THIS ISSUE  (Colorado River Toad Issue)  Spring 2021

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BOB CERWONKA MEMORIAL SCHOLARSHIP

This year’s recipient of the Bob Cerwonka Memorial Scholarship is Laura Schappert. This scholarship is made possible by a generous donation from department alumnus Mr. Robert E. Wagner (‘75) and is awarded to a declared Biology major in good academic standing with a demonstrated interest and appreciation of nature and the environment.

Look for an announcement about the next Cerwonka Award in the Fall 2021 newsletter. Please note: You must be a matriculated student in the Fall following the award given in January to receive the funds!!!
REGISTRATION

Advising begins March 15. The spring schedule will be available online this day
Registration begins:
- Seniors – April 8
- Juniors – April 9
- Sophomores – April 12
- Freshmen – April 13-14

Students may adjust their schedules on BearPAWS until midnight, Sunday, August 28th, 2021, which is the day before classes begin and before the week of Add/Drop.

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. View the Fall 2021 class schedule at:
http://www.potsdam.edu/offices/registrar/schedules/classschedulebydept

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, fill out an online form at …https://www.potsdam.edu/about/offices/registrar/majorminor-declaration, but we suggest you visit the Department Secretary (Stowell 207B) or Dr. Jan Trybula, the Department Chair (Stowell 205A) first!. To declare Environmental Science as a minor, see Dr. Glenn Johnson. Just fill out one form. The entire process takes less than three minutes, but it can save you a semester or more by ensuring that you receive an advisor who understands our program.

Above: Humpback whales bubble net feeding on our Cape Cod trip – another cool thing about being a bio major! (Photo: Alex Matte)

A group of SUNY Potsdam students at the BFREE Biological station in southern Belize…
TRANSITIONS – NEW DEVELOPMENTS IN THE BIOLOGY DEPARTMENT

Biology 151 and 152 changes

Biology 151 and 152 will each be taught both semesters beginning back in Fall 2020. We will continue using the Open Stax textbook, which is free to download. Summer Plans? Biology 151 will be offered this summer during Summer Session I. The Lab portion of the course will not be offered during the Summer Session. Contact Prof Ewy for more information.

Other Transitions

It is not without a touch of bittersweet regret that we announce that Marta Whalen, our wonderful Secretary for Biology and the WISER Center, has moved over to the more demanding role as Administrative Assistant to the Dean of Arts and Sciences. When the college opens up more as the pandemic hopefully subsides and more and more of us get vaccinated, please stop over to 106 Dunn to say hello and congratulate her on her new position! Her replacement has not yet been determined but rest assured that the search is on!

Dr. Gordon Plague has taken on an additional responsibility as SUNY Potsdam’s newest Associate Provost. Dr. Plague will continue to teach and engage in the Biology Department but will bring his talents to the Administration side of our campus as well. He will assist Dr. Bette Bergeron as she negotiates the evolving academic affairs of SUNY Potsdam.

Winterim Semester Ends

Beginning this year, SUNY Potsdam has decided to retire the Winterim semester. Spring classes begin January 9, 2021. In its place, the college is developing a “Maymester”…

Biology on Facebook

Did you know that the Biology Department has a Facebook page? Please connect with us online through Facebook. You will find department announcements as well as information about internships, department seminars, and interesting science news.

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

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

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

The Wagner Institute for Sustainability and Ecological Research (WISER) Center is located in 205 Stowell Hall. As a WISER Intern you’ll learn skills through experiences like event planning, urban farming and creating a culture of sustainability on campus! Most Center activities focus on growing a wide variety of plant life but also include composting, recycling, service learning and wellness activities like yoga and meditation! Interns are an integral part of the WISER Staff, a collection of student volunteers, interns and researchers and some community volunteers as well.

Working at the WISER Center is a great way to learn about our campus, the local community and the globe and enrich your understanding of issues around sustainability and ecology. Choose from the following internship opportunities.

