**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.

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 16. The spring schedule will be available online this day. Registration begins:

- Seniors – November 8
- Juniors – November 12
- Sophomores – November 13
- Freshmen – November 14-15

Students may adjust their schedules on BearPAWS until midnight, Sunday, Jan. 26th, 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 insureing that you receive an advisor who understands our program.
TRANSITIONS – NEW DEVELOPMENTS IN THE BIOLOGY DEPARTMENT

Please welcome Douglas Carlson, Research Associate, to the Biology Department. He writes:

I joined the Biology Department as an Adjunct or Research Associate after retiring from the New York State Department of Environmental Conservation (NYSDEC) in July. For now, I will continue writing about conservation of rare fish of New York and gathering records about fish from Potsdam Flow of the Raquette. The last several years with NYSDEC led to the Atlas of Inland Fishes of New York that was published by the NYS Museum, and I was also part of the recovery programs with threatened or endangered shiners, darters, lake sturgeon and the summer sucker. Stream fishes have been my favorite subjects, and their distribution and patterns of change across New York has been an enduring theme.

My college history included Iowa State Univ. and then Cornell Univ. with a MS. I still have farm ground in western Iowa where I was a kid crossing the acres of corn ground to get to the nearby Missouri River. That introduction to fish and waterways was probably responsible for my path to this career. My wife Carolyn and I have passed our knowledge along to our three children who became scientists working in MN, LA and CA. There are three granddaughters that get lots of notes and fish stories from us as long-distance travelers.

I look forward to developing connections with biology programs and students here in Potsdam. Museum specimens are part of my job history and I like handling those creatures best while they are still alive. My pathways into the Department are just beginning to take shape, as I continue to work remotely and travel from Watertown several times a month.
POTSDAM PATHWAYS

Beginning in Fall 2020, SUNY Potsdam will begin the process of transitioning away from the old General Education Program and begin moving toward a new one called Potsdam Pathways. 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 piloted this coming spring. Ray Bowdish has one called:

“Food Fight!: Food security and food sovereignty” – Ray Bowdish (FC)
Who eats and who doesn’t? Who creates the food and who consumes it? Who controls who eats? Why does cheap food create expensive medical bills? Food Fight! will investigate possible answers to these questions and give students the chance to critically examine the subject of food and its distribution through the media and research around food systems.

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

“Roots of Environmentalism” - Jessica Rogers (FW) 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

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

“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: Currents Topics – Climate Change and Aquatic Communities - SI**

*Dr. Walter Conley* Tuesday/Thursday 9:30 – 10:45 am

This current topic offering is designed to explore the most important environmental issue of our time, climate change. We will use marine ecosystems to explore the impacts of climate change. Marine ecosystems are largest on the planet and ocean circulation is the engine that drives climate. Although the focus will be on marine, we will also include information from lake and river systems as appropriate, with a focus on the Great Lakes.

**BIOL 483 – Current Topics – Insect Biodiversity and Conservation - SI**

*Dr. Rob Snyder* Wednesday 1-3:30PM

Insect populations are declining on a global scale. This Current Topics will address what we know about insect abundance and diversity, as well as, why we should care and what is being done to conserve insects and the ecosystem functions they provide. We will read and discussion current and seminal “papers” on Insect Ecology and Conservation, highlighting recent observations of regional population declines and the global predictions of “Insect Armageddon”. Guided by these readings, students will pick a focused topic for research and present at the end of the semester.
BIOL 479 – Issues in Health Care

Dr. Ewy

MF 1200PM–1250PM; 01/29/19–03/25/19

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, 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. Jason Schreer

Most graduate programs in the health fields require a two-term, upper division, human anatomy and physiology course with labs. Well here is the 2nd term! And as a bonus, this second term of this course counts as the physiology requirement for the bio major. If you already have the phys requirement, you get 4 credits of biology electives.

You do need A&P 1 from here or somewhere else to get into this course. As well as an intro biology sequence.

