

# BIOLOGY

---

## Faculty:

Jessica Martin M.S

The Bachelor of Arts degree is ideal for students seeking a strong foundation in biology, for teaching, for graduate work in many fields of biology (ecology, wildlife biology, environmental science, toxicology), and for admission to the study of medicine, dentistry, or a number of professional programs (nursing, physical therapy, pharmacy). We have a wonderful group of a highly qualified and motivated faculty, modern laboratory facilities, an abundance of field-based classes, and research opportunities. The classes and opportunities at UProvidence will help you become who you want to be, whether it is a physician, physical therapist, dentist, wildlife ecologist or a professional in any of the other biology careers.

## Why Study Biology at UProvidence?

1. You will receive preparation for a broad range of career paths, including medicine, teaching, wildlife biology, and many others.
2. You will have the opportunities to integrate your class schedule, studies, or degree plan with independent research and internships.
3. You will get individualized attention from faculty who care.

## What Makes Our Program Special?

1. A solid foundation for graduate and professional school in medical, dental, veterinary, pharmacy, physical therapy, nursing, ecology, wildlife biology, and environmental science disciplines.
2. Preparation for careers as diverse as teaching, medicine, conservation, field biologist or sales.
3. An emphasis on field and laboratory skills.
4. Exploration of career options through independent study, internships, research projects, summer research positions, field trips, and work-study.
5. State-of-the-art laboratories and classrooms specifically designed for hands-on work and interactive learning.
6. Small class size that allows for more feedback, more conversation, more discussion and more opportunities for interaction with your professors and your peers.

## How You Benefit?

By developing:

1. A framework of knowledge in modern biology, including concepts in genetics, molecular biology, immunology, cell biology, physiology, ecology, organismal biology, and environmental science.
2. Proficiency in scientific writing and speech, developed through the preparation of lab reports, research papers, posters and oral presentations.
3. An aptitude for using the scientific method and for conducting research both in the field and the laboratory.
4. Organizational abilities through summarizing & abstracting scientific literature & data analysis.
5. A commitment to life-long learning in the sciences and an understanding of the integral relationship between biology and other sciences.

All Biology program majors are required for graduation to earn a grade of at least a "C" in all classes required for the major. In addition, biology majors must earn a "C" in all prerequisites prior to further study in the biology program.

## Pre-Biology Major Preparation

Students who enter the biology program must take a placement test. Placement tests are administered by the Center for Academic Excellence. These tests do not affect admission; however, the results are essential for proper placement into English and Math classes.

Students with strong high school backgrounds are urged to complete their basic preparation in general chemistry and mathematics during their freshman year. Students with weak mathematics preparation (as shown by placement test) should make up this deficiency by completing the appropriate courses prior to matriculation into the program. Biology majors should see their faculty advisor early to discuss degree requirements and plan their schedules.

## Science Undergraduate Research Experience (SURE)

Students who are interested in research may join the SURE program which is an undergraduate research program that helps students perform hands on, cutting edge research. These students get the chance to both present and publish their work. These types of projects and activities help students claim a spot in an increasingly competitive job market. They also gain knowledge and experience they will need to get into and succeed in graduate school.

The objectives of SURE center around providing undergraduate students research and educational opportunities designed to enhance their understanding of science and to provide them with skills and confidence to continue their undergraduate science degree program as well as continue their studies at the graduate level.

The collective objectives of SURE are determined by two principal considerations:

- Recruiting students into the sciences through structured professional cross-disciplinary research integrating biology, ecology, chemistry, and mathematics. Students will participate in SURE as members of a research team led by the Principal Investigators. Students majoring in either biology or chemistry will follow a curriculum designed around this research.
- Retaining undergraduates in the sciences by providing exposure to cutting-edge technologies and training opportunities designed to support and nurture these students through their undergraduate and post-graduate careers. Students will gain field experience as well as analytical experience.