- **General Intern (1-2 credits)** – This entry-level internship is a prerequisite* for all other job descriptions. Supports the maintenance of all programs and facilities in the WISER Center and for departments it serves.
- **Plant Doctor (2-4 credits)** – Supports the Healthy Plant Initiative to increase number and health of plants on campus.
- **Urban Farmer (3-6 credits)** – Grows food crops for the PACES/WISER, Community Supported Agriculture (CSA) program to be used in campus dining services or donated to local food pantries.
- **Wellness Intern (1-3 credits)** – Works on programs that promote mental and physical wellness for the campus and surrounding community. The title can be shared with emphasis going to either mental or physical wellness outcomes, with the understanding that they are intimately related.
- **Community Farmer (4-6 credits)** – Works in the summer in The Cecilie Garden with local non-profits to grow food to increase local food security. This internship can serve as a course substitution for Environmental Studies 391.
- **Assistant Coordinator (3-6 credits)** – Experienced intern helps schedule, train and work with other interns in the WISER Center staff. Intern works closely with the Center Coordinator to plan and implement events and programs, run weekly meetings and create weekly reports on WISER Center activities.
- **Campus Beekeeper (1-3 credits)** – Interns assist, or lead activities and tasks required to maintain the campus apiary.

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

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

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

Off Campus Internship Opportunity
Study Horticulture at Never Tire Farm

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

BIOL 483 – Current Topics: Biology of Cancer- SI

*Dr. Laura Rhoads*

Wednesday 5:30-8:20 PM

What person is NOT affected in some way by cancer? Why haven’t we figured out a cure for all cancers yet? Why do some people die young from cancer yet others live to a ripe old age cancer-free? We will be looking at cancer through the lens of cell biology, molecular biology, physiology, and medicine. Using these various aspects of biology, we find out what causes cancer, what the symptoms are for particular cancers, how cancer is treated and the epidemiology of cancer types. Through the course, you will learn how to communicate concepts in cancer biology to your peers, and how to critically evaluate primary and secondary literature in the preparation of your presentations and summary paper. Each student will give a presentation on a type of cancer, with peer review and feedback, and will also lead a discussion of a selected scientific article from the primary literature. (Photo courtesy of the National Cancer Institute)

ESCI 200 – Environmental Science

*Dr. Johnson*

Lecture MWF 10:20-11:10; Lab Tuesdays 2:00 – 4:50

Since most of us understand that the environment controls many aspects of our way of life (e.g. food and fiber production, water supplies, resources for shelter and infrastructure), it is clear that the adverse impacts to the environment affect the well-being of humans and other living organisms. Therefore, this course is designed to introduce students to the basic scientific methods, tools and techniques needed to understand and analyze environmental issues using an earth systems (air, water, soil, life and solid earth) approach. Topics covered include ecosystem structure and function, population dynamics and regulation, earth’s resources and resource management and pollution.

This new course is a gateway to the Environmental Science BS degree and is intended to help majors determine where they would like to specialize within the major, for example: land management, water or air quality, conservation science. This course is expected to have a NW Potsdam Pathways General Education designator.
BIOL 334 – Biology of Woody Plants

*Dr. Johnson*

*Meeting Times: Lecture MW 11:30-12:20; Lab 3:00-5:50 Mondays*

**Course Description:**
This course is about trees and shrubs. It emphasizes identification, ecological and silvicultural characteristics of native and introduced woody plants (trees, shrubs, and vines). Initial lectures will deal with basic introductory botany, including tissue types and plant organs, plant reproduction and the origins and taxonomy of major plant groups. However, the primary focus of the course concerns woody plants; later lectures will cover the natural history, distribution, silvics, economic uses and ecology of selected species, the origin, physics, chemistry, morphology and physiology of trees and wood and topics in forest ecology and management. Laboratory exercises and field trips will focus on learning to identify about 100 species of woody plants (plus a few important ferns and herbaceous species) using leaves, bark, fruits, and winter twigs. Field trips will include visits to diverse natural habitat types in the area, as well as the Botanical Gardens in Montreal and some private lands. Students may assist in development of an arboretum and projects to map and label specimen trees and shrubs on campus. Evaluations will be based on class participation, three lecture exams, group or individual projects including plant collections, and weekly field and lab quizzes.

