Students are encouraged to seek out research experience while pursuing their undergraduate degree. Students desiring a research experience should review the list of faculty research projects provided below and see what opportunities are available. Students must contact faculty directly to express their interest and get more information. Students may earn academic credit for their research experience.

The following faculty members are eager to work with undergraduate students majoring in environmental disciplines who want practical research experience, integrating basic and applied science working towards solutions to real world problems facing our environment.

**Basic Instructions:**

1) Student should review list of available projects below, and then contact faculty members directly to learn more about project expectations and qualifications (if any) that are needed. **Mark your subject line of your email as “Research Inquiry” and in your email provide the following information:**

   *Student name, class year, GPA, list of any relevant course work completed, number of hours available to work on project each week; specific skills/ experience/ training required for the project.*

2) To earn academic credit, an ENVSCI Independent Study contract must be completed and signed by both the student and the sponsoring faculty member. This form is available on-line at [http://eco.umass.edu/wpcontent/uploads/2011/11/ENVSCI_IndepStudyForm_fields.pdf](http://eco.umass.edu/wpcontent/uploads/2011/11/ENVSCI_IndepStudyForm_fields.pdf)

3) Instructions for completing the form are provided on-line within the same document link. Be sure to indicate the number of credits being earned for the research experience.

4) Please note that all Independent Study projects (ENVIRSCI 296, 396, 496) must be letter graded. Student can choose to enroll in Internship/Practicum credits (ENVIRSCI 298, 398, 498), but these courses are mandatory Pass/Fail.

5) **The completed Independent Study Contract must be delivered to the ENVSCI Program Office at 310 Holdsworth Hall prior to the close of the Add/ Drop period.** (If form is received after the end of the Add/Drop period, the ENVSCI Office will initiate the paperwork for a Late Add request, and the student will be required to hand-carry this paperwork across campus for the necessary approval signatures.)

SEE LIST OF FACULTY RESEARCH INTERESTS ON NEXT PAGE.

Faculty Research Interests. Updated September 2013.
Touria Eaton, Senior Research Fellow  
Stockbridge School of Agriculture  
Effects of Biochar on nitrogen leaching in soil.

Jack Finn, Professor  
Environmental Conservation  
The project looks at fisher locations and try to figure out why fisher are where they are (that is, what is it about where they are found that differs from where they are not found). Student must know ArcGIS (and/or have taken NRC 585). This is a completely indoors project. Academic credit is available.

Donna Francis, Adjunct Assistant Professor  
Ecological Restoration  
Impact of stream restoration on invertebrate communities in the Sawmill River.  
Students will sample and identify macroinvertebrates from the Sawmill River in Montague, MA. The work may involve using dissecting microscopes. No previous experience with invertebrates is required. Hours per week: probably 2-4, over 2 semesters, plus one day of field work. The project could be independent study or practicum (pass/fail).

Masoud Hashemi, UMASS Extension  
Sustainable Farming Systems / Cover Crops  
Researching how cover crops improve environmental soil quality by fixing nitrogen, recycling nutrients, and providing food for soil microorganisms. Experience in soil science and practical agriculture is preferable but not required. Students can work 3-6 hours weekly and it includes working in the field, lab and greenhouse.
Christine Hatch, Assistant Professor
Department of Geosciences
Water Resources & Climate Change
233 Morrill Science Center, 413-577-2245
chatch@geo.umass.edu
Project description: design and construction of a seepage flume for temperature and fish behavior experiments at USGS Conte Anadromous Fish Lab in Turner's Falls, MA; Undergrad student would be working closely with Jon Reeves (a grad student) and Prof Hatch; anticipated 5-10 hours to be spent by student each week, most later in the semester; practicum credits (Pass/Fail) available. Paid position possible if work study funds available. It is preferable to find student willing to extend the project through the Spring 2014 semester.