The SURE program revolves around "hands-on" research designed to develop critical thinking skills. Critical thinking, among other things, teaches students to recognize patterns and provides a way to use those patterns to solve a problem or answer a question. Through the analysis, synthesis, and evaluation of their own work as well as the scientific literature relevant to their projects, our students will leave the program with the ability to initiate research and critically evaluate the results. Most importantly, they will be able to support their ideas with evidence, data, qualitative, and statistical measures.

As we move through the 21st century, it is increasingly important that we not only educate students for the current job market, but also prepare

them for the future. Our goal is to afford students the opportunity to hone skills that will make them marketable today and tomorrow. SURE students will gain high-demand expertise with analytical equipment, computer programming, quantitative data management, and science communication. The abilities and experiences garnered by SURE students will make them more versatile for an ever changing market. Students with a broad and deep understanding of science will find themselves open to opportunities in biotechnical or environmental fields, as well as in traditional science disciplines.

- Apply the scientific process to solving problems.
- Distinguish between credible and non-credible sources of information.
- Interpret, analyze and evaluate information collected by doing research.
- Work effectively in collaborative team investigations.
- Present research findings at scientific conferences.
- Evaluate ethical issues related to science and technology.

## Degree Requirements

- Bachelor Degree Requirements

### Biology Major (B.A.)

Code	Title	Credits
BIO 151	GENERAL BIOLOGY I	4
BIO 152	GENERAL BIOLOGY II	4
BIO 200	ECOLOGY	4
BIO 221	CELL AND MOLECULAR BIOLOGY	4
BIO 311	GENETICS	4
BIO 499	SENIOR THESIS	1
CHM 111	GENERAL CHEMISTRY I	4
CHM 112	GENERAL CHEMISTRY II	4
CHM 261	ORGANIC CHEMISTRY I	4
CHM 262	ORGANIC CHEMISTRY II	4
MTH 241	CALCULUS I #	4
MTH 252	STAT METHODS FOR THE SCIENCES	3
Specialized Concentration		16
<b>Total Credits Required:</b>		<b>60</b>

### Specialized Concentration

#### Health Professions Concentration

Code	Title	Credits
CHM 401	BIOCHEMISTRY I	4
3 of the following courses:		12
BIO 380	MICROBIOLOGY	
BIO 400	IMMUNOLOGY	
BIO 405	DEVELOPMENTAL BIOLOGY	
BIO 411	CELL BIOLOGY	
BIO 420	VIROLOGY	
BIO 392	SPECIAL TOPICS:	
PHS 300	CLASSICAL & MODERN PHYSICS II #	
<b>Total Credits Required:</b>		<b>16</b>

#### Physiology Concentration

Code	Title	Credits
BIO 252	HUMAN ANATOMY & PHYSIOLOGY II #	4
CHM 401	BIOCHEMISTRY I	4
8 credits from the following courses:		8
BIO 380	MICROBIOLOGY	
BIO 392	SPECIAL TOPICS:	
EXS 305	EXERCISE PHYSIOLOGY	
HPE 315	KINESIOLOGY & BIOMECHANICS	
PHS 300	CLASSICAL & MODERN PHYSICS II #	
<b>Total Credits Required:</b>		<b>16</b>

#### Wildlife Ecology Concentration

Code	Title	Credits
BIO 422	CONSERVATION ECOLOGY	4
3 of the following courses:		12
BIO 302	ORNITHOLOGY	
BIO 304	MAMMALOLOGY	
BIO 320	AQUATIC ECOLOGY	
BIO 380	MICROBIOLOGY	
BIO 392	SPECIAL TOPICS:	
<b>Total Credits Required:</b>		<b>16</b>

# NOTES COURSE HAS A PREREQUISITE THAT MAY NOT BE PART OF THE MAJOR OR CONCENTRATION

### Biology Minor

Code	Title	Credits
BIO 151	GENERAL BIOLOGY I	4
BIO 152	GENERAL BIOLOGY II	4
BIO 200	ECOLOGY	4
BIO 221	CELL AND MOLECULAR BIOLOGY	4
BIO 311	GENETICS	4
CHM 111	GENERAL CHEMISTRY I	4
CHM 112	GENERAL CHEMISTRY II	4
CHM 261	ORGANIC CHEMISTRY I	4
CHM 262	ORGANIC CHEMISTRY II	4
MTH 241	CALCULUS I	4
MTH 252	STAT METHODS FOR THE SCIENCES	3
Approved Elective for Minor		4
<b>Total Credits Required:</b>		<b>47</b>

