

Bachelor of Science

Major: Chemistry (CHEM)

Concentration: Non-ACS Certified (NACZ)

Version: Fall 2017

UNIVERSITY GRADUATION REQUIREMENTS				
Complete the All-University Core Curriculum (AUCC) – See backside.				
Earn grades of “C” or higher in the major course requirements (listed below).				
Complete a <i>minimum</i> of 120 credits ; a <i>minimum</i> of 42 upper-division credits (300-level+).				
Must have 30 upper-division credits at CSU. Fifteen of last 30 credits must be at CSU (in residence).				
Keep cumulative and AUCC courses GPA of 2.0+.				
DEPARTMENT REQUIREMENTS				
Course	Title	Term	Crs	Prerequisites
General Chemistry				
CHEM 111	General Chemistry I	F/S/SS	4	MATH118 or higher, CHEM105 or ChemPrep
CHEM 112	General Chemistry I Laboratory	F/S/SS	1	CHEM111 or cc registration
CHEM 113	General Chemistry II	F/S/SS	3	CHEM107 or CHEM111; MATH124
CHEM 114	General Chemistry II Laboratory	F/S/SS	1	CHEM108 or CHEM112; CHEM113 or cc registration
Organic Chemistry (Choose one group from the following)				
–Group A– (Recommended)				
CHEM 345	Organic Chemistry I	F	4	CHEM113; CHEM114
CHEM 346	Organic Chemistry II	S	4	CHEM345
–Group B–				
CHEM 341	Modern Organic Chemistry I	F/S/SS	3	CHEM113
CHEM 343	Modern Organic Chemistry II	F/S/SS	3	CHEM245 or CHEM341 or CHEM345
CHEM 344	Modern Organic Chemistry Lab	F/S/SS	2	CHEM114; CHEM343 or cc registration
Analytical Chemistry				
CHEM 334	Quantitative Analysis Laboratory	F/S	1	CHEM114; cc registration in CHEM335
CHEM 335	Introduction to Analytical Chemistry	F/S	3	CHEM113 with min. grade of C; cc registration in CHEM334
Physical and Biological Chemistry (Choose one group from the following)				
–Group A–				
CHEM 474	Physical Chemistry I	F	3	CHEM113; MATH261 or MATH272; PH142
CHEM 475	Physical Chemistry Laboratory I	F	1	CHEM334; CHEM473 or CHEM474 or CBE310 or cc registration
CHEM 476	Physical Chemistry II	S	3	CHEM474
–Group B–				
CHEM 473	Foundations of Physical Chemistry	F	4	CHEM113; MATH161 or MATH271; PH122 or PH142
CHEM 475	Physical Chemistry Laboratory I	F	1	CHEM334; CHEM473 or CHEM474 or CBE310 or cc registration
BC 351	Principles of Biochemistry ¹	F/S/SS	4	BZ110 or BZ120 or LIFE102; CHEM245, CHEM341 or CHEM345
or BC 401	Comprehensive Biochemistry I	F	3	MATH155 or 160; CHEM245 or CHEM343 or CHEM346 or cc reg.
Inorganic Chemistry				
CHEM 261	Fundamentals of Inorganic Chemistry	S	3	CHEM113 or concurrent registration
Advanced Laboratory (Choose one course from the following)				
CHEM 440	Advanced Organic Chemistry Lab	F	2	CHEM344 or CHEM346
CHEM 462	Inorganic Chemistry Laboratory	S	2	CHEM461 or cc registration
Seminars				
CHEM 192	Introductory Seminar in Chemistry	F	1	None
CHEM 493	Senior Seminar	F/S	2	CHEM474
or CHEM 499	Senior Thesis	F/S	2	CHEM 498

Course	Title	Term	Crs	Prerequisites
ADVANCED SCIENCE ELECTIVES: 10 credits total.				
Advanced science electives must be 300-level or higher. All 3++, 4++ and 5++ courses offered by departments in the College of Natural Sciences apply. Courses in other departments may apply as well, please check with a chemistry advisor.				
Department Electives				
CHEM 301	Advanced Scientific Writing	S	3	CO150 and CHEM334 or CHEM345
CHEM 311	Intro to Nanoscale Science	F	3	CHEM113 and CHEM346 or CHEM343
CHEM 320	Chemistry of Additions	S	3	CHEM103 or CHEM107 or CHEM111
CHEM 338	Environmental Chemistry	S	3	CHEM113 and CHEM245 or CHEM341 or CHEM345
CHEM 380A3	Forensic Chemistry	F	3	CHEM103 or CHEM107 or CHEM111
CHEM 431	Instrumental Analysis	F	4	CHEM334; CHEM474 or cc registration.
CHEM 433	Clinical Chemistry	S	3	CHEM334 and CBE310 or CHEM474
CHEM 461	Inorganic Chemistry	S	3	CHEM261; CHEM476 or cc registration
CHEM 462	Inorganic Chemistry Laboratory	S	2	CHEM461 or cc registration
CHEM 477	Physical Chemistry Laboratory II	S	1	CHEM475
CHEM 487	Internship ²	F/S/SS	1-3	CHEM476
CHEM 495	Independent Study ²	F/S/SS	1-3	At least 9 credits in CHEM courses 100-499
CHEM 498	Research ²	F/S/SS	1-3	At least 20 credits in CHEM courses 100-499
OTHER REQUIREMENTS				
Mathematics (Choose one group from the following)				
–Group A– (Recommended)				
MATH 160	Calculus for Physical Scientists	F/S/SS	4	MATH124 and MATH126 with min. grade of B
MATH 271	Applied Math for Chemists I	F	4	MATH155 or MATH159 or MATH160
MATH 272	Applied Math for Chemists II	S	4	MATH271
–Group B–				
MATH 160	Calculus for Physical Scientists I	F/S/SS	4	MATH124 and MATH126 with min. grade of B
MATH 161	Calculus for Physical Scientists II	F/S/SS	4	MATH124; MATH159 or MATH160
MATH 261	Calculus for Physical Scientists III	F/S/SS	4	MATH161
Additional 3 credits in mathematics-based upper division courses (MATH, STAT or CS at the 300+ level) are required.				
Physics				
PH 141	Physics for Engineers/Scientists I	F/S/SS	5	MATH126; MATH155 or 159 or 160 or cc reg.
PH 142	Physics for Engineers/Scientists II	F/S/SS	5	PH141; MATH161 or 255 or 271 or cc reg.
Statistics				
STAT 301	Intro to Statistical Methods	F/S/SS	3	MATH117 or higher
Biological Sciences (Choose one course from the following)				
LIFE 102	Attributes of Living Systems	F/S/SS	4	None
BZ104/105	Basic Concepts of Plant Life	F/S	4	None
BZ110/111	Principles of Animal Biology	F/S/SS	4	None
BZ 120	Principles of Plant Biology	F/S	4	None
F = Fall, S = Spring, SS = Summer Session, cc = concurrent Modified April 19, 2017/CJO.				
¹ This class can also be taken online.				
² Students can take up to 12 credits in any combination of these courses.				

*** IMPORTANT *** Remember that ONLY your Degree Progress Audit (DARS) will be used as the basis for awarding your degree. Always check your DARS on RAM Web to keep on track for your degree. *** IMPORTANT ***