# Biology BS Curriculum Checklist

**Fall 2024 – Spring 2025**

**Completed Required Courses**

- ☐ BIOL2000 Molecules & Cells *(fall/spring)*
- ☐ BIOL2010 Ecology & Evolution *(fall/spring)*
- ☐ BIOL2040 Investigations in Molecular Cell Biology Lab *(fall/spring)*  
  **NOTE:** Taken after BIOL2000

**Category A: Genetics & Genomics**

One from the following:

- BIOL3050 Genetics *(fall only)* – 4 cr
- BIOL3060 Introduction to Genetics *(summer only)*
- BIOL3150 Introduction to Genomics *(spring only)*

**Category B: Physiology & Organismal Biology**

One from the following:

- BIOL3030 Comparative Vertebrate Physiology *(fall only)*
- BIOL3320 Developmental Biology *(spring only)*
- BIOL4110 Ornithology *(not offered in AY24-25)*
- BIOL4330 Human Physiology with Lab *(spring only)* – 4 cr
- BIOL4450 Behavioral Ecology *(spring only)*
- BIOL4540 Neuroscience *(fall only)*

- ☐ One Advanced Experience Course *(see the listing on reverse side)*
  
  **NOTE:** Undergraduate Research can be used to satisfy the Advanced Experience requirement and to contribute three credits toward the major if the student completes two semesters in the same laboratory.

- ☐ Choose Biology courses 3000 level or above to bring the total Biology credits to 30

*See the reverse page for a listing of biology electives. For those who wish to focus their studies in a specific area, courses are categorized by concentration (see superscript). Concentrations, while providing more in-depth coverage around a single topic, are not officially recognized on a transcript and are not required for the Biology Major. More information on how selected electives form the basis of a concentration is available on the Biology Department website.*

## CO-REQUISITES

### Chemistry

- General Chemistry 1 & 2 with Labs (CHEM1109-1110; 1111-1112)
- Organic Chemistry 1 with Lab (CHEM2231-2233)
- Organic Chemistry 2 with Lab (CHEM2232-2234) OR Biological Chemistry (BIOL4350)*

### Mathematics

- Calculus 1 (MATH1100) or equivalent

### Additional Quantitative courses

- Choose three from the following list:
  - Calculus 2 (MATH1101)
  - MATH courses 2000 level or higher
  - Statistics (BIOL2300, ECON1151, MATH4427, PHCG3560)**
  - Intro Physics 1 (calculus-based) with Lab (PHYS2100)
  - Intro Physics 2 (calculus-based) with Lab (PHYS2101)
  - Research Methods in Organismal Biology (BIOL3140)*
  - Population Genetics (BIOL 4250)*
  - Computer Science 1 and/or 2 (CSCI1101, CSCI1102)
  - Database Systems and Applications (CSCI2257)
  - Data Science (CSCI2291)

*Biology, BIOL4250, and BIOL4350 can apply as EITHER an elective OR a co-requisite, not both*
### 2024-2025 BIOLOGY ELECTIVES

#### Fall 2024

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparative Vertebrate Physiology (BIOL3030)</td>
<td>3</td>
</tr>
<tr>
<td>Cell Biology (BIOL3040)</td>
<td>2 cr</td>
</tr>
<tr>
<td>Genetics (BIOL3050)</td>
<td>4 cr</td>
</tr>
<tr>
<td>Research Methods in Organismal Biology (BIOL3140)*</td>
<td></td>
</tr>
<tr>
<td>Virology (BIOL4090)</td>
<td></td>
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<tr>
<td>Inflammation and Disease (BIOL4120)</td>
<td>1 cr</td>
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<tr>
<td>Microbiology (BIOL4140)</td>
<td></td>
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<tr>
<td>Introduction to Bioinformatics (BIOL4200)</td>
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<tr>
<td>Human Anatomy with Lab (BIOL4260)</td>
<td>2, 3 cr</td>
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<tr>
<td>Metabolic Regulation and Human Disease (BIOL4290)</td>
<td>4 cr</td>
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<tr>
<td>Vaccination and Immunity (BIOL4440)</td>
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</tr>
<tr>
<td>Neuroscience (BIOL4540)</td>
<td>2 cr</td>
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#### Spring 2025

