CHEMISTRY BA/BS

The Chemistry major prepares students for careers in research, industry and education as well as for graduate-level study. Students select one of two emphasis areas: Chemistry or Geochemistry.

The Chemistry emphasis provides a strong foundation in organic, inorganic, analytical, biological and physical chemistry. It supports as broad range of careers including those in research, industry and health professions such as pre-medical, pre-dental, pharmacy, and medical technology.

The Geochemistry integrates analytical chemistry with the deductive thinking skills, spatial reasoning, and understanding of earth materials provided by the earth sciences. This interdisciplinary training equips students for careers in the geo-technical industry or for advanced study in environmental earth science.

Students in both emphasis areas often enhance their education by participating in undergraduate research and serving as teaching assistants.

Students interested in teaching may also complete courses required for secondary teaching certification.

Upon completion of the program, students will be **well-prepared** to:

- Understand the relationship between matter and energy, composition and structure, and and their relation to physical and chemical behavior
- Apply chemical principles to biological, geological and environmental phenomena
- Demonstrate quantitative and conceptual reasoning
- Think critically and apply knowledge in novel contexts
- Safely and effectively apply laboratory skills
- Design, conduct and report scientific research within the discipline
- Apply collaborative, ethical and civically engaged practices

General Education Requirements

Code	Title	Credits
Written Communication		
Select one of the following:		6.00
ENGL-101 & ENGL-102	WRITING AND RHETORIC I and WRITING AND RHETORIC II	
ENGL-109	COLLEGE WRITING AND RESEARCH	
Oral Communication		
Select one from the following:		3.00
COMM-101	FUNDAMENTALS OF ORAL COMMUNICATION	
COMM-203	SMALL GROUP COMMUNICATION	
COMM-204	PUBLIC SPEAKING	
Mathematical Ways of Knowing		
Select one of the following:		3.00-5.00
MATH-143	PRECALCULUS I: ALGEBRA	
MATH-147	PRECALCULUS	
MATH-170	CALCULUS I	
Humanistic & Artistic Ways of Knowing		
Select two courses from two different categories (Literature, Arts, Language):		6.00-7.00
Literature		
ENGL-175	LITERATURE AND IDEAS	
ENGL-257	WORLD CLASSICS	
ENGL-258	INTERNATIONAL LITERATURE	
ENGL-260	NATIVE AMERICAN LITERATURE	
ENGL-261	MYTHOLOGIES	
Arts		
ART-100	INTRODUCTION TO ART	
HUM-101	THE ART AND HISTORY OF THE MOTION PICTURE	
HUM-150	INTRODUCTION TO THE ARTS	
MUS-101	SURVEY OF MUSIC	

MUS-102	MUSIC IN AMERICA	
MUS-150	WORLD MUSIC	
MUS-151	HISTORY OF MUSICAL THEATER	
MUS-152	HISTORY OF JAZZ AND POPULAR MUSIC STYLES	
THEA-101	SURVEY OF THE THEATER	
Language		
NP-101	NEZ PERCE LANGUAGE AND CULTURE	
NP-102	NEZ PERCE LANGUAGE AND HISTORY	
SPAN-101	ELEMENTARY SPANISH I	
SPAN-102	ELEMENTARY SPANISH II	
Scientific Ways of Knowing		
Select two of the following:		8.00
CHEM-111	PRINCIPLES OF CHEMISTRY I	
PHYS-111	GENERAL PHYSICS I	
or PHYS-211	PHYSICS FOR SCIENTISTS AND ENGINEERS I	
Social & Behavioral Ways of Knowing		
Select one course from two disciplines:		6.00
ANTH-102	CULTURAL ANTHROPOLOGY	
ANTH-120	WORLD PREHISTORY	
ANTH-170	INTRODUCTION TO NATIVE AMERICAN STUDIES	
ECON-201	PRINCIPLES OF MACROECONOMICS	
ECON-202	PRINCIPLES OF MICROECONOMICS	
GEOG-102	INTRODUCTION TO GEOGRAPHY	
HIST-101	WORLD HISTORY I	
HIST-102	WORLD HISTORY II	
HIST-111	UNITED STATES HISTORY I	
HIST-112	UNITED STATES HISTORY II	
HRPT-184	DIVERSITY IN ORGANIZATIONS	
HRPT-185	HUMAN RELATIONS IN ORGANIZATIONS	
POLS-101	AMERICAN NATIONAL GOVERNMENT	
POLS-237	INTERNATIONAL POLITICS	
POLS-285	COMPARATIVE GOVERNMENT	
PSYC-101	INTRODUCTION TO GENERAL PSYCHOLOGY	
PSYC-205	LIFESPAN DEVELOPMENTAL PSYCHOLOGY	
SOC-101	INTRODUCTION TO SOCIOLOGY	
SOC-102	SOCIAL PROBLEMS	
SS-184	DIVERSITY IN ORGANIZATIONS	
SS-185	HUMAN RELATIONS IN ORGANIZATIONS	
Global Perspectives		
Select one of the following:		3.00-4.00
ANTH-102	CULTURAL ANTHROPOLOGY	
ANTH-120	WORLD PREHISTORY	
ANTH-170	INTRODUCTION TO NATIVE AMERICAN STUDIES	
ANTH-360	RACE AND ETHNICITY	
COMM-345	INTERCULTURAL COMMUNICATION	
ENGL-258	INTERNATIONAL LITERATURE	
ENGL-474	NATIVE AMERICAN WRITTEN LITERATURE	
GEOG-102	INTRODUCTION TO GEOGRAPHY	
HIST-101	WORLD HISTORY I	
HIST-102	WORLD HISTORY II	
HIST-111	UNITED STATES HISTORY I	
HIST-112	UNITED STATES HISTORY II	

