$1000 scholarship
Registration info
Declaring Biology as a Major or Minor
Transitions in the Biology Department: Virtual Classes and COVID academic policy news
Potsdam Pathways
New and improved courses for the upcoming term
Marine Biology Summer 2021
Profile of a Potsdam Biology grad: Michael Lieto
WISER Center News
Health Professions
Work study
Teaching assistantships – Earn credit and beef up your résumé
Beta Beta Beta
Environmental Science Major (Fall 2021) and Revised Minor
Internships
Research with Profs
Looking Ahead – Belize Tropical Ecology Winterim 2021
B.S. checklist/ B.A. checklist/ Bio. specialization checklist

BOB CERWONKA MEMORIAL SCHOLARSHIP

The Biology Department at SUNY Potsdam invites all Biology Majors to apply for the Bob Cerwonka Memorial Scholarship. This scholarship was made possible from a generous donation from department alumnus Mr. Robert E. Wagner ’75. Dr. Cerwonka, a former faculty member in the department, was a Limnologist and Ecologist and also founder of our Lambda Xi Chapter of the Beta Beta Beta Biological Honors Society. Please note: You must be a matriculated student in the Fall following the award given in January to receive the funds!!!

The successful candidate will: 1. Be a student who has declared Biology as their major; 2. Be in good academic standing at SUNY Potsdam, maintaining a minimum of a 2.5 GPA. 3. Preference shall be given to students that demonstrate an interest and appreciation of nature and the environment. 4. The applicant will be required to submit an essay that incorporates their understanding of ecology and natural history with their goals for a career in the life sciences. The successful applicant will receive a $1,000 award. Students can apply for this scholarship multiple times. To apply, submit a typed essay of between 250 and 500 words to Dr. Jan Trybula by December 1st.
REGISTRATION

Advising begins October 21. The spring schedule will be available online this day.

Registration begins:

- Seniors – November 13
- Juniors – November 16
- Sophomores – November 17
- Freshmen – November 18-19

Students may adjust their schedules on BearPAWS until midnight, Sunday, Jan. 24th, 2020, which is the day before classes begin.

Registration instructions can be found at this link: http://www.potsdam.edu/offices/registrar/registration/index.cfm

Students should consult with their advisor to make sure that they have completed the appropriate prerequisites and cognates before choosing electives. Some course descriptions and B.S. and B.A. checklists are included in this newsletter.

DECLARING BIOLOGY AS YOUR MAJOR OR MINOR

Students are strongly encouraged to declare their biology major as early as possible.

Declaring your major or minor early will help you obtain a biology faculty advisor and help you select the best courses toward your degree. It is our wish to match students with advisors with shared interests within life sciences. To declare biology as your major or minor, see Marta Whalen, the Department Secretary (Stowell 207B) or Dr. Jan Trybula, the Department Chair; Stowell 205A). Just fill out one form. The entire process takes less than three-minutes, but it can save you a semester or more by ensuring that you receive an advisor who understands our program.

Above: Back from a whale watch in 2018 on our Cape Cod trip – At right, a group of SUNY Potsdam students in Belize for Tropical Ecology and Conservation…some of the cool things about being a bio major!
Virtual Classes

In light of the current Coronavirus Pandemic, the Biology Department will offer some class virtually. These include the following (see the posted schedule for more detail):

BIOL 107 001 HUMAN BIOLOGY−LEC TuTh 1130AM−1245PM SCHREER
BIOL 107 002 HUMAN BIOLOGY−LAB Tu 530PM−720PM SCHREER
BIOL 107 003 HUMAN BIOLOGY−LEC TuTh 1130AM−1245PM SCHREER
BIOL 151 001 GENERAL BIOLOGY−LEC MWF 1020AM−1110AM SNYDER
BIOL 151 002 GENERAL BIOLOGY−LAB M 300PM−550PM SNYDER
BIOL 151 005 GENERAL BIOLOGY−LAB Tu 115PM−405PM SNYDER
BIOL 151 007 GENERAL BIOLOGY−LAB Tu 910AM−1200PM SNYDER
BIOL 152 001 GEN BIO:ORGANISM & ECOLOGY−LEC MWF 1020AM−1110AM CONLEY
BIOL 152 002 GEN BIO:ORGANISM & ECOLOGY−LAB W 300PM−550PM CONLEY
BIOL 152 004 GEN BIO:ORGANISM & ECOLOGY−LAB Th 115PM−405PM CONLEY
BIOL 310 001 MARINE BIOLOGY TuTh 945AM−1100AM CONLEY
BIOL 311 004 GENETICS−LAB Tu 115PM−405PM LAPLANT
BIOL 311 005 GENETICS−LAB W 300PM−550PM LAPLANT
BIOL 413 001 NEUROPHYSIOLOGY−LEC TuTh 945AM−1100AM SCHREER
BIOL 485 006 RESEARCH IN BIOLOGY CONLEY

Temporary Changes to Academic Policies S/U, W/D and W*

In September the Faculty Senate passed the following adjustments to academic policies:

S/P/U and WD
1. Continuation of the “P”- Low Pass grade for undergraduate students that select S/U for fall 2020 and earn a 1.0, 1.3, 1.7, as was approved for Spring and Summer 2020

2. Move S/P/U and WD deadline to the last day of classes, Friday December 11, at 11:59pm

3. Allow for Fall 2020 courses taken S/P/U to not count against an undergraduate student’s S/U limit of 14 hours total

Emergency Withdrawal (W*)
Extending the adjusted Emergency Withdrawal (W*) policy from Spring 2020 to the Fall 2020 term allowing withdrawals for COVID-related issues to be processed as W* instead of W without requiring the additional documentation typically required for W*. This change brings the withdrawal policy in line with our proposed S/U/P policy and would allow approved students to avoid these withdrawals counting against their 14-credit limit.
POTSDAM PATHWAYS

Beginning in Fall 2020, SUNY Potsdam began the process of transitioning away from the old General Education Program and begin moving toward a new one called Potsdam Pathways. In future years, several Biology Faculty will be participating in this and developing new and innovative courses to meet the general education needs of SUNY Potsdam students. The first-year program consists of a series of WAYS courses and several will be offered this coming spring.

