

MAJOR IN CHEMISTRY, SUSTAINABLE CHEMISTRY CONCENTRATION

Requirements Effective Fall 2022

Chemistry majors must achieve a minimum grade of C (2.000) in all the listed courses required for the major in chemistry.

Freshman

		AUCC	Credits
CHEM 120 ¹	Foundations of Modern Chemistry (GT-SC2)	3A	4
CHEM 121 ¹	Foundations of Modern Chemistry Laboratory (GT-SC1)	3A	1
CHEM 192	Introductory Seminar in Chemistry		2
CHEM 241 ²	Foundations of Organic Chemistry		4
CHEM 242 ²	Foundations of Organic Chemistry Laboratory		1
CHEM 263	Foundations of Inorganic Chemistry		4
CHEM 264	Foundations of Inorganic Chemistry Laboratory		1
CO 150	College Composition (GT-CO2)	1A	3
Select one course from the following:			3
AREC 202	Agricultural and Resource Economics (GT-SS1)	3C	
ECON 202	Principles of Microeconomics (GT-SS1)	3C	
Select one course from the following:			4
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
Diversity, Equity, and Inclusion (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion)			3

Total Credits	30
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Sophomore

CHEM 231	Foundations of Analytical Chemistry		3
CHEM 232	Foundations of Analytical Chemistry Lab		2
CHEM 322	Foundations of Chemical Biology Laboratory		1
GES 101	Foundations of Environmental Sustainability		3
PH 121 or 141	General Physics I (GT-SC1) Physics for Scientists and Engineers I (GT-SC1)	3A	5
PH 122 or 142	General Physics II (GT-SC1) Physics for Scientists and Engineers II (GT-SC1)	3A	5
Select one course from the following:			4
BC 351	Principles of Biochemistry		
CHEM 321	Foundations of Chemical Biology		
Select one group from the following:			8
Group A			
MATH 271	Applied Mathematics for Chemists I		
MATH 272	Applied Mathematics for Chemists II		
Group B			
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	
MATH 261	Calculus for Physical Scientists III		

Total Credits	31
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Junior

CHEM 338	Environmental Chemistry	4B	3
CHEM 371	Fundamentals of Physical Chemistry		4
CHEM 372	Fundamentals of Physical Chemistry Lab	4A	1
Select one course from the following:			3
ANTH 200	Cultures and the Global System (GT-SS3)	1C	
HORT 171/SOCR 171	Environmental Issues in Agriculture (GT-SS3)	1C	
SOC 220	Environment, Food, and Social Justice (GT-SS3)	1C	
Advanced Electives (see list below)			6
In-depth Chemistry Courses (see list below)			5
Advanced Writing (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing) ³		2	3
Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)		3B	3
Historical Perspectives (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)		3D	3
Total Credits			31

Senior

CHEM 431	Instrumental Analysis		4
Select one course from the following:			2
CHEM 493	Senior Seminar	4C	
CHEM 499 ⁴	Senior Thesis	4C	
Select six credits from the following courses:			6
CHEM 555	Chemistry of Sustainability		
ERHS 410	Environmental Health-Air and Waste Management		
GES 465/MSE 465	Sustainable Strategies for E-Waste Management		
GES 542	Biobased Fuels, Energy, and Chemicals		
Advanced Electives (see list below)			3
Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-and-humanities)		3B	3
Electives ⁵			10
Total Credits			28
Program Total Credits:			120

In-depth Chemistry Courses

At least 1 credit must come from AUCC 4B designated courses.

Code	Title	AUCC	Credits
CHEM 311	Introduction to Nanoscale Science		3
CHEM 315	Foundations of Polymer Chemistry		3
CHEM 320	Chemistry of Addictions		3
CHEM 333	Forensic Chemistry		3
CHEM 433	Clinical Chemistry		3
CHEM 440	Advanced Organic Chemistry Laboratory	4B	2
CHEM 445	Synthetic Organic Chemistry	4B	3
CHEM 448	Medicinal Chemistry		3
CHEM 461	Inorganic Chemistry	4B	3
CHEM 462	Inorganic Chemistry Laboratory		2
CHEM 476	Physical Chemistry II	4B	3

CHEM 477	Physical Chemistry Laboratory II	1
CHEM 498	Research	1-3

Advanced Electives

Code	Title	Credits
ATS 350	Introduction to Weather and Climate	2
ATS 351	Introduction to Weather and Climate Lab	1
ERHS 320	Environmental Health–Water Quality	3
ERHS 332	Principles of Epidemiology	3
ERHS 400	Radiation Safety	3
ERHS 410	Environmental Health–Air and Waste Management	3
ERHS 430	Human Disease and the Environment	3
ERHS 446	Environmental Toxicology	3
ERHS 448	Environmental Contaminants	3
ERHS 450	Introduction to Radiation Biology	3

Upper-Division regular courses (300-379; 400-479) from the following subject codes:

AA
AB
ANEQ
BC
BIOM
BMS
BSPM
BZ
CBE
CHEM
CS
CT
ESS
FTEC
FW
HES
HORT
LIFE
MATH
MIP
NR
NSCI
PH
PSY
SOCR
STAT

³ CHEM 301 is recommended.

⁴ CHEM 499 by department approval. Students fulfilling the AUCC 4C requirement with CHEM 499 must write a thesis and present it to the department.

⁵ Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

¹ Students who complete General Chemistry Freshman year (CHEM 111 or CHEM 107, CHEM 112 or CHEM 108, CHEM 113, CHEM 114) do not have to take CHEM 120 and CHEM 121.

² Students may complete the organic chemistry requirement by taking CHEM 341, CHEM 343, and CHEM 344. Students who take CHEM 245/CHEM 246 may complete the organic chemistry requirement by taking CHEM 343/CHEM 344. For both sets of these students, CHEM 343/CHEM 344 together count as an in-depth chemistry course.