BIOL 401 – Exercise Physiology – Fall OR **Online Summer course**

*Dr. Schreer*

You can take this course, with the lab, this summer (100% online) OR in the fall (on campus).
- Summer: Session 1, 100% online and asynchronous with lab. You can work around your job.
- Fall: Lecture Tues, Thurs 9:45-11:00am, Lab Monday 3:00-5:50pm.

Want a class where you can exercise in lab…and think about exercise in lecture? Getting an education and getting fit at the same time. Who doesn’t want that? And get a UD bio elective or the bio physiology requirement to boot.

Exercise Physiology, Biol 401, will be offered this summer AND this fall by Dr. Schreer. Just to be clear, this is NOT a 2-term course; just the same course being offered 2 terms in a row. The summer course is 100% online and includes an online lab. The fall course will be a typical on-campus course with lecture and lab. Both courses **fulfill the biology Physiology requirement.** Any questions, please contact Dr. Schreer at schreejf@potsdam.edu.
**BIOL 279 – Careers in Health Care**  
*Dr. Robert Ewy*

Interested in a health career, but not sure which one? Or maybe you came to college thinking you wanted to become a surgeon, but then decided it wasn't really for you. What else can you do in health care? Did you know you can be the person who runs the heart/lung machine during surgery, but you don't have to go to medical school to do this? Maybe the idea of working in a hospital lab determining if tissues are cancerous or not sounds interesting. There are lots of careers outside of medicine that enable you to help patients. We will also cover application and test prep tutorials. The application process is more arduous than you think so we will cover some of the do’s and don’ts of applying to the program you are interested in. You will also develop a strategy for studying for the entrance exam you will need to take. The course meets twice a week for eight weeks in the first half of the semester. Sophomore level standing required. See Prof Ewy for details.

**HLTH 370 – Health Coaches**  
*Dr. Robert Ewy*

Health Coaches II will be offered **Mondays 6:10-7:50 pm** this fall. The pre-req for this course is HLTH 270. Health Coaches is a two-semester sequence where you will work with a local patient of CPH to improve their health. This is an excellent way to get experience working with patients, particularly in during the pandemic when volunteer opportunities for Health Professional graduate programs are minimal at best. By the fall, both Health Coaches I and II will be cross listed with Biology. Since HLTH 370 is an experiential learning course, the 370 course can count towards internship/TA/Research credit. See Prof. Ewy for more details on the Health Coaches program.

**BIOL 403 – Human Anatomy and Physiology I**  
*Dr. Sirsat*  
**Lecture Tu/Th 9:30 – 10:45  Labs Tu, W, Th 2:00 – 4:50**

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 I (BIOL 403) is the first half of a 2-term course (2nd term is BIOL 404 offered in the spring) 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 319 - Evolutionary Biology**  
*Dr. Conley*  
Tuesday and Thursday, 11:30-12:45am

BIOL 319 - Evolutionary Biology  
Dr. Walter J. Conley  
"Nothing in biology makes sense except in the light of evolution."  
Theodosius Dobzhansky, 1973

Evolution is the most important concept in the natural sciences. Evolutionary Biology examines the mechanisms that have resulted in the rich diversity of life. Students will explore connections between natural selection and Mendelian and molecular genetics, population biology, form and function, sexual selection, development, the fossil record, and human evolution. Students often share that Evolutionary Biology is a biology elective that "brings it all together."

**BIOL 320 – Microbiology**  
*Dr. Gordon Plague*  
Lecture MWF at 10:20 am-11:10 am, Lab Th 1:00 pm - 3:50 pm

**BIOL 320 – Microbiology.** Microbes may be small, but they rule the world (and they’re phenomenally interesting biologically).

**Announcement**

Going forward, Microbiology (BIOL 320) will only be offered every other fall (odd years), so be sure to plan accordingly if you hope to take Microbiology before you graduate.

**Call for Teaching Assistants in Microbiology (BIOL 320)**

Please contact Dr. Plague at plaguegr@potsdam.edu if you’re interested in being a Microbiology TA. The lab will meet Thursday afternoon.

