

University of Northern Iowa



# DEPARTMENT OF BIOLOGY

Diversity of life... diversity of opportunities



## GREETINGS!



Thank you for your interest in the Department of Biology at UNI! We have a lot to offer you. A degree in biology is one of the most versatile degrees available for college students, providing opportunities in medicine, health care, scientific research, genetic counseling,

biotechnology, laboratory science, forensics, pharmacy, environmental and business consulting, ecosystem management, conservation, teaching, and more. The supportive and caring faculty and staff in the Department of Biology provide specialized opportunities and individual attention that foster student success.

If I can help you with your decision, or put you in touch with someone here at UNI that you would like to talk to, please contact me at [Theresa.Spradling@UNI.edu](mailto:Theresa.Spradling@UNI.edu).

## HIGHLIGHTS:

• **Average class size:** We have amazing opportunities in the department, with current average class size being 24 students. So if you want to get to know your professors, you can.

• **Hands-on, active-learning experiences in lab classes:** Most biology classes are taught with a laboratory component that makes learning the material easier and more fun.

• **Individual attention:** About 50 qualified & interested students per semester in our department choose to work with faculty in classrooms as assistants or in labs as researchers.

• **12 student organizations:** Our student clubs and pre-professional organizations are active, engaged groups of students working together to serve the community, to help each other prepare for entry exams to professional programs, and to facilitate interactions with professional schools.

## DEGREES AWARDED:

- Bachelor of Science: Biology
- Bachelor of Arts: Biology
- Bachelor of Arts: Biology – Biomedical Emphasis
- Bachelor of Arts: Biology – Ecology, Evolution and Organismal Biology Emphasis
- Bachelor of Arts: Biology – Teaching

## FINANCIAL INFO:

- University application: **January 15**
- Declare yourself a biology major
- Application: <https://finaid.uni.edu/scholarship>
- No premium tuition junior and senior years (approximately \$2,500 savings)
- Only Regents University to participate in RaisMe <https://finaid.uni.edu/raisme>



## FACULTY RESEARCH & TEACHING SPECIALTIES

- Dr. Tilahun Abebe – Genetics, Functional Genomics, Stress Physiology
- Dr. Pete Berendzen – Genetics & Evolution of Fish
- Dr. Nathan Bird – Vertebrate Anatomy
- Dr. Maureen Clayton – Aquatic Ecosystems
- Dr. Jim Demastes – Host & Parasite Genetics
- Dr. Kenneth Elgersma – Biostatistics, Ecology
- Dr. Laura Jackson – Conservation Biology, Prairie
- Dr. Jerreme Jackson – Microbiology & Bacterial Pathogens
- Dr. James Jurgenson – Genetics of Plants & Pathogens
- Dr. Julie Kang – Plant Anatomy
- Dr. Jill Maroo – Science Education
- Dr. David McClenahan – Immunology
- Dr. Mark Myers – Conservation Biology
- Dr. Steve O’Kane – Plant Systematics
- Dr. Kurt Pontasch – Aquatic Ecology, Ecotoxicology
- Dr. Nilda Rodriguez – Cell Biology, Microbiology, Infectious Disease
- Dr. David Saunders – Environmental Physiology
- Dr. Mark Sherrard – Ecology & Plant Physiology
- Dr. Marek Sliwinski – Microbes & Plants
- Dr. Theresa Spradling – Genetics & Evolution
- Dr. Jeff Tamplin – Turtle Ecology & Conservation
- Dr. Carl Thurman – Animal Physiology
- Dr. Michael Walter – Microbiology, Virology
- Dr. Ai Wen – Ecosystems