#### Approved Electives for Minors

Code	Title	Credits
BIO 302	ORNITHOLOGY	4
BIO 304	MAMMALOLOGY	4
BIO 320	AQUATIC ECOLOGY	4
BIO 400	IMMUNOLOGY	4
BIO 405	DEVELOPMENTAL BIOLOGY	4
BIO 411	CELL BIOLOGY	4
BIO 420	VIROLOGY	4

## Health Professions

Today's health care professions demand more than just achievement in the life sciences. Maturity, leadership, commitment, integrity, communication skills, and knowledge of health care policy are essential for the health care professional. At the University, the choice of a major field of study is left open to the student; however, the majority of pre-health students choose to major in biology, chemistry, or forensics, since these majors include many of the courses required for admission. Some students choose majors in other sciences (computer science or mathematics) or humanities and social science (art, communication, English, history, business, psychology, theology and ministry, sociology – just about anything.) The quality and scope of your academic accomplishments counts far more than the field in which you major. Nevertheless, your performance in science and mathematics courses is weighted heavily in the admissions process. If you decide not to major in science, then be sure to take more than the bare minimum of science courses required by professional schools, and in particular take several upper-division biology or biochemistry courses that have laboratories.

The University's undergraduate curriculum provides a strong foundation for students with both the breadth and depth necessary to excel. Under the University's curricular plan, each student integrates 4 main elements into their four-year experience: a broad knowledge base, critical-thinking and communication skills, a Study in Depth (a disciplinary major), and multicultural literacy to succeed in today's ever changing world. Our Biology, Chemistry, and Forensic Programs at UP have several distinguishing features. First, both our introductory and upper-division courses are small in size. Introductory courses range from 20 to 30 students. It is not uncommon to have upper-division classes with less than 15 students. Second, in the vast majority of our laboratory classes, faculty members teach the laboratory sections of the course. Third, students receive a large amount of individualized attention from their professors. Students in our programs develop strong relationships with their professors. Finally, our programs emphasize out-of-class experiences. Our students complete an internship or a student research project. Students also participate in a Senior Thesis course where a short thesis is written based on either laboratory-based or library-based research. As part of this course the student will prepare a poster summarizing the research that will then be presented at a professional public event during the senior year.

Although we have students applying to a variety of health professions, the largest groups of students apply to allopathic and osteopathic programs. These schools require: one year of introductory biology with laboratory, general and organic chemistry with laboratory, one year of physics with laboratory, one year of mathematics, bio-chemistry, and one year of English writing or literature (in addition to Core). Pre-health students should also take one year of social science, ethics, and statistics. Most physical therapy programs require anatomy and physiology, nutrition, calculus, physics, statistics and psychology courses. BSN and MSN nursing programs require: microbiology, anatomy and physiology, nutrition, developmental psychology, sociology and statistics.

### Pre-Medical, Pre-Dental and Pre-Veterinary Medicine

In addition to the general prerequisite courses listed here, students should visit the websites of their health professional schools of interest to determine required coursework specific to that school. Students must have some experience in the field through volunteer work or an internship.

