

B.A. in Biology

(123 credit minimum)

First Year

1st Semester		Term Credits
BIOL 200	Concepts in Biology	4
CHEM 121 or CHEM 125	Fundamentals of Chemical Principles I or General Chemistry I	3
MATH 138	General Calculus I	3
HUM 101	English Composition: Writing, Speaking, Thinking I	3
BNFO 135	Programming for Bioinformatics	3
FRSH SEM	Freshman Seminar	0
Term Credits		16

2nd Semester

R120 201	Foundations Of Biology	3
R120 202	Foundations Of Biology Lab	1
CHEM 124	General Chemistry Laboratory	1
CHEM 122 or CHEM 126	Fundamentals of Chemical Principles II or General Chemistry II	3
MATH 238	General Calculus II	3
HUM 102	English Composition: Writing, Speaking, Thinking II	3
Physical Education GUR Elective		1
Term Credits		15

Second Year

1st Semester

BIOL 205	Foundations of Biology: Ecology and Evolution Lecture	3
BIOL 206	Foundations of Biology: Ecology and Evolution Lab	1
CHEM 243	Organic Chemistry I	3
PHYS 102	General Physics	3
PHYS 102A	General Physics Laboratory	1
MATH 105	Elementary Probability and Statistics	3
Physical Education GUR Elective		1
Term Credits		15

2nd Semester

Biology Cluster Elective		3
CHEM 244	Organic Chemistry II	3
CHEM 244A	Organic Chemistry II Laboratory	2
PHYS 103	General Physics	3
PHYS 103A	General Physics Laboratory	1
English Composition and Cultural History (lower-level) GUR Elective		3
Term Credits		15

Third Year

1st Semester

Biology Functional Laboratory Elective		4
Biology Cluster Elective		3
MGMT 390	Principles of Management	3
Social Science (lower-level) GUR Elective		3
Humanities and Social Sciences (upper-level) GUR Elective		3
Term Credits		16

2nd Semester

Biology Laboratory Elective		4
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Biology Elective	3
Technical Elective	3
Humanities and Social Sciences (upper-level) GUR Elective	3
Social Science (lower-level) GUR Elective	3
Term Credits	16
Fourth Year	
1st Semester	
Biology Laboratory Elective	3
Biology Elective	3
Humanities and Social Sciences (upper-level) GUR Elective	3
Technical Elective	3
Free Elective	3
Term Credits	15
2nd Semester	
Biology Elective	3
Technical Elective	3
Free Elective	3
Free Elective	3
Free Elective	3
Term Credits	15
Total Credits	123

Biology Credits: 38 (Including General Biology I, II, and Foundations of Biology)

Technical Electives

Any course in chemistry, math or physics beyond major requirements. Any course in environmental science, computer science or engineering. Additional biology courses can be used as technical electives.

Free Electives

Any course in any subject at any level.

Biology Electives

One course must be taken from each cluster.

Cluster A – Ecology and Evolution

BIOL 222	Evolution	3
R120 280	Ecology	3
R120 382	Animal Behavior	3
R120 370	Plant Ecology	3

Cluster B – Functional Organism

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

Cluster C – Molecular and Cellular

R120 352	Genetics	3
R120 355	Cell Biology	3

R120 356	Molecular Biology	3
R120 360	Biochemistry	3
or CHEM 473	Biochemistry	

Laboratory Experience Courses (At least two 4 credit labs are required)

Four Credit Laboratory Courses

Any course from Functional Organism Cluster		4
R120 227	Biol Invertebrates	4
R120 285	Comparative Vertebrate Anatomy	4
R120 311	Flora of New Jersey	4
R120 313	Mycology	4
R120 325 & R120 326	Animal Parasites and Parasitology Lab	4
R120 405	Microanatomy of Cells	4
R120 430	Plant Growth & Development	4
BIOL 451	Cell Physiology and Imaging	4
R120 452	Molecular Biol Techniques	4
R120 481	Marine Biology	4

Three Credit Laboratory Courses

R120 328	Ornithology	3
R120 371	Field Study Plant Ecology	3
R120 381	Ecological History of North Am	3
R120 380	Field Ecology	3
BIOL 385	Evolution of Animal Behavior Laboratory	3
BIOL 475	Ecological Field Methods and Analysis	3
R120 486	Tropical Field Biology	2

