## BIOLOGY, BS

Biology offers courses in the life sciences designed to teach students biological concepts and principles with emphasis on individual laboratory experiences. The curriculum provides a sound basis for professional training in biology, biotechnology, medicine, dentistry, veterinary medicine, allied health, and teaching, as well as for general science education. Biology and Allied Health majors with strong academic backgrounds are encouraged to apply to the Roosevelt Honors Program, the honors curriculum of the university.

See the Allied Health program listing for degree programs leading to clinical licensing for fields such as Diagnostic Medical Sonography, Histotechnology, Medical Technology, Nuclear Medicine Technology, Radiography, and Radiation Therapy Technology.

Students who plan to teach biology in secondary school may qualify for Roosevelt University's recommendation to the Illinois State Board of Education for teacher certification. This program provides biology majors with the flexibility to teach mathematics and general science as well as biology in grades 6-12.

All students considering the BS in Biology should consult an advisor in the Department of Biological, Physical and Health Sciences.

## Standards

All courses applying to the biology major, including required supporting courses, must be passed with a C - or higher grade and a minimum cumulative GPA of 2.0.

## Requirements

- Students must complete the final 30 credit hours of their degree at Roosevelt University.
- A total of 35 credit hours of acceptable biology courses are required for the BS Biology degree. Students must take at least one class in each of the following six competency areas: Applying the Process of Science, Quantitative Reasoning, Modeling and Simulation, Interdisciplinary, Communication and Collaboration, and Science and Society. Courses that fulfill these competencies can be found in the course list below. Each qualifying course may cover up to two competency areas.
- At least 20 credit hours in acceptable biology, chemistry, and physics courses must be taken at Roosevelt University; not more than 15 credit hours of acceptable biology courses may be completed elsewhere and applied to the BS biology degree.
- Following enrollment, completion of all remaining biology, chemistry, physics and mathematics course requirements for Biology degrees must be accomplished at Roosevelt University. Under special circumstances, written permission to take required courses elsewhere may be granted by advisors.
- Courses in biology must have been taken within the past eight years to be accepted for prerequisites and graduation.
- No more than six credit hours total of independent study (BIOL 395 INDEPENDENT STUDY), (BIOL 392 RESEARCH IN BIOLOGY), and internships (BIOL 391 MEDICAL INTERNSHIP, BIOL 393 VETERINARY INTERNSHIP or BIOL 396 BIOLOGY INTERNSHIP) in biology may be used to fulfill the requirements of the major.
- Technical and/or clinical courses are not acceptable for transfer credit.
- AP biology credit with a score of 3.0 or higher may apply toward the major in biology or the general education requirements after consultation with an advisor.
- AP chemistry with a score of 4 or 5 satisfies the requirements for CHEM 201 with lab.
- For AP physics credit, consult an advisor.
- At least one biology course with a laboratory above BIOL 301 CELLULAR \& MOLECULAR BIOLOGY (not including independent research) must be passed with a grade of C - or better.
- A grade of $C$ - is the minimal acceptable grade for a course to be applied to the major and the supporting sequence, or to be acceptable as a prerequisite for subsequent courses.
- A minimum cumulative GPA of 2.0 is required for all course in the major.

| Code | Title | Credit Hours |
| :---: | :---: | :---: |
| Courses Required for the Biology BS |  |  |
| BIOL 201 | ORGANISMIC BIOLOGY (with lab) | 5 |
| BIOL 202 | ECOLOGY, EVOLUTION, AND GENETICS (with lab) | 5 |
| BIOL 301 | CELLULAR \&MOLECULAR BIOLOGY (with lab) | 5 |
| CHEM 201 | GENERAL CHEMISTRY I (with lab) | 5 |
| CHEM 202 | GENERAL CHEMISTRY II (with lab) | 5 |
| CHEM 211 | ORGANIC CHEMISTRY I (with lab) | 5 |
| CHEM 212 | ORGANIC CHEMISTRY II (with lab) | 5 |
| MATH 121 | COLLEGE ALGEBRA | 3 |
| MATH 122 | TRIGONOMETRY AND PRECALCULUS | 3 |
| MATH 217 | ELEMENTARY STATISTICS | 3 |
| MATH 231 | CALCULUS I | 5 |
| MATH 232 | CALCULUS II | 5 |
| PHYS 201 | INTRODUCTION TO NON-CALCULUS BASED PHYSICS I (with lab) | 4 |
| PHYS 202 | INTRO TO NON-CALCULUS PHYSICS II (with lab) | 4 |
| PHYS 233 | CALCULUS-BASED PHYSICS I DISCUSSION | 1 |
| PHYS 234 | CALCULUS-BASED PHYSICS II DISCUSSION | 1 |
| ELECTIVES ${ }^{1}$ |  | 20 |

Select additional biology electives to bring total biology credits to a minimum of 35 credit hours. These courses must cover all six core competency areas. Courses may cover up to two competency areas. ${ }^{1}$

