## YEAR 1

### Fall Semester

- **BIOL 200** Concepts in Biology 4
- **Chem 125** General Chemistry I 3
- **Math 111** Calculus I 4
- **HUM 101** English I 3
- **BNFO 135** Bioinformatics I 3
- **Frsh Sem** Freshman Seminar 0

### Spring Semester

- **R120:201/202** Foundations of Cell/Molec 4
- **Chem 124** General Chem. Lab 1
- **Chem 126** General Chemistry II 3
- **Math 112** Calculus II 4
- **HUM 102** English II 3
- **GUR Elective** Physical Education 1

### Credits

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## YEAR 2

### Fall Semester

- **BIOL 205/206** Foundation of Ecol/Evol 4
- **Chem 243** Organic Chemistry I 3
- **Phys 111** Physics I 3
- **Phys 111A** Physics I Lab 1
- **Math 211** Calculus IIIA 3
- **BNFO 136** Bioinformatics II 3

### Spring Semester

- **Chem 244/244A** Organic Chemistry II & Lab 5
- **Phys 121** Physics II 3
- **Phys 121A** Physics II Lab 1
- **Math 337** Linear Algebra 3
- **GUR Elective** Social Sciences 2
- **GUR Elective** Physical Education 1

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## YEAR 3

### Fall Semester

- **Biology Elective** Cluster Elective - Functional Org 4
- **Biology Elective** Cluster Elective - Ecol/Evol 3
- **Math 222** Differential Equations 4
- **Math 340** Numerical Methods 3
- **GUR Elective** English and Cultural History 3

### Spring Semester

- **Math 373** Introduction to Math Bio 3
- **Biology Elective** Laboratory Elective 4
- **Math 331** Partial Differential Equations 3
- **Math 332** Complex Variables 3
- **GUR Elective** Social Sciences 3

### Credits

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## YEAR 4

### Fall Semester

- **Math 450** Capstone I 3
- **Biology Elective** Cluster Elective - Molec/Cell 3
- **Biology Elective** Laboratory Elective 3
- **Math 333** Probability and Statistics 3
- **Math 480** Advanced Calculus 3
- **GUR Elective** HSS Upper Level 3

### Spring Semester

- **Math 451** Capstone II 3
- **Biology Elective** Math Bio Elective 3
- **MGMT 390** Principles of Management 3
- **GUR Elective** HSS Upper Level 3
- **GUR Elective** HSS Senior Seminar 3

### Credits

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### Total Credits: 132

**Biology Credits: 35 ~ Math Credits: 39**

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1. **BioInformatics:** CS 115 and CS 116 can be used to fulfill the sBNFO 135/136 requirements.
2. **Social Science Electives:** *Two courses*: EPS 202, ECON 201, ECON 265, ECON 266, STS 257, STS 258; approved Rutgers courses.
3. **English & Cultural History:** Choice of HUM 211, HUM 212 or HIST 213; approved Rutgers course.
4. **Laboratory Electives:** *7 credits minimum:* Choice of one 4 credit laboratory and one 3 or 4 credit laboratory.
5. **HSS Upper Level Electives:** *Two courses:* 300-level courses in COM, ENG, HIST, LIT, PHIL, STS, THTR; approved Rutgers courses.
REQUIRED CORE BIOLOGY COURSES ~ 15 Credits * REQUIRED CORE MATH COURSES ~ 39 Credits

- R120/BIOL 200 Concepts in Biology* (4cr) *Effective from Fall 2011
- R120:201 Foundations of Cell & Molecular Biology Lecture (3cr)
- R120:202 Foundations of Cell & Molecular Biology Lab (1cr)
- BIOL 205 Foundations of Ecology & Evolution Lecture (3cr)
- BIOL 206 Foundations of Ecology & Evolution Lab (1cr)
- MATH 373 Introduction to Mathematical Biology (3cr)

- Math 111, 112, 211: Calculus I, II, IIIA (11cr)
- Math 222 Differential Equations (4cr)
- Math 331 Partial Differential Equations (3cr)
- Math 332 Complex Variables (3cr)
- Math 333 Probability and Statistics (3cr)
- Math 337 Linear Algebra (3cr)
- Math 340 Numerical Methods (3cr)
- Math 450, 451 Capstone I & II (6cr)
- Math 480 Advanced Calculus (3cr)

CONCEPT CLUSTER COURSES ~ 10 Credits

Double Majors must complete one course from each of the following three concept cluster elective categories:

- Ecological and Evolutionary Framework (3cr)
  - Evolution (BIOL 222)
  - Ecology (R120:280)
  - Animal Behavior (R120:282)
  - Plant Ecology (R120:370)

- The Functional Organism (4cr)
  - Plant Kingdom (R120:211)
  - Biology of Seed Plants (R120:230)
  - Plant Physiology (R120:330)
  - General Microbiology (R120:335)
  - Mammalian Physiology (R120:340)
  - Developmental Biology & Lab (R120:342/343)

- Molecular and Cellular Mechanisms (3cr)
  - Genetics (R120:352)
  - Cell Biology (R120:355)
  - Molecular Biology (R120:356)
  - Biochemistry (R120:360)

LABORATORY/FIELD EXPERIENCE ~ 7 Credits

Majors must complete at least one 4-credit lab in this category:

- Four Credit Laboratories (4cr)
  - Plant Kingdom (R120:211)
  - Biology of Invertebrates (R120:227)
  - Biology of Seed Plants (R120:230)
  - Comparative Vertebrate Anatomy (R120:285)
  - Taxonomy of Vascular Plants (R120:311)
  - Mycology (R120:313)
  - Animal Parasites & Parasitology Lab (R120:325/326)
  - Plant Physiology (R120:330)
  - General Microbiology (R120:335)
  - Mammalian Physiology (R120:340)
  - Developmental Biology & Lab (R120:342/343)
  - Microanatomy of Tissues (R120:405)
  - Plant Growth and Development (R120:430)
  - Cell Physiology and Imaging (BIOL 451)

- Three Credit Laboratories (3cr)
  - Ecology of Birds (R120:328)
  - Field Plant Ecology (R120:371)
  - Field Ecology (R120:380)
  - Field Animal Ecology (R120:381)
  - Analytical Field Ecology (BIOL 475)
  - Tropical Field Ecology (R120:485) (2cr)

MATHEMATICAL BIOLOGY ELECTIVES ~ 3 Credits

Double Majors must complete one courses from the following list of (3-credit) Math Bio elective courses:

- Math Bio Elective (3cr)
  - Medicine and Physiology (Math 371)
  - Population Biology (Math 372)
  - Computational Neuroscience (Math 430)