# SAMPLE PLAN OF STUDY

<p><b>Semester 1</b></p> <p>BIOL 2051 Gen. Bio.: Organismal Diversity 4 or BIOL 2052 Gen. Bio.: Cell Structure &amp; Function</p> <p>CHEM 1110: General Chemistry I* 4</p> <p>Math course for major 4-5 credits* 4</p> <p>Liberal Arts Core 3</p> <p>* Based on ALEKS scores</p> <p style="text-align: right;">TOTAL HOURS 15</p>	<p><b>Semester 2</b></p> <p>BIOL 2051 Gen. Bio.: Organismal Diversity 4 or BIOL 2052 Gen. Bio.: Cell Structure &amp; Function</p> <p>CHEM 1120: General Chemistry II 4</p> <p>Liberal Arts Core 3</p> <p>Liberal Arts Core 3</p> <p style="text-align: right;">TOTAL HOURS 14</p>
<p><b>Semester 3</b></p> <p>BIOL 3140: Genetics 4 or BIOL 3100 Evo, Eco &amp; Nature of Science</p> <p>Upper level Chemistry course 4-5 hours 3</p> <p>Liberal Arts Core 3</p> <p>Liberal Arts Core 3</p> <p style="text-align: right;">TOTAL HOURS 14</p>	<p><b>Semester 4</b></p> <p>BIOL 3140: Genetics 3 or BIOL 3100 Evo, Eco &amp; Nature of Science</p> <p>Biology Elective 3000 Level 4</p> <p>Liberal Arts Core 3</p> <p>Liberal Arts Core 3</p> <p>University Electives 3</p> <p style="text-align: right;">TOTAL HOURS 16</p>
<p><b>Semester 5</b></p> <p>General Physics I or Introduction to Geology 4</p> <p>Biology Major Elective 3000 Level 3</p> <p>Liberal Arts Core 3</p> <p>Liberal Arts Core 3</p> <p>University Electives 3</p> <p style="text-align: right;">TOTAL HOURS 15</p>	<p><b>Semester 6</b></p> <p>General Physics II or Earth History 4</p> <p>Biology Elective 3000 or 4000 Level 3</p> <p>Liberal Arts Core 3</p> <p>Liberal Arts Core 3</p> <p>University Electives 3</p> <p style="text-align: right;">TOTAL HOURS 16</p>
<p><b>Semester 7</b></p> <p>Biology Major Elective 4000 Level 4</p> <p>Biology Major Elective 3000 or 4000 Level 3</p> <p>Liberal Arts Core 3</p> <p>University Electives 3</p> <p>University Electives 2</p> <p style="text-align: right;">TOTAL HOURS 15</p>	<p><b>Semester 8</b></p> <p>Biology Major Elective 4000 Level 3</p> <p>Liberal Arts Core 3</p> <p>University Electives 3</p> <p>University Electives 3</p> <p>University Electives 3</p> <p style="text-align: right;">TOTAL HOURS 15</p>

## ELECTIVES

### Pre-Professional:

BIOL 3101 Anatomy and Physiology I*#	4 hrs.
BIOL 3102 Anatomy and Physiology II*	4 hrs.
BIOL 3106 Vertebrate Anatomy	4 hrs.
BIOL 3107 Environmental Physiology	3 hrs.
BIOL 3108 Vertebrate Histology	4 hrs.
BIOL 3147 Cancer and Emerging Infectious Diseases	3 hrs.
BIOL 3151 General Microbiology	4 hrs.
BIOL 4114 Comparative Animal Physiology	4 hrs.
BIOL 4128 Cell Biology	4 hrs.
BIOL 4129 Genomics	3 hrs.
BIOL 4137 Vertebrate Physiology	4 hrs.
BIOL 4144 Virology	4 hrs.
BIOL 4146 Developmental Biology of Animals	4 hrs.
BIOL 4150 Immunology	4 hrs.

\*BIOL 3101 & BIOL 3102 must be taken at UNI\*  
<https://catalog.uni.edu/courses/biol/>

### Ecology, Evolution, and Organismal Biology:

BIOL 3160 Field Zoology of Vertebrates	4 hrs.
BIOL 3170 Entomology	3 hrs.
BIOL 4122 Plant Physiology	4 hrs.
BIOL 4105 Wildlife Ecology & Management	4 hrs.
BIOL 4108 Biodiversity Conservation Policy	3 hrs.
BIOL 4164 Mammalogy	4 hrs.
BIOL 4166 Plant Systematics	4 hrs.
BIOL 4167 Conservation Biology	3 hrs.
BIOL 4168 Ecology	4 hrs.
BIOL 4172 Developmental Plant Anatomy	4 hrs.
BIOL 4180 Restoration Ecology	4 hrs.

### Cross-disciplinary classes:

BIOL 314 Field Biology: ____	1-3 hrs.
BIOL 3185 Readings in Biology	1-3 hrs.
BIOL 3189 Seminar	1-2 hrs.
BIOL 3190 Undergraduate Research in Biology	1-3 hrs.
BIOL 4127 Bioinformatics Applications for Biology	3 hrs.
BIOL 4142 Evolutionary Biology	3 hrs.
BIOL 4157 Biostatistics	3 hrs.
BIOL 4198 Independent Study	1-3 hrs.

# COURSES RECOMMENDED BY PROFESSIONAL PROGRAMS

Through a degree in biology, students may complete their pre-professional requirements as an embedded part of their degree plan” and “Biology majors benefit from 3+ 1 partnerships with Chiropractic, Nursing, and Medical Lab Science programs

