$1000 scholarship  
Registration info  
Declaring Biology as a major  
**New and improved courses** for the upcoming term  
Summer 2019 courses  
Dr. Sirsat’s chicken musings  
Health Professions  
Work study  
Teaching assistantships – Earn credit and beef up your résumé  
WISER Institute News  
Revision to the Environmental Science minor (and a major???)  
Internships  
Research with Profs  
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.

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

- Seniors – November 8
- Juniors – November 13
- Sophomores – November 14
- Freshmen – November 15-16

Students may adjust their schedules on BearPAWS until midnight, Monday, Jan. 21st
2019, which is the day before classes begin and before the week of Add/Drop (and Martin
Luther King’s Birthday!).

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 207) 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 insuring that you receive an
advisor who understands our program.

Danielle Brennan hooks a barracuda on a
Biology Department trip to Belize.
Danielle is a bio major…the fish is undeclared.

Above: An Atlantic white-sided dolphin breaching on our Cape Cod trip – another cool thing about being a bio major!
(Photo: Madison Cleveland)
TRANSITIONS – NEW DEVELOPMENTS IN THE BIOLOGY DEPARTMENT

A reminder: Beginning in Fall 2019, BIOL 151 will be taught in the Spring and BIOL 152 will be taught in the Fall. Another upcoming change for Biology majors who matriculate beginning in Fall 2018, there will be requirement that two (2) of the elective courses selected for the Biology BA and BS major degree program have a laboratory section.

Dr. Plague will be enjoying a sabbatical leave during the Spring of 2019, Dr. Rhoads will be on leave during Spring 2019 and Dr. Conley will continue to serve as Interim Dean for the School of Education and Professional Studies and will not be teaching any courses this coming Spring…but, he will be back in Fall 2019! Spring 2019 will be Dr. Romey’s last semester as he plans on retiring from teaching in May. He will, however, continue to live in the North Country while pursuing his professional and academic interests.

Please welcome our two new adjuncts, both recent graduates of our program: Michael Gendler and Jessica LaPlant. They both teach sections of General Biology labs.

NEW AND IMPROVED COURSES

Biol 483: Currents Topics – Physiology of Wellness - SI
Dr. Jason Schreer
Wednesday 2:00 – 4:50

“Wellness is a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity.” - The World Health Organization. In this speaking intensive, open-discussion course, we will explore myriad methods for achieving wellness and try, our best, to ground these methods in a concrete physiological perspective. From meditation, to exercise, to reiki, to yoga, to various diets (vegan, paleo, raw, hypocaloric, etc), and whatever else we can come up with, let’s try to understand “how” these methods work and, along the way, maybe change ourselves for the better. Any questions, please contact Dr. Schreer at schreejf@potsdam.edu.
BIOL 483 – Current Topics – Molecular Ecotoxicology - SI  
_Dr. Trybula_

MWF 12:00-12:50

“The sedge is wither’d from the lake,  
And no birds sing.”  
-- John Keats from “La Belle Dame sans Merci” 1819

In 1962, Rachel Carson published the remarkable “Silent Spring” which ushered in the modern era of environmental awareness. She raised the idea with the general public that pesticides in our environment may be connected to destruction of many more plants and animals than we realize. One day, after a long Winter, we may wake up to a Spring that is silent because the birds are all gone.

Molecular Ecological Toxicology is the study of how pollutants and other stressors in the environment may disrupt the molecular workings of various organisms. This could be mutations in the DNA, disruptions of proteins and metabolic pathways, interfering with hormones and development, and many other ways as well. Although many studies use model organisms, the data isn’t just applicable to other organisms, but to human health as well.