If you are a freshman (or a senior!) in need of a writing class, you might consider one with Dr. Kate Cleary or Dr. Jess Rogers from the Environmental Studies Department:

WAYS 102 World without Wolves: How to save the animals – Kate Cleary
TuTh 3:00 – 4:15 PM (This course is Face-to-Face)
Dive into one of the most controversial conservation debates in recent U.S. history: does the Endangered Species Act actually help endangered species? You will explore a range of texts on this topic, including academic writing, policy positions, and "life writing." Partway through the semester, you will pick a position on the Endangered Species Act. Do you support it or oppose it, and why? Your final essay will present a cohesive argument aimed at helping your chosen audience understand your position and take action!

WAYS 102 “Roots of Environmentalism” -Jessica Rogers (FW)
TuTh 1:15 – 2:30 PM
There is always someone who was the first to describe the world we see around us. Despite living in a world of increasing environmentalism where everyone experiences ecology, most people know very little about how or why we know the things we do about the world we live in. In a globally-connected world, understanding how these ecological discoveries influenced our modern environmentalism is crucial to saving our planet for the future. NOTE: Freshman or Sophomore standing required. Can accommodate virtual students.

Need to pick up a FS (Freshman Speaking)? How about this one with Dr. Fathima Nazeer?

WAYS 103 “Women in Science” –Fathima Nazeer (FS)
This course is designed to help students explore personal and societal assumptions about women in science and examine the various imbalances that have affected the participation of women in scientific fields. In addition, students will practice discussing these topics in a civil and respectful manner. We will discuss contributions made and challenges faced by pioneering scientists as well as less known scientists and even nonscientists who have made significant contributions towards scientific advancement. The potential list of women to be discussed include notable names such as Marie Curie, Rosalind Franklin, and Barbara McClintock as well as recent recipients of Nobel prizes and younger pioneers in their specific fields. We will pay particular attention to women who have historically not been given due recognition such as Henrietta Lacks and Marie-Anne Lavoisier

Please note that WAYS 101 courses will all count for the current FC requirement; WAYS 102 courses will all count for the current FW requirement, and WAYS 103 courses will count for the current FS requirement.
NEW AND IMPROVED COURSES

BIOL 483 – Current Topics: Biology of Invasions- SI

Dr. Glenn Johnson  
W 5:20 – 7:50 pm

In the form of bacteria, small arthropods and tiny plants, life first invaded the land from the sea in the Silurian, about 450 million years ago. Vertebrates followed about 70 million years later, probably from freshwater environments. Since then, living things have moved around the planet, entering and occupying new habitats, expanding their range as they evolve and adapt to changing conditions. It has only been relatively recently, however, that the magnitude and pace of these invasions has been ramped up as human beings now move with relative ease to all corners of the Earth. Some of the worst offenders are those species, like rats and cockroaches, that are commensal with humans, travelling with us as we populate the globe. Others get scooped up in our ballast water or hitchhike on our clothing. Many (most?) are deliberately or through ignorance moved about for agricultural purposes, for their beauty, for novelty or to control another, earlier exotic import. Many of these have become invasive and can drastically alter natural ecosystems, often with grave consequences. In this Current Topics, we will drill deep into the ever-growing body of literature on Biological Invasions.

A case of Invasional Meltdown: The native red land crab, whose overland migrations are legendary, being attacked by the invasive yellow crazy ant…leading to alterations of the native vegetation on Christmas Island in the Indian Ocean

HLTH 270 – Health Coaches I

Dr. Ewy

Looking for experience working with patients? SUNY Potsdam has teamed with Canton Potsdam Hospital (CPH) to train students to work with community members who have chronic conditions such as diabetes, COPD, or heart disease. Health Coaches I is a seminar course where health care professionals and community organizations give presentations on the US health care system, rural medicine, chronic diseases, and techniques to work with patients. In HLTH 370 "Health Coaches II" (offered during Fall Semester 2021) students are paired with a community member who has a chronic condition. Together the health coach and patient will work to develop small patient-centered goals to improve quality of health. This kind of experience looks great on an application to a health professions program such as MD, DO, PA, and PT, and will give you valuable experience in working with patients and first-hand insights into our health care system. You will learn more than you can imagine about working with patients! See Prof Ewy for more questions. An informational session will be scheduled soon.
BIOL 479 – Issues in Health Care

Dr. Ewy

This is a one credit, eight-week course where you will learn about various issues facing health care providers and prepare you for your medical, PA, Veterinary, Dental, Medical, and whatever else school interview. We will cover such issues as Physician-assisted suicide, Health Care systems around the world, the Affordable Care Act, and government-financed health programs. Towards the end of the course, you will be both interviewed and interview others to prepare you for your professional program interview. Developing good interview skills is a must if you want to gain admission to a health professions program. If you are not interested in gaining admission to a Health Care Professional Program, this course is not for you. See Prof Ewy for details.

BIOL 404 – Human Anatomy and Physiology 2

Dr. Sarah Sirsat

Lecture: TuTh 11:30 – 12:45  Lab: Wednesday or Thursday, 1:15 – 4:05

Planning on going into a health professional program? MD, PA, RN, etc.? The first semester of any medical professional program will feature challenging gross anatomy, dissection, and physiology courses. But what if there was a way to get exposure to all of those topics ahead of time?! But, wait!! There is!!

Human Anatomy & Physiology II (BIOL 404) is the second half of a 2-term course (1st term is BIOL 403 offered in the fall) in which students are introduced to different levels of human life: from cells to tissues to organ systems with a special emphasis on preparation for careers in the medical field.

Organ systems are explored in detail so that students will be able to recognize and identify key structure as well as discuss function and role of those structures in respect to the human body as a whole. Throughout the course, students will be challenged to integrate all the information and systems into a holistic approach of what makes a human being and how humans work. The laboratory component of the course provides hands on experiences in physiological experiments and anatomical identification.
**BIOL 413 – Neurophysiology**  
*Dr. Jason Schreer*

It’s back!

*For those of you who haven’t had enough of my neural transmission rants or need to fulfill the Physiology requirement for the Biology BS or BA, this could be the course of your dreams…well at least we’ll study dreams, that is…*

Neurophysiology is a 4 credit lecture and lab course.

*Those of you that have already fulfilled their physiology lab requirement can opt out of the lab (contact me for an override). But even if you have taken a physiology lab, you are welcome and encouraged to take the neurophys lab as we will have many new labs on the brain and behavior.*

This course will focus on the structure and function of the nervous system including neural transmission, neurotransmitters, sensory and motor systems, the brain, behavior, and memory. Compared to my other physiology courses we will go into much more detail on how signals move through the nervous system and the different parts and functions of the brain. Additionally, we will delve deeply into several aspects of behavior including, motivation, emotion, rhythms and sleep, language, mental illness, and how we learn and remember. *Wait…what did I just say? Lecture: Tues, Thurs 9:45-11:00, Lab: Monday: 3:00-5:50 (Note: diff times for COVID).*

Note: Lecture is all virtual and Lab is Face-to-Face.

