

Electives for the Major in Biological Sciences

(24 credits total, including at least 18 credits at the 300-400 level, 3 labs and one 3-credit course from each of the following departments: 146, 447, 694/115 and 216)

Cell Biology and Neuroscience 01: 146...

146:245 Fundamentals of Neurobiology (3)(F/S)
146:270 Fundamentals of Cell & Developmental Biology (3) (F/S)
146:295 Essentials of Cell Biology & Neuroscience (3)(F/S)
146:322 Human Histology (4)(S) **Lab**
146:328 Human Parasitology (3)(F/S)**
146:329 Human Parasitology **Lab** (1) (F/S)
146:340 Virology (3) (F)
146:356 Systems Physiology (3)(F/S)**
146:357 Systems Physiology **Lab** (1)(F/S)**
146:445 Advanced Neurobiology 1 (4)(F)
146:446 Advanced Neurobiology **Lab** 1 (1) (S)
146:447 Advanced Neurobiology II (3)(S)
146:448 Advanced Neurobiology II **Lab** (3)(S)
146:450 Endocrinology (3) (F)
146:456 Advanced Physiology (3) (F)
146:464 Topics in Cell Biology & Neuroscience (3)(F)
146:470 Advanced Cell Biology (3)(F)
146:471 Advanced Cell Biology **Lab** (3)(S)
146:472 Advanced Developmental Biology (3)(S)
146:474 Immunology (3)(F)
146:475 Lab In Immunology **Lab** (1)(S)
146:478 Molecular Biology (3)(S)**

Genetics, 01:447...

447:203 Honors Computational Genetics (3) (F)
447:216 Analysis of Scientific Literature (3)(S)
447:245 Intro to Cancer (3)(S)
447:302 Quantitative Biology & Bioinformatics (3)(S)
447:303 Computational Genetics of Big Data (3) (S)
447:315 Intro to Research in Genetics (3)(S) **Lab**(694/447)
447:352 Genome Evolution (3) (S)
447:354 Social, Legal and Ethical Implications of the New Genetics (3)(F)
447:356 Evolutionary Medicine (3) (S)
447:370 Developmental Genetics (3) (S)
447:380 Genetics (4)(F/S) Elective for Biology minors only
447:382 Genetics **Lab** (1)(F/S)
447:384 & 385 Genetic Analysis I (F) & II (S) (4)
447:390 General Microbiology (4)(F/S) **Lab****
447:392 Pathogenic Microbiology (3) (S)
447:451 Genomes (3) (F/S) **
447:460 Genetics of Compulsive Behavior (3)(S)
447:465 Mutant Isolation and Analysis (3)(F)
447:470 Evolutionary Developmental Biology (3) (S)
447:478 and 479 Special Topics in Genetics (3)(F)
447:480 Topics in Molecular Genetics (3)(F)
447:481 Topics in Human Genetics (3)(F)
447:484 Behavioral and Neural Genetics (3) (S)
447:486 Evolutionary Genetics (3) (S)

**Courses Offered
through the Division
of Life Sciences:
146, 447, 694**

Molecular Biology and Biochemistry 01:694...

694:214 or 215 Intro. to Research in Molecular Biology (215 is Honors) (3) **Lab**
694:230 Analytical Methods In Biology (3) (S)
694:301 Introductory Biochemistry & Molecular Biology ** (3) (F/S)
694:313 Intro to Biochem **Lab** ** (1)
694:315 Intro to MBB Research **Lab** (3)(S) (447 or 694)
694:407 Biochemistry** (3)(F)
694:408 Molecular Biology (3)(S)**
694:411 Molecular Pathways (3)(F)
694:412 Proteomics and Function Genomics (3)(S)
694:413 Chromatin and Epigenomics (3)(F)
694:414 Harnessing Solar Energy (3) (S)
694:420 Special Topics in MBB: Analyzing Numbers in Biology(3)(F)
694:421 Special Topics in Molecular Biology and Biochemistry(3)(S)
694:492 Gene Regulation in Cancer and Development (3)(S)

****Please see the
reverse side for a list
of course conflicts. ****

Department of Biochemistry 11:115...

11:115:301 Intro Biochemistry (3)**
11:115:313 Intro Biochemistry **Lab** (1) **
11:115:403, 404 General Biochemistry (4,3)**
11:115:412 Protein and Enzyme Chemistry (3)
11:115:413, 414 Experimental Biochemistry (3,3) **Lab**
11:115:422 Biochemical Mechanisms of Toxicology (3)
11:115:452 Biochemical Separations (3)

Ecology, Evolution and Natural Resources 11:216... (formerly 704)