In this course we will examine the history of molecular ecotoxicology in its various forms and have students investigate topics of interest to present to the entire class.

https://en.wikipedia.org/wiki/Acid_mine_drainage

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BIOL 479 – Issues in Health Care  
_Dr. Ewy_

MF 1200PM–1250PM; 01/23/17–03/20/17

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 209 – Winter Ecology  
*Dr. Romey*

Potsdam is squarely situated in the middle of a winter climate. Why not learn to understand and enjoy it? Winter Ecology is an interdisciplinary course that looks at all aspects of winter. We will start with the physics of weather then move onto the physiological adaptations of plants and animals to winter. Then we will examine the behavioral adaptations of animals that are active in the winter. Finally, we will look at the human aspects of winter including sport and an examination of northern cultures such as the Inuit. There are a number of field trips we will be going on including: a trip to Ottawa to skate on the canals, the Saranac Winterfest to see a winter parade, making an igloo on campus, and tracking animals in the woods. Take this course and turn the winter from a dreaded time of year to your favorite!

BIOL 404 – Human Anatomy and Physiology II  
*Dr. Sirsat*

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 355 – Invertebrate Biology  
Dr. Romey

Do you suffer from vertebrate--ism (the unnatural focusing of attention on vertebrates)? Truth be told, most species in the world are invertebrates. For example, the majority of the biomass on earth are insects and marine arthropods. About half of what we cover in this course will be marine species (squid, starfish, lobsters, clams, and sponges to name a few). The comparative nature of this course will help you to better comprehend evolution and why humans are the way they are. We will also address the important issue of trophic dynamics, who eats whom. Humans eat many invertebrates and invertebrates “eat” humans (including the organism that causes malaria). Students who take this course will be making a movie on their favorite invertebrate and traveling to Cape Cod for a weekend to: study invertebrates on the beach, go to a museum, and perhaps eat a lobster after naming all of its parts.
4 credits. (Lecture and Laboratory)

Love Biology? – Teach it!

The State of New York and the nation are experiencing a massive teacher shortage. Areas of greatest need include all STEM fields. There are many openings for biology, and all of the natural sciences, educators in every school district, and every state. If you love biology, and want to share that passion with others, the teaching profession offers opportunities to positively influence the lives of many. SUNY Potsdam has been a pioneer in teacher education, housing the oldest teacher preparation program in SUNY, and among the first in the nation. Our BA/MST option provides professional certification while preparing students for a lifetime of success in the classroom. If interested, please contact your academic advisor or Dr. Jan Trybula (trybulj@potsdam.edu).
BIOL 322 – Introduction to Genomics

Dr. Snyder

This course is meant to introduce the major theoretical aspects in the budding, interdisciplinary field of Genomics. Laboratory (required) will focus on basic bioinformatics approaches in studying “big data”. This course is well suited for students interested in graduate studies in molecular biology or students looking for a marketable skill-set in biomedical and molecular biology fields. Students should be comfortable with computers, however no prior coding skills are required. Class meets: M 4-6:30; Lab meets: W 6-8:50 Catalog description: BIOL 322: Focuses on the theory and methods of analyzing large genetic data sets and their application to biological problems, including sequence alignment and search methods, gene prediction, phylogenetic trees, and transcriptomics

Prerequisites: BIOL 311, or permission of Instructor, Lab required.
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 West Nile Virus, Influenza, 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 Zika virus showed us. Even “older” viruses like Yellow Fever can get into new areas or re-emerge and cause drastic outbreaks. This past year, an outbreak in Brazil has infected over 1000 people, killing nearly 1/3 of those infected and also infecting a few hundred in Nigeria.

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.

http://dailypost.ng/2018/01/09/nine-killed-yellow-fever-hits-16-states/
BIOL 303 – Plant Physiology  
*Dr. Ewy*  
Lecture 1:00-1:50 MWF, Lab 2:00-4:50 M

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.