**BIOL 148 – Biodiversity Conservation**  
*Dr. Kate Cleary  MWF 10:20 - 11:10*

We all know that the Earth is losing biodiversity at a rate unprecedented in recent history, but what can we do about it? In this course, we will use the Adirondacks and the Neotropics as two contrasting case studies to explore critical challenges to biodiversity conservation, including climate change, habitat loss, invasive species, pollution, and disease. We will then look at the wide range of conservation efforts mounted by governments, communities, and non-profit organizations, and decide which approaches are the most successful at protecting biological diversity on Earth. After this class, you will be equipped with the tools and knowledge to evaluate and help improve conservation efforts in whatever ecosystem you end up calling home.

*Note: This course is Face-to-Face*
BIOL 303 – Plant Physiology

Dr. Rob Ewy

Lecture: TuTh 11:30 – 12:45  Lab: M 3:00 – 5:50

Plants are dynamic organisms that can move water up 100 meters with no moving parts and no input of energy. We will cover these and other processes unique to plants in both lecture and lab. Experimental design will be stressed as students will design and carry out their own experiments on various plant physiology topics for half the lab exercises. Prerequisites: Biol 151 or 125, and 152. General Chemistry highly recommended. Fulfills Physiology component for both BA and BS degrees.

So, how does the kelp these sea otters are lounging in off the coast of California function? How do they obtain energy, move water and other materials within their bodies? Where do they get required nutrients from and how do they use them? Are kelp plants? These and other questions will be addressed!

BIOL 310 – Marine Biology

Dr. Walt Conley

Tuesdays and Thursdays 9:45 – 11:00

Marine Biology examines the diversity and ecology of organisms that reside in our oceans, bays, and estuaries. We will examine physiological and morphological adaptations of marine life, including the specific adaptations and ecological interactions among organisms that inhabit the plankton, nekton, and benthos. We will also explore marine resources and the impact of humans on the oceans.

Note: This class is virtual only.

“When you teach you gain much more understanding of the subject at hand.”

This is a quote from an anonymous Bio TA.
**BIOL 415 – Virology**  
**Dr. Trybula**  
MWF 9:10-10:00  
Prerequisites: BIOL 151/152 and Junior-level standing

Viruses can range from relatively benign to very deadly indeed. Even as the world turns its attention to the pandemic, there are always other concerns as well. Hidden among the COVID-19 news are concerns about West Nile Virus and Eastern Equine Encephalitis, Dengue Fever and Ebola.

This course will look at what viruses are and how they infect cells. We will investigate the basics of viral infection cycles, viral medications and vaccinations, historic pandemics, and viral eradication.

And of course, we will focus deeper into Severe acute respiratory syndrome coronavirus 2, the virus behind the COVID-19 pandemic. We’ll discuss papers related to its infectivity, its spread, and hopefully by Spring 2021 we can discuss treatments and vaccines, which for all the hype, are still very early in development. Last Spring’s Virology class saw the emergence of the virus, which we tracked during each class period… until the campus went into lockdown and everything changed. Now about eight months out, there have been over 35 million cases worldwide and over one million dead. We will investigate why some people are affected harder than others. Some of this is genetics of the virus and of the people, but more worrisome are the purely socioeconomic concerns that lead to the disparity of care and deaths.

This image from [https://www.visualcapitalist.com/history-of-pandemics-deadliest/](https://www.visualcapitalist.com/history-of-pandemics-deadliest/) and tracks various pandemics through time. Please note that the exact number of deaths from the 1918 Spanish flu is highly disputed, with estimates ranging from 17 to 100 million. Also, with continued concerns that the COVID-19 numbers are severely underreported even in developed countries.
BIOL 331 - Natural History of the Higher Vertebrates (Birds & Mammals)

Dr. Johnson
Lecture: MWF 11:30 - 12:20  Lab: Tuesday 3-5:50

This course is a natural extension to BIOL 330, the Natural History of the Lower Vertebrates. While BIOL 330 is not a prerequisite, it is a useful precursor because many of the concepts in 330 are utilized again in this course. This course will devote itself to birds and mammals, including overviews of their (and our!) evolution, systematics, anatomy, physiology, ecology, and behavior. In addition to the “facts” about birds and mammals, you will be introduced to important ideas—especially in the areas of evolutionary biology, systematics, morphology, and ecology—that form the basis of our conceptual understanding of these animal groups. The general approach will be phylogenetic, tracing each group from its origins, discussing the major changes associated with its evolution, and reviewing selected elements of its current diversity and biology. Several field trips in spring are part of the course. As part of this course, I am planning on a weekend trip to Cape Cod late in the semester, which will include a Whale Watch for marine mammals and seabirds.

Male Spruce Grouse.
Photo by Jeff Nadler

Unusual hybrid mammal

Northern gannet off Cape Cod (Photo: Madison Cleveland)
Marine Biology for Summer 2021

Join the adventure! Several SUNY Potsdam students have been taking biology elective credits at our affiliate institution, the Gulf Coast Research Laboratory (GCRL) in Ocean Springs Mississippi as part of our Marine Biology Program. Courses include Marine Biology, Marine Mammals, Shark Biology, Ichthyology, and a variety of other life science courses with a marine focus. There are also research options available. Classes fill fast so please be attentive to opening dates if interested.

Here is a link to the 2021 Summer Field Program:
https://gcrl.usm.edu/summer_field/docs/2021%20SFP%20Brochure.web.pdf

For complete details, please visit the GCRL website
http://gcrl.usm.edu/summer_field/index.php

Interested students should also contact our GCRL advisor, Dr. Conley (conleywj@potsdam.edu) who will have information about COVID Guidelines at GCRL.

Dr. Conley demonstrating camouflage in the Sargassum Fish, Histrio histrio
Profile of a Recent Bio Graduate: Michael Lieto

My name is Michael Lieto and I graduated with a Bachelor of Science in Biology in 2013. Leaving High School, I knew I was good at Biology and wanted to major in it, but my initial plan was to shift towards Paleontology. However, during the fall of my junior year, I took Lower Verts and began helping Dr. Glenn Johnson with caring for the reptile and amphibian collection in Stowell. These ignited a newfound passion for living herps (reptiles + amphibians), and I began seeking every opportunity at Potsdam to learn and work more with them. I began assisting with Wood Turtle surveys and took Glenn’s Biotic Communities of Southern Florida class. During this 2-week trip throughout Florida, we learned a whole lot about the unique ecosystems found in this state, and spent plenty of time herping! We found everything from American Alligators (*Alligator mississippiensis*) to Eastern Diamond-backed Rattlesnakes (*Crotalus adamanteus*). This was an experience I will continue to cherish.

