# **Biology & Law, Technology and Culture - B.A.**

(120 credit minimum)

First Year         Bitst Semestor         BiOL 200       Concepts in Biology         BiOL 201       or Fundamentals of Chemical Principles I         CHEM 125A       General Chemistry Lab I         MATH 138       General Chemistry Lab I         First-Year Student Seminar       Term Credits         Term Credits       Term Credits         BIOL 205       Foundations of Biology: Ecology and Evolution Lecture         BIOL 205       Foundations of Biology: Ecology and Evolution Lab         CHEM 126A       General Chemistry Lab I         CHEM 126A       General Chemistry II <sup>1</sup> or CHEM 126A       General Chemistry II <sup>1</sup> or CHEM 126       General Chemistry II <sup>1</sup> or CHEM 126       General Chemistry II <sup>1</sup> General Chemistry II <sup>1</sup> Term Credits         Second Year       Term Credits         Second Year       Term Credits         Second Year       Found of Biol: Cell & Molecula         BIOL 201       Found of Biol: Cell & Molecula         BIOL 202       Found of Biol: Cell & Molecula         BIOL 203		
CHEM 125     General Chemistry 1 <sup>1</sup> or CHEM 121     or Fundamentals of Chemical Principles 1       CHEM 125A     General Chemistry Lab 1       MATH 138     General Chemistry Lab 1       MATH 138     General Chemistry Lab 1       MATH 138     General Chemistry Lab 1       First-Veral Student Seminar     Term Credits       Znd Semester     BIOL 205     Foundations of Biology: Ecology and Evolution Lecture       BIOL 205     Foundations of Biology: Ecology and Evolution Lab     CHEM 126       Gen Chemistry Lab II     General Chemistry Lab II       OrtEHM 122     or Fundamentals of Chemical Principles II       ENCL 102     English Composition: Introduction to Writing for Research       MATH 105     Elementary Probability and Statistics       Term Credits     Second Year       1st Semester     BIOL 201       Found of Bio: Cell & Molecula       BIOL 202     Found of Bio: Cell & Molecula       BIOL 203     Found of Bio: Cell & Molecula       BIOL 204     Found of Bio: Cell & Molecula       BIOL 205     Programming and Problem Solving       History and Humanities GER 200 level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/social-science-gen/       Social Science GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/social-science-gen/	Credits	
or CHEM 121         or Fundamentals of Chemical Principles I           CHEM 126A         General Chemistry Lab I           MTH 138         General Calculus I           ENOL 101         English Composition: Introduction to Academic Writing           FYS SEM         First-Year Student Seminar           Terre Credits         Terre Credits           2002         Foundations of Biology: Ecology and Evolution Lecture           BIOL 206         Foundations of Biology: Ecology and Evolution Lecture           BIOL 205         Foundations of Diology: Ecology and Evolution Lecture           BIOL 206         General Chemistry I <sup>1</sup> or CHEM 126         General Chemistry I <sup>1</sup> or CHEM 126         General Chemistry I <sup>1</sup> or CHEM 126         General Chemistry I <sup>1</sup> or CHEM 127         or Finadmentals of Chemical Principles II           ENOL 102         English Composition: Introduction to Writing for Research           MATH 105         Elementary Probability and Statistics           BIOL 201         Found of Biol: Cell & Molecula           BIOL 202         Found of Biol: Cell & Molecula           BIOL 203         Found of Biol: Cell & Molecula           BIOL 204         Found Theory Forgramming and Problem Solving           r Gram Gredits         Forgramming and Proble	4	
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ENGL 101     English Composition: Introduction to Academic Writing       FYS SEM     First-Year Student Seminar       Term Credits     Term Credits       BIOL 205     Foundations of Biology: Ecology and Evolution Lecture       BIOL 206     Foundations of Biology: Ecology and Evolution Lab       CHEM 126A     Gen Chemistry Lab II       CHEM 126A     Gen Chemistry Lab II       CHEM 126     General Chemistry II 1       or CHEM 122     Torudamentals of Chemical Principles II       ENOL 102     English Composition: Introduction to Writing for Research       MATH 105     Elementary Probability and Statistics       Term Credits     Second Year       Second Year     Term Credits       BIOL 202     Found of Biol: Cell & Molecula       BIOL 202     Found of Biol: Cell & Molecula       BIOL 202     Found of Biol: Cell & Molecula       BIOL 203     Forugamming and Problem Solving       Histry and Humanities GER 200 level (http://catalog.nijt.edu/undergraduate/academic-policies-procedures/general-education-requirements/social-science-ger/)       Term Credits     Social Science GER (http://catalog.nijt.edu/undergraduate/academic-policies-procedures/general-education-requirements/social-science-ger/)       Term Credits     Term Credits       Biology Functional Laboratory Elective Cluster B     Cluster Alexander A	1	
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Term Credits         2nd Semester         BIOL 205       Foundations of Biology: Ecology and Evolution Lecture         BIOL 205       Foundations of Biology: Ecology and Evolution Lab         CHEM 126A       Gen Chemistry Lab II         CHEM 126A       Gen chemistry Lab II         Or CHEM 122       or Fundamentals of Chemical Principles II         ENGL 102       English Composition: Introduction to Writing for Research         MATH 105       Elementary Probability and Statistics         Term Credits         Second Year         Ist Semester         BIOL 201       Found of Biol: Cell & Molecula         BIOL 202       Found of Biol: Cell & Molecula         BIOL 203       Porgramming for Bioinformatics or CS 101       or Computer Programming and Problem Solving         History and Humanities GER 200-level/       or Computer Programming and Problem Solving         Social Science GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/social- science-ger/)         Social Science GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education- requirements/ger-200-level/         Social Science GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education- requirements/ger-200-level/         Social Science GER 200 le	3	
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BIOL 202       Found of Biol: Cell & Molecula         CHEM 243       Organic Chemistry I         BNFO 135 or CS 101       Programming for Bioinformatics or Computer Programming and Problem Solving         History and Humanities GER 200 level (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ger-20U-level/         Social Science GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/ser/20U-level/         Social Science GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/social-science-ger/)         Social Science GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/social-science-general-education-requirements/social-science-general-education-requirements/social-science-general-education-requirements/social-science-general-education-requirements/social-scienc		
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Term Credits         2nd Semester         Biology Functional Laboratory Elective Cluster B         CHEM 244       Organic Chemistry II         CHEM 244A       Organic Chemistry I Laboratory         Legal Foundations Elective <sup>2</sup> LTC Core Elective         Term Credits         Third Year         1st Semester         Biology Laboratory Elective         Biology Cluster A or C Elective         PHYS 102       General Physics I	3	
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Term Credits         Third Year         1st Semester         Biology Laboratory Elective         Biology Cluster A or C Elective         PHYS 102       General Physics I	3	
Third Year         1st Semester         Biology Laboratory Elective         Biology Cluster A or C Elective         PHYS 102       General Physics I	3	
1st Semester         Biology Laboratory Elective         Biology Cluster A or C Elective         PHYS 102       General Physics I	15	
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Biology Cluster A or C Elective PHYS 102 General Physics I		
PHYS 102 General Physics I	4	
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PHYS 102A General Physics I I ab	3	
	1	
Legal Foundations Elective <sup>2</sup>	3	
Biology Elective	3	
Term Credits	17	