Adrian Jordaan, Assistant Professor
Historical Marine Ecology
Environmental Conservation
ajordaan@eco.umass.edu
309 Holdsworth Hall, 413-545-2758
Historical marine ecology is a relatively new field that looks back into the past for insight into the current state of marine ecosystems, and for clues as to how people once lived, worked in and interacted with their environment. Most of our work focuses on the Gulf of Maine, but we’re branching out to look at southern New England and even further south. Our most important finding so far is that coastal ecosystems used to be filled with fish from alewives and smelt to swordfish and tuna. More than 50 species were caught within a few miles of the coast in fisheries. These fisheries supported healthier coastal communities. Now we want to know about the coastal food web that supported this abundant marine life. And how fisheries operated when there were many more fish to catch and all were more abundant.

Students will learn basic historical skills of how to explore information found in archival materials and analyze the findings. This includes designing databases and transcribing data from historical documents into them, linking the results to other datasets. Then we'll analyze those results using basic statistical methods to learn important information about the marine world in the past.

The work involves transcribing catch and other historical data from printed and manuscript sources. Other work for interested students may include photographing documents and mapping catch and fishing effort. This work is part of ongoing research to produce new, publishable information that will be relevant for fisheries policy and management, and we're happy to discuss with students individual or collaborative projects resulting from their work. Adrian Jordaan and Karen Alexander will be supervisors. There will also be opportunities to help in field work sampling in coastal waters and ponds, when possible. Academic Credit is offered.

Susannah Lerman, Post-doctoral Researcher
Urban ecology
US Forest Service, Holdsworth Hall
slerman@cns.umass.edu
The research project investigates management regimes for improving urban biodiversity and sustainability. The study investigates how lawn mowing frequency in private yards influences pollinator and ground arthropod diversity, and soil conditions. Primary duties include preparing the pollinator specimens (wash, dry, pin, and attach labels), enter data into project database, and assist with pollinator identification. This is a lab-based project and provides great opportunities to learn about the insect diversity in urban environments, and taxonomy.
Qualifications: a strong interest in wildlife conservation, attention to detail, and patience. Five to ten hours needed per week. Practicum credit available and/or paid work study position for students with WS funding. There will be a field component to the project for Spring / Summer 2014 and the Research Assistant could extend their involvement and learn additional field techniques.
**Faculty Research Interests. Updated September 2013.**

**Brian Kane, Associate Professor**  
*Environmental Conservation*  
126 Holdsworth Hall, 413-545-6637  

Work with arboriculture team measuring trees in Springfield (including heights and diameters of trees), as well as some basic soil analysis (moisture content, bulk density). Number of credits available will depend on time availability of student.  

**William J. Manning, Professor**  
*Plant Environmental Biology*  
*Stockbridge School of Agriculture*  
Fernald Hall  
Fernald Hall  
Website: [www.bio.umass.edu/plantbio/faculty/manning.html](http://www.bio.umass.edu/plantbio/faculty/manning.html)  

Plant effects to ozone and elevated carbon dioxide. Academic year lab work; summer field and lab research. Email professor for more information. No phone calls or drop-ins.  

**Om Parkash, Associate Professor**  
*Biofuels & Plant Biotechnology*  
*Stockbridge School of Agriculture*  
413-545-0062 202 French Hall  

Several positions available for students interested in developing dedicated biofuel crops through biotechnology. Project involves analysis of transgenic plants for biofuel suitability. Honors students encouraged to apply (possible thesis option). Academic credit offered or paid work-study for those students with work study funds available. Students must have strong interest in biotechnology.  