During my last two summers in Potsdam, I worked with Glenn and the NYS DEC on the Blanding’s Turtle (*Emydoidea blandingii*) recovery project. We used mark-recapture, radio telemetry, and nest protection methods to monitor the population of these turtles both in St. Lawrence and Dutchess Counties. We primarily captured turtles using hoop nets. When a Blanding’s was captured, we would scan for a pit tag (and insert one of there was none), take blood samples, and measure the body dimensions. In conjunction with this, Glenn and I performed a trap comparison study between the standard hoop nets (cumbersome in the field and expensive) and small Promar minnow traps (cheap and easy to carry). We found the smaller traps work just as effectively as the large traps, however they do not exclude by-catch. They even keep out the large Snapping Turtles that can destroy hoop nets! The techniques I learned here are invaluable for my career and I continue to use many today doing my current job.

After graduating, I volunteered at the Cold Spring Harbor Fish Hatchery for a season. There I helped care for the fish and herp collection and assist with egg collection. After struggling initially to find a job in ecology on Long Island, I worked IT in Manhattan for a film company. While I made some good money, I really missed working with animals and felt I was not doing anything to help in their conservation.

In 2014, after a field trip to the Bronx Zoo with Glenn and his current Higher Vertebrates class, I began volunteering in the Herpetology Department. This opportunity reignited the passion for herps that began at Potsdam. I would spend every one of my weekends at the zoo, getting as much experience as I could. When a part-time Assistant position opened up in Herpetology, I
immediately applied and got the job! I quit my 9-5 full time job so I can be a part of one of the oldest and most well-respected Herpetology departments in the US, even if only part time.

As an intern, I was directly responsible for the care of our live food collection. This included breeding/maintaining rodents, anoles, fruit flies, crickets, and roaches. In addition to this, I was in charge of salad prep. With a collection as large as ours, this is a very time consuming process! There was literally a huge kitchen sink full of salad that needed to be prepped and delivered first thing in the morning 3 times a week. Sometimes, I would assist the keepers in directly handling some of the animals and maintaining/setting up enclosures of my own. Obviously, this was far and away the best part of the job. I even got the chance to restrain my first moderately-sized crocodilian, a Dwarf Caiman (Paleosuchus palpebrosus)!

While I was an intern, I began Graduate School at Hofstra University under the guidance of Dr. Russel Burke. My initial goal was to earn a Master of Science in Biology and perform an island dwarfism study with Eastern Hognose Snakes (Heterodon platirhinos) and Fowler’s Toads (Anaxyrus fowleri) on Long Island. However, the populations we were looking at were simply too small for study. I switched to a Master of Arts path and published my first publication with Dr. Burke. This was an in-depth analysis of geographic distribution data collected by a premier Herpetology journal and if it is useful for tracking the spread of invasive species.

In 2017, halfway through my graduate school career, my hard work at the zoo finally paid off. After 3 years of being an assistant, I was offered a job as a Full-time Keeper in Herpetology, and I couldn’t be more excited and proud. I was now directly responsible for the health and well-being of many animals in our huge and diverse collection, and I really cannot describe how much hands-on experience I gained from this point forward. I personally manage all of my animal’s habitats, diets, enrichment, training, and even lend a hand with several conservation projects we have at the zoo (most of these are breeding projects to ensure a captive population of endangered species). Being stepped up to a keeper allowed me to begin working with venomous snakes and crocodiles, and today I am the lead keeper for our Indian Gharial (Gavialis gangeticus) training regimes and I have a whole section full of venomous snakes.

Besides training to properly handle venomous snakes, we have the opportunity to travel in our department. I was able to attend both the Association of Zoos and Aquariums (AZA)’s Crocodilian Biology and Professional Management School and Amphibian Management Schools in 2018 and 2019, respectively. There I learned many aspects of crocodilian and amphibian biology and took part in training classes/groups to fine tune our husbandry skills. My favorite part of all of this was Capture and Restraint day at the end of Croc School. We literally spent the entire day catching up a variety of crocodilian species, including a 13-foot Alligator!

Being a zookeeper for 3 and a half years now, there are still rarely 2 days that are alike, there is always something new going on, or something to change things up, and I am always on my feet. Being an active person, this is the ideal job for me. Yes, some days are very hard and it is not easy, but I really do love what I am doing and am proud to be where I am. Being a keeper in the Bronx
Zoo’s Reptile Department really is a dream come true. To walk the same floors as legends like Raymond Ditmars (first curator of Herps at the Zoo) is truly something special. I would never have gotten here had it not been for my start in Potsdam, and I really love it for beginning this life journey.

Currently, I live in Westchester with my girlfriend (also a SUNY Potsdam Biology Graduate!) and my Corn Snake Hodor. When I’m not at the zoo, I sometimes co-host a Progressive Rock radio show, play drums, go herping, or play video games with my friends. I look forward to continuing to expand my knowledge in Herpetology here at the Zoo and to further pursue a life actively working to conserve the species all around us. Most reptile and amphibian taxa are, let’s face it, not well appreciated or liked by many people. I hope that what I am doing will help to change this view and also aid in saving the species I find so fascinating.

Environmental Club

The Environmental Club is meeting virtually this semester on Mondays at 5:30.

Send an email to get added to their list and receive info about meetings and events: potsdamenvironmentalclub@gmail.com

President: Krystyna Matunis (matunik203@potsdam.edu)
Vice President: James Mcspedon (mcspedip201@potsdam.edu)
Treasurer: Chynna Tomastyk (tomastc201@potsdam.edu)
Personal Relations: Abby Shampine (shampiam202@potsdam.edu)
Secretary: Joshua Kim (kimj201@potsdam.edu)
WISER Center News

The Wagner Institute for Sustainability and Ecological Research (WISER) Center is located at 205 Stowell Hall in the Biology Department. The Center’s classroom and greenhouses support activities and demonstrations for classes, labs, courses and programs in Biology, Chemistry, Anthropology, Education and Public Health and Human Performance.