**More SUMMER COURSES!!!  BIOL 151 and BIOL 480 (The Biology of Pandemics)**  
*Dr. Ewy*  

**Summer Plans?** Biology 151 will be offered asynchronously online this summer during Summer Session I. The Lab portion of the course will not be offered during the Summer Session. I will also offer Biol 480 "The Biology Pandemics." In this course you will learn about the history of pandemics, the biological origins and spread, where pandemics begin, and how humans have responded to them. Biol 480 is a three-hour class that does count towards your upper division electives for the Biology major. This course is online and asynchronous.
BIOL 300 – Ecology
Dr. Robert Snyder
Lecture Monday/Wednesday/Friday 9:10 am – 10:00 am. Lab options: M or W 3:00 pm- 5:50 pm

What Is Ecology?
Ecology is the study of the relationships between living organisms, including humans, and their physical environment; it seeks to understand the vital connections between plants and animals and the world around them. Ecology also provides information about the benefits of ecosystems and how we can use Earth’s resources in ways that leave the environment healthy for future generations.

Ecologists study these relationships among organisms and habitats of many different sizes, ranging from the study of microscopic bacteria growing in a fish tank, to the complex interactions between the thousands of plant, animal, and other communities found in a desert.

Ecologists also study many kinds of environments. For example, ecologists may study microbes living in the soil under your feet or animals and plants in a rainforest or the ocean.

The Role of Ecology in Our Lives
The many specialties within ecology, such as marine, vegetation, and statistical ecology, provide us with information to better understand the world around us. This information also can help us improve our environment, manage our natural resources, and protect human health.

-Ecological Society of America

Catalog description: BIOL 300 – Ecology (3-4) Physical environment of terrestrial and fresh-water eco- systems, interspecific and intraspecific relationships, speciation, demography, growth and regulation of populations, energy flow, community organization and development. Prerequisites: BIOL 151 or 125, and 152. Lab optional*. Gen Ed: WI (writing intensive) lab only.

*Biology majors have the option to take either Ecology (BIOL 300 lab) or Genetics (BIOL 311) lab. Students should consult with their Biology advisor to determine which option is best. Students can take both labs, with the additional lab counted as Biology Elective credit.

TA’s needed
Ecology Lab: I am looking for 3-4 Ecology TA’s. TA’s must have taken BIOL 300. TA’s will drive College minivan to field sites, among other duties. Please contact Dr. Snyder (snyderrl@potsdam.edu) if interested.

Lab trip to Cold Brook 2019
BIOL 407 – Cell Physiology
Dr. Laura Rhoads
Lecture Tuesday/Thursday 9:45 – 11:00; Lab Tuesday 3:00 – 5:50 pm

Cell physiology is the study of living organisms at the cellular level. This course will take you through all of the parts of a cell, looking at both the structure and the functions of biomolecules and organelles. The accompanying lab will give you hands-on opportunities to work with cells from across the living kingdoms of eukaryotic organisms—animal, plant, fungi, and protist. Students will perform an independent lab project based upon the techniques learned. The lecture includes short writing assignments and exams that have a research focus. This course counts for the physiology requirement for the biology major; if you are a Biology major looking for an upper level elective and have already completed one of the physiology courses, or a Biochemistry major who doesn’t need the lab, please contact me at rhoadsls@potsdam.edu about an override to remove the lab requirement.

BIOL 455 – Molecular Genetics
Dr. Jan Trybula
MWF 1:50PM-2:40PM

Did you ever wonder how the basic flow of genetic information really works? We all know that replication, transcription, translation tie together to express traits, but… how does it work? Molecular Genetics is the primarily the study of genes, their expression and regulation. How does DNA polymerase “know” which base to put in during replication? How do all our cells have the same DNA, yet they express proteins so differently? With so many genes, how does a cell “know” which RNA to transcribe? How do the major players of translation orchestrate the process to produce a protein? Every published study gives us a better clue to the processes of replication, transcription, translation, and gene regulation. We will follow a basic text and augment our study of these questions by exploring critical and recent literature on these topics. This course counts as writing intensive (WI). The prerequisite is BIOL 311 or permission of the instructor.
ENVR 395: SUSTAINABLE ENERGY