BIOL 413 – Neurophysiology  
*Dr. 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 (see me to sign 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 9:30-10:45, Lab: Monday: 2:00-4:50.
**ENVR 485/BIO 485 - Spring 2019 Research Course option**

*Dr. Rogers*

Are you interested in conservation and deforestation? How about working in Africa, specifically Central Africa. Dr. Jessica Rogers is looking at forest change using remote sensing and GIS. Knowing some GIS or having taken GEO 340 is a plus, but it is not a requirement. You can help look at new change in the forests in Central Africa and help drive policy decisions and forest inventory for developing countries. Contact Dr. Rogers and register for ENVR 485/BIO 485

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**BIOL 331 - Natural History of the Higher Vertebrates (Birds & Mammals)**

*Dr. Johnson*

Lecture: MWF 11 - 11:50  Lab: Thursday 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.
Marine Biology for Summer 2019

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://www.usm.edu/gcrl/) and under “Academics” click on “GCRL Summer Field Program.” Interested students should also contact our GCRL advisor, Dr. Conley.

Marine Biology class of 2014 on Santa Rosa Island, Pensacola Florida; including Potsdam students Ceira Dawson and Matt Nobles.
Back from the Whale Watch! May 2018 Trip to Cape Cod with Dr. Johnson’s class.

Photo: Madison Cleveland

Join us in Spring 2019!!
If you hear “chicken” what comes to mind? “Wings or thighs? Bone in or bone out? Spicy buffalo or garlic parmesan?” When I hear chicken, I think, “Bantam or large fowl? Heritage or commercial? Dual purpose or broiler/layer? Single comb, rose comb, pea comb, or V-comb? Blue egg, brown egg, or olive egg? Booted or bearded? Or booted AND bearded?”

It’s no lie; I’m quite obsessed with chickens. But for good reason!! This ubiquitous farm animal who has provided us with eggs, meat, and a morning wake-up call for the last few thousand years, is more integral to society than we care to admit. The estimated poultry population of the world is 50 billion chickens, give or take a few thousand here and there. Chicken is a major source of protein for much of the world's population; according to the National Chicken Council, the average American ate 92.2lbs of chicken in 2017!

The economic potential of this ground-dwelling member of the pheasant family has been well-recognized and tapped by commercial industry. Giant companies such as Tyson and Perdue produce the majority of the US chicken population for meat consumption and the race to grow bigger chickens as fast as possible is never-ending. But, like so many aspects of modern life, bigger and faster doesn’t necessarily mean better.

Many of the breeds used in the commercial poultry industry have been specifically selected for targeted production characteristics such as rapid growth rate. These modern breeds are quite different from those that roamed the pastures of our great-grandparents’ farms. The term “heritage breed” applies to pure breeds of livestock and poultry with deep histories; they were carefully selected and bred over time for essential attributes for survival and self-sufficiency – fertility, foraging ability, longevity, maternal instincts, ability to mate naturally, and resistance to diseases and parasites.

So, how did I get into heritage and rare breed chickens? While researching which breeds of chickens, and non-chicken birds to keep, my mother and I became intrigued by the way geographic distribution contributed to the history of chicken breeds. For example, northern European countries face extreme cold during the winter months while equatorial countries experience mild winters yet endure extreme heat during summer months. Likewise, some chicken breeds were developed for maximal egg production while other birds were needed as a source of meat. These two characteristics alone led to development of a variety of breeds across the globe. Historically, each country placed a unique combination of demands on the breeds they were developing.

As a celebration of the chicken we decided to keep a variety of breeds based on two main considerations; each should be a heritage or rare founder breed, and preferentially be associated with a specific country during development. And thus, Elm Ridge Heritage Farm was established! We currently work with a number of breeds, including the Egyptian Fayoumi, the Swiss Appenzeller Spitzhauben, the French Copper Marans, the Icelandic, and the Belgian d’Uccle (pronounced Doo-cluh).

We recently relocated the farm from the southern state of Arkansas to the decidedly chillier north country of New York. We are excited to begin working with our chosen breeds as we continue our focus on the conservation of rare and unique poultry.