#### 2nd Semester

Biology Laboratory Elective <sup>3</sup>		3
Biology Cluster /	A or C Elective	3
PHYS 103	General Physics II	3
PHYS 103A	General Physics II Lab	1
Technical Electiv	ve <sup>4</sup>	3
Legal Foundatio	ons Elective <sup>2</sup>	3
	Term Credits	16
Fourth Year		

3

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13

120

1st Semester	
Biology Elective	
Biology Elective	
HSS 404	Humanities, History and Social Sciences Senior Seminar <sup>5</sup>
LTC Core Elective	
LTC Core Elective / T	echnical Elective <sup>6</sup>
	Term Credits
2nd Semester	
HIST 310 or HIST 490 or R510 490	Co-op in Law, Technology, Culture and History I <sup>7</sup> or Seminar - Research or Seminar:Research
LTC Core Elective / T	6

Technical Elective <sup>8</sup> Biology Elective

**Term Credits** 

**Total Credits** 

Biology Credits: 41

#### **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.

### **Concept Cluster Ecology and Evolution**

Code	Title	Credits
BIOL 222	Evolution	3
or R216 222	Evolution	
R216 280	Ecology	3
R120 370	Plant Ecology	3
BIOL 382	Animal Behavior	3

#### **Concept Cluster Molecular and Cellular**

Code	Title	Credits
BIOL 352	Genetics	3
or R120 352	Genetics	
R120 355	Cell Biology	3
R120 356	Molecular Biology	3

CHEM 473	Biochemistry	3
or R120 360	Biochemistry	

# **Concept Cluster Functional Organism (4 credits)**

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	Mammalian Physiology	4
or R120 340	Mammalian Physiology	
R120 342 & R120 343	Developmental Biology and Developmental Biology Lab	4