“Dreamtime”, K. Taviera, Temple University, 2018

Dr. Kate Cleary | SUNY Potsdam | Fall 2021
MWF 11:30-12:20

Fossil fuels are at the heart of our daily lives, but they have two fatal flaws: there are limited quantities of them on earth and burning them is the major driver of current climate change. This course focuses on the 21st century global transition away from fossil fuels and toward renewable energy sources. We will begin with a brief introduction to the history of humans and energy, and the fossil fuel age. We will then examine the major renewable energy sources currently in use: solar, wind, hydro, tidal, geothermal, and biofuels. For each of these, we will begin with a basic introduction to what it is and how it works, then explore the environmental, social, and economic pros and cons and discuss future potential for scalability. For the final project, students will apply their knowledge to design a renewable energy plan for a fictional town and engage in classroom debates to defend their plan to a range of stakeholders. The skills gained in this course will be valuable to any student pursuing a career in environmental management, land planning, or sustainability science.

Prereq: Junior standing OR instructor permission
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.

![Bar chart showing enrollment in NYS teacher ed programs has declined by 53%](image)

Health Professions

Interested in pursuing a career in a Health Profession? Enroll in the Health Professions Moodle course. There you will find information on all kinds of health-related programs including: MD, DO, PA, PT, Vet, Dental, OT, and Optometry, as well as medical related research programs. You can self-enroll and will receive periodic notices of events both on and off campus that pertain to various health-related careers. Talk to Profs Schreer, Trybula, or Ewy for more information.

Pre-health club

There is a student-run pre-health club on campus. This is another valuable resource for information about various health professional graduate programs. You can talk to students who have taken exams such as the MCAT, GRE, and other exams, as well as what out of class experiences you should be doing to help you get into the program you want. The current contact person is Sarahanne Jackson. This link will get you to all the clubs and student organizations: [https://getinvolved.potsdam.edu/organizations](https://getinvolved.potsdam.edu/organizations)
**SUMMER TRAVEL COURSES**

**Marine Biology for Summer 2021**

Join the adventure! Several SUNY Potsdam students have been taking biology elective credits at our affiliate institution, the Gulf Coast Research Laboratory (GCRL) in Ocean Springs Mississippi as part of our Marine Biology Program. Courses include Marine Biology, Marine Mammals, Shark Biology, Ichthyology, and a variety of other life science courses with a marine focus. There are also research options available. Classes fill fast so please be attentive to opening dates if interested. For complete details, please visit the GCRL website [http://gcrl.usm.edu/summer_field/index.php](http://gcrl.usm.edu/summer_field/index.php) The website includes update COVID restrictions. Interested students should also contact our GCRL advisor, Dr. Conley (conleywj@potsdam.edu).

Potsdam students Matt Nobles and Ceira Dawson with their Atlantic Sharpnose shark (*Rhizoprionodon terraenova*) - catch and release.
Winter Break 2021 – 2022

BIOL 395 – Tropical Ecology and Conservation - Belize
Dr. Glenn Johnson

Spend New Year’s Eve in a remote tropical rain forest in Belize.

Consider a Winter travel course tentatively leaving snowy Potsdam on December 27 and returning on January 8, 2022. See Dr. Johnson (johnsong@potsdam.edu; x2710; 231 Timerman) for details. We register during Fall and attend 3-4 meetings in late November and December. Over this two-week course to Belize students will visit unique biological communities including tropical hardwood rain forests, mountain pinelands, mangroves, coral reefs and several freshwater wetland communities such as freshwater lagoons, tropical streams and rivers. Participants will visit Mayan ruins and see first-hand the ecological problems that beset some parts of this small Central American country.

Prerequisites: BIOL 300 or permission of instructor.

Contact Dr. Johnson for more details.