**Allison Roy, Research Assistant Professor**  
*Fisheries Ecology*  
*Environmental Conservation/ US Geological Survey*  
317 Holdsworth Hall, 413-545-4895  

Dr. Roy's research examines effects of urbanization, hydrology, temperature, habitat, and water quality on fishes and macroinvertebrates, and potential for management (e.g., natural flow regimes, forested buffers, green infrastructure, dam removal) to restore lake and stream ecosystems. She has undergraduate students in the lab working on several projects: 1) using GIS tools to understand terrestrial landscape scale impacts of urbanization on fishes and macroinvertebrates (with Bob Smith, postdoctoral researcher), 2) spatial differences in aquatic insects in headwater streams (primarily involving sorting and identifying aquatic insects), and 3) effects of urbanization on stream insect drift. More information about Dr. Roy's research can be found at her websites: [http://eco.umass.edu/people/faculty/roy-allison/](http://eco.umass.edu/people/faculty/roy-allison/) and [http://www.coopunits.org/Massachusetts/People/Allison_Roy/index.html](http://www.coopunits.org/Massachusetts/People/Allison_Roy/index.html).  

Dr. Roy's team is currently looking for one additional undergraduate to work on the project: examining impacts of surface water supply reservoirs on stream flow and biology in small Massachusetts watersheds (with Todd Richards, PhD student). Student should be comfortable with computers/spreadsheets; GIS knowledge preferred. Six to ten hours needed per week. Academic credit is offered (2-3 credits for the term). Potential for further work available in Spring semester.
The student would be participating in a study on bird abundance and nesting success in Amherst conservation areas under supervision by Paige Warren and graduate students. The student would be assisting with analyses of video recordings from bird nests from this past summer and possibly assisting with field measurements of vegetation. Students should have good observation skills, be able to make careful observations and record them accurately, and be comfortable walking off of trail in woodlands. Minimum 4 hours per week time commitment. Academic credit available.

Gain research experience related to the conservation genetics of brook trout. We are looking for an undergraduate student to help us with a brook trout conservation genetic projects. The project is based in Virginia. We experimentally translocated brook trout into a series of isolated and inbred populations. We are now using genetic markers to determine who bred with whom. Once we have that information in hand, we will be able to test for differences in survival of individuals with different types of parents. Work will take place the UMass Amherst Conservation Genetics Lab. This lab is directed by Andrew Whiteley. You will be directly supervised by a grad student. Zak Robinson is taking a lead on the Virginia project.

You must have very good attention to detail. You must have a strong desire to learn conservation genetics techniques. Prior genetics lab experience is not necessary, you will learn these skills. 9 hours per week anticipated commitment, which will be compensated with 3 academic credits of independent study or practicum. Project extension into Spring 2014 possible.

Hurricane Sandy produced the highest water levels ever recorded in New York City with many areas experiencing over 10 feet of inundation. It is currently unknown, however, if there were storms in pre-recorded history (i.e. before ~1850 AD) that produced larger storm surges. This project will attempt to answer this question by examining the sediment deposits left by storm surges in coastal ponds on Staten Island. Students participating in this project will 1) gain hands-on experience with several sedimentological lab techniques including core splitting, grain size analysis, radiometric dating, and x-ray fluorescence, 2) learn to analyze and interpret the data produced by these methods, and 3) develop communication skills by presenting these results in bi-weekly lab meetings and, if desired, designing a poster to be presented at an undergraduate research conference. Undergraduate student will work closely with doctoral student, Christine Brandon. Ten hours per week are anticipated for three academic credits. Either a graded independent study project or P/F practicum credits are available depending on the student’s level of interest. It is recommended that a student who is interested in doing an independent study project extend this research into the Spring semester. A student who is doing this for practicum credits could either do just the fall or (if he or she wants) extend this into the Spring.

Faculty Research Interests. Updated September 2013.
Baoshan Xing, Professor
Stockbridge School of Agriculture
Environmental & Soil Chemistry
413-545-5212 12B Stockbridge Hall
bx@umass.edu

- Environmental fate, behavior and ecotoxicity of engineered nanoparticles
- Sorption mechanisms of organic chemicals in soils and sediments
- Fate and transport of organic chemicals and heavy metals
- Biochar characterization and soil quality
- Risk-assessment and soil remediation

Dr. Xing is looking for minimum of a two semester commitment. See the link: 
http://people.umass.edu/bx/ for more information