

BIOCHEMISTRY

- This worksheet is intended for supplemental use only. The University will use your [Academic Requirements Report \(ARR\)](#) to track your graduation requirements, including those for your major. Please continue to check your ARR for accuracy. If your ARR requires a correction, please submit an [ARR Correction Form](#).
- Your [Degree Planner](#) will display the following requirements in the University's recommended sequence.
- With the exception of CHEM 100, all courses used for the major and preparation for the major must be completed with a grade of C (2.0) or higher.
- All non-articulated courses MUST be reviewed and approved by a faculty advisor.
- It is highly recommended that you meet with your Biochemistry faculty advisor at least once a year.
- Transfer students must complete a minimum of 24 units counted towards the Biochemistry major at CSUSM.
- With suitable choice of electives, this degree meets certification requirements by the American Chemical Society.
- Course offerings are subject to change. Verify course availability with the Chemistry department.
- Biochemistry majors may not minor in Chemistry.

PREPARATION FOR THE MAJOR (49 UNITS)

Non-Biology/Chemistry Supporting Courses (17 units):

✓	Course	Units
<input type="checkbox"/>	MATH 160: Calculus with Applications I (*MATH 125, 126 or pass Calculus Readiness Diagnostic)	5
<input type="checkbox"/>	MATH 162: Calculus with Applications II (*MATH 160)	4
<input type="checkbox"/>	PHYS 201: Physics of Mechanics & Sound (*MATH 160)	4
<input type="checkbox"/>	PHYS 202: Physics of Electromagnetism & Optics (*PHYS 201 or 205; MATH 162)	4

Lower-division Biology/Chemistry Courses (32 units):

✓	Course	Units
<input type="checkbox"/>	CHEM 100: Introduction to the Chemistry and Biochemistry Major	1
<input type="checkbox"/>	BIOL 210: Introduction to Cellular & Molecular Biology (+CHEM 150)	4
<input type="checkbox"/>	BIOL 211: Introduction to Organismal & Population Biology	4
<input type="checkbox"/>	CHEM 150: General Chemistry (*MATH 101, 105 or MATH Category 1 or 2)	4
<input type="checkbox"/>	CHEM 150L: General Chemistry Lab (+CHEM 150)	1
<input type="checkbox"/>	CHEM 162: Enhanced General Chemistry II (*CHEM 150, 150L and MATH 125, 126 or 160)	4
<input type="checkbox"/>	CHEM 201: Organic Chemistry (*CHEM 162)	3
<input type="checkbox"/>	CHEM 201L: Organic Chemistry Lab (+CHEM 201)	2
<input type="checkbox"/>	CHEM 202: Organic Chemistry (*CHEM 201, 201L)	3
<input type="checkbox"/>	CHEM 202L: Organic Chemistry Lab (*CHEM 201, 201L, +CHEM 202)	2
<input type="checkbox"/>	CHEM 275: Quantitative Investigations in Chemistry (*MATH 160, CHEM 201L, +CHEM 160 or 162)	4

MAJOR REQUIREMENTS (35 UNITS)

Upper-division Chemistry Courses (28 units):

✓	Course	Units
<input type="checkbox"/>	CHEM 300: Literature of Chemistry (*CHEM 201)	3
<input type="checkbox"/>	CHEM 351: Biochemistry I (*CHEM 202; fall only)	3
<input type="checkbox"/>	CHEM 351L: Biochemistry Lab (+CHEM 341 or 351)	2
<input type="checkbox"/>	CHEM 352: Biochemistry II (*CHEM 351; spring only)	3

*prerequisite; +pre-/co-requisite; ~corequisite; #course may be repeated for a total of 4 units; ^CHEM 398/399 may be repeated for a total of 6 units; P may require an Academic Advisor or instructor signature to enroll.

BIOCHEMISTRY

<input type="checkbox"/>	CHEM 401: Physical Chemistry-Classical (*CHEM 160 or 162 and MATH 162 and PHYS 202 or 206)	4
<input type="checkbox"/>	CHEM 404: Inorganic Chemistry (*CHEM 162, 201, *CHEM 404L)	4
<input type="checkbox"/>	CHEM 404L: Inorganic Chemistry Lab (*CHEM 404)	1
<input type="checkbox"/>	CHEM 416: Instrumental Methods of Analysis (*CHEM 202, 202L, 275, 300 and PHYS 202)	5
<input type="checkbox"/>	CHEM 450: Protein Structure and Function (*CHEM 341 or 351; spring only)	3

Upper-division Science Elective (7 units):

Select 7 units from the following:

BIOL 351^P: Molecular Cell Biology (5) (*BIOL 210, 211, CHEM 275)
 BIOL 352^P: Genetics (5) (*BIOL 210, 211)
 BIOL 353: Comparative Animal Physiology (5) (*BIOL 210, 211, CHEM 275)
 BIOL 367: Biology of Microorganisms (5) (*BIOL 210, 211)
 BIOL 368: Developmental Biology (3) (*BIOL 210, 211)
 BIOL 370A: Plant Physiology Lecture (3) (*BIOL 210, 211)
 BIOL 374: Exercise Physiology and Bioenergetics (3) (*BIOL 210, 211)
 BIOL 375: Endocrinology (3) (*BIOL 210, 211, CHEM 201)
 BIOL 476: Neurobiology (3) (*BIOL 353)
 BIOT 355: Molecular Biotechnology (5) (*BIOL 210; fall only)
 BIOT 356: Cellular Biotechnology (5) (*BIOL 355; spring only)
 BIOT 497: Internship in Biotechnology (4) (*instructor consent)
 CHEM 308: Environmental Chemistry (3) (*CHEM 160, 201)
 CHEM 398A-B[^]: Special Problems in Chemistry - Library (1-2) (*instructor consent)
 CHEM 399A-B[^]: Special Problems in Chemistry - Laboratory (1-2) (*instructor consent)
 CHEM 402: Physical Chemistry - Quantum (3) (*CHEM 160 or 162 and MATH 162 and PHYS 202 or 206)
 CHEM 405: Physical Chemistry Laboratory (2) (*CHEM 401; spring only)
 CHEM 451: Biophysical Chemistry (3) (*CHEM 341 or 351 and CHEM 401)
 CHEM 455: Enzymology (3) (*CHEM 341 or 351)
 CHEM 490-494: Selected Topics in Chemistry (1-3) (*prerequisites vary)
 CHEM 498[#] or 499[#]: Senior Library or Laboratory Thesis and Seminar (2) (*instructor consent)
 Or, another science course with approval from a Chemistry or Biochemistry faculty member.

<input checked="" type="checkbox"/>	Course	Units
<input type="checkbox"/>		3-4

*prerequisite; *pre-/co-requisite; ~corequisite; #course may be repeated for a total of 4 units; ^CHEM 398/399 may be repeated for a total of 6 units; ^P may require an Academic Advisor or instructor signature to enroll.