Photos: Jessen Swider and Glenn Johnson
**WORK STUDY**

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

**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.

**Teaching Assistant positions in General Biology labs**

If you are interested in becoming a Teaching Assistant in the General Biology labs (BIOL 151 and 152) please contact Dr. Jan Trybula trybulj@potsdam.edu before the end of the spring semester. Basic requirements: 1) successful completion of Biology 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 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.

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

**Lecture TA’s (General Biology or Ecology):** 1 or 2 students to assist in classroom activities and lead weekly review “Successions”. Must be able to attend MWF 11-11:50 (Biol 152) or MWF 9-9:50 (BIOL 300) lecture. Please contact Dr. Snyder (snyderrl@potsdam.edu) if interested.

**Dr. Ewy is looking for TAs for Biology 100 (non–majors Biology). Bio 100 lab has (4) two-hour sections, all on Thursday. See Prof Ewy for more details.**

**Teaching Assistants for General Biology or Introduction to Anatomy and Physiology**

If you would like to gain some teaching experience and encourage first semester biology students, this is a good opportunity. It is also useful for those students going on the graduate school or to teaching careers. This 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
**INTERNSHIPS**

**Biology Department Applied Learning Opportunities**

**New internship: Laboratory Technician.** If you’ve considered laboratory research or management after graduation, this internship may be for you. Topics and experiences covered include: maintaining a lab notebook; making solutions; model systems; hazardous waste disposal and chemical storage; equipment use, troubleshooting, maintenance and repair; media preparation: antibiotics and additives; molecular biology techniques; field trip to Clarkson to see their facilities; creative problem solving (or, Don’t panic: how to fix anything with duct tape and popsicle sticks); and ordering and stocking supplies. Open to one student per semester depending on instructor availability. Contact Rachel Wallace (wallacrm@potsdam.edu) if you’re interested in applying or learning more.

**Care and Handling of Display Animals in the Biology Department at SUNY Potsdam**
What can you do with a Biology Degree??

Here’s a few web resources!

- [https://www.tradeschools.net/articles/biology-careers.asp](https://www.tradeschools.net/articles/biology-careers.asp)
- [https://www.indeed.com/q-Bachelors-Biology-jobs.html](https://www.indeed.com/q-Bachelors-Biology-jobs.html)

For those interested in Natural Resources, Conservation and Wildlife:

- [https://wfscjobs.tamu.edu/job-board/](https://wfscjobs.tamu.edu/job-board/)

Thinking of Grad School in Biology?:

- [https://www.gradschools.com/programs/biology](https://www.gradschools.com/programs/biology)

Think Spring!
**New Major in Environmental Science! Fall 2021??**

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 2020. 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 has been 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 have 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 and go see Dr. Johnson for more info!

<table>
<thead>
<tr>
<th>Revised Environmental Science Minor (24 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level</strong></td>
</tr>
<tr>
<td>Required courses: 6 credits</td>
</tr>
<tr>
<td>Choose one</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Prerequisite courses: 3-4 credits for BIOL/GEOL majors, 7 credits for others</td>
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14 credits for BIOL/GEOL majors, 11 credits for all others. Advanced courses must be taken outside of the student’s major.
RESEARCH WITH PROFS

Dr. Sarah Sirsat – Physiology

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 currently examine 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

My research is tied to many aspects of genetics and biodiversity. I’m interested in molecular ecotoxicology, how toxins in the environment affect the genetics of various organisms. I’m also interested in the biodiversity of emergent aquatic insects. Worldwide insect numbers and diversity are in decline and pollutants are thought to be one of the greatest contributors.

Students in my lab examine a wide variety of ways to determine genetic damage caused by a wide variety of pollutants. We exam toxicity by examining the chromosomes, DNA genetic markers, and expressed proteins. We examine the toxicity of in-lab exposures and natural and anthropogenic exposures in the environment. If you’re interested in learning more, please contact me.
Dr. Glenn Johnson – Conservation of Threatened Species
231 Timerman Hall, 267-2710, johnsong@potsdam.edu

I am in the second year of a 3-year funded projects on turtle conservation. This involves Blanding’s turtles, a Threatened Species over much of its range, and other regional freshwater turtles species. This project is part of a grant from the US Fish and Wildlife Service 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, 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.

