**Elective Course List (Students Entering FA18 & After)**

Microbiology electives MUST include 3 MIP electives (2 must include lab component).

To reach 22 credits, additional electives may be chosen from any of the courses on this page not taken elsewhere in the program.\(^*\)

\(^*\)A maximum of TWO unique courses, maximum of SIX credits, may be selected from the following: MIP 298, 384, 495, or 498.

- Courses that fulfill the formal microbiology laboratory component.
- Electives recommended for students planning to apply to a Medical Technology program.

### Microbiology Electives

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Terms Offered</th>
<th>Prerequisites</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIP 150</td>
<td>Introduction to Research Methods</td>
<td>F, S</td>
<td>None</td>
<td>3</td>
</tr>
<tr>
<td>MIP 192</td>
<td>Microbiology First Year Seminar</td>
<td>F</td>
<td>None/New freshman only</td>
<td>2</td>
</tr>
<tr>
<td>MIP 298</td>
<td>Introductory Research</td>
<td>F, S, SS</td>
<td>Completion of form with sponsor</td>
<td>variable</td>
</tr>
<tr>
<td>MIP 303</td>
<td>General Microbiology—Honors Recitation</td>
<td>F, S</td>
<td>Participation in Honors Program</td>
<td>1</td>
</tr>
<tr>
<td>MIP 315</td>
<td>Human and Animal Disease</td>
<td>F, S</td>
<td>None</td>
<td>3</td>
</tr>
<tr>
<td>MIP 334</td>
<td>Food Microbiology</td>
<td>S</td>
<td>LIFE 205 or MIP 300</td>
<td>3</td>
</tr>
<tr>
<td>MIP 335</td>
<td>Food Microbiology Laboratory</td>
<td>F—odd years</td>
<td>(LIFE 206 or MIP 302) and (MIP 334, may be taken concurrently)</td>
<td>2</td>
</tr>
<tr>
<td>MIP 343</td>
<td>Immunology Laboratory</td>
<td>S</td>
<td>MIP 302 and MIP 342 (may be taken concurrently)</td>
<td>2</td>
</tr>
<tr>
<td>MIP 352</td>
<td>Medical Microbiology Laboratory</td>
<td>S</td>
<td>MIP 302 and MIP 351, may be taken concurrently</td>
<td>3</td>
</tr>
<tr>
<td>MIP 384</td>
<td>Supervised College Teaching</td>
<td>F, S, SS</td>
<td>Completion of form with sponsor</td>
<td>variable</td>
</tr>
<tr>
<td>MIP 400</td>
<td>Capstones in Microbiology (if not taken as capstone); [See Catalog for complete list; topics rotate]</td>
<td>F, S</td>
<td>MIP 342; MIP 351 or MIP 420—may be taken concurrently</td>
<td>2</td>
</tr>
<tr>
<td>MIP 425</td>
<td>Virology and Cell Culture Laboratory</td>