The center is run by the WISER Staff comprising, volunteers, interns and research students who do amazing things for the campus, surrounding community and the globe! The WISER Staff grows food for the campus Dining Services in the PACES CSA program. They educate plant owners and help green the campus through the Health Plant Initiative, fight hunger with food from the Cecilie Garden, help improve health and mindfulness with Yoga in the Greenhouse and improve education by using Tower Gardens and the curriculum from the Green Bronx Machine to support teachers in our North Country Food and Nutritional Education program.

Even if you aren’t a member of our WISER Staff, we hope you will visit the public greenhouse, accessed via Stowell 205. Feel free to ask questions of staff members or else learn more by emailing wiser@potsdam.edu or contacting Ray Bowdish via email, bowdisrp@potsdam.edu.
WISER Internship Guide

The Wagner Institute for Sustainability and Ecological Research (WISER) Center is located in 205 Stowell Hall. As a WISER Intern you’ll learn skills through experiences like event planning, urban farming and creating a culture of sustainability on campus! Most Center activities focus on growing a wide variety of plant life but also include composting, recycling, service learning and wellness activities like yoga and meditation! Interns are an integral part of the WISER Staff, a collection of student volunteers, interns and researchers and some community volunteers as well. Working at the WISER Center is a great way to learn about our campus, the local community and the globe and enrich your understanding of issues around sustainability and ecology. Choose from the following internship opportunities.

- **General Intern (1-2 credits)** – This entry-level internship is a prerequisite* for all other job descriptions. Supports the maintenance of all programs and facilities in the WISER Center and for departments it serves.

- **Plant Doctor (2-4 credits)** – Supports the Healthy Plant Initiative to increase number and health of plants on campus.

- **Urban Farmer (3-6 credits)** – Grows food crops for the PACES/WISER, Community Supported Agriculture (CSA) program to be used in campus dining services or donated to local food pantries.

- **Wellness Intern (1-3 credits)** – Works on programs that promote mental and physical wellness for the campus and surrounding community. The title can be shared with emphasis going to either mental or physical wellness outcomes, with the understanding that they are intimately related.

- **Community Farmer (4-6 credits)** – Works in the summer in The Cecilie Garden with local non-profits to grow food to increase local food security. This internship can serve as a course substitution for Environmental Studies 391.

- **Assistant Coordinator (3-6 credits)** – Experienced intern helps schedule, train and work with other interns in the WISER Center staff. Intern works closely with the Center Coordinator to plan and implement events and programs, run weekly meetings and create weekly reports on WISER Center activities.

- **Campus Beekeeper (1-3 credits)** – Interns assist, or lead activities and tasks required to maintain the campus apiary.

*Prerequisites can be waived by the WISER Center Coordinator based on prior learning experiences.
Getting Started as a WISER Intern

We follow the internship process required by the Experiential Education Office (EEO). Your first step is to meet the WISER Coordinator. Arrange an appointment via email at wiser@potsdam.edu.

1. First click here to see if you qualify.
2. If you qualify, schedule an appointment with the WISER Coordinator by emailing, wiser@potsdam.edu.
3. At the meeting you and the coordinator will determine which of the internship job descriptions best fit your goals. The WISER Coordinator will email you a copy an Internship Proposal Template appropriate to the job description you selected.
4. After editing your Internship Proposal Template, attach it to an email to the WISER Coordinator for preapproval. This step may repeat depending on how complete your Internship Proposal is.
5. Once you have preapproval from the WISER Coordinator you need apply for full approval for academic credit. Full instructions are here.

Off Campus Internship Opportunity

Study Horticulture at Never Tire Farm

Each Spring in Lisbon NY, Never Tire Farm seeks motivated students for a unique and valuable experience, working in a modern greenhouse operation. Students that qualify for the internship will be actively learning about all aspects of greenhouse production including sowing, transplanting, fertilizing, watering and propagation of various annuals, perennials, vegetables and herbs. Interns learn about the business of growing plants and will be exposed to maintenance and labor issues facing modern growers. Qualifying interns should have experience as a WISER intern and be trained in Integrated Pest Management (IPM) techniques and participate in the Never Tire Farm’s biological control program. Talk to Ray Bowdish about this opportunity.
Health Professions

If you have not done so, enroll in the "Health Professions" Moodle Course. Send Prof Ewy an email: ewyrg@potsdam.edu and include the following information:

Your name
What career you want to pursue (dental, medicine, veterinary, etc.)
Your year classification (1st, 2nd, 3rd, 4th)

Preparing for MCATs or another exam that will test your Biology knowledge? The best way to really know Biology is to teach it! The Department is looking for TAs to help with Biology 152 labs. This is an excellent way to review your Biology and help out the Intro class.

Committee Letters of Recommendation

Applying to Medical School (or any other program that requires a committee letter) for the upcoming cycle? HPAC interviews will be done in March or early April. Please have your letters of recommendation to Prof Ewy by the first of March. For more information, contact Prof Ewy.

WORK STUDY

If you are interested in and eligible for the federal work study program please see either Rachel Wallace (wallacrm@potsdam.edu, Ph 267-4814), or the department secretary, Marta Whalen (whalenmm@potsdam.edu, Ph 267-2264). Responsibilities include laboratory setup and cleanup, plant and animal care and a variety of secretarial work.

TEACHING ASSISTANTSHIPS

See the world from our side. Most professors are looking for motivated students to be teacher assistants for their courses. This is a great way to get some teaching experience and an opportunity to work more closely with one of your profs. This also counts as a 1 credit upper division bio course. Contact your Profs before the end of the semester if you are interested and see some possibilities below.

Preparing for MCATs or another exam that will test your Biology knowledge? The best way to really know Biology is to teach it! The Department is looking for TAs to help with Biology 152 labs. This is an excellent way to review your Biology and help out the Intro class.

As a lab TA you will be helping to prepare and teach the General Biology II labs. This is a great way to reinforce your knowledge and to learn how things are done “behind the scenes” of lab. Upon successful completion of a TA position, students earn 1 credit and no monetary compensation.
Teaching assistants for **General Biology Labs**

If you would like to gain some teaching experience and encourage first year Biology students, this is a good opportunity. It is also useful for those students going on to graduate school or to teaching careers. This course, Biology laboratory techniques, counts as a 1 credit upper division biology course. You must have successfully (3.0 or higher) completed Biology 151 lecture and lab. If interested contact Pat Burdick; burdicpc@potsdam.edu or Jan Trybula; trybulj@potsdam.edu

**Biology Laboratory Techniques; BIOL 475, sec 0001; CRN 91157**

---

**Teaching Assistant Opportunities** The department has a number of teaching assistant positions available this coming spring. **Biology 100 needs four TAs,** Contact Dr. Ewy or Dr. Trybula if you are interested in being a TA for Biology 100 (the non-majors will appreciate your help). We are particularly interested in someone who can help set up the 4 two-hour sections of Biology 100 labs which meet on Thursdays. The Biology 100 lab can be set up anytime during the week, so you can easily fit it into your schedule. This is an excellent way to review your introductory Biology, learn some teaching techniques, have some fun, and earn 1 hour of credit.