~Dr. Sarah Sirsat
WISE Center News

The Wagner Institute for Sustainability and Ecological Research (WISE 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 WISE Staff comprising, volunteers, interns and research students who do amazing things for the campus surrounding community and the globe! The WISE 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 WISE 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 wis@potsdam.edu or contacting Ray Bowdish via email, bowdisrp@potsdam.edu.
Students in the Biological Concepts (BIOL 125) lab sections recently participated in a fieldtrip to Lehman Park, where they sampled aquatic organisms from the Raquette River and learned about organisms that live in our region. Despite the rain, students uncovered numerous aquatic animals and enjoyed being outdoors. This was the first time that many of these students visited this peaceful and interesting campus gem.

Photos by Hannah Arnold
**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.

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.

- 4 (four) TAs needed for BIOL 311 labs (Genetics) - contact Dr. Trybula
- Many TAs needed for BIOL 152 (General Biology II labs), BIOL 125 (Biological Concepts) and BIOL 100 (Principles of Biology) – For all contact Dr. Trybula

**Teaching Assistant (TA) positions in General Biology 2 labs**

If you are interested in becoming a Teaching As in the General Biology II labs (BIOL 152), please contact Dr. Trybula before the end of the fall semester. Basic requirements: 1) successful completion of Biology II lecture and lab courses (3.0 or better) and 2) a willingness to commit at least 2 hours of time outside your regularly scheduled lab section each week.

As a lab TA you will be helping to prepare and teach the General Biology II labs. This is a great way to reinforce you 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 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 4 Teaching Assistants for Genetics labs**
Dr. Trybula
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, one TA will be selected as the lead TA who coordinates the prep activities. 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.

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**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!

In the meantime, please take a look at the Environmental Science Minor that is already on the books, and outlined on the next page.
**Revision to Environmental Science Minor!!**

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!

<table>
<thead>
<tr>
<th>Revised Environmental Science Minor (24 credits)</th>
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<tbody>
<tr>
<td><strong>Level</strong></td>
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<tr>
<td>Required courses: 6 credits</td>
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<tr>
<td>ENVR 110: Introduction to Environmental Studies</td>
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<td>CHEM 301: Fundamentals of Environmental Science</td>
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<td>PHYS 325: Energy and the Environment</td>
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<td>Choose one</td>
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<tr>
<td>GEOL 101: Environmental Geology</td>
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<td>BIOL 152: General Biology II</td>
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<tr>
<td>Prerequisite courses: 3-4 credits for BIOL/GEOL majors, 7 credits for others</td>
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<td>BIOL 300: Ecology + Lab</td>
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<td>BIOL 312: Insect Ecology</td>
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<td>BIOL 326: Morphology of Higher Land Plants</td>
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<td>BIOL 330: Natural History of Lower Vertebrates</td>
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<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>BIOL 402: Conservation Biology</td>
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<td>CHEM 311: Quantitative Analysis</td>
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<td>GEOL 340: Geographic Information Systems</td>
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<td>GEOL 310: Hydrology and Hydrogeology</td>
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<td>GEOL 406: Geomorphology</td>
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<td>PHYS 330: Meteorology</td>
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<tr>
<td>CONS 314: Soil Mechanics (SUNY Canton)</td>
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<td>CONS 386: Water Quality (SUNY Canton)</td>
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Please consider becoming a **WISER** volunteer, intern or researcher for the Spring semester.*

*Positions are granted on a semester-by-semester basis. A total of 4 volunteers, 4 interns and 2 research positions are available in the WISER Staff. They are filled according to program needs and the strength of applications for positions. Please see Ray Bowdish, Timerman 232 or email wiser@potsdam.edu for more information.

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.

Off Campus Internship Opportunity

*Study Horticulture from Never Tire Farm*

Each spring, 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.
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 2019), 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 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.

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

**Dr. Rob Snyder**

Dr. Rob Snyder

Spring 2019: I will be teaching Introduction to Genomics (Biol 322). Come see me (or read the courses section of the newsletter) if you want to know more about this course. Interested in independent research? I'm willing to mentor undergraduate research in genomics / bioinformatics and phylogenetics, as well as, behavioral ecology. Don't know what you want to do? Stop by my office (307 Stowell).