HRPT-184	DIVERSITY IN ORGANIZATIONS	
ID-300C	ETHICS AND IDENTITY	
KIN-220	SOCIAL-CULTURAL ASPECTS OF SPORTS	
NP-101	NEZ PERCE LANGUAGE AND CULTURE	
NP-102	NEZ PERCE LANGUAGE AND HISTORY	
POLS-285	COMPARATIVE GOVERNMENT	
SOC-101	INTRODUCTION TO SOCIOLOGY	
SPAN-101	ELEMENTARY SPANISH I	
SPAN-102	ELEMENTARY SPANISH II	
SPAN-201	INTERMEDIATE SPANISH I	
SPAN-202	INTERMEDIATE SPANISH II	
Integrative Seminar: Ethics & Values		
Select one of the following:		3.00
ID 300A - 300Z (see course descriptions for options)		
ID-301A	HELLS CANYON INSTITUTE	
Total Credits		**38.00-42.00**

Program Requirements

Code	Title	Credits
Major Courses		
CHEM-112	PRINCIPLES OF CHEMISTRY II	4.00
CHEM-325	QUANTITATIVE ANALYSIS	5.00
CHEM-454	INSTRUMENTAL ANALYSIS	5.00
MATH-170	CALCULUS I (Required if not completed as core)	
PHYS-112	GENERAL PHYSICS II	4.00
or PHYS-212	PHYSICS FOR SCIENTISTS AND ENGINEERS II	
Electives		
Select 4 credits from Natural Science at 300/400 level		4.00
Select 32 elective credits		32.00
Emphasis		
Select one of the following emphasis:		28.00-29.00
Chemistry Emphasis		
BIOL-182	CONCEPTS IN CELLULAR MECHANISMS	
CHEM-300	PHYSICAL CHEMISTRY I WITH LABORATORY	
CHEM-306	PHYSICAL CHEMISTRY II	
CHEM-353	LABORATORY PREPARATION TECHNIQUES	
CHEM-371 & CHEM-373	ORGANIC CHEMISTRY I and ORGANIC CHEMISTRY I LAB	
CHEM-372 & CHEM-376	ORGANIC CHEMISTRY II and ORGANIC CHEMISTRY II LAB	
CHEM-463	INORGANIC CHEMISTRY	
CHEM-481	BIOCHEMISTRY I	
MATH-175	CALCULUS II	
Geology Emphasis		
GEOL-101	PHYSICAL GEOLOGY	
or GEOL-120	INTRODUCTION TO EARTH SYSTEMS	
GEOL-202	HISTORICAL GEOLOGY	
GEOL-313	EARTH MATERIALS I	
GEOL-314	EARTH MATERIALS II	
GEOL-420	PRINCIPLES OF GEOCHEMISTRY	
GEOL-491	WORKSHOP IN GEOLOGY	

Select one from the following:

CHEM-300	PHYSICAL CHEMISTRY I WITH LABORATORY	
CHEM-371 & CHEM-373	ORGANIC CHEMISTRY I and ORGANIC CHEMISTRY I LAB	
CHEM-463	INORGANIC CHEMISTRY	
Select 4 credits of CHEM or GEOL 300/400 level		
Total Credits		**82.00-83.00**