This second term of A&P will cover the muscular system, cardiovascular system, lymph system, immune system, respiratory system, digestive system, nutrition, metabolism, temperature regulation, urinary system, osmotic balance, and reproductive system. In the lab, we will alternate between detailed dissections of the rabbit and physiological experiments related to the system covered in the dissections. This course will be very demanding, but we'll all learn a ton and you'll be thanking me when you take your gross anatomy course in graduate school. And by the way, gross anatomy is a serious weed-out course so the more prepared you are ahead of time, the better.

TA for Biol 404 – Human Anatomy and Physiology 2

Dr. Schreer

Looking for a quick upper division credit and something to improve your résumé? I'm looking for TAs for A&P 2. If you already took A&P and did well and are interested in being exposed to the best way to learn…that is, to teach, contact me at schreejf@potsdam.edu or stop by my office T, Th 12:30-1:00 or any time I'm in.

Note: Dr. Schreer is also offering Human Biology (BIOL 107) over Winterim…pass it on to friends in need of an SB Gen Ed course!!!
BIOL 440 – Comparative Animal Physiology

Dr. Sarah Sirsat

Lecture: Tuesdays and Thursdays 11:00 – 12:15
Lab: Mondays 2:00 – 4:50

Prerequisites: BIOL 311 & CHEM 341

“For such a large number of problems there will be some animal of choice, or a few such animals, on which it can be most conveniently studied.” – August Krogh

Comparative Animal Physiology will explore how animals function - how they breathe, whether it be in water or in air; how they circulate their blood and how this facilitates the transport of respiratory gases, heat, nutrients, waste products, etc.; how they exchange energy with their environment and how this affects their body temperature; how they excrete; and how these phenomena are coordinated. As a comparative course, the topics will not be limited to humans, mammals, or even vertebrates. For example, we will explore how insects, fish and birds breathe, how some frogs survive freezing, and how an alligator heart is similar in function to the heart of a neonatal mammal. In short, we will be comparing structures and functions in a variety of animals to arrive at a better understanding of how animals have adapted to live and work in the diversity of environments found on Earth.

The required laboratory component will serve as an opportunity continuing lecture discussions and for hands on learning with conduction of experiments utilizing a variety of species where students will have the opportunities to learn how metabolic rates are measured, temperature affects physiological processes, nerves fire and muscles contract, and much more from specimens ranging across numerous classes.
BIOL 111 – Biodiversity Conservation
Dr. Kate Cleary

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.

BIOL 303 – Plant Physiology
Dr. Rob Ewy

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 385 – Guided Biology Research
Dr. Rob Snyder

This is an upper-level biology course meant to help you develop your research skills. Students will meet together weekly to learn and practice how to: do statistics, read primary literature, write a research proposal, and give a presentation. There will be a focus during group sessions on how to use SPSS to explore data, make tables, and perform advanced statistics such as: ANOVA, ANCOVA, GLM, Multiple Regression, and Power Analysis. Early in the course, students will take a tour of the labs of participating faculty mentors doing research on cell biology, physiology, behavior, and ecology. Once students have identified, and been accepted by, a faculty mentor they will develop a project and work in that person’s lab for about four hours a week as well as participating in the weekly interdisciplinary group. You don’t have to have a particular research project in mind when you sign up for Biol 385, we’ll help you figure that out.

Wednesday evenings 4-7PM plus individually arranged lab times. Prerequisites: Ecology (Biol 300) and an overall GPA > 3.0
BIOL 310 – Marine Biology
Dr. Walt Conley
Tuesdays and Thursdays 11:00 – 12:15

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.

BIOL 415 – Virology
Dr. Trybula
MWF 1:00-1:50 Pre-requisites: BIOL 151/152 and Junior-level standing

Viruses can range from relatively benign like the common cold virus to very deadly indeed. Currently, hidden amongst the political headlines is information about Ebola, EEE, and others.

