

## Bachelor of Science in Biology

*The Bachelor of Science in Biology degree prepares graduates for a wide range of careers. The courses that comprise the degree provide graduates with an appropriate foundation to teach science, particularly biology at either elementary or secondary schools. Graduates are also equipped with the skills to pursue research in biological, environmental, or medical science fields. The degree provides a thorough preparation of students who wish to proceed to further study in biology, environmental science, medicine, dentistry or other health related graduate or professional programs. A distinctive feature of the program is its emphasis on values and the philosophical issues underlying the study of biology.*

### DEGREE STRUCTURE AND REQUIREMENTS FOR GRADUATION

The Biology major includes General Education, Specialized areas and Free electives. 37 credit points are related to General Education studies. 93 credit points focus on specialization studies in Biology, related science and mathematics cognates and a minor selected by the student. The 51 credit points in the major include 36 credit points required for all students and 15 elective credit points. All students are required to complete 27 credit points of cognates and each student may choose a minor from the list of approved minors offered by the University (except a biology minor) for an additional minimum of 15 credit points. A further 6 credit points are free electives which a student may choose from any courses offered by the University.

COURSES	CREDIT POINTS
General Education	37
· Philosophy and Moral Values Courses (12)	
· Language Study (8)	
· Health and Social Sciences (6)	
· Humanities (5)	
· Science and Mathematics (3)	
· Information Sciences (3)	
Specialized Areas	93
· Biology Major (51)	
· Biology Major Cognate (27)	
· Minor (15)	
Free Electives	6
<b>TOTAL</b>	<b>136</b>

## SPECIFIC COURSE REQUIREMENTS

### Biology Major Degree Structure

(136 Credit Points)

#### General Education Courses

(37 Credit Points )

#### Philosophy & Moral Values

(12 credit points)

HMNT 130 The Human Quest I: The Quest for Roots (3)  
 HMNT 131 The Human Quest II: The Search for Self (3)  
 HMNT 230 The Human Quest III: The Individual & Society (3)  
 HMNT 231 The Human Quest IV: Questions of Human Destiny (3)  
 SOCI 204 Marriage & Family (2)  
 RELB 120 Introduction to Sacred Literature (2)  
 Or equivalent courses outline by Deans Council

#### *One of the following:*

RELB 104 Ethical Models (2) *or*  
 EDUC 270 Philosophical Foundations of Education (2) *or*  
 RELE 250 Principles & Concepts of Adventist Education (2)

#### Language Study

(8 credit points)

ENGL 114 English Composition I (3)  
 ENGL 115 English Composition II (3)  
 SPCH 204 Fundamentals of Speech & Communication (2)

#### Health & Social Sciences:

(6 credit points)

HLED 118 Health & Wellness (3)  
 PSYC 104 General Psychology (3)

#### Humanities:

(5 credit points)

CHIN 101 Listening & Speaking in Chinese I (2) or (3)  
 ENGL 260 Survey of English Literature I (3)  
 HIST 214 History of Civilization (3)  
 HMNT 210 Appreciation of the Fine Arts (2)  
 HMNT 234 Literature & Civilization (2)  
 HMNT 256 Thai Language & Culture (3)

#### Science & Mathematics:

(3 credit points)

MATH 215 Statistics (3)

#### Information Science:

(3 credit points)

CPTR 105 Computers and Information Technology or (3)  
 CIS 104 Introduction to Computer Information Systems (3)

#### Orientation To Higher Education

NOND 044 Orientation to Higher Education (0)  
 \*Or equivalent courses as listed by the faculty

#### Specialized Courses

(93 Credit Points)

#### A. Major

(51 Credit Points)

#### Foundation

(8 credit points)

BIOL 151 General Biology I (4)  
 BIOL 152 General Biology II (4)

#### Advanced

(14 credit points)

BIOL 321 Cell & Molecular Biology (4)  
 BIOL 322 Genetics (4)  
 BIOL 333 General Microbiology (3)  
 BIOL 367 General Ecology (3)

#### Research & Career Application

(9 credit points)

BIOL 386 Research Methods I (3)  
 BIOL 387 Research Methods II (3)  
 BIOL 486 Directed Research I *or* (3)  
 BIOL 480 Internship (3)

#### Integrated Capstone

(5 credit points)

BIOL 456 Philosophy of Science (3)  
 BIOL 496 Seminar: Bioethics (2)

#### Major Electives

(15 credit points)

In order to provide additional breadth as well as depth, electives must include one course from each of the following four categories: Animal Biology, Environmental Biology, Functional Biology and Plant Biology. A course may be used to fulfill more than one category. After the category requirement is fulfilled remaining electives may be chosen from any of the five areas.