Code	Title	Credits
BIO 151	GENERAL BIOLOGY I	4
BIO 152	GENERAL BIOLOGY II	4
BIO 221	CELL AND MOLECULAR BIOLOGY	4
BIO 311	GENETICS	4
BIO 4XX	Any 400 level BIO course	4
CHM 111	GENERAL CHEMISTRY I	4
CHM 112	GENERAL CHEMISTRY II	4
CHM 261	ORGANIC CHEMISTRY I	4
CHM 262	ORGANIC CHEMISTRY II	4
CHM 401	BIOCHEMISTRY I	4
ENG 117	WRITING ESSAYS	3
ENG 313	WRITING FOR SCIENCES	3
MTH 252	STAT METHODS FOR THE SCIENCES	3
MTH 241	CALCULUS I	4
PHS 241	CLASSICAL & MODERN PHYSICS I	4
PHS 300	CLASSICAL & MODERN PHYSICS II	4

### Pre-Pharmacy

Pharmacy programs usually consist of a two-year pre-pharmacy program followed by four years of pharmacy school. Beginning in 2001, all pharmacy schools in the U.S. began granting only pharmacy doctoral degrees. The pre-pharmacy program at UP provides the academic requirements of the first two years of a pharmacy program. Students are then eligible to transfer into the first professional year at a college of pharmacy. Transfer is highly competitive with most institutions requiring a 3.2 GPA in the sciences and overall cumulative GPA. Most students complete the pre-pharmacy requirements in two years and then transfer to a college of pharmacy as they do not have to fulfill actual major requirements.

Prerequisites required by most pharmacy programs are listed below, but students are required to investigate the exact course requirements of the pharmacy program of interest.

Code	Title	Credits
BIO 151	GENERAL BIOLOGY I	4
BIO 152	GENERAL BIOLOGY II	4
BIO 221	CELL AND MOLECULAR BIOLOGY	4
BIO 251	HUMAN ANATOMY & PHYSIOLOGY I	4
BIO 252	HUMAN ANATOMY & PHYSIOLOGY II	4
BIO 311	GENETICS	4
CHM 111	GENERAL CHEMISTRY I	4
CHM 112	GENERAL CHEMISTRY II	4
CHM 261	ORGANIC CHEMISTRY I	4
CHM 262	ORGANIC CHEMISTRY II	4
CHM 401	BIOCHEMISTRY I	4
COM 101	FUND OF SPEECH COMMUNICATIONS	3
ECN 202	MICROECONOMICS	3
ENG 117	WRITING ESSAYS	3
MTH 241	CALCULUS I	4
PHS 241	CLASSICAL & MODERN PHYSICS I	4
PHS 300	CLASSICAL & MODERN PHYSICS II	4
PSY 200	GENERAL PSYCHOLOGY	3
or SOC 110	THE REAL WORLD: INTRO TO SOC	

## Pre-Physical Therapy

Prerequisite courses and entrance requirements vary between different programs; however, most programs require the following courses: General Biology I and II, Anatomy and Physiology I and II, General Chemistry I and II, Organic Chemistry I and II, Classical and Modern Physics I and II, Introduction to Psychology, Advanced Psychology, English Composition, and Statistics. Mathematics, English, and computer prerequisites vary depending on the program. Additional courses in psychology, sociology, communication and the humanities may also be required. Applicants to schools of physical therapy must demonstrate knowledge of the profession. To be considered for admission, programs typically require a minimum of 80 hours of full or part time experience under the supervision of a licensed physical therapist.

Code	Title	Credits
BIO 151	GENERAL BIOLOGY I	4
BIO 152	GENERAL BIOLOGY II	4
BIO 251	HUMAN ANATOMY & PHYSIOLOGY I	4
BIO 252	HUMAN ANATOMY & PHYSIOLOGY II	4
CHM 111	GENERAL CHEMISTRY I	4
CHM 112	GENERAL CHEMISTRY II	4
CHM 261	ORGANIC CHEMISTRY I	4
CHM 261	ORGANIC CHEMISTRY I	4
EXS 201	SAFETY, FIRST AID, & CPR	2
EXS 305	EXERCISE PHYSIOLOGY	3
HPE 315	KINESIOLOGY & BIOMECHANICS	3
MTH 252	STAT METHODS FOR THE SCIENCES	3
MTH 241	CALCULUS I	4
PHS 241	CLASSICAL & MODERN PHYSICS I	4
PHS 300	CLASSICAL & MODERN PHYSICS II	4
PSY 200	GENERAL PSYCHOLOGY	3
PSY 212	DEVELOPMENTAL PSYCHOLOGY	3

\*Plan templates are based on the most current catalog and ideal route for degree completion, and should only be used to get an idea of what degree completion may look like. New and enrolled students should log into DegreeWorks to see their specific degree requirements.