Requirement	UNI Course	MD, DO, Podiatry	Dental	Optometry	Pharmacy	Physician Assistant	Physical Therapy*	Chiropractic	Veterinary Medicine
Biology I w/lab	BIOL 2051	✓	✓	✓	✓	✓	✓	✓	✓
Biology II w/lab	BIOL 2052	✓	✓	✓	✓	✓	✓	✓	✓
Chem I w/lab	CHEM 1110	✓	✓	✓	✓	✓	✓	✓	✓
Chem II w/lab	CHEM 1120	✓	✓	✓	✓	✓	✓	✓	✓
Organic I	CHEM 2210	✓	✓	✓	✓	✓		✓	✓
Organic II w/lab	CHEM 2220 & CHEM 2230	✓	✓	✓	✓	✓		✓	✓
Biochemistry	CHEM 4510	✓	✓	Recommend or Required	✓	✓			✓
Physics I w/lab	PHYSICS 1511	✓	✓	✓	✓		✓	✓	✓
Physics II w/lab	PHYSICS 1512	✓	✓	✓			✓	✓	✓
Pre-calculus or equivalent	MATH 1140 or MATH 1120 & MATH 1130	✓	✓				✓		✓
Calculus	MATH 1420			✓	✓				
Statistics	STATS 1772	Recommend	✓	✓	✓	✓	✓	✓	some
Microbiology	BIOL 3151	Recommend		✓	✓	Recommend or Required	some	Recommend	some
Anatomy & Physiology I	BIOL 3101	Recommend	✓	Recommend	Recommend	Recommend or Required	✓	Recommend	Some or Vertebrate
Anatomy & Physiology II	BIOL 3102	Recommend	✓	Recommend	Recommend	Recommend or Required	✓	Recommend	Some or Vertebrate
Psychology	PSYCH 1001	Recommend	✓	✓		✓	✓	✓	
English	ENGLISH 1005	English 1005 & Lit Course	Plus an advanced course	Plus Lit Course	✓	some		✓	some

Apply Toward a Biology Degree

University or Liberal Arts Requirements

**WE PUT STUDENTS FIRST!** As a Biology major, you receive one-on-one support from experienced Academic Advisors assigned specifically to Biology Majors.

Benefits to students of individualized advising:

- Students have easy accessibility to advisors with one-on-one appointments and walk-ins, making it convenient for students to utilize professional advisement.
- Relationship building begins at Freshmen Orientation when students meet with their department advisors.
- Students receive help navigating academic courses and electives.
- Students receive weekly communication from advisors.



- Advisors serve as liaison to academic support and other campus resources and services.
- Advisors create individual Plans of Study with students.
- Advisors provide insight into internships, career opportunities and graduate program processes.

- Advisors have access to contacts at professional schools

# UNI'S STUDY ABROAD PROGRAM



Studying abroad is a transformational learning experience that allows students the opportunity to understand other cultures and societies in the context of their own and to gain a more global perspective on issues such as human health and the environment. Department of Biology faculty members typically lead one or two of these experiences each summer. Our most recent trips were to the Galapagos Islands and to New Zealand.

## UNDERGRADUATE RESEARCH IN BIOLOGY

### 1. Volunteering

Volunteering is a good option for a student to get a first experience in research without a large time commitment. It allows a student the chance to get acquainted with the faculty and the research they are conducting.

### 2. Undergraduate Research

Undergraduate Research is for those students choosing to be involved in a long-term research project spanning multiple semesters or years. This option allows for interesting research, and earns a student biology credits too!

### 3. Summer Undergraduate Research (SURP)

SURP is a competitive program that pairs students with faculty mentors and pays them to do independent research during the summer. If selected, students first develop a research plan with their faculty mentor and complete that during the 10 week summer program.

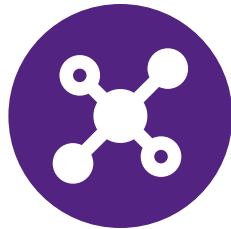
*For more information on these opportunities, please contact the Department of Biology office in McCollum Science Hall 144 at 319-273-2456.*

## BIOLOGY CLUBS

- Beta Beta Beta (Tri-Beta)
- Pre-Chiropractic Club
  - Pre-Dental Club
  - Pre-Medical Club
- Pre-Occupational Therapy Club
  - Pre-Optometry Club
  - Pre-Pharmacy Club
- Pre-Physical Therapy Club
- Pre-Physician Assistant Club
  - Pre-Veterinary Club
- Student Nature Society
- Women in Healthcare