<td>F</td>
<td>MIP 302 and MIP 420, may be taken concurrently</td>
<td>2</td>
</tr>
<tr>
<td>MIP 432</td>
<td>Microbial Ecology</td>
<td>S—odd years</td>
<td>MIP 300</td>
<td>3</td>
</tr>
<tr>
<td>MIP 433</td>
<td>Microbial Ecology Lab</td>
<td>S—odd years</td>
<td>MIP 432, may be taken concurrently</td>
<td>1</td>
</tr>
<tr>
<td>MIP 443</td>
<td>Microbial Physiology</td>
<td>S</td>
<td>(MIP 300) and (BC 351 or BC 401)</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Microbial Genetics</td>
<td>F</td>
<td>(MIP 300) and (BC 351, may be taken concurrently, or BC 401, may be taken concurrently)</td>
<td>3</td>
</tr>
<tr>
<td>MIP 450</td>
<td>Parasitology and Vector Biology</td>
<td>F</td>
<td>(BZ 110 or LIFE 103) and (MIP 302 or LIFE 206 or BZ 212)</td>
<td>5</td>
</tr>
<tr>
<td>MIP 495</td>
<td>Independent Study</td>
<td>F, S, SS</td>
<td>MIP 300; Completion of form with sponsor</td>
<td>variable</td>
</tr>
<tr>
<td>MIP 496</td>
<td>Group Study</td>
<td>F, S</td>
<td>Consent of instructor</td>
<td>variable</td>
</tr>
<tr>
<td>MIP 498</td>
<td>Research (if not taken as capstone)</td>
<td>F, S, SS</td>
<td>Completion of form with sponsor</td>
<td>variable</td>
</tr>
<tr>
<td>MIP 530</td>
<td>Advanced Molecular Virology</td>
<td>S—even years</td>
<td>MIP 351 and (BC 401 or BC 483) or (BC 351 or BC 401)</td>
<td>4</td>
</tr>
<tr>
<td>MIP 540</td>
<td>Biosafety in Research Laboratories</td>
<td>F, S</td>
<td>MIP 300</td>
<td>2</td>
</tr>
<tr>
<td>MIP 550</td>
<td>Microbial and Molecular Genetics Laboratory</td>
<td>S</td>
<td>MIP 302; MIP 450; instructor consent</td>
<td>4</td>
</tr>
<tr>
<td>MIP 555</td>
<td>Principle and Mechanisms of Disease</td>
<td>F</td>
<td>BMS 300</td>
<td>3</td>
</tr>
<tr>
<td>MIP 563</td>
<td>Biology of Disease Vectors</td>
<td>S—odd years</td>
<td>MIP/BSPM/BZ 462</td>
<td>3</td>
</tr>
<tr>
<td>MIP 570</td>
<td>Functional Genomics</td>
<td>F</td>
<td>MIP 300 and 302; MIP 443 and MIP 450</td>
<td>3</td>
</tr>
<tr>
<td>MIP/BZ 577</td>
<td>Computer Analysis in Population Genetics</td>
<td>F</td>
<td>MIP/BZ 578, may be taken concurrently</td>
<td>2</td>
</tr>
<tr>
<td>MIP/BZ 578</td>
<td>Genetics of Natural Populations</td>
<td>F</td>
<td>(BC 350 or LIFE 202A or LIFE 201B or SOCR 330) and (STAT 201 or STAT 301 or STAT 307 or ERHS 307)</td>
<td>4</td>
</tr>
</tbody>
</table>

