**Biology BS Curriculum Checklist**  
Fall 2021 – Spring 2022 (updated 10/22/2021)

**Completed Required Courses**
- [ ] BIOL 2000 Molecules & Cells (fall/spring)
- [ ] BIOL 2010 Ecology & Evolution (fall/spring)
- [ ] BIOL 2040 Investigations in Molecular Cell Biology Lab (fall/spring)  
  **NOTE:** Taken after BIOL 2000

**Category A: Genetics & Genomics**
- One from the following:
  - BIOL 3050 Genetics (fall/spring) – 4 cr
  - BIOL 3060 Introduction to Genetics (summer only)
  - BIOL 3150 Introduction to Genomics – 4 cr
  **NOTE:** Taken after BIOL 2000

**Category B: Physiology & Organismal Biology**
- One from the following:
  - BIOL 3030 Introduction to Physiology (fall)
  - BIOL 3210 Plant Biology (not offered in 2021-2022)
  - BIOL 4110 Ornithology (spring)
  - BIOL 4320 Developmental Biology (fall)
  - BIOL 4330 Human Physiology with Lab (spring) – 4 cr
  - BIOL 4450 Behavioral Ecology (not offered in 2021-2022)
  - BIOL 4540 Neuroscience (spring)

**One Advanced Experience Course (see listing on back page)**
- Undergraduate Research can be used to satisfy the Advanced Experience requirement or one biology elective only if the student completes two semesters (research contract required).

**Complete one of the following concentrations with required biology electives noted below and on the reverse page.**
See the concentration flyers for a more detailed list. **BS degree in Biology requires a minimum of 30 credits for all biology courses.**

1. **Microbiology**
   - [ ] BIOL 3090 Microbiology (spring)
   - OR BIOL 4140 (not offered 2021-22)
   - [ ] Choose four courses from the concentration list

2. **Cell Biology and Development**
   - [ ] BIOL 3040 Cell Biology (fall/spring)
   - [ ] BIOL 4320 Developmental Biology (fall) OR BIOL 4050 Evolution and Development (fall)
   - [ ] Choose three courses from the concentration list

3. **Physiology & Organismal Biology**
   - [ ] BIOL 3030 Introduction to Physiology (fall)
   - OR BIOL 4330 Human Physiology (spring)
   - [ ] Choose five courses from the concentration list

4. **Genetics and Genomics**
   - [ ] BIOL 3050 Genetics (fall/spring)
   - [ ] Choose five courses from the concentration list

5. **General Biology**
   - [ ] Choose Biology courses 3000 level or above to bring the total Biology credits to 30
   **NOTE:** This option is the default for anyone not completing a concentration

**CO-REQUISITES**

**Chemistry**
- [ ] General Chemistry 1 & 2 with Labs (CHEM 1109-1110; 1111-1112)
- [ ] Organic Chemistry 1 with Lab (CHEM 2231-2232)
- [ ] Organic Chemistry 2 with Lab (CHEM 2233-2234) OR Biological Chemistry (BIOL 4350)* /Bioch (CHEM 4461)*

**Mathematics**
- [ ] Calculus 1 (MATH 1100) or equivalent

**Additional Quantitative courses**
- [ ] Choose three from following list
  - Calculus 2 (MATH 1101)
  - MATH courses 2000 level or higher
  - Statistics (BIOL 2300, ECON 1151, MATH 4427)**
  - Intro Physics 1 (calculus-based) with Lab (PHYS 2100)
  - Intro Physics 2 (calculus-based) with Lab (PHYS 2101)
  - Experimental Methods in Organismal Biology (BIOL3140)*
  - Population Genetics (BIOL 4250)*
  - Computer Science 1 and/or 2 (CSCI 1101, CS1102)
  - Database Systems and Applications (CSC 1257)
  - Data Science (CSCI 2290)
### 2021-2022 BIOLOGY ELECTIVES

