

B.S. in Biology

(120 credit minimum)

First Year

1st Semester		Credits
BIOL 200	Concepts in Biology	4
CHEM 125 or CHEM 121	General Chemistry I ¹ or Fundamentals of Chemical Principles I	3
CHEM 125A	General Chemistry Lab I	1
MATH 111	Calculus I	4
ENGL 101	English Composition: Introduction to Academic Writing	3
FYS SEM	First-Year Student Seminar	0
Term Credits		15

2nd Semester

BIOL 205	Foundations of Biology: Ecology and Evolution Lecture	3
BIOL 206	Foundations of Biology: Ecology and Evolution Lab	1
CHEM 126 or CHEM 122	General Chemistry II ¹ or Fundamentals of Chemical Principles II	3
CHEM 126A	Gen Chemistry Lab II	1
MATH 112	Calculus II	4
ENGL 102	English Composition: Introduction to Writing for Research	3
Term Credits		15

Second Year**1st Semester**

BIOL 201	Found of Biol: Cell & Molecula	3
BIOL 202	Found of Biol: Cell & Molecula	1
CHEM 243	Organic Chemistry I	3
PHYS 111	Physics I	3
PHYS 111A	Physics I Lab	1
MATH 211	Calculus III A	3
BNFO 135	Programming for Bioinformatics	3
Term Credits		17

2nd Semester

CHEM 244	Organic Chemistry II	3
CHEM 244A	Organic Chemistry I Laboratory	2
PHYS 121	Physics II	3
PHYS 121A	Physics II Lab	1
Biology Laboratory Elective		4
CS 101	Computer Programming and Problem Solving	3
Term Credits		16

Third Year**1st Semester**

Biology Laboratory Elective ²		3
Biology Cluster A or C Elective		3
MATH 222	Differential Equations	4
History and Humanities GER 200 level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-200-level/)		3
Social Science GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/social-science-ger/)		3

Term Credits**16**

2nd Semester

Biology Laboratory Elective	4
Biology Cluster A or C Elective	3
MATH 333 Probability and Statistics	3
History and Humanities GER 300+ level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/)	3
Biology Elective	3
Term Credits	16

Fourth Year**1st Semester**

Biology Elective	3
Biology Cluster D Elective	3
History and Humanities GER 300+ level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/)	3
Technical Elective ³	4
Term Credits	13

2nd Semester

Biology Elective 400 level	3
Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/hss-capstone/)	3
Free Elective ⁴	3
Free Elective ⁴	3
Term Credits	12
Total Credits	120

See the **General Education Requirements** "Refer to the General Education Requirements for specific information for GER courses"

- ¹ CHEM 121 and CHEM 122 require permission from the academic adviser
- ² Laboratory Elective - A four or three credit BIOL laboratory elective
- ³ Technical Elective - Any course in BIOL, BME, CHEM, CS, EVSC, FRSC, IS, IT, MATH, MIT, MIS, IE.
One Technical Elective must be four credits (PHYS 202 and 202A, PHYS 203 or 203A, FRSC 307, FRSC 359).
- ⁴ Free Elective - Any course in any subject at any level.

Biology Credits: 41

BIOLOGY ELECTIVES MUST BE CHOSEN AS OUTLINED BELOW:

One course must be taken from each cluster.

Concept Cluster Computational Biology

Code	Title	Credits
BIOL 432	Intro to Comp Neuroscience	3
BIOL 436	Advanced Neuroscience Modeling	3
BIOL 470	Dynamic Princ in Systems BIOL	3
MATH 371	Physiology And Medicine	3
MATH 372	Population Biology	3
MATH 373	Introduction to Mathematical Biology	3

Concept Cluster Ecology and Evolution

Code	Title	Credits
BIOL 222	Evolution	3
or R216 222	Evolution	
R120 370	Plant Ecology	3

R216 280	Ecology	3
BIOL 382	Animal Behavior	3

Concept Cluster Functional Organism(4 cr)