**BIOL 311 – up to 3 Teaching Assistants for Genetics labs**

Labs: Tuesday 9:00-11:50a.m., Tuesday 2:00-4:50p.m., Wednesday 2:00-4:50p.m.
Pre-requisite: BIOL 311 lab or permission of instructor

Teaching Assistants needed for three lab sections. Duties include lab prep, lab breakdown, and attending one of the lab sections to assist the instructor and students. It is preferred that TA applicants have prior experience working with chemicals (e.g. CHEM 105) and willingness to learn lab and chemical safety regulations.

---

Rainy Adirondack FIG Field Trip to the Upper Works at Tahawus with Paul Hai from SUNY ESF
Beta Beta Beta (TriBeta) is a society for students, particularly undergraduates, dedicated to improving the understanding and appreciation of biological study and extending boundaries of human knowledge through scientific research. Since its founding in 1922, more than 200,000 persons have been accepted into lifetime membership, and more than 670 chapters have been established throughout the United States and Puerto Rico.

New member candidates are invited to join BBB every year. Invitations are sent out in March and a new member induction ceremony is in late April.

The membership shall be divided into six classes: regular, associate, graduate, honorary, alumna/us and corporate. Beta Beta Beta is a non-discriminating organization that does not consider age, race, color, creed, sex, national origin or sexual preference.

Regular members shall be:
 a) Undergraduate biology majors (BS or BA) at SUNY Potsdam.
 b) Shall have completed at least 3 semesters of a four-year curriculum.
 c) Shall have completed at least three term courses in biology (BIOL), of which at least one must be upper division (300 or 400 level), with an average 3.25 GPA in those biology courses.
 d) Shall have a 3.25 GPA in all courses, and in good academic standing

**Only regular members may hold the constitutionally specified chapter offices, vote on chapter membership nominations and national questions, and represent the chapter or vote at national conventions.**

Associate members shall:
 a) Shall have completed at least 3 semesters of a four-year curriculum.
 b) Shall have completed at least three term courses in biology (BIOL), of which at least one must be upper division (300 or 400 level), with an average 3.25 GPA in those biology courses.
 c) Shall have a 3.25 GPA in all courses, and in good academic standing.

Any questions about BBB membership should be sent to the advisor Dr. Snyder snyderrl@potsdam.edu
### Potential New Major in Environmental Science!

**Notice:** Faculty in Biology, Geology, Physics, Chemistry and Environmental Studies are developing a brand-new Major in Environmental Science. Our hope is that this effort will be completed and be on the books by **Fall 2021**. Current students interested in exploring this exciting proposed major, email or stop by and chat with Drs Johnson, Rygel and/or Rogers to hear more!

**Beginning Fall 2015, the Environmental Science Minor was revised** in an effort to shift the focus of the Environmental Science Minor to the natural sciences in order to give students the knowledge and technical skills they need to get jobs in the environmental science sector. The number of credits is largely unchanged, and the number of uncounted prerequisite courses has been greatly decreased. Most scientists who focus on environmental issues end up functioning primarily as either biologists (plants, animals, and ecosystems) or geologists (water, soil, and pollution); a minor that gives them interdisciplinary training will improve their marketability. Common tasks like wetland delineation can be done more effectively by a biologist if they have had a few classes on soil and water; geologists can do it more effectively if they have had formal coursework on ecology and plant biology. See it below!

#### Revised Environmental Science Minor (24 credits)

<table>
<thead>
<tr>
<th>Level</th>
<th>Course</th>
<th>Credits</th>
<th>Required for:</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required courses: 6 credits</td>
<td>ENVR 110: Introduction to Environmental Studies</td>
<td>3</td>
<td>all</td>
<td>none</td>
</tr>
<tr>
<td>Choose one</td>
<td>CHEM 301: Fundamentals of Environmental Science</td>
<td>3</td>
<td>All majors except GEOL and BIOL</td>
<td>one semester of college-level science</td>
</tr>
<tr>
<td></td>
<td>PHYS 325: Energy and the Environment</td>
<td>3</td>
<td>GEOL and BIOL majors</td>
<td>one semester of college-level science</td>
</tr>
<tr>
<td>Prerequisite courses: 3-4 credits for BIOL/GEOL majors, 7 credits for others</td>
<td>GEOL 101: Environmental Geology</td>
<td>3</td>
<td>non-GEOL majors</td>
<td>none</td>
</tr>
<tr>
<td></td>
<td>BIOL 152: General Biology II</td>
<td>4</td>
<td>non-BIOL majors</td>
<td>none</td>
</tr>
<tr>
<td>BIOL 300: Ecology + Lab</td>
<td>4</td>
<td>non-BIOL majors</td>
<td>BIOL 152</td>
<td></td>
</tr>
<tr>
<td>BIOL 312: Insect Ecology</td>
<td>4</td>
<td></td>
<td>BIOL 152</td>
<td></td>
</tr>
<tr>
<td>BIOL 326: Morphology of Higher Land Plants</td>
<td>3</td>
<td></td>
<td>BIOL 152</td>
<td></td>
</tr>
<tr>
<td>BIOL 330: Natural History of Lower Vertebrates</td>
<td>4</td>
<td></td>
<td>BIOL 152</td>
<td></td>
</tr>
<tr>
<td>BIOL 331: Natural History of Higher Vertebrates</td>
<td>4</td>
<td></td>
<td>BIOL 152</td>
<td></td>
</tr>
<tr>
<td>BIOL 334: Biology of Woody Plants</td>
<td>3</td>
<td></td>
<td>BIOL 152</td>
<td></td>
</tr>
<tr>
<td>BIOL 355: Invertebrate Biology</td>
<td>4</td>
<td></td>
<td>BIOL 152</td>
<td></td>
</tr>
<tr>
<td>BIOL 402: Conservation Biology</td>
<td>3</td>
<td></td>
<td>BIOL 300 or permission of instructor</td>
<td></td>
</tr>
<tr>
<td>CHEM 311: Quantitative Analysis</td>
<td>4</td>
<td></td>
<td>CHEM 106</td>
<td></td>
</tr>
<tr>
<td>GEOL 340: Geographic Information Systems</td>
<td>4</td>
<td></td>
<td>Sophomore standing</td>
<td></td>
</tr>
<tr>
<td>GEOL 310: Hydrology and Hydrogeology</td>
<td>4</td>
<td>non-GEOL majors</td>
<td>100-level geology class + either CHEM 105 or MATH 125 or MATH 151 or STAT 100</td>
<td></td>
</tr>
<tr>
<td>GEOL 406: Geomorphology</td>
<td>4</td>
<td></td>
<td>100-level geology class + junior standing</td>
<td></td>
</tr>
<tr>
<td>PHYS 330: Meteorology</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONS 314: Soil Mechanics (SUNY Canton)</td>
<td>3</td>
<td></td>
<td>GEOL 101</td>
<td></td>
</tr>
<tr>
<td>CONS 386: Water Quality (SUNY Canton)</td>
<td>4</td>
<td></td>
<td>GEOL 310</td>
<td></td>
</tr>
</tbody>
</table>
INTERNSHIPS

