

# CHEMISTRY

## Bachelor of Science Degree Requirements

CSULA | NSS Academic Advisement Center | 323.343.5284 | King Hall D1051

Name: \_\_\_\_\_

CIN: \_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

Date: \_\_\_\_\_

Catalog (Qtr/Yr): \_\_\_\_\_

Major (Qtr/Yr): \_\_\_\_\_

Student Signature: \_\_\_\_\_

Advisor Signature: \_\_\_\_\_

### GENERAL EDUCATION REQUIREMENTS (72 units)

Refer to the *Double Count Handout* for a list of major specific courses that also fulfill GE requirements.

A: Basic Subjects (16 units)	Qtr/Yr	Grade
A1: Written Communication		
A2: Oral Communication		
A3: Critical Thinking		
A4: Mathematics		

A minimum C grade is required for all courses in Block A

AI: American Institutions (8 units)	Qtr/Yr	Grade
US History		
US Constitution		

B: Natural Sciences (8 units)	Qtr/Yr	Grade
B1: Biological (with lab)		
B2: Physical (with lab)		

C: Humanities (12 units)	Qtr/Yr	Grade

D: Social Sciences (12 units)	Qtr/Yr	Grade

E: Lifelong Understanding (4 units)	Qtr/Yr	Grade

Upper Division Theme (12 units)	Qtr/Yr	Grade
Natural Sciences and Mathematics		
Social Sciences		
Humanities		

Courses listed or cross-listed with major cannot be taken to satisfy theme requirements.

### UNIVERSITY REQUIREMENTS (14-16 units)

NSS 101 or 301		
ENGL 102		
WPE (UNIV 400)		
(d) Diversity		
(d) Diversity		

### 2.0 GPA and 186 units required to graduate

Academic Standing:	
Overall GPA:	Major GPA:
CSULA GPA:	Units:

### MAJOR REQUIREMENTS (117 units)

Lower Division (69 units)	Qtr/Yr	Grade
CHEM 101: General Chemistry I (5)		
CHEM 102: General Chemistry II (5)		
CHEM 103: General Chemistry III (5)		
CHEM 201: Quantitative Analysis (5)		
CHEM 291A: Organic Chemistry (3)		
CHEM 291B: Organic Chemistry (3)		
CHEM 292A: Organic Chemistry Laboratory (2)		
CHEM 292B: Organic Chemistry Laboratory (2)		
MATH 206: Calculus I-Differentiation (4)		
MATH 207: Calculus II-Integration (4)		
MATH 208: Calculus III: Sequences, Series & ... (4)		
MATH 209: Calculus IV: Several Variables (4)		
MATH 215 <i>OR</i> MATH 401: Differential Equations (4)		
PHYS 211: Mechanics (5)		
PHYS 212: Waves, Optics, & Thermodynamics (5)		
PHYS 213: Electricity & Magnetism (5)		
PHYS 214: Modern Physics (4)		

Upper Division (41 units)	Qtr/Yr	Grade
CHEM 301: Organic Chemistry (3)		
CHEM 318: Introduction to Inorganic Chemistry (3)		
CHEM 327: Advanced Synthetic Methods (2)		
CHEM 360: Writing for Chemists (4)		
CHEM 401: Physical Chemistry I (4)		
CHEM 402: Physical Chemistry II (4)		
CHEM 403: Physical Chemistry III (4)		
CHEM 412A: Physical Chemistry Laboratory (2)		
CHEM 412B: Physical Chemistry Laboratory (2)		
CHEM 418: Inorganic Chemistry (3)		
CHEM 435: Introduction to Biochemistry (4)		
CHEM 462: Instrumental Analysis (6)		

### Electives in Chemistry (Select 7 units with advisor approval; maximum 3 units of CHEM 499)

1.		
2.		
3.		

### NOTES

<b>Department Office: 323.343.2300, BS 336</b>
° Students must earn a grade of C- or higher in all courses used to meet major requirements.