## Area 1: Applying the Process of Science

Select at least one course from this list. Course offerings will vary by semester.

| BIOL 123 | ANATOMY \&PHYSIOLOGY I |
| :--- | :--- |
| BIOL 124 | ANATOMY \&PHYSIOLOGY II |
| BIOL 242 | ANIMAL BEHAVIOR |
| BIOL 314 | QUANTITATIVE ECOLOGY AND <br>  <br> BIOL 339 |
| EONSERVATION |  |


| BIOL 360 | MICROBIOLOGY (Lab) |
| :--- | :--- |
| BIOL 367 | IMMUNOLOGY (Lab) |
| BIOL 369 | CONSERVATION BIOLOGY: AFRICA |
| Area 2: Quantitative Reasoning |  |
| Select at least one course from this list. Course offerings <br> will vary by semester. |  |


| BCHM 344 | BIOINORGANIC CHEMISTRY |
| :--- | :--- |
| BCHM 356 | EXPERIMENTAL METHODS IN <br> BIOCHEMISTRY \& BIOTECHNOLOGY |
| BCHM 357 | ADVANCED BIOCHEMISTRY |
| BIOL 314 | QUANTITATIVE ECOLOGY AND <br> CONSERVATION |
| BIOL 315 | ECOLOGY (Lab) |
| BIOL 324 | MARINE BIOLOGY |
| BIOL 351 | GENERAL GENETICS (Lecture) |
| BIOL 381 | BIOLOGY OF BIRDS: ORNITHOLOGY |

## Area 3: Modeling and Simulation

Select at least one course from this list. Course offerings will vary by semester.

| BIOL 242 | ANIMAL BEHAVIOR |
| :--- | :--- |
| BCHM 355 | BIOCHEMISTRY |
| BIOL 325 | VIROLOGY |
| BIOL 363 | GENOMICS \& APPLIED BIOINFO |

## Area 4: Interdisciplinary

Select at least one course from this list. Course offerings
will vary by semester.

| BCHM 344 | BIOINORGANIC CHEMISTRY |
| :--- | :--- |
| BCHM 355 | BIOCHEMISTRY |
| BCHM 356 | EXPERIMENTAL METHODS IN <br> BIOCHEMISTRY \& BIOTECHNOLOGY |
| BCHM 357 | ADVANCED BIOCHEMISTRY |
| BIOL 315 | ECOLOGY |
| BIOL 337 | NUTRITION IN AMERICA |
| BIOL 350 | CANCER BIOLOGY |
| BIOL 360 | MICROBIOLOGY (Lecture) |
| BIOL 371 | THE BIOLOGY OF AGING |
| BIOL 381 | BIOLOGY OF BIRDS: ORNITHOLOGY |

## Area 5: Communication and Collaboration

Select at least one course from this list. Course offerings
will vary by semester.

| BIOL 123 | ANATOMY \&PHYSIOLOGY I |
| :--- | :--- |
| BIOL 124 | ANATOMY \&PHYSIOLOGY II |
| BIOL 339 | EVOLUTIONARY PHYSIOLOGY |
| BIOL 351 | GENERAL GENETICS (Lab) |
| BIOL 360 | MICROBIOLOGY (Lecture) |
| BIOL 367 | IMMUNOLOGY (Lecture) |

## Area 6: Science and Society

Select at least one course from this list. Course offerings will vary by semester.

BCHM 322 FERMENTATION SCIENCE
BIOL 315 ECOLOGY
BIOL 322 BOTANY
BIOL 323 TROPICAL MARINE BIOLOGY

| BIOL 324 | MARINE BIOLOGY |
| :--- | :--- |
| BIOL 337 | NUTRITION IN AMERICA |
| BIOL 350 | CANCER BIOLOGY |
| BIOL 366 | ECOL \& EVOL OF MICRO ORG |
| BIOL 369 | CONSERVATION BIOLOGY: AFRICA |
| BIOL 367 | IMMUNOLOGY (Lecture) |

General Electives
Any of the following courses can be taken as general electives to reach the required 35 credit hours in the Biology major

| BIOL 221 | KINESIOLOGY |
| :--- | :--- |
| BIOL 304 | HISTOLOGY \& ULTRASTRUCTURE |
| BIOL 332 | ECOLOGY OF TALLGRASS PRAIRIE |
| BIOL 336 | INTRODUCTION TO NEUROSCIENCE |
| BIOL 344 | MAMMALOGY |
| BIOL 383 | SPECIAL TOPICS IN BIOLOGY |
| BIOL 391 | MEDICAL INTERNSHIP |
| BIOL 392 | RESEARCH IN BIOLOGY |
| BIOL 395 | INDEPENDENT STUDY |

General Education, University Writing Requirement, and Electives
Courses to total $120 \quad 37$
Total Credit Hours 121

## 1

Must be selected in consultation with an advisor; at least one 300-level laboratory course beyond BIOL 301 CELLULAR \&MOLECULAR BIOLOGY