Sequential Plan of Study

Course	Title	Credits
First Year		
Fall		
ENGL-101	WRITING AND RHETORIC I	3.00
CORE	Oral Communication	3.00
CORE	Humanistic & Artistic Ways of Knowing	3.00
CHEM-111	PRINCIPLES OF CHEMISTRY I	4.00
	Credits	**13.00**
Spring		
CHEM-112	PRINCIPLES OF CHEMISTRY II	4.00
ENGL-102	WRITING AND RHETORIC II	3.00
CORE	Humanistic & Artistic Ways of Knowing	3.00
CORE	MATH-143, MATH-147 or MATH-170	3.00-5.00
CORE	Social & Behavioral Ways of Knowing	3.00
	Credits	**16.00-18.00**
Second Year		
Fall		
CHEM-325	QUANTITATIVE ANALYSIS	3.00
CORE	Social & Behavioral Ways of Knowing	3.00
PHYS-111 or PHYS-211	GENERAL PHYSICS I or PHYSICS FOR SCIENTISTS AND ENGINEERS I	4.00-5.00
Program Requirement	Select NS course 300/400 Level	4.00
	Credits	**14.00-15.00**
Spring		
CORE	Global Perspectives	3.00
CORE	Integrative Seminar: Ethics & Values	3.00
CHEM-454	INSTRUMENTAL ANALYSIS	5.00
PHYS-112 or PHYS-212	GENERAL PHYSICS II or PHYSICS FOR SCIENTISTS AND ENGINEERS II	4.00-5.00
	Credits	**15.00-16.00**
	Total Credits	**58.00-62.00**

Geochemistry Emphasis

Course	Title	Credits
Third Year		
Fall		
GEOL-101 or GEOL-120	PHYSICAL GEOLOGY or INTRODUCTION TO EARTH SYSTEMS	4.00
GEOL-313	EARTH MATERIALS I	4.00
Elective	Elective Credits	4.00
Elective	Elective Credits	3.00
	Credits	**15.00**
Spring		
GEOL-202	HISTORICAL GEOLOGY	4.00

GEOL-314	EARTH MATERIALS II	4.00
Elective	Elective Credits	4.00
Elective	Elective Credits	3.00
	Credits	**15.00**
Fourth Year		
Fall		
GEOL-420	PRINCIPLES OF GEOCHEMISTRY	3.00
Program Requirement	Select CHEM or GEOL course 300 level or above	4.00
Elective	Elective Credits	3.00
Elective	Elective Credits	3.00
Elective	Elective Credits	3.00
	Credits	**16.00**
Spring		
GEOL-491	WORKSHOP IN GEOLOGY	1.00-12.00
Elective	Elective Credits	3.00
Elective	Elective Credits	3.00
Elective	Elective Credits	3.00
Program Requirements	CHEM-300, CHEM-371/CHEM-373, or CHEM-463	4.00
	Credits	**14.00-25.00**
	Total Credits	**60.00-71.00**

Chemistry Emphasis

Course	Title	Credits
Third Year		
Fall		
MATH-175	CALCULUS II	4.00
CHEM-300	PHYSICAL CHEMISTRY I WITH LABORATORY	4.00
CHEM-371	ORGANIC CHEMISTRY I	3.00
CHEM-373	ORGANIC CHEMISTRY I LAB	1.00
Elective	Elective Credits	3.00
	Credits	**15.00**
Spring		
CHEM-372	ORGANIC CHEMISTRY II	3.00
CHEM-376	ORGANIC CHEMISTRY II LAB	2.00
CHEM-463	INORGANIC CHEMISTRY	4.00
Elective	Elective Credits	3.00
Elective	Elective Credits	3.00
	Credits	**15.00**
Fourth Year		
Fall		
CHEM-353	LABORATORY PREPARATION TECHNIQUES	2.00
CHEM-481	BIOCHEMISTRY I	4.00
Elective	Elective Credits	3.00
Elective	Elective Credits	3.00
Elective	Elective Credits	3.00
	Credits	**15.00**
Spring		
CHEM-306	PHYSICAL CHEMISTRY II	3.00
Elective	Elective Credits	3.00
Elective	Elective Credits	3.00
Elective	Elective Credits	3.00

Elective	Elective Credits	3.00
	Credits	**15.00**
	Total Credits	**60.00**

Graduates with a BA/BS in Chemistry go on to obtain careers in a variety of fields:

- Analytical
- Organic or Inorganic Chemistry
- Physical Chemistry
- Business
- Law
- Biochemical
- Geochemistry
- Education
- Technical Writing
- Information Specialists/Technical Libraries