### **Animal Biology**

- BIOL 345 Vertebrate Natural History (3)
- BIOL 346 Mammalogy (3)
- BIOL 347 Entomology (3)
- BIOL 348 Ornithology (3)
- BIOL390/490 Topics (1-4)

### **Environmental Biology**

- BIOL 363 Aquatic Biology (3)
- BIOL 365 Field Ecology (3)
- BIOL 369 Tropical Marine Biology (3)
- BIOL 373 Economic Botany (3)
- BIOL 473 Medicinal Plants (3)
- ENVR 305 Environmental Conservation (3)
- BIOL390/490 Topics (1-4)

### **Functional Biology**

- BIOL 335 Parasitology (3)
- BIOL 337 Immunology (3)
- BIOL 375 Plant Tissue Culture (3)
- BIOL 446 Animal Physiology (3)
- BIOL 476 Plant Physiology (3)
- BIOL390/490 Topics (1-4)

### **Plant Biology**

- BIOL 377 Systematic Botany (3)
- BIOL 379 Flora of Southeast Asia (3)
- BIOL390/490 Topics (1-4)

### **Other**

- BIOL 336 Mycology (3)
- BIOL 422 Molecular Biology Techniques (3)
- BIOL 457 Current Issues in the Life Sciences (3)
- BIOL 480 Internship (1-12)
- BIOL 487 Directed Research II (3)
- BIOL 390/490 Topics (1-4)

## **B. Major Cognates**

(27 Credit Points)

- CHEM 151 General Chemistry I (4)
- CHEM 152 General Chemistry II (4)
- CHEM 311 Organic Chemistry I (4)
- CHEM 312 Organic Chemistry II (4)
- MATH 241 Calculus for Life & Social Sciences (3)
- PHYS 251 General Physics I (4)
- PHYS 252 General Physics II (4)

## **C. Minor**

(15 credit points)

The student may select a minor from the list of approved minors (except biology). Free electives may count towards a minor that requires more than 15 credits. A minor is intended to complement and enhance the major in order to provide better career preparation. For example, a student who plans to teach would be advised to select an Education Minor, while a student who plans to enter graduate or professional school may choose an English minor and a student who wants to pursue a career in biotechnology may elect to take business as a minor.

### **Free Electives**

(6 credit points)

Courses may be selected from any course offered by the University.

## **Biology Minor Degree Structure**

(18 Credit Points)

### **Required**

- BIOL 151 General Biology I (4)
- BIOL 152 General Biology II (4)

### **Electives**

BIOL and ENVR Electives (10 credit points)

## PROJECTED SEQUENCE OF CLASSES

### First Year

#### First Semester

BIOL 151 General Biology I	4
ENGL 114 English Composition I	3
HLED 118 Health & Wellness	3
NOND 044 Orientation to Higher Education	0
GE or Free Elective or Minor*	5
<b>TOTAL</b>	<b>15</b>

#### Second Semester

BIOL 152 General Biology II	4
CPTR 105 Computers & Information Technology	3
ENGL 115 English Composition II	3
MATH 241 Calculus for Life & Social Sciences	3
GE or Free Elective or Minor*	2
<b>TOTAL</b>	<b>15</b>

#### Inter Semester

SPCH 204 Fundamentals of Speech	2
GE or Free Elective or Minor*	5
<b>TOTAL</b>	<b>7</b>

\*GE or Free Elective or Minor includes Philosophy & Moral Values and Humanities GE; other GE courses are specified.

### Second Year

#### First Semester

CHEM 151 General Chemistry I	4
PHYS 251 General Physics I	4
PSYC 104 General Psychology	3
BIOL Elective	3
<b>TOTAL</b>	<b>14</b>

#### Second Semester

BIOL 333 General Microbiology	3
CHEM 152 General Chemistry II	4
MATH 215 Statistics	3
PHYS 252 General Physics II	4
<b>TOTAL</b>	<b>14</b>

#### Inter Semester

BIOL 367 Ecology	3
BIOL Elective	3
<b>TOTAL</b>	<b>6</b>

### Third Year

#### First Semester

BIOL 386 Research Methods I	3
CHEM 311 Organic Chemistry I	4
BIOL 321 Cell & Molecular Biology	4
GE or Free Elective or Minor*	3
<b>TOTAL</b>	<b>14</b>

#### Second Semester

BIOL 387 Research Methods II	3
CHEM 312 Organic Chemistry II	4
BIOL 322 Genetics	4
GE or Free Elective or Minor*	3
<b>TOTAL</b>	<b>14</b>

#### Inter Semester

BIOL 486 Dir Research or BIOL 480 Internship	3
BIOL Elective	3
<b>TOTAL</b>	<b>6</b>

\*GE or Free Elective or Minor includes Philosophy & Moral Values and Humanities GE; other GE courses are specified.

### Fourth Year

#### First Semester

BIOL 456 Philosophy of Science	3
BIOL Elective	3
GE or Free Elective or Minor*	10
<b>TOTAL</b>	<b>16</b>

#### Second Semester

BIOL 496 Seminar: Bioethics	2
BIOL Elective	3
GE or Free Elective or Minor*	10
<b>TOTAL</b>	<b>15</b>

\*GE or Free Elective or Minor includes Philosophy & Moral Values and Humanities GE; other GE courses are specified.

BIOL 215 Careers in Biology	1
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