Approved Life Science 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 Approved Electives (01:146):**
146:245 Fundamentals of Neurobiology (3)(F/S)
146:270 Fundamentals of Cell 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)
146:356 Systems Physiology (3)(F/S)*
146:357 Systems Physiology Lab (1)(F/S)*
146:445 Synapses, Neurons, and Circuits (previously Adv Neuro I)(4)(F)
146:466 Advanced Neurobiology Lab 1 (1) (S)
146:473 Genetic Regulation of Cell Biology (3)(F) (previously Adv Cell Bio I)
146:474 Immunology (3)(F)
146:475 Lab in Immunology Lab (1) (S)
146:476 Honors Immunology (3) (S)
146:481 Protein Dynamics in Cell Biology (3)(S) (effect. Sp. 2025)

**Genetics Approved Electives (01:447):**
447:203 Honors Computational Genetics (3)(F)
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) (F)
447:370 Developmental Genetics (3) (F)

**447:380 Genetics (4)(F/S) Elective for Biology minors only**
447:382 Genetics Lab (1)(F/S)
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 Genetic Approaches and Research Analysis (3)(F)
447:470 Evolutionary Developmental Biology (3) (S)
447:484 Behavioral and Neural Genetics (3) (S)
447:486 Evolutionary Genetics (3) (S)

**Molecular and Biochemistry Approved Electives (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 MBB Research Lab *(694/447)
694:395 Biochemistry for Life Sciences *(3)(F/S)
694:407 Biochemistry**(3)(F)
694:408 Molecular Biology (3)**
694:413 Chromatin and Epigenomics (3)(F)
694:421 Special Topics in Molecular Biology and Biochemistry(3)(S)
694:492 Gene Regulation in Cancer and Development (3)(S)

**Biochemistry Approved Electives (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)
11:115:451 Principles of Ecology (3) (S)
11:115:452 Principles of Ecology Lab (1) (S)
11:115:473 Evolution of Infectious Diseases (3) odd years only
11:115:480 Molecular Biology (3)**
11:115:481 Protein Dynamics in Cell Biology (3)(S)

**Ecology, Evolution and Natural Resources Approved Electives (11:216):**
11:216:240 Behavioral Biology (4) (does NOT include lab) (F)
11:216:251 Fundamentals of Evolution (3) (S)
11:216:269 Evolution of Animal Behavior (3) (F)
11:216:317 Conservation Ecology (3) (F/S)
11:216:325 Vertebrate Zoology (4) Lab (S)
11:216:332 Plant Ecology (4) Lab (S)
11:216:335 Principles of Ecology (3) (S)
11:216:337 Principles of Ecology Lab (1) (S)
11:216:351 Animal Behavior (3) (S)
11:216:352 Animal Behavior Lab (1) (S)
11:216:360 Animal Physiological Ecology (3) (F)
11:216:365 Evolution of Infectious Diseases (3) (S) odd years only
11:216:368 Global Change and Ecology (3) (F)
11:216:375 Molecular Ecology (3) (F)
11:216:386 Principles of Evolution (3) (S)
11:216:407 Urban Ecology (3) (S)

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*Please see the reverse side for a list of course conflicts.*
Exercise Science Approved Electives:
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 Approved Electives:
11:067:300 Integrative Physiology (4)* Lab
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 Approved Electives:
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)
11:126:486 Analytical Microbiology (3) Lab

Criminal Justice Approved Electives:
01:202:351 Forensic Science I (4)
01:202:352 Forensic Science II (4) Lab

Entomology Approved Electives:
11:370:320 Insect Ecology & Evolution (3)
11:370:380 Insect Biotechnology (3)
11:370:381 Insect Biology (4) Lab
11:370:403 Insect Structure and Function (4) Lab
11:370:406 Medical & Veterinary Entomology (3)
11:370:414 Forensic Entomology (3)

Environmental Science Approved Elective:
11:375:312 Environmental Microbiology Lab (2)
11:375:411 Environmental Microbiology (3)
11:375:453 Soil Ecology (3)

Marine Sciences Approved Electives:
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 Approved Electives:
11:680:390 General Microbiology (4) Lab** (fulfills 447 subject area requirement)
11:680:475 Microbiomes and Health (3)
11:680:480 Microbial Genetics and Genomics (3)
11:680:491 Microbial Ecology and Diversity (3)
11:680:492 Experiments in Microbial Ecology and Diversity Lab (3) (EBE for SEBS)
11:680:494 Applied Microbiology (4) Lab

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

Plant Science Approved Electives:
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

Out of Classroom Learning Experiences**:
Biological Sciences (01:119) Approved Electives:
01:119:201, 202 Independent Study in Biology (1-3)
01:119:408, 409 Honors in Biology (3-6) Lab***
**Maximum of 6 credits in total can be applied toward the major from this type of coursework.
***May only be applied 1 time toward the 3 lab requirement.

* Course Conflicts*

Credit not given for more than one of the courses listed per each row of courses below:

Animal Behavior: 11:216:269 or 11:216:441
Anatomy: 01:377:213 or 01:377:223/224 or 11:067:391
Biochemistry: 01:694:301 or 01:694:407 or 11:115:301 or 11:115:403 or 01:694:395
Biochemistry Lab: 11:115:313 or 01:694:313
Endocrinology: 01:146:450 or 11:067:450
Molecular Biology: 01:146:478 or 01:694:408 or 11:126:481
Endocrinology: 01:146:450 or 11:067:450
Microbiology: 01:447:390 or 11:680:390
Parasitology: 01:146:328 or 11:067:404
Physiology: 01:146:356 or 01:146:357 or 11:067:300