Code	Title	Credits
R216 211	Plant Kingdom	4
R216 230	Biology Of Seed Plants	4
R216 330	Plant Physiology	4
R120 335	General Microbiology	4
BIOL 340 or R120 340	Mammalian Physiology	4
R120 342 & R120 343	Developmental Biology and Developmental Biology Lab	4

Concept Cluster Molecular and Cellular

Code	Title	Credits
BIOL 352 or R120 352	Genetics	3
R120 355	Cell Biology	3
R120 356	Molecular Biology	3
CHEM 473 or R120 360	Biochemistry	3

Laboratory Experience Courses

Code	Title	Credits
R216 211	Plant Kingdom	4
R120 227	Biol Invertebrates	4
R216 230	Biology Of Seed Plants	4
R120 311	Flora of New Jersey	4
R120 313	Mycology	4
BIOL 421	Comparative Vertebrate Anatomy	4
R120 325 & R120 326	Animal Parasites and Parasitology Lab	4
BIOL 328	Ornithology - The Life of Birds	3
R216 330	Plant Physiology	4
R120 335	General Microbiology	4
BIOL 340 or R120 340	Mammalian Physiology	4
R120 342 & R120 343	Developmental Biology and Developmental Biology Lab	4
BIOL 347	Lab Approaches in Neuroscience	4
R120 404	Intro to Neuroanatomy	4
R120 405	Microanatomy of Cells	4
R216 430	Plant Growth & Development	4
BIOL 451	Cell Physiology and Imaging	4
BIOL 475	Ecological Field Methods and Analysis	3
BIOL 484	Evolution of Animal Behavior Laboratory	3
FRSC 307	Crime Scene Investigation & Lab	4
FRSC 479	Forensic Biology & Lab	4
FRSC 480	Forensic Microscopy & Lab	4
CHEM 473 & CHEM 475	Biochemistry and Biochemistry Lab I	5

Biology Electives

Code	Title	Credits
BIOL 222	Evolution	3
or R216 222	Evolution	
R216 280	Ecology	3
BIOL 315	Principles of Neurobiology	3
BIOL 320	Discovering Biological Research	3
BIOL 337	Collective Intel in Biol Syst	3
BIOL 338	Ecology of the Dining Hall	3
R120 346	Neurobiology	3
BIOL 350	Immunology	3
R120 355	Cell Biology	3
R120 356	Molecular Biology	3
R120 360	Biochemistry	3
R216 365	Evolutions of Humans	3
BIOL 375	Conservation Biology	3
BIOL 376	Biological Applications of Geographic Information Systems	3
BIOL 382	Animal Behavior	3
BIOL 383	Neural Basis of Behavior	3
BIOL 400	Biology in Science Fiction	3
R120 402	Biology of Cancer	3
R216 422	Biological Invasions	3
BIOL 423	Physiological Mechanisms	3
BIOL 424	Comparative Physiology	3
BIOL 436	Advanced Neuroscience Modeling	3
BIOL 440	Cell Biology of Disease: Cells gone Bad!	3
BIOL 441	Neurophysiology	3
BIOL 443	Biology of Addiction	3
BIOL 445	Endocrinology	3
BIOL 447	Systems Neurobiology	3
BIOL 448	Neuropathophysiology: Nervous System Gone Bad!	3
BIOL 453	Applied Genetics & Genomics	3
R120 455	Molec Cell Biology	3
R120 456	Virology	3
BIOL 462	Comparative Biomechanics	3
BIOL 468	Disease Ecology & Evolution	3
BIOL 470	Dynamic Princ in Systems BIOL	3
R120 472	Environmental Assessment	3
CHEM 473	Biochemistry	3
CHEM 474	Biochemistry II	3
BIOL 491	Research and Independent Study	3
BIOL 492	Research and Independent Study	3
BIOL 495	Honors Seminar in Biology	3
BIOL 498	Special Topics in Biology	3

This curriculum represents the maximum number of credits per semester for which a student is advised to register. A full-time credit load is 12 credits.

First-year students are placed in a curriculum that positions them for success which may result in additional time needed to complete curriculum requirements. Continuing students should consult with their academic advisor to determine the appropriate credit load.