

# B.S. in BioChemistry

(130 Credits)

**First Year**

<b>1st Semester</b>		<b>Term Credits</b>
CHEM 121 or CHEM 125	Fundamentals of Chemical Principles I or General Chemistry I	3
CHEM 125A	General Chemistry Lab I	1
CS 113 or BNFO 135	Introduction to Computer Science or Programming for Bioinformatics	3
HUM 101	English Composition: Writing, Speaking, Thinking I	3
MATH 111	Calculus I	4
PHYS 111	Physics I	3
PHYS 111A	Physics I Laboratory	1
FRSH SEM	Freshman Seminar	0
<b>Term Credits</b>		<b>18</b>

**2nd Semester**

CHEM 122 or CHEM 126	Fundamentals of Chemical Principles II or General Chemistry II	3
MATH 112	Calculus II	4
CHEM 124	General Chemistry Laboratory	1
PHYS 121	Physics II	3
PHYS 121A	Physics II Laboratory	1
HUM 102	English Composition: Writing, Speaking, Thinking II	3
Physical Education		1
<b>Term Credits</b>		<b>16</b>

**Second Year****1st Semester**

CHEM 221	Analytical Chemical Methods	2
CHEM 222	Analytical Chemistry	3
CHEM 243	Organic Chemistry I	3
MATH 211	Calculus III A	3
R120 101	General Biology	4
English Composition and Cultural History (lower-level) GUR Elective		3
<b>Term Credits</b>		<b>18</b>

**2nd Semester**

CHEM 231	Physical Chemistry I	3
CHEM 244	Organic Chemistry II	3
CHEM 244A	Organic Chemistry II Laboratory	2
R120 102	General Biology	4
Technical Elective		3
<b>Term Credits</b>		<b>15</b>

**Third Year****1st Semester**

CHEM 473	Biochemistry	3
CHEM 235	Physical Chemistry II	3
R120 201	Foundations Of Biology	3
R120 202	Foundations Of Biology Lab	1
Technical Elective		3
Humanities and Social Sciences (upper-level) Elective		3

Physical Education GUR		1
<b>Term Credits</b>		<b>17</b>
<b>2nd Semester</b>		
Technical Elective		3
CHEM 475	Biochemistry Lab I	2
ECON 201	Economics	3
R120 356	Molecular Biology	3
Free Elective		3
<b>Term Credits</b>		<b>14</b>
<b>Fourth Year</b>		
<b>1st Semester</b>		
CHEM 235A	Physical Chemistry II Laboratory	2
MATH 225	Survey of Probability and Statistics	1
EPS 202	Society, Technology, and the Environment	3
R120 352	Genetics	3
Technical Elective		3
Open GUR Elective		3
<b>Term Credits</b>		<b>15</b>
<b>2nd Semester</b>		
CHEM 480	Instrumental Analysis	2
Capstone Seminar Humanities and Social Sciences (upper-level) GUR Elective		3
Management GUR Elective		3
EVSC 385	Environmental Microbiology	3
Technical Elective		3
<b>Term Credits</b>		<b>14</b>
<b>Total Credits</b>		<b>127</b>

## Specific General University Requirements

### Computing Sciences

Select at least two credits from the following: 2

CS 101	Computer Programming and Problem Solving
CS 103	Computer Science with Business Problems
CS 104	Computer Programming and Graphics Problems
CS 113	Introduction to Computer Science
CS 115	Intro. to CS I in C++

### English Composition and Cultural History (lower-level)

Select at least one of the following: 6

HUM 100	English Composition: Reading, Writing, Speaking II
HUM 101 & HUM 102	English Composition: Writing, Speaking, Thinking I and English Composition: Writing, Speaking, Thinking II

Select at least one of the following: 3

100-level or 200-level cultural history course

HIST 213	The Twentieth-Century World
HUM 211	The Pre-Modern World
HUM 212	The Modern World

Rutgers-Newark 200-level history course with prefix 510 or 512

### Humanities and Social Sciences Electives (upper-level) <sup>1</sup>

Select one of the following: 3

LIT 3XX	Literature course
HIST 3XX	History course
PHIL 3XX	Philosophy course
STS 3XX	Science, Technology and Society course