# CHEMISTRY

## Bachelor of Science

### List of Courses and Prerequisites

#### Lower Division (69 units)

CHEM 101	General Chemistry I (5)	High school chemistry and physics; two years of high school algebra; satisfactory score on placement exam; See catalog for more details.
CHEM 102	General Chemistry II (5)	CHEM 101
CHEM 103	General Chemistry III (5)	CHEM 102
CHEM 201	Quantitative Analysis (5)	CHEM 103
CHEM 291A	Organic Chemistry (3)	Originally CHEM 301A. CHEM 103 or one year of General Chemistry
CHEM 291B	Organic Chemistry (3)	Originally CHEM 301B. CHEM 291A
CHEM 292A	Organic Chemistry Laboratory (2)	Originally CHEM 302A. CHEM 291A. Corequisite: CHEM 291B
CHEM 292B	Organic Chemistry Laboratory (2)	Originally CHEM 302B. CHEM 292A and CHEM 291B. Corequisite: CHEM 301
MATH 206	Calculus I: Differentiation (4)	MATH 104A and 104B, each with a minimum C grade or satisfactory score on placement examination; students with a grade less than B- in either MATH 104 A or MATH 104B must enroll concurrently in MATH 206P.
MATH 207	Calculus II: Integration (4)	MATH 206 with a minimum C grade; students with a grade less than B- in either MATH 206 must enroll concurrently in MATH 207P.
MATH 208	Calculus III: Sequences, Series, & Coordinate Systems (4)	MATH 207 with a minimum C grade; students with a grade less than B- in either MATH 207 must enroll concurrently in MATH 208P.
MATH 209	Calculus IV: Several Variables (4)	MATH 208 with minimum C grade.
MATH 215	Differential Equations (4)	MATH 209
MATH 401	Differential Equations (4)	Upper division math course.
PHYS 211	Mechanics (5)	High school physics or equivalent, or permission of the department, MATH 206 or equivalent (may be taken concurrently).
PHYS 212	Waves, Optics, and Thermodynamics (5)	PHYS 211. Prerequisite or corequisite: MATH 207.
PHYS 213	Electricity & Magnetism (5)	PHYS 212. Prerequisite or corequisite: MATH 208.
PHYS 214	Modern Physics (5)	PHYS 213. Prerequisite or corequisite: MATH 208.

#### Upper Division (41 units)

CHEM 301	Organic Chemistry (3)	Originally CHEM 301C. CHEM 291B
CHEM 318	Introduction to Inorganic Chemistry (3)	CHEM 103 or one year of General Chemistry
CHEM 327	Advanced Synthetic Methods (2)	CHEM 301, 292B and 318
CHEM 360	Writing for Chemists (4)	Satisfactory completion the GVAR: CHEM 291B or Instructor consent.
CHEM 401	Physical Chemistry I (4)	CHEM 103 or equivalent; MATH 208; PHYS 213.
CHEM 402	Physical Chemistry II (4)	CHEM 401
CHEM 403	Physical Chemistry III (4)	MATH 215 or 401; CHEM 103 or one year of General Chemistry.
CHEM 412A	Physical Chemistry Laboratory (2)	CHEM 401 or 403
CHEM 412B	Physical Chemistry Laboratory (2)	CHEM 401 or 403
CHEM 418	Inorganic Chemistry (3)	CHEM 318
CHEM 435	Introduction to Biochemistry (4)	CHEM 301 or one year of Organic Chemistry. No credit taken after CHEM 431A.
CHEM 462	Instrumental Analysis (6)	CHEM 201, CHEM 402

#### Electives in Chemistry (Select 7 units with advisor approval; may include a maximum of 3 units of CHEM 499)

CHEM 353	Nutritional Synthetic Methods (2)	CHEM 301, CHEM 292B and 318
CHEM 354 L, P	Special Topics in Chemistry (1-5)	As needed for specific topic.
CHEM/BIOI 355N or GEOL 355	Scientific Perspectives on Global Change (4)	Completion of Basic Subjects (Block A) and one course from Block B.
CHEM/HIST 380N or HIST 380	Ancient & Modern Science (4)	Completion of Basic Subjects (Block A) and one course from Block B.
CHEM 396	Honors Studies in Chemistry (1-5)	Participation in Chemistry Honors Program. CHEM 291AB and CHEM 301, consent of an instructor to serve as research advisor, and approval of department honors advisor.
CHEM 411	Fundamentals of Physical Chemistry (4)	CHEM 201; MATH 208; PHYS 103 or PHYS 203
CHEM 415	Introduction to Atmospheric Chemistry (4)	CHEM 201; MATH 206; PHYS 103 or 203
CHEM 420	Advanced Organic Chemistry I (4)	CHEM 301
CHEM 425	Polymer Chemistry (4)	CHEM 301 and MATH 209
CHEM 431A	Biochemistry (3)	CHEM 301
CHEM 431B	Biochemistry (3)	CHEM 431A
CHEM 431C	Biochemistry (3)	CHEM 431B
CHEM 432A	Biochemistry Laboratory (2)	CHEM 292B and 431A
CHEM 432B	Biochemistry Laboratory (2)	CHEM 431A and 432A
CHEM 434/BINF 400	Bioinformatics and Computational Biology (4)	Grade of C or higher in BIOL 100A & CS 201; upper division standing.
CHEM 438	Bioinorganic & Bioorganic Chemistry (4)	CHEM 431A or 435
CHEM/BIOI 444	Drug Discovery and Development (4)	CHEM 301 and either BIOL 380 or CHEM 435 or CHEM 431A.
CHEM 450	Biomedical Seminars and Presentation (1)	
CHEM 454L, P	Special Topics in Advanced Chemistry (1-4)	As needed for specific topic.
CHEM 480	History of Chemistry (4)	CHEM 103, CHEM 301
CHEM 498	Cooperative Education (2) See UNIV 498	