Check out my website for news and information about the Snyder Lab [http://www2.potsdam.edu/snyderrl/](http://www2.potsdam.edu/snyderrl/)

**Ms. Ningyun Cai**

Adjunct Professor, M.S., M.L.A.
Ning teaches labs for Genetics, General Biology and Principles of Biology. Her interests include Sustainability, Landscape Architecture and Ecotourism. She also teaches Chinese 101-103 for the modern Languages Department
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.

The research team is seeking to document the spread of purple loosestrife throughout wetlands in the region in particular. Additionally, they are also looking for two other invasive species, the common reed and wild parsnip. To be considered invasive, a species must be non-native to an area and have no predators, Rogers said. “Only a particular set of species of beetles eats the purple loosestrife, so it’s going to spread everywhere. And the problem with this spreading is that ultimately that all of these cattails will be gone and you’ll have a field of purple loosestrife. So, you’ll get none of the migratory birds that use the wetlands, and you’ll end up with just purple loosestrife—which, while beautiful, is ecologically barren,” said Rogers.

“Ultimately, all the wetlands will get dried up by purple loosestrife. As a migratory bird issue, this is huge, because we’re such a stopover point from the northern range and the southern range of all the migratory species,” she added. Among the findings from the first year of the project was that there was a correlation between a higher number of invasive plant species in areas where the state and municipalities have mowed along roadsides.

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 2019, **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.
## Requirements for Graduation
### Biology (BS)

**Name:** ________________________________  
**Student ID No:** ________________________  
**Expected Graduation Date:** ________________

**Required Biology Courses**  
(22 hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
<th>Grade</th>
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<tbody>
<tr>
<td>151</td>
<td>Biology I Lecture</td>
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<td>Biology I Lab</td>
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<tr>
<td>152</td>
<td>Biology II Lecture</td>
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<td>152</td>
<td>Biology II Lab</td>
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<tr>
<td>300</td>
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<tr>
<td>311</td>
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<td>300/311</td>
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<tr>
<td>483</td>
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**Required Chemistry Courses**  
(12 hours)

<table>
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<td>341</td>
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**Required Physics Courses**  
(8 hours)

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<tr>
<td>202</td>
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<tr>
<td>204</td>
<td>University Physics II</td>
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**Required Math Courses**  
(7-8 hours) (Two Semesters)

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<td>125</td>
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**Biology Electives**  
(17 hours)

<table>
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<tr>
<th>Course</th>
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<th>Hours</th>
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**Chemistry Courses:**  
12

**Math and Physics:**  
15-20

**Total Hours Required:**  
66-71

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**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.
### Requirements for Graduation

**Biology (BA)**

<table>
<thead>
<tr>
<th>Name: ____________________________</th>
<th>Required Biology Courses: 22</th>
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<tr>
<td>Student ID No: ____________________</td>
<td>Biology Electives: 15</td>
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<td>Expected Graduation Date: __________</td>
<td>Chemistry Courses: 12</td>
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### REQUIRED BIOLOGY COURSES

(22 hours)

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<th>Grade</th>
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<td>Ecology Lecture</td>
<td>3</td>
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<td>311</td>
<td>Genetics Lecture</td>
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<td>300/311</td>
<td>Ecol or Genetics Lab*</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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<th>Grade</th>
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</table>

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)

<table>
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<th>Course Number</th>
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<th>Hrs.</th>
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<tr>
<td>125</td>
<td>Biological Concepts</td>
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<td>152</td>
<td>Biology 2</td>
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<td>152</td>
<td>Biology 2 Lab</td>
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<tr>
<td>300</td>
<td>Ecology Fall Only</td>
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### Biology Electives (6 hrs)

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<tbody>
<tr>
<td>300</td>
<td>Ecology Lab (optional)</td>
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<tr>
<td>311</td>
<td>Genetics Lab (optional)</td>
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</table>

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