

Degree: Biological Sciences, B.S.: Cell and Molecular Biology Concentration 23-24				
Requirement Area	Course	Course Title	Prerequisites	Units
First Semester (FALL)				
E	BIOL 130	Connecting to Biology		2
A1		Oral Communication		3
A2		Written Communication		3
B2/B3/LD Major	BIOL 140A	Principles of Cell and Molecular Biology		5
B4/LD Major	MATH 130	Calculus I	One from the following: Satisfactory score of 78 or higher on Mathematics Placement Exam, MATH 120 or MATH 125 (either course with grade C- or better).	4
			Total:	17
Second Semester (SPRING)				
A3	PHIL 100	Workshop in Critical Thinking		3
C1		Arts		3
LD Major	BIOL 140B	Principles of Organismal Biology	BIOL 140A with grade C- or better.	5
Second Composition	ENGL 200	Second Comp		3
			Total:	14
Third Semester (FALL)				
B1/LD Major	CHEM 111	General Chemistry I		3
B3/LD Major	CHEM 111L	General Chemistry Lab I		2
UD Major	BIOL 310	Genetic Analysis I	BIOL 140B with a grade of C- or better.	4
LD Major	PHYS 125	Principles of Physics I		4
C2		Humanities		3
			Total:	16
Fourth Semester (SPRING)				
LD	CHEM 112	General Chemistry II	CHEM 111 with grade C- or better.	5
LD Major	PHYS 126	Principles of Physics II	PHYS 125	4
UD Major	BIOL 410	Genetic Analysis II	BIOL 310	3
D1/CODE 1		Social Science/US Code		3
			Total:	14
Fifth Semester (FALL)				
E		Lifelong Learning and Self-Development		1
F		Ethnic Studies		3
UD Major	CHEM 331	Organic Chemistry I	CHEM 112 with grade C- or better.	5
UD Major	BIOL 424	Bioinformatics	BIOL 310.	3
UD Major	BIOL 320	Principles of Evolutionary Biology	BIOL 310.	3
			Total:	15
Sixth Semester (SPRING)				
D2/Code 2		Social Science/US Code		3
UD Major	CHEM 332	Organic Chemistry II	CHEM 331 with grade C- or better.	5
UD Major	BIOL 428	Genomics	BIOL 424.	3
UD Major/Elective 1				4
			Total:	15
Seventh Semester (FALL)				
Add'l C1 or C2*		Arts or Humanities		3
UWR				3
UD Major	CHEM 441	General Biochemistry I	CHEM 332 with grade C- or better.	4
UD Major/Elective 2				4
			Total:	14
Eighth Semester (SPRING)				
UD-B/Overlay		UD Science		3
UD-C/Overlay		UD Arts or Humanities		3
UD-D/Overlay		UD Social Science		3
UD Major/Capstone	BIOL 426	Advanced Cell and Molecular Biology	BIOL 310.	3
UD Major	BIOL 427	Molecular and Cell Biology Lab	BIOL 310.	3
			Total:	15
Total Units:				120

Note: No changes to, or from, the credit/no credit pattern are permitted after the Grade Type Change period. There are no exceptions to this rule. Courses in a student's major department, regardless of course prefix, may not be taken "CR/NC," unless that is the only grading pattern in the course.

Revised: 03/24/23

CSUEB General Breadth and Graduation Requirement Checklist	
Area A (9 units): Communication in the English Language & Critical Thinking (Must earn passing grade of C-/CR or better)	
<input type="checkbox"/>	A1. COMM 100 or 104, MLL 111
<input type="checkbox"/>	A2. ENGL 101, 102, or 104
<input type="checkbox"/>	A3. PHIL 100
Area B (9 units) : Scientific Inquiry & Quantitative Reasoning	
<input type="checkbox"/>	B1. Physical Science
<input type="checkbox"/>	B2. Life Science
<input type="checkbox"/>	B3. Laboratory Activity
<input type="checkbox"/>	B4. Quantitative Reasoning (Must earn passing grade of C-/CR or better.)
Area C (9 units): Arts & Humanities - Minimum of two different disciplines as designated by course prefix (e.g., ART, THEA, MUS)	
<input type="checkbox"/>	C1. Arts
<input type="checkbox"/>	C2. Humanities
<input type="checkbox"/>	*Additional Lower-division Area C Course in Arts (C1) or Humanities (C2)
Area D (6 units) : Social Sciences - Minimum of two different disciplines as designated by course prefix (e.g., ANTH, ECON, POSC)	
<input type="checkbox"/>	D1.
<input type="checkbox"/>	D2.
Area E (3 units) : Lifelong Learning and Self-Development	
<input type="checkbox"/>	E.
Area F (3 units): Ethnic Studies	
<input type="checkbox"/>	F.
Second Composition : Requires completion of GE A2 with a C-/CR or better. Must be completed before attaining junior standing.	
<input type="checkbox"/>	Second Composition
University Writing Requirement	
<input type="checkbox"/>	UWR
U.S. Code (American Institutions Requirement) - Two courses (6 units) covering three U.S. Code Requirements of US-1 (U.S. History), US-2 (U.S. Constitution), and US-3 (California State & Local Government).	
<input type="checkbox"/>	Code 1.
<input type="checkbox"/>	Code 2.
Upper Division GE Requirements (9 units): Should be taken after completion of A1, A2, A3, and B4 with a C- (CR)	
<input type="checkbox"/>	UD-B. Upper-division Science Inquiry and Quantitative Reasoning
<input type="checkbox"/>	UD-C. Upper-division Arts OR Humanities
<input type="checkbox"/>	UD-D. Upper-division Social Sciences
Overlay Requirements (9 units): Courses may be upper or lower division, and GE or major	
<input type="checkbox"/>	Diversity (Div)
<input type="checkbox"/>	Social Justice (SJ)
<input type="checkbox"/>	Sustainability (S)
Elective Courses	
Choose a minimum of 7 units of electives from the following list of courses. Note: BIOL 398 Co-operative Education and/or BIOL 490 Independent Study may be used for a maximum total of 3 units elective credit. Enrollment in these courses requires approval by a faculty member and the Department Chair.	
BIOL 330 - General Microbiology Units: 5	
BIOL 398 - Internship Units: 1-4	
BIOL 415 - PCR, Sequencing and Fragment Analysis Units: 3	
BIOL 420 - Cell and Molecular Biology Undergraduate Seminar Units: 2	
BIOL 425 - Techniques in Mammalian Cell Culture Units: 3	
BIOL 431 - Medical Microbiology Units: 5	
BIOL 434 - Molecular Microbiology Units: 3	
BIOL 440 - Molecular Virology Units: 3	
BIOL 443 - Hematology Units: 4	
BIOL 445 - Immunology Units: 3	
BIOL 466 - Population Biology Units: 4	
BIOL 468 - Molecular Ecology Units: 4	
BIOL 490 - Independent Study Units: 1-4	
CHEM 442 - Biochemistry II Units: 4	

*Students are required to take a minimum of 40 semester units as upper division (includes 9 units upper division GE)