

B.S. IN BIOLOGICAL SCIENCE (AY 2024-2025)
CONCENTRATION IN CELL AND MOLECULAR BIOLOGY (75 units)

CORE REQUIREMENTS (39 units)

| LOWER DIVISION BIOLOGY | UNITS | OFFERED | PREREQUISITES |
|---|--------------|----------------|----------------------|
| BIOL 140A <i>Principles of Cell & Molecular Biology</i> | 5 | Fall & Spring | N/A |
| BIOL 140B <i>Principles of Organismal Biology</i> | 5 | Fall & Spring | BIOL 140A* |
| <i>subtotal</i> | 10 | | |
| LOWER DIVISION PHYSICAL SCIENCE & MATH | UNITS | OFFERED | PREREQUISITES |
| CHEM 111 & 111L <i>General Chemistry I (Lec & Lab)</i> | 5 | Fall & Spring | MATH 120(25) or 130 |
| CHEM 112 & 112L <i>General Chemistry II (Lec & Lab)</i> | 5 | Fall & Spring | CHEM 111* & 111L* |
| MATH 130 <i>Calculus I</i> | 4 | Fall & Spring | MATH 120 or MATH 125 |
| PHYS 125 <i>Principles of Physics I</i> | 4 | Fall & Spring | MATH 120 or MATH 125 |
| PHYS 126 <i>Principles of Physics II</i> | 4 | Fall & Spring | PHYS 125 |
| <i>subtotal</i> | 22 | | |
| UPPER DIVISION BIOLOGY | UNITS | OFFERED | PREREQUISITES |
| BIOL 310 <i>Genetic Analysis I</i> | 4 | Fall & Spring | BIOL 140B* |
| BIOL 320 <i>Evolutionary Biology</i> | 3 | Fall & Spring | BIOL 310* |
| <i>subtotal</i> | 7 | | |

CONCENTRATION REQUIREMENTS (36 units)

| UPPER DIVISION BIOLOGY | UNITS | OFFERED | PREREQUISITES |
|---|--------------|----------------|---------------------------|
| BIOL 410 <i>Genetic Analysis II</i> | 3 | Spring | BIOL 310* |
| BIOL 424 <i>Bioinformatics</i> | 3 | Fall | BIOL 310* |
| BIOL 425 <i>Techniques in Mammalian Cell Culture</i> | 3 | Spring | BIOL 310*, BIOL 330* |
| BIOL 426 <i>Advanced Molecular and Cell Biology**</i> | 3 | Spring | BIOL 310* |
| BIOL 427 <i>Molecular and Cell Biology Lab</i> | 3 | Spring | BIOL 310*, BIOL 426*(co-) |
| BIOL 428 <i>Genomics</i> | 3 | Spring | BIOL 320* |
| <i>subtotal</i> | 15 | | |
| UPPER DIVISION PHYSICAL SCIENCE & STATS | UNITS | OFFERED | PREREQUISITES |
| CHEM 331 <i>Organic Chemistry I</i> | 5 | Fall & Spring | CHEM 112*, CHEM 112L* |
| CHEM 332 <i>Organic Chemistry II</i> | 5 | Fall & Spring | CHEM 331* |
| CHEM 441 <i>Biochemistry I</i> | 4 | Fall & Spring | CHEM 332* |
| <i>subtotal</i> | 14 | | |
| ELECTIVES (Select 4 units from the list below) | UNITS | OFFERED | PREREQUISITES |
| BIOL 330 <i>General Microbiology</i> | 5 | Fall | BIOL 140B* |
| BIOL 350 <i>Ecology</i> | 4 | Fall & Spring | BIOL 140B*, STATS 303 |
| BIOL 415 <i>PCR, Sequencing, & Fragment Analysis</i> | 3 | Fall | BIOL 310* |
| BIOL 434 <i>Molecular Microbiology</i> | 3 | Spring | BIOL 330* |
| BIOL 440 <i>Molecular Virology</i> | 3 | Fall | BIOL 310* |
| BIOL 466 <i>Population Biology</i> | 4 | Intermittently | BIOL 320* |
| BIOL 468 <i>Molecular Ecology</i> | 4 | Intermittently | BIOL 320* |
| CHEM 442 <i>Biochemistry II</i> | 4 | Spring | CHEM 441* |
| STAT 303 <i>Statistical Methods in Biology</i> | 3 | Fall & Spring | completion of GE Area B4 |
| <i>subtotal</i> | 4 | | |
| Note: BIOL 490 Independent Study, BIOL 493 Directed Research in Biology, BIOL 498 Internship or a combination of 2 or more of these courses may be used for a maximum of 3 total units of elective credit. | | | |

* Must pass this prerequisite course with a C- or better to move onto the next course.