Biology Electives

BIOL 225	Insects and Human Society	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
BIOL 341	Introduction to Neurophysiology	3
BIOL 344	Physiological Mechanisms	3
R120 345	Comparative Physiology	3
R120 346	Neurobiology	3
or BIOL 346	Neurobiology	
R120 350	Immunology	3
R120 365	Evolutions of Humans	3
BIOL 368	The Ecology and Evolution of Disease	3
MATH 371	Physiology and Medicine	3
MATH 372	Population Biology	3
MATH 373	Introduction to Mathematical Biology	3
BIOL 375	Conservation Biology	3
BIOL 383	Neural Basis of Behavior	3
BIOL 398	Visualizing Biology	3
BIOL 400	Biology in Science Fiction	3
R120 403	Biological Ultrastructure	3
R120 404	Intro to Neuroanatomy	4
R120 416	Plant Evolution	3
R120 422	Biological Invasions	3

MATH 430	Analytical and Computational Neuroscience	3
R120 431	Modern Plant Biology	3
BIOL 440	Cell Biology of Disease: Cells gone Bad!	3
R120 444	Cell Neurobiology	3
BIOL 445	Endocrinology	3
BIOL 447	Systems Neurobiology	3
BIOL 448	Neuropathophysiology: Nervous System Gone Bad!	3
R120 455	Molec Cell Biology	3
BIOL 462	Comparative Biomechanics	3
R120 471	Ecological Physiology	3
R120 487	Systems Ecology: Ecosystems in the Landscape	3
BIOL 491 & BIOL 492	Research and Independent Study and Research and Independent Study	6
BIOL 495	Honors Seminar in Biology	3

General University Requirements and Electives

Computer Science

BNFO 135	Programming for Bioinformatics	3
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Management

IE 492	Engineering Management	3
or MGMT 390	Principles of Management	

Physical Education ¹

PE 1XX	Physical Education course	1
Physical Education course		1

Social Science (lower-level)

Select two of the following: 6

ECON 265	Microeconomics	
ECON 266	Macroeconomics	
EPS 202	Society, Technology, and the Environment	
STS 257	Technology, Society and Culture: An American View	
STS 258	Technology, Society and Culture: A Global View	

Approved introductory courses in basic social sciences at Rutgers-Newark

English Composition and Cultural History (lower-level)

HUM 101	English Composition: Writing, Speaking, Thinking I	3
HUM 102	English Composition: Writing, Speaking, Thinking II	3

Select one of the following: 3

HUM 211	The Pre-Modern World	
HUM 212	The Modern World	
HIST 213	The Twentieth-Century World	
HIST 2XX	History course at Rutgers-Newark	

Humanities and Social Sciences (upper-level)

Select one of the following 300-level courses: 3

3XX	Literature course	
3XX	History course	
3XX	Philosophy course	
3XX	Science, Technology and Society course	
3XX	Approved 300-level course at Rutgers-Newark	

Open Elective in Humanities and Social Sciences (upper-level)

Select one of the following 300-level courses: 3

3XX	English course	
3XX	History course	
3XX	Literature course	

3XX	Philosophy course	
3XX	Science, Technology and Society course	
3XX	Social Science course	
3XX	Theatre course	
ARCH 382		
3XX	Approved 300-level course at Rutgers-Newark	
Senior Seminar in Humanities and Social Sciences (upper-level)		
Select one of the following. Honors College students register for honors section.		3
HSS 403	Humanities Senior Seminar - Literature	
HSS 404	Humanities Senior Seminar - History	
HSS 405	Humanities Senior Seminar - Philosophy	
HSS 406	Humanities Senior Seminar - English	
HSS 407	Humanities Senior Seminar - Theater	
HSS 408	Humanities Senior Seminar - Science, Technology, and Society	
HSS 409	Humanities Senior Seminar - Social Science	

¹ Students who register as full-time undergraduates for two or more consecutive semesters must take two PE courses. Students are urged to complete the requirement as soon as possible.