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Cell Biology (BIOL3040)</td>
<td>2 cr</td>
</tr>
<tr>
<td>Foundations of Microbiology (BIOL3090)</td>
<td>1 cr</td>
</tr>
<tr>
<td>Introduction to Genomics (BIOL3150)</td>
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<tr>
<td>Ecology in a Changing Climate (BIOL3200)</td>
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<tr>
<td>Developmental Biology (BIOL3320)</td>
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<tr>
<td>Deep Sea Biology (BIOL4030)</td>
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<tr>
<td>Population Genetics (BIOL4250)*</td>
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</tr>
<tr>
<td>Human Physiology with Lab (BIOL4330)</td>
<td>1, 2, 3 cr</td>
</tr>
<tr>
<td>Biological Chemistry (BIOL4350)</td>
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</tr>
<tr>
<td>Molecular Biology (BIOL4400)</td>
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<tr>
<td>Behavioral Ecology (BIOL4450)</td>
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<tr>
<td>Cancer Biology (BIOL4510)</td>
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<tr>
<td>Principles of Immunology (BIOL4570)</td>
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### BIOLOGY ELECTIVES OFFERED IN OTHER DEPARTMENTS

#### Fall 2024

- Biochemistry I (CHEM4461)

#### Spring 2025

- Biochemistry II (CHEM4462)
- Drug Discovery and Medicinal Chemistry (CHEM5510)
- Synthetic Biology (CHEM5513)

### ADVANCED EXPERIENCE COURSES

#### Fall 2024

**Seminars (3 credits)**

- Nobel Winning Res in Medicine or Physio (BIOL5010) — 2 cr
- Topics in Developmental Biology (BIOL5040) — 2 cr
- Microbiome and Human Disease (BIOL5100) — 2 cr
- Environmental Disruptors of Development (BIOL5130)
- Glycobiology and Human Disease (BIOL5200) — 2 cr
- Cancer as a Metabolic Disease (BIOL5420)

**Advanced Labs (3 credits)**

- Research in Phylogenetics (BIOL4075)
- Research in Molecular Biology Lab (BIOL4830)
- Investigations in Cellular Re-Programming (BIOL4890)
- Advanced Lab in Cell Imaging (BIOL5450) — 2 cr

#### Spring 2025

**Seminars (3 credits)**

- Nobel Winning Res in Medicine or Physio (BIOL5010) — 2 cr
- Microbial Community Ecology (BIOL5071) — 2 cr
- Environmental Disruptors of Development (BIOL5130)
- Seminar in Cellular Dynamics (BIOL5180) — 2 cr
- Movement in Biology (BIOL5220) — 2 cr
- Immunity and Infectious Disease (BIOL5230)
- Topics in Nutrition and Metabolism (BIOL5250)
- Vertebrate Biomechanics (BIOL5380)
- Cancer as a Metabolic Disease (BIOL5420)
- Genomics and Personalized Medicine (BIOL5430)

**Advanced Labs (3 credits)**

- Research in Molecular Biology Lab (BIOL4830)
- Advanced Lab in Cell Imaging (BIOL5450) — 2 cr

Undergraduate Research for credit (BIOL4960 or BIOL4963) can be used to satisfy the Advanced Experience requirement or one biology elective only if the student completes two semesters of research in the same laboratory, with permission from the Biology Department. Undergraduate research for credit can take place on or off campus, and requires the permission of the supervising faculty member.

### NOTES

1. Microbiology concentration course
2. Cell Biology and Development concentration course
3. Physiology and Organismal Biology concentration course
4. Genetics and Genomics concentration course

**Statistics** is applied to the quantitative requirement and to the Genes and Genomes concentration but is not applied to the Biology elective credits.

Please visit the [website](#) to see a full list of CORE courses offered Fall 2024.