### Other Science Electives

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Terms Offered</th>
<th>Prerequisites</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANEQ 460</td>
<td>Meat Safety</td>
<td>S</td>
<td>Three credits of 100 level chemistry</td>
<td>2</td>
</tr>
<tr>
<td>BC 404</td>
<td>Comprehensive Biochemistry Lab</td>
<td>F, S</td>
<td>(BC 401 or conc) and (CHEM 246 or CHEM 344 or CHEM 346) and (LIFE 212 and LIFE 203)</td>
<td>2</td>
</tr>
<tr>
<td>BC 463</td>
<td>Molecular Genetics</td>
<td>F</td>
<td>(BC 401, may be taken conc., or BC 351 and (LIFE 201B or BC 350)—All with minimum grade of C</td>
<td>3</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Terms</td>
<td>Prerequisites</td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------------------</td>
<td>-------</td>
<td>------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>BMS 300</td>
<td>Prin of Human Physiology</td>
<td>F, S, SS</td>
<td>(BZ 101 or BZ 110 or LIFE 102) and (CHEM 103 or CHEM 107 or CHEM 111)</td>
<td></td>
</tr>
<tr>
<td>BMS 301</td>
<td>Human Gross Anatomy</td>
<td>F, S, SS</td>
<td>BZ 110 or LIFE 102</td>
<td></td>
</tr>
<tr>
<td>BMS 305</td>
<td>Domestic Animal Gross Anatomy</td>
<td>S</td>
<td>BZ 110 or LIFE 102</td>
<td></td>
</tr>
<tr>
<td>BMS 325</td>
<td>Cellular Neurobiology</td>
<td>F</td>
<td>BMS 300 or BMS 360</td>
<td></td>
</tr>
<tr>
<td>BMS 401</td>
<td>Laboratory Research in Biomedical Sciences</td>
<td>F, S</td>
<td>BMS 300 or BMS 360</td>
<td></td>
</tr>
<tr>
<td>BMS 450</td>
<td>Pharmacology</td>
<td>S</td>
<td>BMS 300 or BMS 360</td>
<td></td>
</tr>
<tr>
<td>BZ 220</td>
<td>Introduction to Evolution</td>
<td>F, S, SS</td>
<td>BZ 110 or BZ 120 or LIFE 103</td>
<td></td>
</tr>
<tr>
<td>BZ 310</td>
<td>Cell Biology</td>
<td>F, S, SS</td>
<td>&quot;C&quot; in CHEM 245 or CHEM 341; BZ 110 or BZ 120 or LIFE 103</td>
<td></td>
</tr>
<tr>
<td>BZ 333</td>
<td>Introductory Mycology</td>
<td>F</td>
<td>BZ 120 or LIFE 104</td>
<td></td>
</tr>
<tr>
<td>BZ 346</td>
<td>Population and Evolutionary Genetics</td>
<td>F</td>
<td>(BZ 220) and (MAT 155) and (STAT 301 or STAT 307 or ERHS 307)</td>
<td></td>
</tr>
<tr>
<td>BZ 350</td>
<td>Molecular and General Genetics</td>
<td>F, S, SS</td>
<td>(BZ 110 or BZ 120 or LIFE 102) and (STAT 201 or STAT 301 or STAT 307 or ERHS 307, all may be taken concurrently)</td>
<td></td>
</tr>
<tr>
<td>BZ 360</td>
<td>Bioinformatics and Genomics</td>
<td>S</td>
<td>BZ 110 or BZ 120 or LIFE 102</td>
<td></td>
</tr>
<tr>
<td>BZ 418</td>
<td>Ecology of Infectious Diseases</td>
<td>S</td>
<td>LIFE 320</td>
<td></td>
</tr>
<tr>
<td>BZ 462</td>
<td>Parasitology and Vector Biology</td>
<td>F</td>
<td>(BZ 110 or LIFE 103) and (MIP 302 or LIFE 206 or BZ 212)</td>
<td></td>
</tr>
<tr>
<td>CHEM 334</td>
<td>Quantitative Analysis Laboratory</td>
<td>F, S</td>
<td>CHEM 114 and CHEM 335 or concurrent</td>
<td></td>
</tr>
<tr>
<td>CHEM 335</td>
<td>Quantitative Analysis Laboratory</td>
<td>F, S</td>
<td>CHEM 113 (C or better); CHEM 334 or concurrent</td>
<td></td>
</tr>
<tr>
<td>CHEM 343</td>
<td>Modern Organic Chemistry II</td>
<td>F, S, SS</td>
<td>CHEM 245 or CHEM 341 or CHEM 345</td>
