

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) **LAB**
146:350 Introduction to Light Microscopy Lab (1)(S) **LAB**
146:356 Systems Physiology (3) (F/S) *
146:357 Systems Physiology Lab (1) (F/S) * **LAB**
146:445 Synapses, Neurons, and Circuits (3)(F)
146:447 Clinical Neurobiology (3) (F/S)
146:456 Advanced Physiology (3) (F/S)
146:465 Neurobiology of Pain and Addiction (3) (F/S)
146:471 Advanced Cell Biology Lab (3)(S) **LAB**
146:472 Developmental Biology (3)(S)
146:473 Genetic Regulation in Cell Biology (3)(F)
146:474 Immunology (3)(F)
146:475 Lab in Immunology (1)(S) **LAB**
146:476 Honors Immunology (3) (S)
146:481 Protein Dynamics in Cell Biology (3)(S)

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**
447:345 Quantitative Methods in Drug Discovery and Development (1)(F) **LAB NEW!**
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 minor only
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)

Updated March 2026 (F)=Offered Fall, (S) = Offered Spring, (F/S) = Offered Fall & Spring

Molecular Biology and Biochemistry Approved Electives (01:694):

694:214 Intro. to Research in Molecular Biology (215 is Honors) (3) **LAB**
694:215 Honors Intro. to Research in Molecular Biology (3) **LAB**
694:313 Intro to Biochem Lab(1)(S) * **LAB**
694:315 Intro to MBB Research (3)(S) **LAB**
694:316 Honors Intro to MBB Research (3)(F) (694/447) **LAB**
694:390 Introductory Computational Biology (3)(S)
694:395 Biochemistry for Life Sciences (3) (F/S) *
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)
694:421 Special Topics in Molecular Biology and Biochemistry(3)(F)
694:492 Gene Regulation: Clocks to Cancer (3)(S)

Biochemistry Approved Electives (11:115):

11:115:301 Intro Biochemistry (3) (F/S) *
11:115:313 Intro Biochemistry Lab (1) (F/S) * **LAB**
11:115:403 General Biochemistry I (4) (F/S) *
11:115:404 General Biochemistry I (3) (F/S) *
11:115:413 Experimental Biochemistry I (3) (F) **LAB**
11:115:414 Experimental Biochemistry II (3) (S) **LAB**
11:115:422 Biochemical Mechanisms of Toxicology (3)(F)
11:115:423 Fundamentals of Genomics (3) S

Ecology, Evolution, and Natural Resources Approved Electives (11:216):

11:216:240 Behavioral Biology (3)(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)
11:216:323 Ornithology (4)(S) **LAB**
11:216:324 Invertebrate Zoology (4)(F) **LAB**
11:216:325 Vertebrate Zoology (4) (S) **LAB**
11:216:332 Plant Ecology (4)(F) **LAB**
11:216:351 Principles of Ecology (3) (S)
11:216:352 Principles of Ecology Lab (1)(S) **LAB**
11:216:360 Animal Physiological Ecology (3)(F)
11:216:411 Plant Diversity & Evolution (3) (F)
11:216:412 Plant Diversity & Evolution Lab (1)(F) **LAB**
11:216:441 Animal Behavior (3)(S) *
11:216:451 Climate Change Ecology (3)(F)
11:216:464 Wildlife Ecology and Conservation (4) (F) **LAB**
11:216:487 Urban Ecology (3)(S)

Exercise Science Approved Electives:

01:377:223 Functional Human Anatomy (3) (F/S)
 01:377:224 Functional Human Anatomy Lab (1) does **NOT** count as Lab (F/S)
 01:377:370 Exercise Physiology (3) (F/S)
 01:377:371 Exercise Physiology Lab (1) (F/S) **LAB**

Animal Science Approved Electives:

11:067:300 Integrative Physiology (4) **LAB** (F/S) *
 11:067:327 Animal Reproduction (3) (F/S)
 11:067:391 Comparative Mammalian Anatomy (3) (F/S) *
 11:067:404 Animal Diseases (3)(F) *
 11:067:410 Neuroendocrinology (3)(F) (even years only)
 11:067:430 Animal Micro techniques and Tissue Culture (4)(S) **LAB**
 11:067:450 Endocrinology (4) (F/S) (restarts Sp27)
 11:067:490 Pathophysiology (3)(S)
 11:067:491 Reproductive & Developmental Toxicology (3)(F)
 11:067:492 Molecular and Cellular Physiology (3)(S)

