### MOLECULAR AND CELLULAR BIOLOGY CONCENTRATION

- **BIO 452**  
  Cell Biology  
  
- **BIO/CHEM 475**  
  Molecular Biology Laboratory  
  
- **CHEM 217**  
  Organic Chemistry II  
  
- **CHEM 220**  
  Organic Chemistry Laboratory For Life Sciences II  
  
- **CHEM 371**  
  Biochemical Principles  
  
- **CHEM 372**  
  Metabolism  
  
- **MCRO 224**  
  General Microbiology I  
  
#### Advanced Cell and Molecular Applications ¹

- **ASCI 403**  
  Applied Biotechnology in Animal Science  
  
- **BIO 405**  
  Developmental Biology  
  
- **BIO 426**  
  Immunology  
  
- **BIO 428**  
  Hematology  
  
- **BIO/CHEM 441**  
  Bioinformatics Applications  
  
- **BIO/CHEM 476**  
  Gene Expression Laboratory  
  
- **CHEM 474**  
  Protein Techniques Laboratory  
  
- **MCRO 402**  
  General Virology  
  
- **MCRO 433**  
  Microbial Biotechnology  
  
#### Approved Electives ¹,²,³,⁴

Select from any 300-400 level BIO/BOT/MCRO/MSCI courses or select from the following:

- **ASCI 403**  
  Applied Biotechnology in Animal Science  
  
- **ASCI 406**  
  Applied Animal Embryology and Assisted Reproduction  
  
- **ASCI 503**  
  Advanced Molecular Techniques in Animal Science  
  
- **BIO/CHEM 202**  
  Orientation to Biotechnology  
  
- **CHEM 218**  
  Organic Chemistry III  
  
- **CHEM 223**  
  Organic Chemistry Laboratory for Life Sciences III  
  
- **CHEM 331**  
  Quantitative Analysis  
  
- **CHEM 377**  
  Chemistry of Drugs and Poisons  
  
- **CHEM 418**  
  Neurochemistry  
  
- **CHEM 474**  
  Protein Techniques Laboratory  
  
- **CHEM 528**  
  Nutritional Biochemistry  
  
- **ENGR 322/SCM 302**  
  The Learn By Doing Lab Teaching Practicum  
  
- **ES/WGS 350**  
  Gender, Race, Culture, Science and Technology  
  
- **PHIL 339** or **PHIL 341** or **SCM 451**  
  Biomedical Ethics or Professional Ethics or Ethics in the Sciences  
  
- **STAT 313**  
  Applied Experimental Design and Regression Models  

**Total units: 43**

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¹ Consultation with advisor is recommended prior to selecting approved electives; bear in mind your selections may impact pursuit of post-baccalaureate studies and/or goals.

² Consult with your faculty advisor for approval to use other relevant upper-division coursework in other departments.

³ Courses taken to meet a major or support requirement cannot be double-counted as an elective.

⁴ Maximum of 6 units may be applied toward Approved Electives from "by arrangement" courses: BIO 330, BIO 400, BIO 450, BIO 461, BIO 462, BIO 463, BIO 471, BIO 472, BIO 485, BIO 495, ENGR 322/SCM 302.