Researchers have traced viral outbreaks back to 1901 and have discovered that 3-4 new human viruses are detected every year. Some of them are deadly, as Ebola virus shows us. Other viruses are always among us but occasionally make the jump from an animal host to humans, such as we are seeing this year with EEE, Eastern Equine Encephalitis, that is jumping from horses, deer, and other hooved animals to humans by mosquitoes. Although illnesses are rare, the death rate is high for those who do get sick. Another concern is the potential emergence of vaccine-resistant strains of some classic viruses. If predictions pan out, it paints a very scary picture for future treatment of viruses.

This course will help you understand the biology of viruses, their classification, their reproduction, their use as tools in molecular biology, antiviral medications, and more.

https://s.abcnews.com/images/GMA/190927_gma_ashton_hpMain_16x9_992.jpg
BIOL 331 - Natural History of the Higher Vertebrates (Birds & Mammals)

Dr. Johnson
Lecture: MWF 11 - 11:50 Lab: Tuesday 2-4:50

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)
BIOL 355 – Conservation and Wildlife Management – 3 Credits

Dr. Johnson
MWF 900AM– 950AM STW–HL0103

Conservation biology is relatively new as an intellectual endeavor in biology. The central goal of this science is to maintain the planet’s biological diversity. It attempts to apply scientific principles to understanding and solving the problems facing most of the Earth’s ecosystems and species. It is both derived from and nested within such areas of biological science as ecology, wildlife and fisheries management, zoology and botany and draws heavily on expertise from physiologists, microbiologists, molecular biologists and population geneticists. It contains elements of many other disciplines including economics, political science, biogeochemistry, public health law, veterinary science, sociology and environmental engineering. Indeed, the question may be what is not within the domain of Conservation Biology?

Releasing spruce grouse captured in Ontario into the Adirondacks to augment bolster (and increase the genetic diversity of) NY populations of this endangered species. Photo: Jason Hunter.

Note that the course name has changed from Conservation Biology to Conservation and Wildlife Management. While the content will be similar, this was done so that the course is now eligible for inclusion as a required course for Biologist positions with the New York State Department of Environmental Conservation.
What is Dr. Rhoads up to?

I wanted to let everyone know that I will not be on campus in the Spring semester, as I will be away on a leave of absence. I will miss everyone but not the Potsdam wind chill! The reasons are personal, but while I am away, I will not be wasting any time. I will be spending part of my time in the lab of Susan Bane, a bio-organic chemist at Binghamton University. We are collaborating on a research project to examine how cellular stress may be monitored using the fluorescent dyes that her lab is generating, to measure oxidative stress and carbonylation of biomolecules. My goal is to look at the stress generated by exposure to nanoparticles (see the picture of vanadium oxide nanoscrolls below), which have been provided to me through the lab of M. Stanley Whittingham, who just last week won the Nobel Prize in Chemistry for his contributions to the invention of lithium ion batteries. I hope to be able to translate this research back to Potsdam in the future for undergraduate research projects, so stay tuned for more once I return. On another note, my first publication with Stan Whittingham was in 2008, and including a Potsdam biology undergraduate as a co-author, Will Silkworth. So, I guess we can both say that we now have a Nobel Prize number of 1!
Marine Biology for Summer 2020

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.

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).

Dr. Conley demonstrating camouflage in the Sargassum Fish, *Histrio histrio*
Please Note: Students Interested in the Spring 2020 Course

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 2020 (Jan 13 - Jan 25) 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
Profile of a Recent Bio Graduate: Shannon Westlake

My name is Shannon Westlake and I am a Biology graduate from SUNY Potsdam, Class of 2010. Since graduating, my career path has been circuitous, but it has nonetheless been very interesting and rewarding. I chose Potsdam because it had a great Biology program, the faculty were approachable and engaged, and Upstate New York is a wonderful place to live. I still have great memories from the countless hours spent in Stowell going through specimens in Dr. Johnson’s Higher Verts class and working on whirligig experiments with Dr. Romey. I had two formative experiences during my time at Potsdam, which I feel are worth sharing!