## OPPORTUNITIES IN BIOLOGY

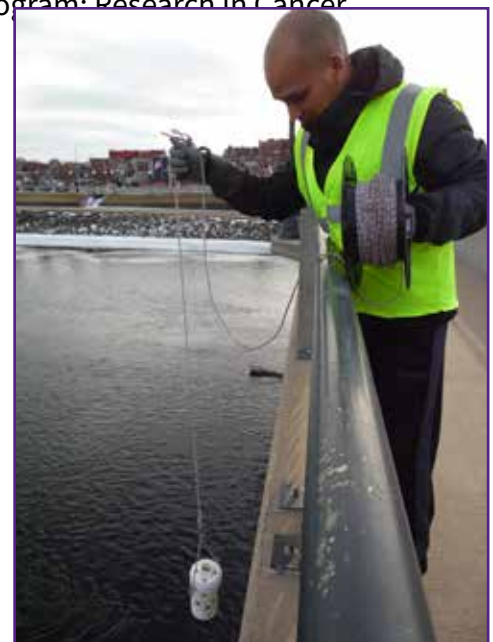


### JOBS

Medical Doctor (MD, DO)  
Dentist  
Nursing, Nurse Practitioner  
Physician Assistant  
Geneticist, Genetic Counselor  
Podiatrist  
Teacher  
Pharmacist  
Pharmaceutical Sales  
Biotechnology Specialist  
Toxicologist  
Forensic Science Technician  
Bioproduction Operators  
Marine Scientist  
Medical Examiner  
Veterinarian  
Botanical Center Director  
Embryologist  
Chiropractor  
Microbiologist  
DNA Analyst  
Pathologist  
Epidemiologist  
Medical Lab Technician  
Food Safety/Quality Assurance  
Conservation Officer  
Natural Resources Technician  
Environmental Specialist  
Research Scientist  
Wildlife Biologist  
Horticulturist

## INTERNSHIPS AND SUMMER PROGRAMS

- University North Florida - Coastal Biology Research with Bottlenose Dolphins
- University of Minnesota Medical School - Life Sciences Summer Program: Research in Cancer Neuroscience, National Institute of Drug Abuse
- Boston Medical - Summer Neuroscience and Neurosurgery Program
- University of Iowa Summer Health Program (SHPEP)
- Des Moines University Summer Scholar Program
- AmeriCorps - Positions on-campus, across U.S.
- Turpentine Creek - Eureka Springs, Arkansas - Wildlife preserve for tigers, lions, mountain lions
- Disney's Animal, Science and Environment Internships
- Iowa State Laboratory Summer Internships
- Iowa: County Conservation Summer Internships
- Medical Scribes
- Vet Assistants
- Living History Farms Internships
- DNR/Park Ranger Internships
- Blank Park Zoo



## WHAT OUR GRADUATES SAY

Preparing our students for entry to medical school is one of the things we do especially well, with admission statistics for UNI biology students applying to the University of Iowa Carver College of Medicine that beat national trends three times over. **Bryce Duchman** is now the Chief Resident of Internal Medicine at the University of Iowa Hospitals and Clinics and soon will be entering a Pulmonary and Critical Care fellowship. But not that long ago, Bryce was a biology major at UNI. Dr. Duchman had the following to say, “UNI’s biology program had me very well prepared for medical school at the University of Iowa. The biology program offers great breadth of exposure to general biology, but it also has the flexibility to allow students to take more specialized/advanced courses such as human physiology, cellular biology, biochemistry, and graduate-level courses. There are ample opportunities for biology research, and the faculty are approachable and eager to see their students succeed. Most importantly, however, is the Biology program’s dedication to teaching students critical thinking skills. I consider this the most essential skill for any physician, and I continue to use critical thinking skills in every patient encounter as an internal medicine physician.”



Recent UNI biology graduate, **Nicole Hindman**, says “I loved animals so much growing up that I'd make endangered species posters for different animals and hang them up in my bedroom. My passion for conservation led me to a biology degree from UNI and I've found my place in the world of informal science education. I'm currently working as an Environmental Educator at the Nature Center at Shaker Lakes in Cleveland, Ohio, where I get to inspire the public and the next generations to love, respect, and protect our natural world and all of the creatures that live in it. I've worked with some amazing animals like owls, bats, snakes, and salamanders, and I lead informative hikes and programs for all ages. It's a perfect balance of enjoying days outside in nature, working with animals, and inspiring people to love nature as much as I do!” Nicole’s preparation for her work in conservation started here at UNI. Come learn with us and let’s see where your passions will lead you!

Students in the Department of Biology have many opportunities to learn both inside and outside the classroom, building resumes, and gaining important life experiences. Victor Soupine is one example. Victor works with Dr. Nilda Rodriguez on his own research project. Victor says, “I came to UNI to become a teacher. I started tutoring my sophomore year and found myself fascinated by the depths of biology. I became very interested in biological research and started exploring different opportunities. I began an ecological project and learned about the scientific method. As I took more upper level courses, I realized I was equally fascinated by biomedical coursework. This led me to join a lab studying immune response to microbes. Working in this lab has given me a solid foundation of how to conduct scientific studies. I had the opportunity to present our project at the Iowa One Health Conference, where I was awarded best poster presentation. UNI has given me the opportunity to explore and grow as a biologist. I want to combine my undergraduate research experiences to pursue my doctorate in environmental toxicology by investigating how pollutants affect human health.”



## APPLY FOR FALL ADMISSION

- Apply for Scholarships by January 15
- Attend “Up Close” in February
- Attend orientation in June



### For questions, contact:

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