Biotechnology Approved Electives:

11:126:383 Nucleotide Sequence Analysis (3) (F/S)
 11:126:407 Comparative Virology (3)(S)
 11:126:413 Plant Molecular Biology (3)(F) (odd years only)
 11:126:427 Methods and Applications in Molecular Biology (4)(F) **LAB**
 11:126:444 Advanced Technologies in Biosciences (3)(S) (odd years only)
 11:126:481 Molecular Genetics (3)(F)*
 11:126:482 Molecular Genetics Lab (4)(S) **LAB**

Criminal Justice Approved Electives:

01:202:351 Forensic Science I (4) (F)
 01:202:352 Forensic Science II (4) (S) **LAB**

Entomology Approved Electives:

11:370:320 Insect Ecology & Evolution (3)(S)
 11:370:380 Insect Biotechnology (3)(S)
 11:370:381 Insect Biology (4) (F/S) **LAB**
 11:370:403 Insect Structure and Function (4)(S) **LAB**
 11:370:406 Medical & Veterinary Entomology (3) (F/S)
 11:370:414 Forensic Entomology (3)(S)

Environmental Science Approved Elective:

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

Marine Sciences Approved Electives:

11:628:321 Ichthyology (4)(F) **LAB**
 11:628:462 The Biology of Living in the Ocean: Boundary Ecosystems & Processes (3)(S)

Microbiology Approved Electives:

11:680:390 General Microbiology (4) (fulfills 447 subject area requirement) (F/S) **LAB****
 11:680:475 Microbiomes and Health (3)(S)
 11:680:480 Microbial Genomics (3)(S)
 11:680:481 Microbial Physiology (3)(S)
 11:680:490 Molecular Mechanisms of Virulence (3)(S)
 11:680:491 Microbial Ecology and Diversity (3)(F)
 11:680:492 Microbial Ecology and Diversity Lab (3)(S) (an EBE for SEBS) **LAB**
 11:680:494 Applied Microbiology (4)(F) **LAB**

Nutrition Approved Electives:

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

Plant Science Approved Electives:

11:776:302 General Plant Pathology (3)(F)
 11:776:311 General Plant Pathology Lab (1)(F) **LAB**
 11:776:382 Plant Physiology (4)(S) **LAB**
 11:776:405 Plant Biosecurity (3) (S) (even years only)
 11:776:452 Plant Tissue Culture (3)(S) **LAB**

“Out of Classroom/Experiential Learning/Career Approved Electives” **

01:119:201, 202 Independent Study in Biology (1-3) (F/S)
 01:119:206 Career & Professional Development for Life Sciences Majors (1.5) (F/S) **(EXP/LAB)*****
(majors only)

01:119:307, 308, 406, 407 Research in Biology (1-4) (F/S) **EXP/LAB*****
 01:119:408, 409 Honors in Biology (3-6) 408(F) & 409(S) **EXP/LAB*** (majors only)**
 01:119:205 Internship in Life Sciences (3) (F/S) **EXP/LAB** (majors only)**
 16:137:653(F) 16:137:654(S) 16:137:655(Su) Master of Business and Science (MBS)
 Externship (3) **EXP/LAB*** (majors only)**

**** A maximum of 6 credits for the major and 3 for the minor can be applied from the “Out of Classroom/Experiential Learning/Careers Approved Electives”. A maximum of 3 credits of either Internship in Life Sciences or MBS Externship courses can be applied toward the Bio Major.**

***** A maximum of 1 life science lab course requirement can be fulfilled with a “EXP/ LAB” option. See biology.rutgers.edu or Biology Advisor for information.**

Course Conflicts*

Credit is not given for more than one course listed for each row below.

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

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

Biochemistry: 01:694:301 or 01:694:395 or 01:694:407 or 11:115:301 or 11:115:403

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

Evolution: 11:216:251 or 11:216:486

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

MBB/GEN Research course: 01:694:214 or 01:694:215 or 01:694:315 or 01:694:316

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

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

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

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

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