## CORE Requirements (General Education)

Code Title Credit Hours

First Year Success Course or Transfer Success Course

| FYS 101 | FIRST YEAR SUCCESS COURSE | 1 |
| :---: | :--- | :--- |
| or TRS 101 | TRANSFER SUCCESS 101 |  |

Communication Requirement

\left.| ENG 101 | COMPOSITION I: CRITICAL READING \& | 3 |
| :--- | :--- | ---: |
|  | WRITING |  |$\right]$|  |  |
| :--- | :--- |
| ENG 102 | COMPOSITION II: INTRODUCTION TO |
| COMM 101 | ACADEMIC RESEARCH |
|  | PUBLIC SPEAKING (or program specific <br> CORE communications course) |

## Ideas of Social Justice

3 credits in coursework categorized as Ideas. 3
Humanities and Fine and Performing Arts
9 credits from the following subject areas: African- 9
American Studies, Art History, English (excluding ENG 101
and ENG 102), History, Languages, Music, Philosophy,
Theatre, Communication and Women's and Gender
Studies
Mathematics
MATH 110 QUANTITATIVE LITERACY (or above) ${ }^{1} 3$

## Science

One biological science and one physical science required 7-8 (one must include a one credit lab).

## Social Sciences

| 9 credits from the following subject areas: African- | 9 |
| :--- | ---: |
| American Studies, Criminal Justice, Economics, History, |  |
| Journalism, Philosophy, Political Science, Psychology, |  |
| Sociology and Women's and Gender Studies |  |
| Experiential Learning |  |
| 6 credits from coursework categorized as Experiential | 6 |
| Learning. | $47-48$ |

## 1

Higher level of Math may be required by major
These quantitative requirements also apply to degrees.

- Students must earn a minimum of 120 semester hours.
- Students may apply no more than 60 credit hours of 100 -level courses toward the degree.
- Students must apply no fewer than 60 credit hours of 200- and 300level courses toward the degree.
- Students must have at least 18 credit hours (of the 60 credit hours above) at the 300 level.
- Students may transfer in no more than 70 credit hours from community colleges.
- Students earning less than 60 total hours in residence must take their final 30 hours at Roosevelt University. Note that some majors have additional requirements for RU hours.
- Students must have a grade point average of 2.0 or higher to graduate. Note that some majors have additional GPA requirements.
- Students may apply no more than 51 hours in the major (BA) or 57 hours in the major (BS)

Your degree map is a general guide suggesting courses to complete each term on the academic pathway to your degree. It is based on the most current scheduling information from your academic program. Your program's degree map is reviewed annually and updated as schedules change (although you retain the same course requirements as long as you are continuously enrolled in your degree program).

Always work closely with your academic advisor to understand curriculum requirements and scheduling, as each student's academic plan can look slightly different.

| Year 1 |  |  |  |
| :--- | :--- | :--- | :--- |
| Fall | Credit Hours | Spring | Credit Hours |
| FYS 101 | 1 BIOL 202 |  |  |
| ENG 101 | 3 ENG 102 | 5 |  |
| CHEM 201 | 5 CHEM 202 | 3 |  |
| MATH 121 | 3 Ideas of Social <br>  <br> Social Science \#1 | 3 | 5 |
|  | 15 | 3 |  |

## Year 2

| Fall | Credit Hours | Spring | Credit Hours |
| :--- | :---: | :---: | :---: |
| BIOL 201 | 5 BIOL 301 |  | 5 |
|  | (Experiential <br> Learning \#1) |  |  |
| CHEM 211 | 5 CHEM 212 | 5 |  |
| MATH 122 | 3 MATH 217 | 3 |  |


| COMM 101 | 3 Social Science \#2 | 3 |
| :--- | :--- | ---: |
| 16 | 16 |  |

## Year 3

| Fall | Credit Hours | Spring | Credit Hours |
| :---: | :---: | :---: | :---: |
| BIOL 3XX with Lab ${ }^{2}$ |  | 5 BIOL Elective | 3 |
| MATH 231 |  | 5 MATH 232 | 5 |
| Humanities \#1 |  | 3 Humanities \#3 | 3 |
| Humanities \#2 |  | 3 Social Science \#3 | 3 |
|  |  | 6 | 14 |

## Year 4

| Fall | Credit Hours | Spring | Credit Hours |
| :---: | :---: | :---: | :---: |
| BIOL Elective |  | 3 BIOL Elective | 3 |
| BIOL Elective |  | 3 BIOL Elective | 3 |
| BIOL Elective |  | 3 PHYS 202 | 4 |
| PHYS 201 |  | 4 PHYS 234 | 1 |
| PHYS 233 |  | 1 Experiential Learning \#2 ${ }^{1}$ | 3 |
| 14 |  |  |  |

Total Credit Hours 121
1
Experiential Learning class must be 200/300 level. Satisfies CORE Experiential Learning requirement. EXL courses can satisfy major requirements/electives or CORE requirement 2

Any course at the 300 level within the discipline above BIOL 301.