## Biology, Health Professions Concentration

Plan Template: Biology, Health Professions 4 Year Plan

Description: Bachelor of Arts

# of Terms: 8

Term Start: Fall

Year 1		Credits
Fall		
COD 100	CORPS OF DISCOVERY	3
BIO 151	GENERAL BIOLOGY I	4
CHM 111	GENERAL CHEMISTRY I	4
ENG 117	WRITING ESSAYS	3
BIO 190	FRESHMAN SCIENCE SEMINAR	1

MTH 110	PRECALCULUS I <sup>1</sup>	4
<b>Credits</b>		<b>19</b>
<b>Spring</b>		
BIO 152	GENERAL BIOLOGY II	4
CHM 112	GENERAL CHEMISTRY II	4
PHL 101 or ENG 117	WHAT DOES IT MEAN TO BE HUMAN or WRITING ESSAYS	3
MTH 120 or MTH 241	PRECALCULUS II (If Necessary) or CALCULUS I	4
<b>Credits</b>		<b>15</b>
<b>Year 2</b>		
<b>Fall</b>		
BIO 221	CELL AND MOLECULAR BIOLOGY	4
BIO 251	HUMAN ANATOMY & PHYSIOLOGY I	4
BIO 290	SOPHOMORE SCIENCE SEMINAR	1
CHM 261	ORGANIC CHEMISTRY I	4
ENG 215 or TRL 201	INTRO TO LITERARY STUDIES or INTRODUCTION TO THEOLOGY	3
MTH 241	CALCULUS I (If not already taken)	4
Select one of the following options:		1
Option 1:		
Select one of the following:		
CPS 140	ESSENTIALS OF SPREADSHEETS	
CPS 141	ESSENTIALS OF WORD PROCESSING	
CPS 142	ESSENTIALS OF PRESENTATIONS	
Option 2:		
CPS 215	INFORMATION LITERACY	
<b>Credits</b>		<b>21</b>
<b>Spring</b>		
BIO 200	ECOLOGY	4

BIO 252	HUMAN ANATOMY & PHYSIOLOGY II	4
CHM 262	ORGANIC CHEMISTRY II	4
ENG 215 or TRL 201	INTRO TO LITERARY STUDIES or INTRODUCTION TO THEOLOGY	3

Select one of the following options:

Option 1:

Select one of the following:

CPS 140	ESSENTIALS OF SPREADSHEETS	1
CPS 141	ESSENTIALS OF WORD PROCESSING	1
CPS 142	ESSENTIALS OF PRESENTATIONS	1

Option 2:

Select one of the following:

CPS 215	INFORMATION LITERACY	1
---------	----------------------	---

**Credits 16**

**Year 3**

**Fall**

CHM 401	BIOCHEMISTRY I	4
PHS 241	CLASSICAL & MODERN PHYSICS I	4
PHL 301 or ILC 330	ETHICS or WHAT IS TRUTH	3-4

Select one of the following:

BIO 400	IMMUNOLOGY	4
BIO 405	DEVELOPMENTAL BIOLOGY	4
BIO 420	VIROLOGY	4

Select one of the following options:

Option 1:		
MTH 252	STAT METHODS FOR THE SCIENCES	3
Option 2:		
ENG 300-319	Upper Division English or WAC	3

**Credits 18-19**

**Spring**

BIO 311	GENETICS	4
PHS 300	CLASSICAL & MODERN PHYSICS II	4

ILC 350 or TRL 301	WHAT IS THE COMMON GOOD or THE CHRISTIAN LIFE	3-4
-----------------------	---	-----

Select one of the following options:

Option 1;

MTH 252	STAT METHODS FOR THE SCIENCES	3
---------	-------------------------------	---

Option 2:

ENG 300-319	Upper Division English or WAC	3
-------------	-------------------------------	---