**Capstone course for the Cell & Molecular Biology concentration.

- **Freshman/Sophomore C&MB Concentration & GE Advisor:** Ms. Joanna Cady-Aguilar (joanna.cadyaguilar@csueastbay.edu)
- **Junior/Senior C&MB Concentration & GE Advisors:** Mr. Avel Perez or Dr. Kelley Gove (cscstudentcenter@csueastbay.edu)
- **C&MB Concentration Career & Course Sub Advisor:** Dr. Chris Baysdorfer, (chris.baysdorfer@csueastbay.edu)

DEGREE: B.S. in Biological Sciences (AY 2024-25)

CONCENTRATION: Cell and Molecular Biology

Graduation Semester: _____

Name (Last, First): _____

Net ID: _____

CORE REQUIREMENTS

| Course | Grade | Semester & Year | Units | College/University Where Equivalent Course Was Taken | Equivalent Course Number | TES Verification |
|-----------|-------|-----------------|-------|--|--------------------------------|---------------------|
| CHEM 111 | | | 3 | ..... | ..... | ..... |
| CHEM 111L | | | 2 | ..... | ..... | ..... |
| CHEM 112 | | | 3 | ..... | ..... | ..... |
| CHEM 112L | | | 2 | ..... | ..... | ..... |
| PHYS 125 | | | 4 | ..... | ..... | ..... |
| PHYS 126 | | | 4 | ..... | ..... | ..... |
| MATH 130 | | | 4 | ..... | ..... | ..... |
| BIOL 140A | | | 5 | ..... | ..... | ..... |
| BIOL 140B | | | 5 | ..... | ..... | ..... |
| BIOL 310 | | | 4 | ..... | ..... | ..... |
| BIOL 320 | | | 3 | ..... | ..... | ..... |

CONCENTRATION REQUIREMENTS

| Course | Grade | Semester & Year | Units | College/University Where Equivalent Course Was Taken | Equivalent Course Number | TES Verification |
|----------|-------|-----------------|-------|--|--------------------------------|---------------------|
| CHEM 331 | | | 5 | ..... | ..... | ..... |
| CHEM 332 | | | 5 | ..... | ..... | ..... |
| CHEM 441 | | | 4 | ..... | ..... | ..... |
| BIOL 410 | | | 3 | ..... | ..... | ..... |
| BIOL 424 | | | 3 | ..... | ..... | ..... |
| BIOL 425 | | | 3 | ..... | ..... | ..... |
| BIOL 426 | | | 3 | ..... | ..... | ..... |
| BIOL 427 | | | 3 | ..... | ..... | ..... |
| BIOL 428 | | | 3 | ..... | ..... | ..... |

ELECTIVES (At least 4 units from the courses below)

| Course | Grade | Semester & Year | Units | College/University Where Equivalent Course Was Taken | Equivalent Course Number | TES Verification |
|----------|-------|-----------------|-------|--|--------------------------------|---------------------|
| BIOL 330 | | | 5 | ..... | ..... | ..... |
| BIOL 350 | | | 4 | ..... | ..... | ..... |
| BIOL 415 | | | 3 | ..... | ..... | ..... |
| BIOL 434 | | | 3 | ..... | ..... | ..... |
| BIOL 440 | | | 3 | ..... | ..... | ..... |
| BIOL 466 | | | 4 | ..... | ..... | ..... |
| BIOL 468 | | | 4 | ..... | ..... | ..... |
| CHEM 442 | | | 4 | ..... | ..... | ..... |
| STAT 303 | | | 3 | ..... | ..... | ..... |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Total Units for Concentration: (75 min.) _____

Note: A C- or better required in all courses that serve as a prerequisite.