Creating Turtle Nesting Habitat: Drone view of a site in Lisbon Pre (above left, early fall) and Post (above right, late fall) Treatment. The wetland turtles occupy can be seen in the background. It took 111 20-ton truckloads to cover the 0.75-acre site with 12 inches of fine clean sand (right).

I have a second project to look at the distribution, spawning and habitat relationships of Mooneye, a Threatened fish species in NY. We will be focusing our efforts in the Oswegatchie River and parts of Black Lake near Heuvelton.
Dr. Robert Ewy - Research experience: Medicinal Properties of Willows

The willows are still growing! I am looking for students interested in studying the medicinal properties of willow. There are numerous papers written on using willow extracts to treat a variety of ailments, but little is known about maximizing production of these extracts. 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 you need are curiosity and an appreciation of plants. You can earn research credit via Biology 485 or an internship.

Adirondack Ecology (BIOL 111) students at Spring Pond Bog!
Dr. Rob Snyder – Genomics/Animal Behavior

My main project is looking at the role of primary gut symbionts, in plant feeding insect speciation. Basically, gut bacteria provide the insect essential amino acids synthesis pathways. Closely related species have different diets and require different pathways. This research is interested in explaining how insects adapt and diverge to new diets, which leads to speciation. To date we have sequenced the genomes of two co-symbionts and are using that information to look for patterns in the amino acid pathways between 9 closely related species.

Other projects include egg laying behavior of the Two-spotted treehopper, and the effect of the invasive Viburnum leaf beetle on Two-spotted treehopper habitat.

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).

Two of seven Colorado River Toads (Incilius alvarius), also known as Sonoran Desert Toads, confiscated from a suspected ne’er do well in the City of Oneida that are being temporarily housed in the Biology Department’s Animal Room. This desert species is the largest toad native to the United States. It is found in Arizona, New Mexico, and adjacent Mexico.
**Dr. Jessica Rogers**

Job Announcement:
Paid Summer Research Assistant 2021 – INVASIVE PLANT SPECIES RESEARCH
DEADLINE: March 15

Dr. Rogers is seeking 2-3 motivated students to work with her during summer of 2020 – the timing is flexible, a minimum of 5 weeks commitment is required, but the entire summer is an option. She is continuing a research project on a local invasive species, purple loosestrife (*Lythrum salicaria*), present in wetlands and along roadides. The study will involve traveling local roads by vehicle and on foot both with Dr. Rogers and other interns as well as alone to find areas along these roads that demonstrate the presence of purple loosestrife. Measuring these infestations and examining plants for herbivory (damage from insects) and mapping these locations with this kind of data will be done from Colton to Massena and Waddington to Massena, mapping a new area.

We will also be propagating a biocontrol, *Galerucella* beetles in the WISER center greenhouse at SUNY Potsdam. Field work will also take place at the Red Barn Preserve in Morristown, NY. Work will be 20-30/hrs per week starting immediately after graduation and ending just before classes start. The requirements in a given week are uncertain based on the weather and plants/insects requirements. The compensation for this work is $15/hr with a minimum total salary guarantee when you sign on, regardless of hours. The start and end dates are somewhat flexible and will depend somewhat on the availability of interns and of the target species.

Dates – multiple people could be hired for each time period or just 2 for the entire summer, please indicate your availability.
~10hrs/week April 15-May 30 depending on weather to create beetle hatchery
~2-5 hours/week May 30-July 15 – Tending beetle hatchery
~30 hrs/week July 20-August 15 – Mapping current infestations

Job requirements:
1. A valid driver’s license and comfort driving, having your own vehicle is required this summer due to COVID-19 and social distancing.
2. The ability to work outside in potentially rigorous environments for many hours in potentially hot or wet environments (hiking boots/shoes are preferred, but sturdy sneakers will suffice)
3. A strong commitment to organization, particularly with computer data/files.
4. A smart phone (iPhone or Android) with the ability to download the free ArcGIS Collector App, and the iMap Invasives app (this won’t be provided, but training in using the apps will be).
5. Good communication skills and interpersonal skills are required.