In winterim 2008, I attended Dr. Johnson’s “Biotic Communities of Southern Florida”. We traipsed all over the state observing various flora and fauna and experiencing incredible ecosystems that are unique to the area. I still remember just missing the sight of a Florida panther and finding its tracks in the mud! The following fall, I took Dr. Romey’s Entomology class, which turned out to be the trigger for my current efforts in pollinator conservation. During one of our first labs, Dr. Romey brought us to the field behind Maxcy Hall to look for insects and I happened upon a monarch caterpillar. We took him back to the lab to observe the metamorphosis and, upon completion, we had a releasing ceremony in the quad. It is a memory I will always carry with me!

After graduating, I still had no idea “what I wanted to be when I grew up”, so I followed a more untraditional path. Because a Bachelor’s of Science in Biology is a technical degree, I was able to secure a job as a Research Melting Technician at Corning Incorporated in Corning, New York. My main job was to organize and conduct research glass melting. Although the job was not directly related to biological subjects, I was better able to understand the process because of my training in the scientific method and familiarity with chemistry thanks to courses I had taken at Potsdam. A few years into that job, I was promoted to the supervisor of the research melting group. This allowed me to grow as a professional, developing project, time, and people management skills that are transferrable to almost any position.
While in this position, I had a strong urge to return to my academic studies. Many people will say that if you want to pursue a graduate degree(s), you should do so right after completing your undergraduate, otherwise you will likely never go back and finish. However, I prefer the road less traveled. I decided to enter an online Master’s program through Green Mountain College based in Poultney, Vermont. This was a fast-paced bioregional approach program that allowed me to use my home, the Finger Lakes Region, as a laboratory for my studies and thesis project. Working full time while doing a Master’s degree is definitely not for everyone, but I somehow made it work. I was a glass melting supervisor by day and an environmental studies student by night and weekends!

For my Master’s thesis project, I wanted to raise awareness about the native pollinator plight and work on pollinator conservation efforts in an urban area. To accomplish this, I teamed up with the U.S. Fish and Wildlife Service at the Montezuma National Wildlife Refuge to initiate a pollinator and food gardening project in Auburn, New York. This was an incredible experience because I was able to bring together a group of individuals with varying expertise, such as a permaculture expert and a Cornell Cooperative Extension Master Gardener, to work on this project. We built adjacent pollinator and food gardens at the Booker T. Washington Community Center (BTW) and held environmental education lessons at the gardens throughout the summer. This project allowed children of all ages and adults to experience a green haven in this urban area. These gardens continue to grow and thrive at BTW and are still a favorite activity choice among the students who attend after school and during the summer.

After completing my Master’s in Environmental Studies, I applied for and was offered a PhD Fellowship at Mississippi State University in human dimensions research. For the past three years, I have continued my work in pollinator conservation; however, I have switched my focus to the social aspects of conservation by studying private landowners’ attitudes, knowledge, social pressures, constraints, and intentions to adopt pollinator best management practices. I will soon be graduating and hope to continue this work in the future because I am passionate about bridging the conservation research-extension gap. During my time here at MSU, I have also been able to assist my friends in their research, such as conducting vegetation surveys in wildlife mass mortality experiments, and I have led efforts to get MSU certified as a Bee Campus.

As you can see, my path has not been traditional; however, each experience has allowed me to grow and learn in ways I did not expect. I am grateful for the foundation I built at Potsdam and for the continued support from the incredible professors there. I see my Biology degree as the roots of my scientific pursuits from which I am continually growing. It is okay to not know exactly where you are heading next. My advice is to surround yourself with positive people, follow your passions, and be ready to say yes to opportunities. You never know where they might lead you!
**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.