Biology Department Applied Learning Opportunities

Wagner Institute for Sustainability and Agricultural Research (WISER) Internship, in the Biology Department at SUNY Potsdam

You get to:

- Manage the Healthy Plant Initiative (HPI) program
- Grow microgreens for PACES
- Help Develop our campus composting initiative
- Learn horticultural technique
- Practice Integrated Pest Management
- Report your achievements to the campus at the Learning and Research Fair
Care and Handling of Display Animals in the Biology Department at SUNY Potsdam

Help care for animals (amphibians, reptiles and fish) in the department

Create learning materials and provide outreach to help others discover the animals in the department

Report your work to the campus at the Learning and Research Fair

Please see Dr. Johnson or Rachel Wallace about Animal Room or Diversity House opportunities

Biology Technician Internship Techniques in the Biology Department at SUNY Potsdam

You get to:
  o Help create and maintain chemical inventory lists
  o Learn to prepare lab materials for biology labs
  o Develop skills in lab instrument care and maintenance
  o Maintain the lab materials inventory
  o Learn various lab protocols and skills for working in a biology research lab
  o Get trained in chemical safety.

Please see Rachel Wallace about opportunities
RESEARCH WITH PROFS

**Dr. Glenn Johnson – Conservation of Threatened Species**
231 Timerman Hall, 267-2710, johnsong@potsdam.edu

I have a new project initiated last spring during the beginning of the pandemic that brings many years of research on the conservation of the threatened Blanding’s Turtle to the applied management stage. Perhaps the biggest threat to this species in the North Country, which is a stronghold in New York, is the high mortality to both adult and offspring during the annual nesting season. Females often have to cross roads to get to favored nesting areas (direct mortality threat), or they nest in row crop fields, which look great early in the season (open sites exposed to the sun), but become ecological traps as the corn grows and shades the site, resulting in much reduced nest success (indirect mortality threat). Because predation on nests is so high (90%), this species needs every opportunity for a successful nest just to replace themselves in a long lifetime of breeding. So, we are constructing large potential nesting areas where turtles do not have to cross roads AND that are maintained as open sandy places protected from nest predators by electric fences. To determine success, we are also trapping and tracking many turtles of multiple species and tracking their movements with radiotelemetry and GPS systems. If this sounds interesting to you, please contact Dr. Johnson for details about participating.
**Robert Ewy - Research experience on environmental effects on plants**

The two primary projects in my lab are sustainable energy production and herbal medicines, both from shrub willow. This fall, 5000 willow plants will be harvested, yields determined, and the biomass turned into pellets. Yes, you can get research credit for making energy! If you are at all interested in graduate school, research experience during your undergraduate education is becoming a must. But the most important point is that research is fun! I work with all levels of students, from first year students to seniors. The only requirements to work in my lab are curiosity, a willingness to solve problems, and the desire to learn outside of a book.

Surface roots in tropical rain forest, Belize, Central America

You can earn research credit via Biology 485 or an internship.

**Dr. Rob Snyder**

Dr. Rob Snyder

Interested in independent research? I’m looking for one or two students to sample overwintering insect populations during the Spring 2020 semester. Stop by my office (307 Stowell) if you want to learn more about this opportunity. [http://www2.potsdam.edu/snyderr1/](http://www2.potsdam.edu/snyderr1/)

*Teton pass Wyoming*
Dr. Jan Trybula  Molecular Ecotoxicology & Population Genetics

My research involves studying molecular ecotoxicology. That is a fancy way of saying using molecular techniques of DNA or protein genetics to study how pollutants in the environment disrupt the genetics and health of populations of organisms. I primarily work with *Drosophila* in lab exposure tests and emergent aquatic insects in the field under natural and anthropogenic stressors.

Students in my lab examine a wide variety of ways to determine genetic damage and loss of genetic diversity caused by a wide variety of pollutants. We exam chromosome damage, DNA microsatellite genetic markers, and variation in expressed proteins.


---

Dr. Jessica Rogers - Purple Loosestrife Biological Control Research Project

Assistant Professor Dr. Jessica Rogers worked with two student research interns, Angus Armstrong, SUNY Potsdam ’21, and Sage Richards, SLU ‘21, over the summer to document infestations of invasive plant species on a new part of St. Lawrence County, using cloud-based data collection. This was the 4th summer of research on this topic. Rogers teaches in SUNY Potsdam’s Departments of Geology/GIS and Environmental Studies. She and her students traveled to examine and record the presence of several types of invasive plant species in an area stretching from South Colton to Massena and Waddington, expanding the previous route by 66 miles. Rogers’ research is funded in part by a grant from the Walker Fellowship, and St. Lawrence River Research and Education Fund. In 2019, Rogers and her interns began to construct a beetle hatchery at SUNY Potsdam, propagating nearly 6000 beetles from an initial population of about 90. They were released to help control the purple loosestrife in the largest infestations.

Following the successful first four years of the project, at several locations, Dr. Rogers and her team introduced *Galerucella* beetles, a known biological control for loosestrife. This research will continue during Summer 2021, beginning in June, where the beetles will be monitored, and a larger hatchery will be constructed. Students potentially interested in this research project are encouraged to reach out to Dr. Rogers (rogersje@potsdam.edu) to work for credit during the Spring semester, or apply for a paid internship during the summer – applications accepted in March, 2021.
Due to COVID Restrictions, travel to Belize is not possible this coming 2021 Winterim...BUT plans are afoot to offer this course the following year!

