Degree: Biological Sciences, B.S.: Microbiology and Biomedical Lab Sciences Concentration 23-24				
Requirement Area	**Course**	**Course Title**	**Prerequisites**	**Units**
First Semester (FALL)				
E	BIOL 130	Connecting to Biology		2
A1	COMM 100	Communication		3
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
C1		Arts		3
D1/CODE 1		Social Sciece/US Code		3
			Total:	15
Second Semester (SPRING)				
A2		Written Communication		3
C2		Humanities		3
B2/LD Major	BIOL 140A	Principles of Cell and Molecular Biology		5
A3	PHIL 100	Workshop in Critical Thinking		3
			Total:	14
Third Semester (FALL)				
E		Lifelong Learning and Self Development		1
LD Major	BIOL 140B	Principles of Organismal Biology	BIOL 140A with grade C- or better.	5
F		Ethnic Studies		3
B1/LD Major	CHEM 111	General Chemistry I		3
B3/LD Major	CHEM 111L	General Chemistry Lab I		2
			Total:	14
Fourth Semester (SPRING)				
Add'l C1 or C2*		Arts or Humanities		3
Second Composition	ENGL 200 or PHYS 230			3
B3/LD Major	CHEM 112	General Chemistry II	CHEM 111 with grade C- or better.	5
UD Major	BIOL 310	Genetic Analysis I	BIOL 140B with a grade of C- or better.	4
			Total:	15
Fifth Semester (FALL)				
D2/Code 2		Social Science		3
LD Major	PHYS 125	Principles of Physics I	Satisfactory score of 78 or higher on Math Proficiency Assessment or MATH 120.	4
UD Major	BIOL 330	General Microbiology		5
UD Major	CHEM 331	Organic Chemistry I	CHEM 112 with grade C- or better.	5
			Total:	17
Sixth Semester (SPRING)				
UD Major/Elective 1	BIOL			3
LD Major	PHYS 126	Principles of Physics II	PHYS 125.	4
UD Major	CHEM 332	Organic Chemistry II		5
UWR		US Code		3
			Total:	15
Seventh Semester (FALL)				
UD Major	CHEM 340	Survey of Biochemistry	CHEM 230 or CHEM 332, both with grade C- or better.	3
UD Major	BIOL 320	Evolutionary Biology	BIOL 310.	3
UD Major/Elective 2				3
UD Major Elective 3				3
UD-B/Overlay		UD Science	Completion of GE areas A1, A2, A3 and B4.	3
			Total:	15
Eighth Semester (SPRING)				
UD-C/Overlay		UD Arts or Humanities	Completion of GE areas A1, A2, A3 and B4.	3
UD-D/Overlay		UD Social Science	Completion of GE areas A1, A2, A3 and B4.	3
UD Major/Elective 4				3
UD Major/Elective 5				4
UD Major/Capstone	BIOL 430	Microbial Physiology and Biochemistry	BIOL 330, and CHEM 340 or CHEM 441.	3
			Total:	15
Total Units:				120

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)
☐ A1. COMM 100 or 104, MLL 111
☐ A2. ENGL 101, 102, or 104
☐ A3. PHIL 100
Area B (9 units) : Scientific Inquiry & Quantitative Reasoning
☐ B1. Physical Science
☐ B2. Life Science
☐ B3. Laboratory Activity
☐ 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)
☐ C1. Arts
☐ C2. Humanities
☐ *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)
☐ D1.
☐ D2.
Area E (3 units) : Lifelong Learning and Self-Development
☐ E.
Area F (3 units): Ethnic Studies
☐ F.
Second Composition : Requires completion of GE A2 with a C-/CR or better. Must be completed before attaining junior standing.
☐ Second Composition
University Writing Requirement
☐ 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).
☐ Code 1.
☐ Code 2.
Upper Division GE Requirements (9 units): Should be taken after completion of A1, A2, A3, and B4 with a C- (CR)
☐ UD-B. Upper-division Science Inquiry and Quantitative Reasoning
☐ UD-C.Upper-division Arts OR Humanities
☐ UD-D. Upper-division Social Sciences
Overlay Requirements (9 units): Courses may be upper or lower division, and GE or major
☐ Diversity (Div)
☐ Social Justice (SJ)
☐ Sustainability (S)
Elective Courses
Choose a minimum of 15 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 of 3 units elective credit. Enrollment in these courses requires approval by a faculty member and the Department Chair.
BIOL 431 - Medical Microbiology Units: 5
BIOL 432 - Microbe-Host Interactions Units: 3
BIOL 433 - Microbial Ecology Units: 3
BIOL 434 - Molecular Microbiology Units: 3
* BIOL 440 - Molecular Virology Units: 3
* BIOL 441 - Parasitology Units: 3
BIOL 442 - Epidemiology Units: 3
* BIOL 443 - Hematology Units: 4
* BIOL 445 - Immunology Units: 3
BIOL 446 - Pathogenic Microbiology Units: 3
BIOL 447 - Zoonoses & Emerging Infectious Diseases Units: 3
* BIOL 454 - Biology of Fungi Units: 4
BIOL 490 - Independent Study Units: 1-4
BIOL 498 - Internship Units: 1-4
* CHEM 220 - Quantitative Analysis Units: 4
* These courses are recommended if the student objective is to apply to a Clinical Lab Scientist licensing program.

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

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