Double Major in Biology & Mathematical Sciences

(124 credits)

First Year		
1st Semester		**Credits**
MATH 111	Calculus I	4
BIOL 200	Concepts in Biology	4
ENGL 101	English Composition: Introduction to Academic Writing	3
CHEM 125	General Chemistry I	3
CHEM 125A	General Chemistry Lab I	1
FYS SEM	First-Year Student Seminar	0
	Term Credits	**15**
2nd Semester		
MATH 112	Calculus II	4
BIOL 201	Found of Biol: Cell & Molecula	3
BIOL 202	Found of Biol: Cell & Molecula	1
CHEM 126	General Chemistry II	3
ENGL 102	English Composition: Introduction to Writing for Research	3
	Term Credits	**14**
Second Year		
1st Semester		
MATH 211	Calculus III A	3
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 111	Physics I	3
PHYS 111A	Physics I Lab	1
BNFO 135 or CS 101	Programming for Bioinformatics or Computer Programming and Problem Solving	3
	Term Credits	**17**
2nd Semester		
MATH 222	Differential Equations	4
CHEM 244	Organic Chemistry II	3
CHEM 244A	Organic Chemistry II Laboratory	2
PHYS 121	Physics II	3
PHYS 121A	Physics II Lab	1
BNFO 236 or CS 101	Programming for Bioinformatics II or Computer Programming and Problem Solving	3
	Term Credits	**16**
Third Year		
1st Semester		
MATH 337	Linear Algebra	3
MATH 340	Applied Numerical Methods	3
Biology Functional Organism Laboratory		4
History and Humanities GER 200 (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-200-level/)		3
	Term Credits	**13**
2nd Semester		
MATH 331	Introduction to Partial Differential Equations	3
MATH 333	Probability and Statistics	3
MATH 373	Introduction to Mathematical Biology	3

Biology Cluster Elective		3
	Term Credits	**12**
Fourth Year		
1st Semester		
MATH 450	Methods Of Applied Math	3
MATH 371	Physiology And Medicine	3
or MATH 430	or Analytical and Computational Neuroscience	
Biology Cluster Elective		3
History and Humanities GER 300+ level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/)		3
	Term Credits	**12**
2nd Semester		
MATH 332	Introduction to Functions of a Complex Variable	3
MATH 451	Methods Appl Math II	3
Biology Laboratory Elective		4
History and Humanities GER 300+ level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-300-level/)		3
	Term Credits	**13**
Fifth Year		
1st Semester		
MATH 480	Introductory Mathematical Analysis	3
Biology Laboratory Elective		3
Social Sciences GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/social-science-ger/)		3
Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/hss-capstone/)		3
	Term Credits	**12**
	Total Credits	**124**

Biology Electives

Concept Cluster Ecology and Evolution

Code	Title	Credits
BIOL 222	Evolution	3
or R120 222	Evolution	
R120 282	Animal Behavior	3
R120 280	Ecology	3
R120 370	Plant Ecology	3

Concept Cluster Molecular and Cellular

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

Concept Cluster Functional Organism(4 cr)

Code	Title	Credits
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

Laboratory/ Field Experience (Four Credit Laboratories)

Code	Title	Credits
R120 211	Plant Kingdom	4
R120 227	Biol Invertebrates	4
R120 230	Biology Of Seed Plants	4
R120 285	Comparative Vertebrate Anatomy	4
R120 311	Flora of New Jersey	4
R120 325 & R120 326	Animal Parasites and Parasitology Lab	4
R120 330	Plant Physiology	4
R120 335	General Microbiology	4
BIOL 340	Mammalian Physiology	4
or R120 340	Mammalian Physiology	
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
R120 430	Plant Growth & Development	4
BIOL 451	Cell Physiology and Imaging	4
R120 452	Molecular Biol Techniques	4

Three Credit Laboratories

Code	Title	Credits
R120 328	Ornithology	3
R120 371	Field Study Plant Ecology	3
R120 380	Field Ecology	3
R120 381	Ecological History of North Am	3
BIOL 484	Evolution of Animal Behavior Laboratory	3
BIOL 475	Ecological Field Methods and Analysis	3
R120 486	Tropical Field Biology	2

Biology Electives

Code	Title	Credits
BIOL 315	Principles of Neurobiology	3
BIOL 337	Collective Intel in Biol Syst	3
BIOL 338	Ecology of the Dining Hall	3
BIOL 441	Neurophysiology	3
BIOL 423	Physiological Mechanisms	3
R120 345	Comparative Physiology	3
R120 346	Neurobiology	3
R120 350	Immunology	3
R120 365	Evolutions of Humans	3
BIOL 468	Disease Ecology & Evolution	3
BIOL 375	Conservation Biology	3
BIOL 383	Neural Basis of Behavior	3

BIOL 400	Biology in Science Fiction	3
R120 402	Biology of Cancer	3
R120 422	Biological Invasions	3
BIOL 440	Cell Biology of Disease: Cells gone Bad!	3
BIOL 445	Endocrinology	3
or R120 445	Endocrinology	
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 472	Environmental Assessment	3
BIOL 491 & BIOL 492	Research and Independent Study and Research and Independent Study	6
R120 493 & R120 494	Seminar In Biology and Seminar In Biol	2
BIOL 495	Honors Seminar in Biology	3