

# Biology Major

**Biology – General Biology Concentration mission:** The General Biology concentration encompasses an overall knowledge of biological concepts with an emphasis on preparation for graduate studies and gaining a broad biological knowledge base. Students should leave with knowledge of biology, ecology, and chemistry, combined with critical thinking and writing skills, to assist them in any further education they might choose.

**Biology - Conservation Concentration mission:** The Biology conservation concentration encompasses an overall comprehension of biological concepts with an added emphasis on ecology and conservation. Students should leave Missouri Valley College with a broad knowledge of biology, ecology, and chemistry. In addition, graduates will gain competence in a variety of field and laboratory techniques, and will be able to use information gathered from concentration courses and current literature to make informed wildlife management decisions. Upon graduation, students should be prepared to enter graduate school or professional service.

**Biology – Pre-Medical / Pre-Veterinary Concentration mission:** The Biology Pre-Medical / Pre-Veterinary concentration encompasses an overall knowledge of biological concepts with an added emphasis in organismal health. Students should leave with a broad knowledge of biology, ecology, and chemistry, combined with critical thinking skills, to be applied to whichever organismal health field they choose.

## **Learning Outcomes:**

- Students will demonstrate scientific reasoning skills through experimentation, collecting and interpreting data, and analyzing scientific literature.
- Students will describe the molecular biology and biochemistry of metabolic processes and relate them to the organization and function of tissues.
- Students will compare and contrast the morphology and phylogeny of plants and animals, and summarize their characteristics to identify their taxonomy.
- Students will explain and evaluate interactions between organisms and their environment and be able to predict the outcomes of these interactions.
- Students will investigate the history, significance and mechanisms of evolutionary processes to describe the diversity of life.

**Biology students wishing to attend graduate school should check requirements of the schools they are applying to, in order to meet any other requirements.**

## **Major assessment:**

**All Biology majors must complete the Major Field Test in Biology prior to graduation.**

**Program:** Biology

**Type:** Major

## Major Requirements

**Completion of the Biology core plus a concentration in one of the following areas: General Biology; Conservation; Pre-Medical/Pre-Veterinary.**

# Biology Core

## **Required for all areas of concentration**

***BI104, BI210, BI212 OR BI215, BI250, BI320, BI323, BI332, BI315, CH111, CH112, MA200***

<b>Item #</b>	<b>Title</b>	<b>Hours</b>
BI 104	Principles of Biology	4
BI 210	General Botany	4
BI 212	Vertebrate Zoology	4
BI 215	General Zoology	4
BI 250	Introduction to Cell Biology	3
BI 320	Principles of Microbiology	4
BI 323	Genetics	4
BI 332	Ecology	4
BI 315	Research Methods	3
CH 111	General Chemistry I	5
CH 112	General Chemistry II	5
MA 200	Introduction to Statistics	3

## General Biology Concentration requirements:

### ***Biology Core +***

***+ 6 courses from PH105, BI275, BI285, BI300, BI305, BI306, BI310, BI316, BI335, BI376/476, BI401 (1-3 hours), BI403, BI404, BI413, BI420, BI425, BI430 (MUST TOTAL 19 HOURS MINIMUM)***

***+ 1 course from CH300, CH331, PH315***

6 courses from

<b>Item #</b>	<b>Title</b>	<b>Hours</b>
PH 105	Environmental Science	3
BI 275	Human Anatomy and Physiology I	4
BI 285	Human Anatomy & Physiology II	4
BI 300	Ichthyology	4
BI 305	Ornithology	4
BI 306	Herpetology	4
BI 310	Mammalogy	4
BI 316	History of Science	3
BI 335	Dendrology	2
BI 376	Independent Study	1-3
BI 476	Independent Study	1-3
BI 401	Internship in Biology	1-9
BI 403	Entomology	4
BI 404	Wildlife Ecology and Management	3
BI 413	Field Biology	3
BI 420	Conservation Biology Seminar	2
BI 425	Evolution Seminar	2
BI 430	Taxonomy of Higher Plants	4
CH 451	Biochemistry I	5

1 course from

<b>Item #</b>	<b>Title</b>	<b>Hours</b>
CH 300	Analytical Chemistry	5
CH 331	Organic Chemistry I	5
PH 315	General Physics I	5

## Conservation Concentration requirements

### Biology Core +

**BI335, BI404, BI413 (must be taken twice or students may sub one with an approved internship - BI401 or BI376/476), BI 420, BI430, CH331 OR CH300**

**+ 3 courses from BI300, BI305, BI306, BI310 OR BI403**

**PH315 and MA190 are recommended, but not required.**

<b>Item #</b>	<b>Title</b>	<b>Hours</b>
	Biology Core	
BI 335	Dendrology	2
BI 404	Wildlife Ecology and Management	3
BI 413	Field Biology	3
BI 420	Conservation Biology Seminar	2
BI 430	Taxonomy of Higher Plants	4
CH 331	Organic Chemistry I	5
CH 300	Analytical Chemistry	5

3 courses from

<b>Item #</b>	<b>Title</b>	<b>Hours</b>
BI 300	Ichthyology	4
BI 305	Ornithology	4
BI 306	Herpetology	4
BI 310	Mammalogy	4
BI 403	Entomology	4

The following courses are recommended, but not required:

<b>Item #</b>	<b>Title</b>	<b>Hours</b>
PH 315	General Physics I	5
MA 190	Analytic Geometry and Calculus I	5

## Pre-Medical / Pre-Veterinary Concentration requirements:

### **Biology Core +**

**BI275, BI285, PH315, CH331, CH332, CH451, BI401 (must be taken twice for a total of 4 credit hours or students may sub 2 credit hours of internship with BI413 OR BI376/476 for a minimum total of 4 credits)**

**NU270, PY100, SC100, HU125 OR HU126, PH365, MA190 are recommended but not required.**

Entry into Pre-Medical / Pre-Veterinary Concentration requires Sophomore status and to maintain a 3.0 cumulative GPA or higher. Those that fall below this minimum GPA will revert to the General Biology concentration. To apply, visit: <https://www.moval.edu/academics/academic-divisions/division-math-science/biology/>

<b>Item #</b>	<b>Title</b>	<b>Hours</b>
	Biology Core	
BI 275	Human Anatomy and Physiology I	4
BI 285	Human Anatomy & Physiology II	4
PH 315	General Physics I	5
CH 331	Organic Chemistry I	5
CH 332	Organic Chemistry II	5
CH 451	Biochemistry I	5
BI 401	Internship in Biology	1-9

The following courses are recommended, but not required:

<b>Item #</b>	<b>Title</b>	<b>Hours</b>
NU 270	Pharmacology	4
PY 100	Principles of Psychology	3
SC 100	Introduction to Sociology	3
HU 125	Humanities I	3
HU 126	Humanities II	3
PH 365	General Physics II	5
MA 190	Analytic Geometry and Calculus I	5
	<b>Total credits:</b>	<b>71-86</b>