11:216:240 Behavioral Biology (4) (does NOT include lab) (S)
11:216:251 Fundamentals of Evolution (3) (S)
11:216:269 Evolution of Animal Behavior (3) (F) (credit not given for this and 11:216:441)
11:216:302 Parasite Ecology (4) **Lab** (F)
11:216:317 Conservation Ecology (3) (F/S)
11:216:323 Ornithology (4) **Lab** (S)
11:216:324 Invertebrate Zoology (4) **Lab** (F)
11:216:325 Vertebrate Zoology (4) **Lab** (S)
11:216:332 Plant Ecology (4) **Lab** (F)
11:216:335 Freshwater Ecology (formerly Limnology) (4) **Lab** (S)
11:216:351 Principles of Ecology (3) (S)
11:216:352 Principles of Ecology **Lab** (1) (S)
11:216:353 Experimental Evolution (4) **Lab** (Summer)
11:216:360 Animal Physiological Ecology (3) (F)
11:216:401 Evolution of Eukaryotes (3) (F)
11:216:405 Evolution of Infectious Diseases (3) (S) odd years only
11:216:406 Pollination Ecology **Lab** (4) (S)
11:216:411 Plant Diversity & Evolution (3) (F)
11:216:412 Plant Diversity & Evolution **Lab** (1) (F)
11:216:421 Wetland Ecology (4) **Lab** (F) odd year only
11:216:422 Soil Organismal Diversity (3) (S) (effective Spring 2020)
11:216:428 Conversational Mathematical Modeling of Bio. Systems (3) (S)
11:216:441 Animal Behavior (3) (S) (credit not given for this and 11:216:269)
11:216:451 Global Change and Ecology (3) (F)
11:216:454 Molecular Ecology (3) (F)
11:216:464 Wildlife Ecology and Conservation **Lab** (4)
11:216:469 Wildlife Diseases (3) (S)
11:216:486 Principles of Evolution (3) (S)
11:216:487 Urban Ecology (3) (S)
11:216:488 Restoration Ecology (4) **Lab** (S)

Exercise Science

- 01:377:213 Functional Human Anatomy (4) ** (effective through Summer 2021)
01:377:223 Functional Human Anatomy (3) **
01:377:224 Functional Human Anatomy Lab (1) - Will only count for elective credit only—will **NOT** fulfill a Life Science elective lab requirement
01:377:370 Exercise Physiology (3)
01:377:371 Exercise Physiology **Lab** (1)

Animal Science

- 11:067:300 Integrative Physiology (4)** **Lab** (effective Spring 2017)
11:067:327 Animal Reproduction (3)
11:067:391 Comparative Mammalian Anatomy (3) **
11:067:404 Animal Diseases (3) **
11:067:410 Neuroendocrinology (3)
11:067:430 Animal Microtechniques and Tissue Culture (4) **Lab**
11:067:450 Endocrinology (4)
11:067:490 Pathophysiology (3)
11:067:491 Reproductive & Developmental Toxicology (3)
11:067:492 Molecular and Cellular Physiology (3)

Biotechnology

- 11:126:383 Nucleotide Sequence Analysis (3)
11:126:405 Microbial Technology (3)
11:126:406 Plant Gene Transfer (2.5) **Lab**
11:126:407 Comparative Virology (3)
11:126:413 Plant Molecular Biology (3)
11:126:420 Trends in Biotechnology (3)
11:126:427 Methods and Applications in Molecular Biology (4) **Lab**
11:126:444 Advanced Technologies in Biosciences (3)
11:126:481 Molecular Genetics (3)**
11:126:482 Molecular Genetics **Lab** (4)
11:126:483 Nucleotide Sequence Analysis (3)
11:126:486 Analytical Microbiology (3) **Lab**

Criminal Justice

- 01:202:351 Forensic Science I (4)
01:202:352 Forensic Science II (4) **Lab**

Entomology

- 11:370:380 Insect Biotechnology (3)
11:370:381 Insect Biology (4) **Lab**
11:370:406 Medical & Veterinary Entomology (3)
11:370:414 Forensic Entomology (3)

Environmental Science

- 11:375:312 Environmental Microbiology **Lab** (2)
11:375:411 Environmental Microbiology (3)
11:375:453 Soil Ecology (3)

Marine Sciences

- 11:628:321 Ichthyology (4) **Lab**
11:628:404 Fungi and Ecosystems (3)
11:628:462 The Biology of Living In the Ocean: Boundary Ecosystems & Processes (3)

Microbiology

- 11:680:390 General Microbiology (4) **Lab**** (fulfills 447 subject area requirement)
11:680:480 Microbial Genetics and Genomics (3) **
11:680:491 Microbial Ecology and Diversity (3)
11:680:492 Microbial Ecology and Diversity **Lab** (3)
11:680:494 Applied Microbiology (4) **Lab**

Nutrition

- 11:709:400 Advanced Nutrition I: Regulation of Macronutrient Metabolism (3)
11:709:401 Advanced Nutrition II: Energy and Micronutrient Metabolism (3)

Plant Biology and Pathology

- 11:776:302 General Plant Pathology (3) (formerly 11:770:301)
11:776:311 General Plant Pathology **Lab** (1) (formerly 11:770:311)
11:776:382 Plant Physiology (4) **Lab**
11:776:405 Plant Biosecurity (3)
11:776:452 Plant Tissue Culture (3) **Lab**

**** Course Conflicts****

Credit not given for more than one of the following courses in each group:

Biochemistry: 01:694:301 or 01:694:407 or 11:115:301 or 11:115:403

Biochemistry Lab: 11:115:313 or 01:694:313

Molecular Biology: 01:146:478 or 01:694:408 or 11:126:481

Microbiology: 01:447:390 or 11:680:390

Endocrinology: 01:146:450 or 11:067:450

Physiology: 01:146:356 or 11:067:300

Physiology lab: 01:146:357 or 11:067:300

Anatomy: 01:377:213 or 01:377:223/224 or 11:067:391

Parasitology: 01:146:328 or 11:067:404

Genomes: 01:447:451 or 11:680:480 or 11:216:423 or 11:115:423

Genetics: 01:447:203 or 01:447:302

Animal Behavior: 11:216:269 or 11:216:441