

# BIOTECHNOLOGY

- 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](http://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.
- A minimum of 40 units of upper-division coursework must be completed to meet graduation requirements.
- Course offerings are subject to change. Verify course availability with Biotechnology faculty advisor.

## PREPARATION FOR THE MAJOR (35-36 UNITS)

Need <input checked="" type="checkbox"/>		Course	Units	Sem	Grade
<input type="checkbox"/>	<input type="checkbox"/>	<b>CHEM 150:</b> General Chemistry (*Chemistry Placement Exam or CHEM 101 or CHEM 105)	4		
<input type="checkbox"/>	<input type="checkbox"/>	<b>CHEM 150L:</b> General Chemistry Lab (+CHEM 150)	1		
<input type="checkbox"/>	<input type="checkbox"/>	<b>CHEM 160:</b> General Chemistry II (formerly CHEM 250; *CHEM 150/150L, +MATH 125)	3		
<input type="checkbox"/>	<input type="checkbox"/>	<b>CHEM 201:</b> Organic Chemistry (*CHEM 160)	3		
<input type="checkbox"/>	<input type="checkbox"/>	<b>CHEM 201L:</b> Organic Chemistry Lab (*CHEM 160, +CHEM 201)	2		
<input type="checkbox"/>	<input type="checkbox"/>	<b>CHEM 202:</b> Organic Chemistry (*CHEM 201/201L)	3		
<input type="checkbox"/>	<input type="checkbox"/>	<b>MATH 160:</b> Calculus with Applications I (*MATH 125, 126 or strong high school math)	5		
<input type="checkbox"/>	<input type="checkbox"/>	<b>PHYS 205:</b> Physics for Biological Sciences I (+MATH 160)	4		
<input type="checkbox"/>	<input type="checkbox"/>	<b>PHYS 206:</b> Physics for Biological Sciences II (*MATH 160, PHYS 201 or 205)	4		
<input type="checkbox"/>	<input type="checkbox"/>	<b>PSYC 100:</b> Introduction to Psychology or <b>SOC 101:</b> Introduction to Sociology	3-4		
<input type="checkbox"/>	<input type="checkbox"/>	<b>PHIL 315, PHIL 340 or PHIL 345</b>	3		

## MAJOR REQUIREMENTS

### Lower-division Coursework (18 units):

Need <input checked="" type="checkbox"/>		Course	Units	Sem	Grade
<input type="checkbox"/>	<input type="checkbox"/>	<b>ACCT 201:</b> Introduction to Financial Accounting	3		
<input type="checkbox"/>	<input type="checkbox"/>	<b>ACCT 202:</b> Introduction to Managerial Accounting (*ACCT 201)	3		
<input type="checkbox"/>	<input type="checkbox"/>	<b>BIOL 210:</b> Introduction to Cellular & Molecular Biology (+CHEM 150)	4		
<input type="checkbox"/>	<input type="checkbox"/>	<b>BIOL 211:</b> Introduction to Organismal & Population Biology (*BIOL 210)	4		
<input type="checkbox"/>	<input type="checkbox"/>	<b>BIOL 215:</b> Experimental Design and Statistical Analysis	4		

### Upper-division Coursework (20 units):

Need <input checked="" type="checkbox"/>		Course	Units	Sem	Grade
<input type="checkbox"/>	<input type="checkbox"/>	<b>BIOT 355:</b> Molecular Biotechnology (*BIOL 210, BIOL 211; <b>fall only</b> )	4		
<input type="checkbox"/>	<input type="checkbox"/>	<b>BIOT 356:</b> Cellular Biotechnology (*BIOL 210, BIOL 211; <b>spring only</b> )	4		
<input type="checkbox"/>	<input type="checkbox"/>	<b>BIOT 357:</b> Foundations of Biotechnology (*BIOL 210, BIOL 211, <b>fall only</b> )	2		
<input type="checkbox"/>	<input type="checkbox"/>	<b>BIOT 460:</b> Scientific Communication in Biotechnology (*BIOT 355 or BIOT 356; <b>spring only</b> )	3		
<input type="checkbox"/>	<input type="checkbox"/>	<b>CHEM 341:</b> General Biochemistry (*CHEM 201) or <b>CHEM 351:</b> Biochemistry I (*CHEM 202; <b>fall only</b> )	3		
<input type="checkbox"/>	<input type="checkbox"/>	<b>MGMT 302:</b> Foundations of Management (*ACCT 201, 202, MATH 160, and PSYC 100 or SOC 101)	2		
<input type="checkbox"/>	<input type="checkbox"/>	<b>MKTG 302:</b> Foundations of Marketing (*ACCT 201, 202, MATH 160, and PSYC 100 or SOC 101)	2		