**Fall 2021**

1. Introduction to Physiology (BIOL 3030)
2. Cell Biology (BIOL 3040)
3. Genetics (BIOL 3050) – 4 cr
4. Experimental Methods in Organismal Biology (BIOL3140)*
5. Evolution and Development (BIOL4050)
6. Virology (BIOL 4090)
7. Inflammation and Disease (BIOL 4120)
8. Introduction to Bioinformatics (BIOL 4200)
9. Human Anatomy with Lab (BIOL 4260) – 4 cr
10. Developmental Biology (BIOL 4320)
11. Vaccination and Immunity (BIOL 4440)
12. Principles of Immunology (BIOL 4570)

**Spring 2022**

1. Cell Biology (BIOL 3040)
2. Genetics (BIOL 3050) – 4 cr
3. Microbiology (BIOL 3090)
4. Introduction to Genomics (BIOL 3150) – 4 cr
5. Deep Sea Biology (BIOL 4030)
6. Ornithology (BIOL 4110)
7. Population Genetics (BIOL 4250)*
8. Medical Biochemistry and Metabolism (BIOL 4290)
9. Human Physiology with Lab (BIOL 4340) – 4 cr
10. Biological Chemistry (BIOL 4350)
11. Molecular Biology (BIOL 4400)
12. Molecular Basis of Disease (BIOL 4460)
13. Cancer Biology (BIOL 4510)
14. Neuroscience (BIOL 4540)

### ADVANCED EXPERIENCE COURSES

**Fall**

- **Seminars (3 credits)**
  1. Nobel Winning Res in Medicine or Physio (BIOL 5010) – 2 cr
  2. Topics in Developmental Biology (BIOL 5040) - 2 cr
  3. Emerging Therapeutics (BIOL 5075) – 2 cr
  4. Topics in Advanced Cell Biology (BIOL 5095)
  5. Environmental Disruptors of Development (BIOL 5130)
  6. Exploring the Eukaryotic Chromosome (BIOL 5190) – 2 cr
  7. Cancer as a Metabolic Disease (BIOL 5420)

- **Advanced Labs (3 credits)**
  1. Research in Molecular Cell Biology (BIOL 4220)
  2. Research in Evolutionary Genomics (BIOL 4802)
  3. Research in Molecular Biology Lab (BIOL 4830)
  4. Investigations in Cellular Re-Programming (BIOL 4890)
  5. Advanced Lab in Cell Imaging (BIOL 5450) – 2 cr

**Spring**

- **Seminars (3 credits)**
  1. Nobel Winning Res in Medicine or Physio (BIOL 5010) – 2 cr
  2. Recombinant DNA Technology (BIOL 5060)
  3. Microbial Community Ecology (BIOL 5071) – 2 cr
  4. Emerging Therapeutics (BIOL 5075) – 2 cr
  5. Microbiome and Human Disease (BIOL 5100) – 2 cr
  6. Vaccine Development & Public Health (BIOL 5150)
  7. Immunity & Infectious Disease (BIOL 5230)
  8. Topics in Biomechanics (BIOL 5380)
  9. Cancer as a Metabolic Disease (BIOL 5420)
  10. Genomics and Personalized Medicine (BIOL5430)
  11. Synthetic Biology (BIOL 5440)

- **Advanced Labs (3 credits)**
  1. Research in Molecular Biology Lab (BIOL 4830)
  2. Research in Molecular Genetics Lab (BIOL 4870)
  3. Advanced Lab in Cell Imaging (BIOL 5450) – 2 cr

### SPRING 2022 BIOLOGY ELECTIVES OFFERED IN OTHER DEPARTMENTS

- Biochemistry 2 (CHEM 4462), Chemical Biology (CHEM 5567), Agroecology (EESC 3310)

### 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

* Can be applied to either Biology electives credits or the quantitative requirement (not both)
** Statistics is applied to the quantitative requirement and to the Genes and Genomes concentration, but is not applied to the Biology elective credits