Internship job headings:

- **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 nonprofits 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

Becoming a WISER Intern requires you to follow the internship process required by the Experiential Education Office (EEO). Your first step is to meet the WISER Coordinator, if you haven’t done this please email. After your meeting you can use the steps below

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 from Never Tire Farm*

Each Spring Semester, Never Tire Farm (Lisbon, NY) seeks motivated students of junior status or higher, 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.
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)

Need to Interview for Professional School?

Developing good interview skills is a must if you want to gain admission to a health professions program. **Biology 479 "Issues in Health Care"** 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, 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. See Prof Ewy for details. If you are not interested in gaining admission to a Health Care Professional Program, this course is not for you.

Applying to Medical School (or any other program that requires a committee letter) this summer? HPAC interviews will be done in late March or early April. Please have your letters of recommendation to Prof Ewy by mid-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.
Many TAs needed for BIOL 151 (General Biology I labs), BIOL 125 (Biological Concepts) and BIOL 100 (Principles of Biology)—For all Contact Dr. Trybula

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

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.

“When you teach you gain much more understanding of the subject at hand.”
This is a quote from an anonymous Bio TA.
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, alumnus 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 2019. Current students interested in exploring this exciting proposed major, 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>
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</thead>
<tbody>
<tr>
<td>Required courses: 6 credits</td>
<td>ENVR 110: Introduction to Environmental Studies</td>
<td>3</td>
<td>all</td>
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<td></td>
<td>CHEM 301: Fundamentals of Environmental Science</td>
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<td>All majors except GEOL and BIOL</td>
<td>one semester of college-level science</td>
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<td></td>
<td>PHYS 325: Energy and the Environment</td>
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<td>GEOL and BIOL majors</td>
<td>one semester of college-level science</td>
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<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>
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<tr>
<td></td>
<td>BIOL 152: General Biology II</td>
<td>4</td>
<td>non-BIOL majors</td>
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<tr>
<td></td>
<td>BIOL 300: Ecology + Lab</td>
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<td>non-BIOL majors</td>
<td>BIOL 152</td>
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<td></td>
<td>BIOL 312: Insect Ecology</td>
<td>4</td>
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<td>BIOL 152</td>
</tr>
<tr>
<td></td>
<td>BIOL 326: Morphology of Higher Land Plants</td>
<td>3</td>
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<tr>
<td></td>
<td>BIOL 330: Natural History of Lower Vertebrates</td>
<td>4</td>
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<td>BIOL 152</td>
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<tr>
<td></td>
<td>BIOL 331: Natural History of Higher Vertebrates</td>
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<td>BIOL 334: Biology of Woody Plants</td>
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<td>BIOL 355: Invertebrate Biology</td>
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<td></td>
<td>BIOL 402: Conservation Biology</td>
<td>3</td>
<td></td>
<td>BIOL 300 or permission of instructor</td>
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<td></td>
<td>CHEM 311: Quantitative Analysis</td>
<td>4</td>
<td></td>
<td>CHEM 106</td>
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<tr>
<td>Advanced Courses: 14 credits for BIOL/GEOL majors, 11 credits for all others. Advanced courses must be taken outside of the student's major</td>
<td>GEOL 340: Geographic Information Systems</td>
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<td>non-GEOL majors</td>
<td>100-level geology class + either CHEM 105 or MATH 125 or MATH 151 or STAT 100</td>
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<td></td>
<td>GEOL 310: Hydrology and Hydrogeology</td>
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<td>non-GEOL majors</td>
<td>100-level geology class + junior standing</td>
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<td>GEOL 406: Geomorphology</td>
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<td>PHYS 330: Meteorology</td>
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<td>CONS 314: Soil Mechanics (SUNY Canton)</td>
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<td>GEOL 101</td>
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<td></td>
<td>CONS 386: Water Quality (SUNY Canton)</td>
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<td>GEOL 310</td>
</tr>
</tbody>
</table>
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:
- Help create and maintain chemical inventory lists
- Learn to prepare lab materials for biology labs
- Develop skills in lab instrument care and maintenance
- Maintain the lab materials inventory
- Learn various lab protocols and skills for working in a biology research lab
- 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 am participating in a relatively new turtle project that began in earnest last Fall, where students and I are surveying local streams for the presence of wood turtles, considered a Species of Greatest Conservation Need in New York. This project is regional in scope and is being pursued by conservation departments in most northeastern states. In the meantime, we are busy beginning surveys in streams and rivers throughout the region. Wood turtles are most readily found in Fall (late September – mid November) and again in late March to early May, when they are still active and moving about in clear streams that flow through woodlands and meadows. Between those dates in winter, they are hibernating in the stream banks and in beaver lodges, while in summer they spend most of their time on land, foraging for invertebrates they love to eat. Three students are participating this Fall and I am hopeful a similar number will be interested next Spring…so, if you like to muck about in wetlands and cruise up and down beautiful creeks and streams, please stop by and see me or email (johnsong@potsdam.edu).

