

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 at www.csusm.edu/academicadvising.
- 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

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

Need <input checked="" type="checkbox"/>		Course	Units	Sem	Grade
<input type="checkbox"/>	<input type="checkbox"/>	MATH 160: Calculus with Applications I (*MATH 125, 126 or MATH 160 Placement Exam)	5		
<input type="checkbox"/>	<input type="checkbox"/>	MATH 162: Calculus with Applications II (*MATH 160)	4		
<input type="checkbox"/>	<input type="checkbox"/>	PHYS 201: Physics of Mechanics & Sound (*MATH 160)	4		
<input type="checkbox"/>	<input type="checkbox"/>	PHYS 202: Physics of Electromagnetism & Optics (*PHYS 201, MATH 162)	4		

Lower-division Biology/Chemistry Courses (30 units):

Need <input checked="" type="checkbox"/>		Course	Units	Sem	Grade
<input type="checkbox"/>	<input type="checkbox"/>	BIOL 210: Introduction to Cellular & Molecular Biology (+CHEM 150)	4		
<input type="checkbox"/>	<input type="checkbox"/>	BIOL 211: Introduction to Organismal & Population Biology (*BIOL 210)	4		
<input type="checkbox"/>	<input type="checkbox"/>	CHEM 150: General Chemistry (*Chemistry Placement Exam, CHEM 101 or CHEM 105)	4		
<input type="checkbox"/>	<input type="checkbox"/>	CHEM 150L: General Chemistry Lab (+CHEM 150)	1		
<input type="checkbox"/>	<input type="checkbox"/>	CHEM 160: General Chemistry II (formerly CHEM 250; *CHEM 150/150L, +MATH 125)	3		
<input type="checkbox"/>	<input type="checkbox"/>	CHEM 201: Organic Chemistry (*CHEM 160)	3		
<input type="checkbox"/>	<input type="checkbox"/>	CHEM 201L: Organic Chemistry Lab (*CHEM 160, +CHEM 201)	2		
<input type="checkbox"/>	<input type="checkbox"/>	CHEM 202: Organic Chemistry (*CHEM 201/201L)	3		
<input type="checkbox"/>	<input type="checkbox"/>	CHEM 202L: Organic Chemistry Lab (*CHEM 201/201L, +CHEM 202)	2		
<input type="checkbox"/>	<input type="checkbox"/>	CHEM 275: Quantitative Investigations in Chemistry (*MATH 160, CHEM 201/201L)	4		

*prerequisite; +pre/co-requisite; ~course may be taken twice for a total of 4 units;

%BIOC majors are not required to take BIOL 215 as a prereq for BIOL 351/BIOL 352, but may require faculty approval to enroll

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MAJOR REQUIREMENTS

Upper-division Chemistry Courses (26 units):

Need <input checked="" type="checkbox"/>	Course	Units	Sem	Grade
<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 351)	2		
<input type="checkbox"/>	CHEM 352: Biochemistry II (*CHEM 351; spring only)	3		
<input type="checkbox"/>	CHEM 401: Physical Chemistry-Classical (*CHEM 160, MATH 162, PHYS 202 or 206)	3		
<input type="checkbox"/>	CHEM 404: Inorganic Chemistry (*CHEM 201, CHEM 160, +CHEM 404L; spring only)	3		
<input type="checkbox"/>	CHEM 404L: Inorganic Chemistry Lab (+CHEM 404; spring only)	1		
<input type="checkbox"/>	CHEM 416: Instrumental Methods of Analysis (*CHEM 202/202L, CHEM 275, MATH 160)	5		
<input type="checkbox"/>	CHEM 450: Protein Structure and Function (*CHEM 341 or 351; spring only)	3		

Upper-division Biology Course (4-5 units):

Select 1 of the following:

BIOL 351%: Molecular Cell Biology (5) (*BIOL 210, BIOL 211)

BIOL 352%: Genetics (4) (*BIOL 210, BIOL 211)

BIOL 353%: Comparative Animal Physiology (4) (*BIOL 210, BIOL 211)

BIOL 367: Biology of Microorganisms (4) (*BIOL 210, BIOL 211; **fall only**)

Need <input checked="" type="checkbox"/>	Course	Units	Sem	Grade
<input type="checkbox"/>		4-5		

Upper-division Science Elective (3-4 units):

Select 3-4 units from the following:

BIOL 368: Developmental Biology (3)

BIOL 370: Plant Physiology (3)

BIOL 374: Exercise Physiology and Bioenergetics (3)

BIOL 375: Endocrinology (3)

BIOL 476: Neurobiology (3)

BIOT 355: Molecular Biotech (4) (**fall only**)

BIOT 356: Cellular Biotech (4) (**spring only**)

BIOT 497: Internship in Biotechnology (4)

CHEM 308: Environmental Chemistry (3)

CHEM 398: Special Problems in Chemistry-Library (1-2)

CHEM 399: Special Problems in Chemistry-Lab (1-2)

Or, another science course with approval from a Chemistry or Biochemistry faculty member.

CHEM 402: Physical Chemistry-Quantum (3) (**fall only**)

CHEM 405: Physical Chemistry-Lab (2) (**spring only**)

CHEM 455: Enzymology (3)

CHEM 490: Selected Topics in Analytical Chemistry (3)

CHEM 491: Selected Topics in Biochemistry (3)

CHEM 492: Selected Topics in Inorganic Chemistry (3)

CHEM 493: Selected Topics in Organic Chemistry (3)

CHEM 494: Selected Topics in Physical Chemistry (3)

CHEM 498~: Senior Library Thesis and Seminar (2)

CHEM 499~: Senior Lab Thesis and Seminar (2)

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

Upper-division Biology Course and Upper-division Science Elective must total 8 units and may not double count: /8 units

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