\*prerequisite; +pre-/co-requisite; ^may require CoBA advisor or faculty signature to enroll;

#students may take either BIOL 352 or BIOL 353, but not both, as an elective for the major

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**Upper-division Elective Coursework (11 units minimum):**

Other courses may be approved by a Biotechnology faculty member.

- BIOL 352#:** Genetics (4) (\*BIOL 210, 211, 215)
- BIOL 353#:** Comparative Animal Physiology (4) (\*BIOL 210, 211, 215)
- BIOL 367:** Biology of Microorganisms (4) (\*BIOL 210, 211; **fall only**)
- BIOL 452:** Medical Genetics (3) (\*BIOL 212, 352)
- BIOL 456:** Molecular Med & Mechanisms of Disease (3) (\*BIOL 351, 352, 353, 477, 504, BIOT 355 or 356 or instructor consent)
- BIOL 477:** Immunology (3) (\*BIOL 351 or BIOT 355)
- BIOL 477L:** Immunology Laboratory (1) (\*BIOL 477)
- BIOL 480:** Bioinformatics (4) (\*BIOL 351, 352 or BIOT 355)
- BIOL 489:** Introduction to Laboratory/Field Research (2) (\*instructor consent; may be repeated for a total of 4 units)
- BIOL 503:** Modern Molecular Biology & Genomics (4) (\*BIOL 351 or BIOT 355)
- BIOL 504:** Virology (3) (\*BIOL 351 or BIOT 355)
- BIOT 420:** Plant Biotechnology (3) (\*BIOL 351 or 355)
- BIOT 450:** Medical Biotechnology (3) (\*BIOL 351 or BIOT 355)
- BIOT 497:** Internship in Biotechnology (4) (\*instructor consent)
- BIOT 498:** Stem-Cell Internship (12) (\*BIOL 210, 211 and instructor consent; [www.csusm.edu/biotechnology/StemCell](http://www.csusm.edu/biotechnology/StemCell))
- CHEM 351L:** Biochemistry Laboratory (2) (\*CHEM 341 or 351)
- CHEM 352:** Biochemistry II (3) (\*CHEM 351; **spring only**)
- CHEM 450:** Protein Structure and Function (3) (\*CHEM 341 or 351; **spring only**)
- FIN 302^:** Foundations of Finance (2) (\*ACCT 201, 202 and MATH 160)
- MGMT 415^:** Human Resource Management (4) (\*MGMT 302 or 305)
- MGMT 452^:** Leadership in Organizations (4) (\*MGMT 302 or 305)
- MGMT 461^:** Management in Different Cultures (4) (\*MGMT 302 or 305)
- MIS 302^:** Foundations of Management Info Systems (4) (\*ACCT 201, 202 and MATH 160)
- MIS 411^:** Java Programming for Business Applications (4) (\*MIS 302, 304 or ACCT 308)
- MIS 425^:** Business Systems Development (4) (\*MIS 302, 304 or ACCT 308 with instructor consent)
- MIS 426^:** Telecommunications for Management (4) (\*MIS 302, 304 or ACCT 308 with instructor consent)
- OM 302^:** Foundations of Operations Management (2) (\*ACCT 201, 202, MATH 160 and BIOL 215)

Need ✓


Course	Units	Sem	Grade

\*prerequisite; +pre-/co-requisite; ^may require CoBA advisor or faculty signature to enroll;  
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