**Credits 14-15**

**Year 4**

**Fall**

Select one of the following:

BIO 400	IMMUNOLOGY	4
BIO 405	DEVELOPMENTAL BIOLOGY	4
BIO 420	VIROLOGY	4

PHL 301 or ILC 330	ETHICS or WHAT IS TRUTH	3-4
-----------------------	-------------------------	-----

SS	Social Science	3
----	----------------	---

Select one of the following options:

Option 1:

FA	Fine Arts	3
----	-----------	---

Option 2:

HST 102	GLOBAL HISTORY II	3
HST 203	UNITED STATES HISTORY I	3
HST 204	UNITED STATES HISTORY II	3

**Credits 13-14**

**Spring**

BIO 499	SENIOR THESIS	1
BIO 380 or BIO 411	MICROBIOLOGY or CELL BIOLOGY	4

ILC 350 or TRL 301	WHAT IS THE COMMON GOOD or THE CHRISTIAN LIFE	3-4
-----------------------	---	-----

Select one of the following options:

Option 1:

FA	Fine Arts	3
----	-----------	---

Option 2:

HST 203	UNITED STATES HISTORY I	3
---------	-------------------------	---

HST 204	UNITED STATES HISTORY II	
HST 102	GLOBAL HISTORY II	
		<b>Credits 11-12</b>
		<b>Total Credits 127-131</b>
		<b>Required:</b>

<sup>1</sup> Only if placed in MTH 110 PRECALCULUS I.

\*Plan templates are based on the most current catalog and ideal route for degree completion, and should only be used to get an idea of what degree completion may look like. New and enrolled students should log into DegreeWorks to see their specific degree requirements.

## Biology, Physiology Concentration

Plan Template: Biology, Physiology 4 Year Plan

Description: Bachelor of Arts

# of Terms: 8

Term Start: Fall

Year 1		
Fall		
		Credits
COD 100	CORPS OF DISCOVERY	3
BIO 151	GENERAL BIOLOGY I	4
CHM 111	GENERAL CHEMISTRY I	4
ENG 117 or PHL 101	WRITING ESSAYS or WHAT DOES IT MEAN TO BE HUMAN	3
MTH 110	PRECALCULUS I <sup>1</sup>	4
		<b>Credits 18</b>
Spring		
BIO 152	GENERAL BIOLOGY II	4
CHM 112	GENERAL CHEMISTRY II	4
PHL 101 or ENG 117	WHAT DOES IT MEAN TO BE HUMAN or WRITING ESSAYS	3
MTH 120 or MTH 241	PRECALCULUS II ((If Necessary)) or CALCULUS I	4
BIO 190	FRESHMAN SCIENCE SEMINAR ((Optional))	1
		<b>Credits 16</b>

### Year 2

#### Fall

BIO 221	CELL AND MOLECULAR BIOLOGY	4
BIO 290	SOPHOMOR SCIENCE SEMINAR	1
CHM 261	ORGANIC CHEMISTRY I	4
ENG 215 or TRL 201	INTRO TO LITERARY STUDIES or INTRODU TO THEOLO	3
MTH 241	CALCULUS I ((If not already taken))	4

Select one of the following options:

Option 1:

CPS 140	ESSENTIALS OF SPREADSHEETS	
CPS 141	ESSENTIALS OF WORD PROCESSING	
CPS 142	ESSENTIALS OF PRESENTATIONS	

Option 2:

CPS 215	INFORMATION LITERACY	
---------	----------------------	--

**Credits 17**

#### Spring

BIO 200	ECOLOGY	4
CHM 262	ORGANIC CHEMISTRY II	4
ENG 215 or TRL 201	INTRO TO LITERARY STUDIES or INTRODU TO THEOLO	3
MTH 252	STAT METHODS FOR THE SCIENCES	3
SS	Social Science	3
		<b>Credits 17</b>
Select one of the following options:		
Option 1:		
CPS 140	ESSENTIALS OF SPREADSHEETS	1
CPS 141	ESSENTIALS OF WORD PROCESSING	1
CPS 142	ESSENTIALS OF PRESENTATIONS	1
Option 2:		

