



SIENA HEIGHTS UNIVERSITY

# BIOLOGY

Siena Heights University • 1247 East Siena Heights Drive • Adrian, MI 49221 • [www.sienaheights.edu](http://www.sienaheights.edu)



The living science



## The Perfect Blend

### BIOLOGY AT SIENA HEIGHTS UNIVERSITY

Biology is distinguished from the other sciences because it focuses on the study of living things. In the era of DNA mapping, AIDs, and cloning, one component of a good college education never changes; a solid foundation in research.

One of the most important aspects of the Siena Heights biology program is a dedication to student research. As early as your freshman year, you'll be doing hands-on experiments. Class experiments will continue in your sophomore year. During your junior year, biology seminar courses will help you develop skills in research procedures.

At this time, you'll begin working with the biology faculty on a one-to-one basis. This is one of the strengths of Siena Heights' program. For many larger schools, it's not feasible for faculty to devote the time needed to mentor students individually. At Siena Heights University, your faculty are your advisors, your mentors, and often your friends.

All of this preparation and advising culminates in your senior project. "Our students do what amounts to a bachelor's thesis, sometimes approaching master's level quality. This is important preparation for either graduate school or a career," says Dr. Carl Kaster, Professor of Biology.

In the past, senior research topics have included: surveys of dragonflies and damsel flies (part of a statewide initiative); predation of eggs; courtship displays in fruit flies, water striders and mallards; blood stains; localization of the bovine herpes virus in cells; searching for endangered, threatened snakes in Lenawee County; mushroom survey; live trapping for the least shrew; and heavy metal accumulation in mink.

In the end, you'll have proposed, developed, tested, analyzed, and drawn conclusions about a biology-related topic. In short, you'll become a scientist.



## Field Research

### GETTING OUT OF THE CLASSROOM

When Siena Heights University's facilities and programs were reviewed by the district chairperson for Beta Beta Beta, one of the reasons Siena was granted a charter was our program's emphasis on field research.

Our students get out of the classroom and laboratory and into the natural environment. It's one thing to do experiments designed to work in a laboratory where all the variables are taken into account. In the field, students have to think on their feet. It's not uncommon for ecology classes to research the physical environment and biological parameters in the River Raisin, a local waterway. Field research is another way Siena Heights students prepare themselves for graduate school and/or a career in the sciences.





## Extra Options At Siena

### PRE-MED AND PRE-VET PROGRAMS

Do you have aspirations of being a doctor or a veterinarian? Siena Heights can help you attain that goal. Nearly 100 percent of our students in the pre-med or pre-vet programs at Siena Heights have been accepted to a medical or veterinary school.

It all starts with our courses. The biology curriculum has the prerequisites for medical and veterinary school embedded within them. Combine that rigorous curriculum with hands-on research and faculty mentors who will work with you one-on-one, and you'll find yourself prepared to succeed.

Students planning to attend medical or veterinary school should consult with their advisor during their first year.



## Beta Beta Beta

### EXTRACURRICULAR ACTIVITIES JUST FOR YOU

Beta Beta Beta is a national biological honor society dedicated to improving the understanding and appreciation of biological study and to extending the boundaries of human knowledge through scientific research. The Xi Omega chapter was founded at Siena Heights in 1992.

With Beta Beta Beta, our scholars compete with students from across the nation, and are gaining national notoriety for their scientific work. Students like Billy Houghteling, who took first place at a national convention for his research paper on tryptophan biosynthetic pathway in the plant *Arabidopsis thaliana*, and its ability to elicit a resistance response by producing indole-3-acetonitrile.



"Our students do what amounts to a bachelor's thesis, sometimes approaching master's level quality. This is important preparation for either graduate school or a career."

Dr. Carl Kaster,  
Professor of Biology



# Bachelor of Science Degree Major

## BIOLOGY REQUIREMENTS

BIO 141	Basic Concepts of the Cell	4
BIO 241	Animal Biology	4
BIO 242	Plant Biology	4
BIO 342	Genetics	4
BIO	Approved Electives	15-16
BIO 395	Junior Seminar I	1
BIO 396	Junior Seminar II	1
BIO 495	Senior Seminar I	1
BIO 496	Senior Seminar II	1
<b>Total for Major</b>		<b>35-36</b>

## REQUIREMENTS OUTSIDE OF MAJOR

CHE 141	General Chemistry I	4
CHE 142	General Chemistry II	4
CHE 241	Organic Chemistry I	4
CHE 242	Organic Chemistry II	4
MAT 159	Precalculus or	4
MAT 181	Calculus with Analytic Geometry I	4
MAT174*	Data Analysis and Statistics	3
MAT 244	Statistical Analysis and Design	3
MAT 182	Calculus with Analytic Geometry II or	4
PHI 110	Logic or	3
PHI 210	Symbolic Logic	3
PHY 241	General Physics I (Non-Calculus Based) or	4
PHY 261	Physics I (Calculus Based)	4
PHY 242	General Physics II (Non-Calculus Based) or	4
PHY 262	Physics II (Calculus Based)	4
TSC 101*	Fundamentals of Speech Communication	3
<b>Liberal Arts Requirements</b>		<b>30-32</b>
<b>Total Requirements Outside of Major</b>		<b>70-73</b>
<b>General Electives</b>		<b>11-15</b>
<b>Total for Degree</b>		<b>120</b>

## NOTES:

Biology majors must earn a 2.1 Grade Point Average in their majors.

Most Siena Heights University students planning to attend medical or veterinary school normally major in Biology. Students should consult with a science advisor during the first year.

Students seeking Medical Technology Option must take BIO 360 Microbiology as one of the four required Biology electives

Students seeking Secondary Certification need only complete an additional 4 semester hours of approved Chemistry electives for a Chemistry minor.

Students who are seeking teacher certification must take BIO 441 Ecology as one of the four required Biology electives.

Students seeking teacher certification must also complete the appropriate science methods course: BIO 372 (Secondary Science Methods) from the Professional Education Sequence.

Students seeking secondary certification in teaching must also take NSC110 Earth Science.

\* Indicates division requirements

## Additional Options

Siena Heights University also offers a minor in Biology, an Associate of Science Degree and a Biology Major: Medical Technology Option.

To learn more about these options, speak with your admissions representative.

# Graduate Schools & Employment

## CAREER AND PROFESSIONAL OPPORTUNITIES

Approximately one-half of Siena Heights graduates are accepted into graduate/professional programs at institutions such as Bowling Green State University, Michigan State University, University of Illinois, Wayne State University, University of New Hampshire, Madonna University, University of Michigan, Ball State University, Barry University, University of Wisconsin-Madison, and the University of Louisville. When asked if they are well prepared for graduate/professional school, our graduates answer that they are as well prepared, if not better, than any peers in their programs.

Siena Heights graduates enter the work force in diverse occupations such as chiropractors, dentists, forensic scientists, medical technologists, nurses, nutritionists, physicians, podiatrists, public health officials, physical trainers, teachers, and veterinarians. They work in all areas of the work force from the corporate sector (Johnson and Johnson, Pfizer, Detroit Medical Center, General Foam Corporation, Biolex, Inc., Henry Ford Hospital) to the non-profit sector (Olivet College, Wayne State University, Illinois College of Optometry) to the government (US Army, Michigan DNR, Hamilton Co. Coroner's Lab).