### Laboratory/ Field Experience (7 credits, At least one 4-credit lab)

Code	Title	Credits
Four Credit Laboratories		
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
R216 330	Plant Physiology	4
R120 335	General Microbiology	4
BIOL 340	Mammalian Physiology	4
or R120 340	Mammalian Physiology	
R120 342	Developmental Biology	4
& R120 343	and Developmental Biology Lab	
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
R120 452	Molecular Biol Techniques	4
FRSC 307	Crime Scene Investigation &Lab	4
FRSC 480	Forensic Microscopy & Lab	4
CHEM 475 & CHEM 473	Biochemistry Lab I and Biochemistry	5
Three Credit Laboratories		
R216 328	Ornithology	3
BIOL 475	Ecological Field Methods and Analysis	3
BIOL 484	Evolution of Animal Behavior Laboratory	3

# **Biology Electives**

Code	Title	Credits
Any concept cluster or lab course	or any of the following	
BIOL 222	Evolution	3
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
BIOL 342	Developmental Biology (Embryology)	3
R120 346	Neurobiology	3
BIOL 350	Immunology	3
BIOL 352	Genetics	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 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 440	Cell Biology of Disease: Cells gone Bad!	3
BIOL 441	Neurophysiology	3
BIOL 443	Biology of Addiction	3
BIOL 445	Endocrinology	3
or R120 445	Endocrinology	
BIOL 447	Systems Neurobiology	3
BIOL 448	Neuropathophysiology: Nervous System Gone Bad!	3
BIOL 453	Applied Genetics & Genomics	3
BIOL 462	Comparative Biomechanics	3
BIOL 468	Disease Ecology & Evolution	3
BIOL 491	Research and Independent Study	6
& BIOL 492	and Research and Independent Study	
BIOL 492	Research and Independent Study	3
BIOL 495	Honors Seminar in Biology	3
BIOL 498	Special Topics in Biology	3
CHEM 473	Biochemistry	3
CHEM 474	Biochemistry II	3
FRSC 498	Special Topics in Forensic Science	3

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

Legal Foundations Electives (9 credits)

Code	Title	Credits
Choose three of the following: <sup>2</sup>		
HIST 342	Civil Rights Revolution and Law	3
HIST 361	The Founding of the American Nation	3
HIST 362	Sex, Gender, and the Law in American History	3
HIST 364	American Law in the World	3
HIST 369	Law and Society in History	3
HIST 395	Research Methods in Law and Society	3
MGMT 290	Business Law I	3
STS 300	Legal Reasoning, Writing, and Technology	3
R790 304	Intro Law And Legal Res	3
		3

LTC Core Electives (12 credits)

Code	Title	Credits
Choose four of the following:		
EVSC 335	Environmental Law <sup>6</sup>	3
HIST 320	Law and Evidence	3
HIST 338	Environmental Justice and Climate Change in America	3
HIST 370	Legal issues in the History of Media	3
HIST 375	Legal Issues in Environmental History	3
HIST 378	Medicine and Health Law in Modern America	3
HIST 384	Invention and Regulation	3
IE 447	Legal Aspects of Engineering <sup>6</sup>	3
IT 331	Privacy and Information Technology <sup>6</sup>	3
IT 332	Digital Crime <sup>6</sup>	3
IT 400	Information Technology and the Law <sup>6</sup>	3
R790 382	Environm Pol & Policy	3

<sup>1</sup> CHEM 121 and CHEM 122 require permission from academic advisor

At least two of the Legal Foundations Electives must also fulfill the History and Humanities 300+ GER (https://catalog.njit.edu/undergraduate/ academic-policies-procedures/general-education-requirements/ger-300-level/) requirement

<sup>3</sup> Laboratory Elective - 3 or 4-credit laboratory

<sup>4</sup> Technical Elective - Any course in BIOL, CHEM, CS, EVSC, IT, IS, PHYS, FRSC, MATH, MIS, MIT, and BME or any other engineering course qualifies. Taking a course that also counts as an LTC Core Elective is recommended.

<sup>5</sup> Must be a law-related HSS 404 History Seminar approved by LTC Advisor.

<sup>6</sup> At least 6 of the 12 credits of LTC Core Electives must be completed as Technical Electives. The qualifying LTC Core Electives are EVSC 335, IE 447, IT 331, IT 332, and IT 400.

<sup>7</sup> Students may take a History Research Seminar (HIST 490 or R510 490) instead of HIST 310 with the approval of the LTC advisor. Student projects in the history research seminar must be law-related.

<sup>8</sup> Technical Elective - Any course in BIOL, CHEM, CS, EVSC, IT, IS, PHYS, FRSC, MATH, MIS, MIT, and BME or any other engineering course qualifies, however this technical elective must be four credits.