<td></td>
</tr>
<tr>
<td>ERHS 210</td>
<td>Cancer Biology, Medicine, and Society</td>
<td>F</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>ERHS 320</td>
<td>Environmental Health--Water and Food Safety</td>
<td>F</td>
<td>MIP 300 or concurrent</td>
<td></td>
</tr>
<tr>
<td>ERHS 332</td>
<td>Principles of Epidemiology</td>
<td>S</td>
<td>(STAT 301 or STAT 307, may be taken concurrently) and (MIP 300, may be taken concurrently)</td>
<td></td>
</tr>
<tr>
<td>ERHS 502</td>
<td>Fundamentals of Toxicology</td>
<td>F</td>
<td>BMS 300 or BMS 360; CHEM 245 or CHEM 341 or CHEM 345</td>
<td></td>
</tr>
<tr>
<td>ERHS 567</td>
<td>Cell &amp; Molecular Toxicology Techniques</td>
<td>F</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>FTEC 360</td>
<td>Brewing Processes</td>
<td>F, S</td>
<td>CHEM 245; MATH 118; age 21; completion of 60 credits</td>
<td></td>
</tr>
<tr>
<td>FTEC 460</td>
<td>Brewing Science and Technology</td>
<td>F, S</td>
<td>CHEM 245; MATH 118; age 21; completion of 60 credits</td>
<td></td>
</tr>
<tr>
<td>HORT 477</td>
<td>Enology—History and Winemaking</td>
<td>F—even years</td>
<td>CHEM 107 and 108 concurrent or CHEM 111 and 112 concurrent</td>
<td></td>
</tr>
<tr>
<td>LIFE 103</td>
<td>Biology of Organisms</td>
<td>F, S, SS</td>
<td>LIFE 102</td>
<td></td>
</tr>
<tr>
<td>LIFE 201B</td>
<td>Introductory Genetics</td>
<td>S</td>
<td>LIFE 102</td>
<td></td>
</tr>
<tr>
<td>LIFE 203</td>
<td>Genetic Mechanisms Lab</td>
<td>S</td>
<td>LIFE 201A or LIFE 20B, may be taken conc.</td>
<td></td>
</tr>
<tr>
<td>LIFE 210</td>
<td>Introductory Eukaryotic Cell Biology</td>
<td>F</td>
<td>LIFE 102; CHEM 111, CHEM 112, or concurrent; organic chemistry recommended</td>
<td></td>
</tr>
<tr>
<td>LIFE 211</td>
<td>Eukaryotic Cell Biology Honors Recitation</td>
<td>F, S</td>
<td>LIFE 210 or concurrent</td>
<td></td>
</tr>
<tr>
<td>LIFE 212</td>
<td>Introductory Cell Biology Laboratory</td>
<td>F, S</td>
<td>CHEM 112; LIFE 210 or concurrent</td>
<td></td>
</tr>
<tr>
<td>LIFE 320</td>
<td>Ecology</td>
<td>F, S</td>
<td>BZ 101 or BZ 104 or BZ 110 or BZ 120 or LIFE 102 and MATH 141 or MATH 155 or MATH 160</td>
<td></td>
</tr>
<tr>
<td>MATH 155</td>
<td>Calculus for Biological Scientists I (GT-MA1)</td>
<td>F, S, SS</td>
<td>MATH 124 and MATH 125</td>
<td></td>
</tr>
<tr>
<td>MATH 160</td>
<td>Calculus for Physical Scientists I (GT-SC1)</td>
<td>F, S, SS</td>
<td>&quot;B&quot; in MATH 124 and MATH 126</td>
<td></td>
</tr>
<tr>
<td>PH 122</td>
<td>General Physics II (GT-SC1)</td>
<td>F, S</td>
<td>PH 121 or PH 141</td>
<td></td>
</tr>
<tr>
<td>SOCR 330</td>
<td>Principles of Genetics</td>
<td>F, S, SS</td>
<td>BZ 110 or BZ 120 or LIFE 102</td>
<td></td>
</tr>
<tr>
<td>SOCR 455</td>
<td>Soil Microbiology</td>
<td>F</td>
<td>MIP 300 or SOCR 240</td>
<td></td>
</tr>
<tr>
<td>SOCR 456</td>
<td>Soil Microbiology Lab</td>
<td>F</td>
<td>SOCR 455 or concurrent</td>
<td></td>
</tr>
<tr>
<td>VS 331</td>
<td>Histology</td>
<td>F, S, SS</td>
<td>BMS 230 or BMS 300</td>
<td></td>
</tr>
<tr>
<td>VS 333</td>
<td>Domestic Animal Anatomy</td>
<td>F, S, SS</td>
<td>BZ 110 or LIFE 102</td>
<td></td>
</tr>
</tbody>
</table>