

Biology BS Curriculum Checklist

Fall 2024 – Spring 2025 (updated 03/07/2024)

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)* /Biochem I (CHEM4461)*

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)

*BIOL4350, CHEM4461, BIOL3140, and BIOL4250 can apply as EITHER an elective OR a co-requisite, not both

2024-2025 BIOLOGY ELECTIVES

Biology Electives are 3 credits each unless otherwise noted.

2024-2025 BIOLOGY ELECTIVES	
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<p style="text-align: center; color: #2e8b57;">Fall 2024</p> <ul style="list-style-type: none"> ³ Comparative Vertebrate Physiology (BIOL3030) ² Cell Biology (BIOL3040) ⁴ Genetics (BIOL3050) – 4 cr ³ Research Methods in Organismal Biology (BIOL3140)* ¹ Virology (BIOL4090) ^{2,3} Inflammation and Disease (BIOL4120) ¹ Microbiology (BIOL4140) ⁴ Introduction to Bioinformatics (BIOL4200) ³ Human Anatomy with Lab (BIOL4260) – 4 cr ^{2,3} Metabolic Regulation and Human Disease (BIOL4290) ¹ Vaccination and Immunity (BIOL4440) ^{2,3} Neuroscience (BIOL4540) 	<p style="text-align: center; color: #2e8b57;">Spring 2025</p> <ul style="list-style-type: none"> ² Cell Biology (BIOL3040) ¹ Foundations of Microbiology (BIOL3090) ⁴ Introduction to Genomics (BIOL3150) ³ Ecology in a Changing Climate (BIOL3200) ² Developmental Biology (BIOL3320) ³ Deep Sea Biology (BIOL4030) ⁴ Population Genetics (BIOL4250)* ³ Human Physiology with Lab (BIOL4330) – 4 cr ^{1,2,3} Biological Chemistry (BIOL4350) ^{2,4} Molecular Biology (BIOL4400) ³ Behavioral Ecology (BIOL4450) ² Cancer Biology (BIOL4510) ^{1,4} Principles of Immunology (BIOL4570)
BIOLOGY ELECTIVES OFFERED IN OTHER DEPARTMENTS	
<p style="text-align: center; color: #2e8b57;">Fall 2024</p> <ul style="list-style-type: none"> Biochemistry I (CHEM4461) 	<p style="text-align: center; color: #2e8b57;">Spring 2025</p> <ul style="list-style-type: none"> Biochemistry II (CHEM4462) Drug Discovery and Medicinal Chemistry (CHEM5510) Synthetic Biology (CHEM5513)
ADVANCED EXPERIENCE COURSES	
<p style="text-align: center; color: #2e8b57;">Fall 2024</p> <p>Seminars (3 credits)</p> <ul style="list-style-type: none"> ² Nobel Winning Res in Medicine or Physio (BIOL5010) – 2 cr ^{2,3,4} Topics in Developmental Biology (BIOL5040) (2 cr) ¹ Microbiome and Human Disease (BIOL5100) – 2 cr ² Environmental Disruptors of Development (BIOL5130) ² Glycobiology and Human Disease (BIOL5200) – 2 cr ^{2,3} Cancer as a Metabolic Disease (BIOL5420) ⁴ Biology of the Nucleus (BIOL5700) <p>Advanced Labs (3 credits)</p> <ul style="list-style-type: none"> ⁴ Research in Phylogenetics (BIOL4075) ^{1,4} Research in Molecular Biology Lab (BIOL4830) ² Investigations in Cellular Re-Programming (BIOL4890) ² Advanced Lab in Cell Imaging (BIOL5450) – 2 cr 	<p style="text-align: center; color: #2e8b57;">Spring 2025</p> <p>Seminars (3 credits)</p> <ul style="list-style-type: none"> ² Nobel Winning Res in Medicine or Physio (BIOL5010) – 2cr ¹ Microbial Community Ecology (BIOL5071) – 2 cr ² Environmental Disruptors of Development (BIOL5130) ² Seminar in Cellular Dynamics (BIOL5180) – 2 cr ² Movement in Biology (BIOL5220) – 2 cr ¹ Immunity and Infectious Disease (BIOL5230) ^{2,3} Topics in Nutrition and Metabolism (BIOL5250) ³ Vertebrate Biomechanics (BIOL5380) ^{2,3} Cancer as a Metabolic Disease (BIOL5420) ⁴ Genomics and Personalized Medicine (BIOL5430) <p>Advanced Labs (3 credits)</p> <ul style="list-style-type: none"> ^{1,4} Research in Molecular Biology Lab (BIOL4830) ² 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.