CPS 215	INFORMATION LITERACY	1
<b>Credits</b>		<b>22</b>
<b>Year 3</b>		
<b>Fall</b>		
CHM 401	BIOCHEMISTRY I	4
BIO 251	HUMAN ANATOMY & PHYSIOLOG' I	4
PHL 301 or ILC 330	ETHICS or WHAT IS TRUTH	3-4
Select one of the following:		4
PHS 241	CLASSICAL & MODERN PHYSICS I	
Any General Elective Course		
Select one of the following options:		3
Option 1:		
MTH 252	STAT METHODS FOR THE SCIENCES	
Option 2:		
ENG 300-319	Upper Division English or WAC	
<b>Credits</b>		<b>18-19</b>
<b>Spring</b>		
BIO 311	GENETICS	4
PHS 300	CLASSICAL & MODERN PHYSICS II	4
BIO 252	HUMAN ANATOMY & PHYSIOLOGY II	4
Select one of the following:		4
BIO 380	MICROBIOLOGY	
BIO 411	CELL BIOLOGY	
BIO 392	SPECIAL TOPICS:	
<b>Credits</b>		<b>16</b>
<b>Year 4</b>		
<b>Fall</b>		
BIO 490	RESEARCH IN BIOLOGY	1
ILC 350 or TRL 301	WHAT IS THE COMMON GOOD or THE CHRISTI. LIFE	3-4
PHL 301 or ILC 330	ETHICS or WHAT IS TRUTH	3-4
Select one of the following options:		3

Option 1:		
FA	Fine Arts	
Option 2:		
HST 102	GLOBAL HISTORY II	
HST 203	UNITED STATES HISTORY I	
HST 204	UNITED STATES HISTORY II	
Select one of the following:		3
EXS 305	EXERCISE PHYSIOLOG'	
HPE 315	KINESIOLOGY & BIOMECHANICS	
BIO 392	SPECIAL TOPICS:	
<b>Credits</b>		<b>13-15</b>
<b>Spring</b>		
BIO 499	SENIOR THESIS	1
ILC 350 or TRL 301	WHAT IS THE COMMON GOOD or THE CHRISTIAN LIFE	3-4
Select two of the following:		8
BIO 380	MICROBIOLOGY	
BIO 411	CELL BIOLOGY	
BIO 392	SPECIAL TOPICS:	
Select one of the following options:		3
Options 1:		
FA	Fine Arts	
Options 2:		
HST 102	GLOBAL HISTORY II	
HST 203	UNITED STATES HISTORY I	
HST 204	UNITED STATES HISTORY II	
<b>Credits</b>		<b>15-16</b>
<b>Total Credits Required:</b>		<b>135-139</b>

<sup>1</sup> Only if placed in MTH 110 PRECALCULUS I.

\*Plan templates are based on the most current catalog and ideal route for degree completion, and should only be used to get an idea of what degree completion may look like. New and enrolled students should log into DegreeWorks to see their specific degree requirements.

## Wildlife Ecology Concentration

**Plan Template: Biology, Wildlife 4 Year Plan**

**Description: Bachelor of Arts**

**# of Terms: 8**

**Term Start: Fall**

Year 1		Credits
<b>Fall</b>		
COD 100	CORPS OF DISCOVERY	3
BIO 151	GENERAL BIOLOGY I	4
ENG 117 or PHL 101	WRITING ESSAYS or WHAT DOES IT MEAN TO BE HUMAN	3
MTH 110	PRECALCULUS I	4
Select one of the following options:		3
Option 1:		
FA	Fine Arts	
Option 2:		
Select one of the following:		
HST 102	GLOBAL HISTORY II	
HST 203	UNITED STATES HISTORY I	
HST 204	UNITED STATES HISTORY II	
Select one of the following Options:		1
Option 1:		
CPS 140	ESSENTIALS OF SPREADSHEETS	
CPS 141	ESSENTIALS OF WORD PROCESSING	
CPS 142	ESSENTIALS OF PRESENTATIONS	
Option 2:		
CPS 215	INFORMATION LITERACY	
<b>Credits</b>		<b>18</b>
<b>Spring</b>		
BIO 152	GENERAL BIOLOGY II	4
MTH 120	PRECALCULUS II	4
PHL 101 or ENG 117	WHAT DOES IT MEAN TO BE HUMAN or WRITING ESSAYS	3
Select one of the following options:		3
Option 1:		
FA	Fine Arts	
Option 2:		
HST 102	GLOBAL HISTORY II	
HST 203	UNITED STATES HISTORY I	
HST 204	UNITED STATES HISTORY II	