If you’re interested in the summer research work, please send a basic resume and a cover letter explaining your interest in the project and how it relates to your academic or career goals, including 1 reference from a professor on campus (name and e-mail address is all that is required). Students from all majors will be considered. Send the 2 files to rogersje@potsdam.edu with the subject line SUMMER INTERNSHIP ASAP.
Beta Beta Beta (TriBeta) is a society for students, particularly undergraduates, dedicated to improving the understanding and appreciation of biological study and extending boundaries of human knowledge through scientific research. Since its founding in 1922, more than 200,000 persons have been accepted into lifetime membership, and more than 670 chapters have been established throughout the United States and Puerto Rico.

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

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

**Regular members shall be:**

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

**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
Students preparing Dr. Johnson’s lunch in Belize 2020!

There’s a Motus Wildlife Tracking System on the Roof of Bowman Hall!

The antenna array in these photos is part of the Motus Wildlife Tracking System. This system is designed to track telemetered wildlife (birds, bats and others including monarch butterflies) as they move around the landscape. Currently, there are 15 receiver stations in New York State and, between 2019 to the end of 2020, Motus will have placed 40 receiver stations between NY, NJ, PA, MD, and DE. The new effort is to place a similar number of stations along the NY/Canada border. This is a globally important project and SUNY Potsdam is now a collaborator! You can read more about the MOTUS system and see the path a tagged northern saw-whet owl took as it was picked up here in Potsdam last October at this link: https://motus.org/data/track?tagDeploymentId=27254
**Requirements for Graduation**

**Biology (BS)**

Name: __________________________________________________________

Student ID No: _________________________________________________

Expected Graduation Date: ________________________________

**REQUIRED BIOLOGY COURSES**

(22 hours)

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<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
<th>Grade</th>
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<tbody>
<tr>
<td>151</td>
<td>Gen Bio: Cells and Genetics</td>
<td>3</td>
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<td>Lecture</td>
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<tr>
<td>151</td>
<td>Gen Bio Lab</td>
<td>1</td>
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<tr>
<td>152</td>
<td>Gen Bio: Organisms and Ecology</td>
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<td>Lecture</td>
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<tr>
<td>152</td>
<td>Gen Bio Lab</td>
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<tr>
<td>300</td>
<td>Ecology Lecture</td>
<td>3</td>
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<tr>
<td>311</td>
<td>Genetics Lecture</td>
<td>3</td>
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<tr>
<td>483</td>
<td>Current Topics</td>
<td>3</td>
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**REQUIRED CHEMISTRY COURSES**

(12 hours)

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<th>Course</th>
<th>Title</th>
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<tr>
<td>105</td>
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<td>General Chemistry I Lab</td>
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<td>106</td>
<td>General Chemistry II</td>
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<td>106</td>
<td>General Chemistry II Lab</td>
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<td>341</td>
<td>Organic Chemistry I</td>
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<td>341</td>
<td>Organic Chemistry I Lab</td>
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**REQUIRED MATH COURSES**

(7-8 hours) (Two Semesters)

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<td>151**</td>
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<td>125</td>
<td>Probability &amp; Statistics</td>
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<td>Probability &amp; Statistics</td>
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<tr>
<td>152</td>
<td>Calculus II</td>
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**BIOLOGY ELECTIVES**

(17 hours)

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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 I & 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>Gen Bio: Cells and Genetics Lecture</td>
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<td>151</td>
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<td>Gen Bio: Organisms and Ecology Lecture</td>
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<tr>
<td>300</td>
<td>Ecology Lecture</td>
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<tr>
<td>300</td>
<td>Ecology Lab</td>
<td>1</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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### 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, of 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 hours)

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<th>Grade</th>
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<tr>
<td>125</td>
<td>Biological Concepts</td>
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<td>Ecology Lab (Optional Elective)</td>
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<td>Gen Bio: Organisms and Ecology Lecture</td>
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<td>311</td>
<td>Genetics Lab (Optional Elective)</td>
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<tr>
<td>300</td>
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<td>311</td>
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<td>3</td>
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### Biology Electives (6 hours)

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