A second, somewhat related project involves a region-wide survey for Blanding’s turtles, a Threatened Species over much of its range. This project is part of a multi-state State Wildlife Grant, is fully funded, and we will be cooperating with conservation biologists in Pennsylvania, Massachusetts, New Hampshire and Maine. Our portion involves conducting rapid assessments of Blanding’s turtle populations across the North Country, Saratoga and Dutchess Counties, establishing several long-term monitoring sites, creating artificial nest sites for this species and setting up a Turtle Crossing sign network within parts of New York. If interested in learning more, please contact Dr. Johnson.

Finally, I am looking for someone to participate in a brand-new project on Spotted Turtles. This will be a paid 12-week position (May through July 2020), travelling around the northern half of NY State capturing this elusive small turtle, collecting tissue samples and habitat information as you go. Please see me if interested...
Robert Ewy - Research experience on environmental effects on plants

Research: The two primary projects in my lab are sustainable energy production and herbal medicines, both from shrub willow. This spring, I need some help making wood 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.

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

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/snyderrl/

Teton pass Wyoming

Dr. Sarah Sirsat

Physiology encompasses all biological levels from molecular to whole organism; as a physiologist I have an interest in the how and why at all of these levels. I am especially fascinated by the interplay of avian biological systems and the role phenotype, the outward manifestation of an organism’s genetic makeup, plays in physiological responses. My research explores the relationship of phenotype and physiology using a small, precocial bird known as the Chinese Painted Quail or King Quail. Numerous pattern and color mutations have been developed in captivity for this species. I am currently focused on examining physiological differences related to a recessive white pattern that my students and I have successfully developed into a pure-breeding lineage. These spotted white birds show different growth rates, organ masses, and morphological measurements than the wild type color. My research aims to determine the physiological mechanisms behind these differences, such as changes in metabolism and differences in mitochondrial function of various tissue types.
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.

https://www.pressherald.com/2014/06/25/buzz-about-bees-new-study-claims-widely-used-class-ofpesticides-is-killing-them/

Dr. Jessica Rogers - Purple Loosestrife Research Project

Assistant Professor Dr. Jessica Rogers worked with two SUNY Potsdam student research interns, Robert Luckman ’18 and Matthew King ’18, over the summer to document infestations of invasive plant species in the St. Lawrence River Valley, using cloud-based data collection. Rogers teaches in SUNY Potsdam’s departments of biology 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 Alexandria Bay, N.Y. Rogers’ research is funded in part by a grant from the St. Lawrence River Research and Education Fund. “Very little data is collected for St. Lawrence County, especially for invasive species. They normally stop at the Blue Line at the edge of the Adirondack Park, so there’s no information for our area. Our goal this year was just to map it, to know where these species are, so we can do something in the future,” Rogers said.

Following the successful first year 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 2020, beginning in June, where the beetles will be monitored. Students potentially interested in this research project are encouraged to reach out to Dr. Rogers (rogersje@potsdam.edu) to obtain for credit during the Spring semester, or apply for an internship during the summer.
Looking Ahead
Agroecology January 2021!