Select one of the following options:		1
Option 1:		
Select one of the following:		
CPS 140	ESSENTIALS OF SPREADSHEETS	
CPS 141	ESSENTIALS OF WORD PROCESSING	
CPS 142	ESSENTIALS OF PRESENTATIONS	
Option 2:		
CPS 215	INFORMATION LITERACY	
BIO 190	FRESHMAN SCIENCE SEMINAR	1
<b>Credits</b>		<b>16</b>

Year 2		Credits
<b>Fall</b>		
BIO 221	CELL AND MOLECULAR BIOLOGY	4
CHM 111	GENERAL CHEMISTRY I	4
MTH 241	CALCULUS I	4
ENG 215 or TRL 201	INTRO TO LITERARY STUDIES or INTRODUCTION TO THEOLOGY	3
BIO 290	SOPHOMORE SCIENCE SEMINAR (Optional)	1
<b>Credits</b>		<b>16</b>

<b>Spring</b>		
BIO 200	ECOLOGY	4
CHM 112	GENERAL CHEMISTRY II	4
SS	Social Science	3
ENG 215 or TRL 201	INTRO TO LITERARY STUDIES or INTRODUCTION TO THEOLOGY	3
<b>Credits</b>		<b>14</b>

Year 3		Credits
<b>Fall</b>		
CHM 261	ORGANIC CHEMISTRY I	4
BIO 422	CONSERVATION ECOLOGY (OR Major Elective)	4



ENG 313 or MTH 252	WRITING FOR SCIENCES or STAT METHOC FOR THE SCIENCE	3
ILC 330 or ILC 350	WHAT IS TRUTH or WHAT IS THE COMMON GOOD	4

**Credits 15**

**Spring**

BIO 311	GENETICS	4
CHM 262	ORGANIC CHEMISTRY II	4
BIO 390	JUNIOR SCIENCE SEMINAR	1

ENG 313 or MTH 252	WRITING FOR SCIENCES or STAT METHOC FOR THE SCIENCE	3
-----------------------	--	---

BIO 422	CONSERVATION ECOLOGY (Major Elective)	4
---------	--	---

**Credits 16**

**Year 4**

**Fall**

Major Elective		4
ILC 330 or ILC 350	WHAT IS TRUTH or WHAT IS THE COMMON GOOD	4
PHL 301 or TRL 301	ETHICS or THE CHRISTIAN LIFE	3
BIO 499 or BIO 495	SENIOR THESIS or INTERNSHIP	1
Major Elective	Any BIO Course	4

**Credits 16**

**Spring**

BIO 499	SENIOR THESIS	1
Major Elective		4
PHL 301 or TRL 301	ETHICS or THE CHRISTIAN LIFE	3

General Elective	Any Course	3
	<b>Credits</b>	<b>11</b>
	<b>Total Credits</b>	<b>122</b>
	<b>Required:</b>	

**Wildlife - Electives for Concentration**

Code	Title	Credits
BIO 302	ORNITHOLOGY	4
BIO 304	MAMMALOLOGY	4
BIO 320	AQUATIC ECOLOGY	4
BIO 380	MICROBIOLOGY	4
BIO 392	SPECIAL TOPICS:	4

\*Plan templates are based on the most current catalog and ideal route for degree completion, and should only be used to get an idea of what degree completion may look like. New and enrolled students should log into DegreeWorks to see their specific degree requirements.