( <a href="http://catalog.uaf.edu/bachelors/#bachelorofsciencetext">http://catalog.uaf.edu/bachelors/#bachelorofsciencetext</a> )		16

As part of the B.S. requirements, complete the following:

MATH F252X	Calculus II	
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<b>Chemistry Program Requirements</b>		
Complete the following:		

CHEM F105X	General Chemistry I	4
CHEM F106X	General Chemistry II	4
CHEM F202	Basic Inorganic Chemistry	3
CHEM F212	Chemical Equilibrium and Analysis	4
CHEM F314	Analytical Instrumental Laboratory	3
CHEM F321	Organic Chemistry I	4
CHEM F325	Organic Chemistry II	4
CHEM F331	Physical Chemistry I	4
CHEM F332	Physical Chemistry II	4
CHEM F434	Chemistry Capstone Laboratory	3
CHEM F481	Seminar	1
CHEM F482	Seminar	2
CHEM F488	Undergraduate Chemistry and Biochemistry Research	3-4
or CHEM F288 and CHEM F488	Introduction to Chemical Research and Undergraduate Chemistry and Biochemistry Research	
MATH F253X	Calculus III	4

Complete two of the following: 7-8

ATM F101X	Weather and Climate of Alaska	
BIOL F115X	Fundamentals of Biology I	
BIOL F116X	Fundamentals of Biology II	
GEOS F101X	The Dynamic Earth	
GEOS F262	Rocks and Minerals	

Complete two of the following: 6-7

ATM F401	Introduction to Atmospheric Sciences	
BIOL F342	Microbiology	
CHEM F406	Atmospheric Chemistry	
CHEM F455	Environmental Toxicology	
GEOS F417	Introduction to Geochemistry	
NRM F380	Soils and the Environment	

<b>Electives</b>		
General Electives		1-8

**Total Credits** 120

**Note:** A course in statistics (e.g. STAT F200X, STAT F300, or GEOS F430) is suggested. The selection of optional courses will determine if the curriculum conforms to the American Chemistry Society-approved chemistry degree. Students desiring an ACS-approved chemistry degree should consult with their advisor about optional courses that will meet ACS requirements.

## REQUIREMENTS FOR CHEMISTRY TEACHERS (GRADES 7-12)

Code	Title	Credits
Complete all the requirements of the chemistry B.A. or B.S. degree.		

All prospective science teachers must complete the following:

PHIL F481	Philosophy of Science	3
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**Note:** We strongly recommend that prospective secondary science teachers seek advising from the Alaska College of Education early in their undergraduate degree program so that they can be appropriately advised of the State of Alaska requirements for teacher licensure.