Tropical Ecology and Conservation
(BIOL 352, 3 upper division credits! Prerequisites BIOL 300 OR permission of instructor!)

Travel to Belize

Please see Dr. Johnson in 231 Timerman to sign up AND leave message at johnsong@potsdam.edu

This course involves a trip over Winterim 2021-22 to a variety of field sites across Belize, including a Mayan Ruin, a remote Biological Field Station in the Maya Mountain rainforests and several days on a Caribbean island. If you are interested in this course, you will need to register by early September and attend several meetings prior to the official start of Winterim. Check out this website for information about the BFREE Bio Station: http://www.bfreebz.org
**Requirements for Graduation**

**Biology (BS)**

Name: ______________________________________

Student ID No: _________________________________

Expected Graduation Date: ______________________

<table>
<thead>
<tr>
<th>REQUIRED BIOLOGY COURSES (23 hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course</td>
</tr>
<tr>
<td>151</td>
</tr>
<tr>
<td>151</td>
</tr>
<tr>
<td>152</td>
</tr>
<tr>
<td>152</td>
</tr>
<tr>
<td>300</td>
</tr>
<tr>
<td>300</td>
</tr>
<tr>
<td>311</td>
</tr>
<tr>
<td>311</td>
</tr>
<tr>
<td>483</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>REQUIRED CHEMISTRY COURSES (12 hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course</td>
</tr>
<tr>
<td>105</td>
</tr>
<tr>
<td>105</td>
</tr>
<tr>
<td>106</td>
</tr>
<tr>
<td>106</td>
</tr>
<tr>
<td>341</td>
</tr>
<tr>
<td>341</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>REQUIRED PHYSICS COURSES (8 hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course</td>
</tr>
<tr>
<td>101</td>
</tr>
<tr>
<td>202</td>
</tr>
<tr>
<td>103</td>
</tr>
<tr>
<td>104</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>REQUIRED MATH COURSES (7-8 hours) (Two Semesters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course</td>
</tr>
<tr>
<td>151</td>
</tr>
<tr>
<td>125</td>
</tr>
<tr>
<td>100</td>
</tr>
<tr>
<td>151</td>
</tr>
<tr>
<td>152</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BIOLOGY ELECTIVES (16 hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course</td>
</tr>
</tbody>
</table>

*CHEM 342 (Organic Chemistry II) is highly recommended for Biology Majors seeking careers in health sciences, molecular biology, or physiology.

*MATH 151 and 152 (Calculus I and II) are co requisites for the University Physics sequence.

*Ecology is only offered in the Fall semester.

*Genetics is only offered in the Spring semester.

**Must have a 2.0 GPA or higher in all major courses.**
## Requirements for Graduation

### Biology (BA)

<table>
<thead>
<tr>
<th>Name: ____________________________</th>
<th>Required Biology Courses: 22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student ID No: ____________________</td>
<td>Biology Electives: 14</td>
</tr>
<tr>
<td>Expected Graduation Date: _________</td>
<td>Chemistry Courses: 12</td>
</tr>
<tr>
<td></td>
<td>Total Hours Required: 48</td>
</tr>
</tbody>
</table>

#### REQUIRED BIOLOGY COURSES

(22 hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>151</td>
<td>Biology I Lecture</td>
<td>3</td>
<td>______</td>
</tr>
<tr>
<td>151</td>
<td>Biology I Lab</td>
<td>1</td>
<td>______</td>
</tr>
<tr>
<td>152</td>
<td>Biology II Lecture</td>
<td>3</td>
<td>______</td>
</tr>
<tr>
<td>152</td>
<td>Biology II Lab</td>
<td>1</td>
<td>______</td>
</tr>
<tr>
<td>300</td>
<td>Ecology Lecture</td>
<td>3</td>
<td>______</td>
</tr>
<tr>
<td>300</td>
<td>Ecology Lab</td>
<td>1</td>
<td>______</td>
</tr>
<tr>
<td>311</td>
<td>Genetics Lecture</td>
<td>3</td>
<td>______</td>
</tr>
<tr>
<td>311</td>
<td>Genetics Lab</td>
<td>1</td>
<td>______</td>
</tr>
<tr>
<td></td>
<td>Physiology Lecture</td>
<td>3</td>
<td>______</td>
</tr>
<tr>
<td></td>
<td>Physiology Lab</td>
<td>1</td>
<td>______</td>
</tr>
<tr>
<td>483</td>
<td>Current Topics</td>
<td>3</td>
<td>______</td>
</tr>
</tbody>
</table>

#### REQUIRED CHEMISTRY COURSES

(12 hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>105</td>
<td>General Chemistry I</td>
<td>3</td>
<td>______</td>
</tr>
<tr>
<td>105</td>
<td>General Chemistry I Lab</td>
<td>1</td>
<td>______</td>
</tr>
<tr>
<td>106</td>
<td>General Chemistry II</td>
<td>3</td>
<td>______</td>
</tr>
<tr>
<td>106</td>
<td>General Chemistry II Lab</td>
<td>1</td>
<td>______</td>
</tr>
<tr>
<td>341</td>
<td>Organic Chemistry I</td>
<td>3</td>
<td>______</td>
</tr>
<tr>
<td>341</td>
<td>Organic Chemistry I Lab</td>
<td>1</td>
<td>______</td>
</tr>
</tbody>
</table>

#### BIOLOGY ELECTIVES

(14 hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
<th>Grade</th>
</tr>
</thead>
</table>

* Ecology is only offered in the Fall semester.

* Genetics is only offered in the Spring semester.

**Must have a 2.0 GPA or higher in all major courses.**
# BIOLOGY SPECIALIZATION REQUIREMENTS

**Biology Required Courses (13-15 hours)**

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Title</th>
<th>Hrs.</th>
<th>Grade</th>
<th>Course Number</th>
<th>Title</th>
<th>Hrs</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>125</td>
<td>Biological Concepts</td>
<td>3</td>
<td></td>
<td>300+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>125L</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>152</td>
<td>Biology II</td>
<td>3</td>
<td>300+</td>
<td>300+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>152</td>
<td>Biology II Lab</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>300</td>
<td>Ecology</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>300</td>
<td>Fall Only</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>300</td>
<td>Ecology Lab (Optional)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>311</td>
<td>Genetics</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>311</td>
<td>Spring Only</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>311</td>
<td>Genetics Lab (optional)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**College requirements are 16 hours in the Specialization. This does not include the hours for Biology 125 (or equivalent). All electives after the first-year sequence must be 300 or higher.**