I will be creating a course to study food systems, sustainable farming in the Agroecology of Cuba course. Dr. Ewy and I will take up to 16 students for a 10-day course that will also investigate Cuban culture, history and society. We will be holding interest meetings during the Spring 2020 semester but if you want more information, please email me at, bowdisrp@potsdam.edu.

The Agroecology of Cuba Course is a 3-credit travel course designed to investigate the history, methods and cultural connections of a range of Cuban agricultural practices. Participants will travel around the province of Cienfuegos Cuba, visiting historical sites and attending cultural events and activities in a multidiscipline course of reflection and learning about Cuba’s food production systems. Students will be immersed in Cuban culture as they live in Casa Particulares and attend lectures from faculty of the Universidad de Cienfuegos (UCF). Faculty and staff from UCF attend activities and events to enrich information and provide advice to students about how to interact with Cubans and their institutions. The combination of focused study in agroecology, its connection the economic and societal issues of Cuba, presents a unique multidisciplinary learning opportunity, unique to both SUNY and nationally.
## REQUIRED BIOLOGY COURSES

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
<th>Grade</th>
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</thead>
<tbody>
<tr>
<td>151</td>
<td>Biology I Lecture</td>
<td>3</td>
<td></td>
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<tr>
<td>151</td>
<td>Biology I Lab</td>
<td>1</td>
<td></td>
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<tr>
<td>152</td>
<td>Biology II Lecture</td>
<td>3</td>
<td></td>
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<tr>
<td>152</td>
<td>Biology II Lab</td>
<td>1</td>
<td></td>
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<tr>
<td>300</td>
<td>Ecology Lecture</td>
<td>3</td>
<td></td>
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<tr>
<td>311</td>
<td>Genetics Lecture</td>
<td>3</td>
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<tr>
<td>300/311</td>
<td>Ecol or Genetics Lab*</td>
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<tr>
<td></td>
<td>Physiology Lecture</td>
<td>3</td>
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<td></td>
<td>Physiology Lab</td>
<td>1</td>
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<tr>
<td>483</td>
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## REQUIRED CHEMISTRY COURSES

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<tr>
<td>106</td>
<td>General Chemistry II</td>
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<tr>
<td>341</td>
<td>Organic Chemistry I</td>
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## REQUIRED PHYSICS COURSES

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<tr>
<td>202</td>
<td>College Physics II</td>
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<td>OR</td>
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## REQUIRED MATH COURSES

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<td>125</td>
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## BIOLOGY ELECTIVES

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

**CHEM 342 (Organic Chemistry II) is highly recommended for careers in health sciences, molecular biology, or physiology.**  
**MATH 151 and 152 (Calculus I and II) are co-requisites for the University Physics sequence.**  
No more than 4 cr of BIOL 475, 485, or biological internship may be used toward elective hours.  
* If you take both BIOL 300 lab and BIOL 311 lab, one will count toward your Biology elective hours.  
**MATH 141 & 142, Integrated Calculus IA & IB, together count as equivalent to MATH 151, Calculus I**  
**Must have a 2.0/S or higher in all major courses, including cognates.**
### Required Biology Courses
(22 hours)

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<td>Ecology Lecture</td>
<td>3</td>
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<td>Genetics Lecture</td>
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<td>300/311</td>
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<td>Physiology Lecture</td>
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### Required Chemistry Courses
(12 hours)

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### Biology Electives
(15 hours)

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No more than 4 cr of BIOL 475, 485, or biological internship may be used toward elective hours.
* If you take both BIOL 300 lab and BIOL 311 lab, one will count toward your Biology elective hours.

**Must have a 2.0/S or higher in all major courses, including cognates.**
## BIOLOGY SPECIALIZATION REQUIREMENTS

### Biology Required Courses (13 hrs)

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<tr>
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### Biology Electives (6 hrs)

College requirements are 19 hours in the Specialization. All electives after the first year sequence must be 300 or higher.