R350 XXX	English Literature course
R352 XXX	American Literature course
R510 XXX	History course
R512 XXX	American History course
R730 XXX	Philosophy course

Select one of the following: 3

ENG 3XX	English course
HIST 3XX	History course
LIT 3XX	Literature course
PHIL 3XX	Philosophy course
STS 3XX	Science, Technology and Society course
SS 3XX	Social Science course
THR 3XX	Theater course

Any 300-level Rutgers-Newark course in humanities, social sciences, fine arts or performing arts <sup>2</sup>

Select one of the following: 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 491	Honors Sem In Humanities

### Management <sup>3</sup>

Select one of the following: 3

HRM 301	Organizational Behavior
MGMT 390	Principles of Management
ENTR 410	New Venture Management
IE 492	Engineering Management

### Mathematics

Select one of the following: 3

MATH 111	Calculus I
MATH 113 or MATH 138	Finite Mathematics and Calculus I General Calculus I

Select one of the following: 1

MATH 105	Elementary Probability and Statistics
MATH 114	Finite Mathematics and Calculus II
MATH 225	Survey of Probability and Statistics
MATH 244	Introduction to Probability Theory
MATH 279	Statistics and Probability for Engineers
MATH 305	Statistics for Technology
MATH 333	Probability and Statistics
IE 331	Applied Statistical Methods
ECE 321	Random Signals and Noise
MNET 315	Industrial Statistics

### Natural Sciences

Select at least seven credits from the following, including a laboratory experience. 7

#### Biology

R120 101	General Biology
R120 102	General Biology
R120 109	Basic Plant Science
R120 110	Basic Plant Sci Lab
R120 205	Environmental Issues

R120 206	General Horticulture	
R120 207	Horticulture Lab	
R120 208	Human Sexuality	
R120 237	Environmental Microbiology	
R120 241	Anatomy & Physiology	
R120 242	Anatomy & Physiology	
<b>Chemistry</b>		
CHEM 122	Fundamentals of Chemical Principles II	
CHEM 124	General Chemistry Laboratory	
CHEM 124	General Chemistry Laboratory	
CHEM 125	General Chemistry I	
CHEM 126	General Chemistry II	
<b>Physics</b>		
PHYS 102	General Physics	
PHYS 102A	General Physics Laboratory	
PHYS 103	General Physics	
PHYS 103A	General Physics Laboratory	
PHYS 111	Physics I	
PHYS 111A	Physics I Laboratory	
PHYS 121	Physics II	
PHYS 121A	Physics II Laboratory	
PHYS 202	Introductory Astronomy and Cosmology	
PHYS 202A	Astronomy and Cosmology Laboratory	
PHYS 203	The Earth in Space	
PHYS 203A	The Earth in Space Laboratory	
<b>Geology</b>		
R460 101	Intro To The Earth	
R460 103	Planet Earth	
R460 104	Planet Earth Lab	
R460 206	Env Geology	
R460 207	Env Geology Lab	
<b>Physical Education</b>		
PE 1XX	Physical Education course	1
Physical Education course		1
<b>Social Sciences (lower-level)</b>		
Select at least two of the following:		6
ECON 265	Microeconomics	
or R220 101	Intro To Econo-Micro	
ECON 266	Macroeconomics	
or R220 102	Intro To Econ-Macro	
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	
R070 203	Intro Phys Anth & Arch	
R070 204	Intro Cultural Anthro	
R202 201	Intro Criminal Justice	
R790 201	American Government	
R790 202	America & The World	
R830 101	Principles Of Psychology I	
R830 102	Prin Of Psychology	
R920 201	Intro Sociology I	
R920 202	Sociology II	

- <sup>1</sup> No more than three of the nine required credits in this category may be fulfilled with a course that is specially required by a student's degree program or college.
- <sup>2</sup> Prefixes 070, 080, 081, 202, 220, 350, 352, 370, 420, 510, 512, 560, 570, 700, 701, 790, 810, 830, 861, 920, 940, 965, 988.
- <sup>3</sup> Students in the aerospace option take AS 333 Leadership and Management I and those in the dual degree program between architecture and management take HRM 301 Organizational Behavior.

Courses that satisfy the General University Requirements are so certified by the University Curriculum Review Committee at the time they are first approved to be offered.

*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.*