FALL 2016 NEWSLETTER

Environmental Science and Policy

Happy Autumn!

We hope you all had a wonderful fall break and are enjoying the semester! As midterms come and go, it is important to be thinking ahead to the remainder of the semester, as it seems to fly by during November and December. Registration is right around the corner, so we advise that you schedule times to meet with your advisor(s) and professors to make sure you will be on track going into the spring semester.

The ENSP program has several exciting updates, including welcoming Dr. Bryan Murray to campus and kicking off the *Sustainability & Resilience* track during the 2016-17 academic year. We're also excited to have 26 new ENSP students join us.

What's Inside:

IMPORTANT DATES

Fall Camping Trip was
Friday October 7th
A dozen students camped overnight at the Kuehn Conservation Area. Keep tuned in to our Twitter feed for other events!

ENSP Fall Potluck
Friday October 28th
11:30 – 12:30
Come enjoy some fun and food with the ENSP faculty and students! The potluck will include brief research talks by Rainie Schulte, Amanda Muir, Thomas Ehlinger, and Grace Baumgartner - as well as the ENSP faculty.

Course Offerings

The courses listed below are being offered to students during the spring 2017

ENSP 169

Zoo and Great Ape Internship

Michael Renner

Supervised entry-level practical experience in husbandry, management, and research in a captive animal setting. Involves learning the practices, regulations, and protocols of a research laboratory or zoological park. Specific work assignments will vary based on the needs of the host institution and the individual professional goals of the student.

ENSP 165

Applications of Geographic Information Systems

Bryan Murray

This course acquaints students with "real world" GIS solutions by taking a project from concept to completion; this includes generating project proposals, acquiring and creating data, performing spatial analysis, project presentation, and product delivery. Students learn to identify issues at all phases of a GIS project and work with the client and fellow team members to creatively solve problems. Client and consultant relationships are established by working with central Iowa agencies and organizations. Students are exposed to internship opportunities and are able to network with professionals in a variety of fields. Prerequisite ENSP 065

ENSP 151

Sustainability and Resilience

David Courard-Hauri

Sustainable systems are those that can continue their core functions indefinitely without degradation; resilient systems are those that can continue their core functions in the face of rapid, and often unexpected, change. In this course we explore what makes something sustainable and resilient and develop techniques to measure and assess environmental, economic, and social sustainability and resilience in real-world systems and institutions.

ENSP 037

Environmental Case Analysis

Peter Levi/Michael Renner

Environmental Case Analysis is a team-based learning course designed for Environmental Science and Policy majors in their sophomore year. Students will develop scientific and policy responses to three major case studies, each focused on a problem in a different area of environmental studies. Students will be introduced to interdisciplinary analysis, the use of primary literature in problem-solving, and addressing complexity.

ENSP 041/042

Principles of Geology/Lab

Peter Levi

Introduction to the science of geology, its principles, methods and theories as they are employed in studying planet Earth. The importance of geological knowledge in understanding problems of natural resources, hazards, and land use is emphasized.

Laboratory required.

ENSP 063

Zoo Biology

Michael Renner

This course will provide an overview of the field of zoo biology, with emphases on the role of zoos in conservation, species survival plans, captive management of small populations of exotic animals (especially including endangered species), and the use of behavioral research and environmental enrichment methods in captive animal welfare. The course will have a significant component of experiential learning including participation in ongoing and newly-initiated behavioral research in a zoo setting. Prerequisite: BIO 013 or instructor permission. Cross-listed with BIO 063.

Course Offerings

The courses listed below are being offered to students during the spring 2017

BIO 025

Animal Behavior

Michael Renner

This course provides an introduction to the study of animal behavior often called ethology, with an emphasis on evolutionary approach. Although ethological and evolutionary approaches can be successfully applied to human behavior, this course will primarily deal with animal behavior in natural environments. We will cover a variety of topics, including: natural selection and evolution, development of behavior, neural and hormonal control of behavior, predator- prey interactions, foraging behavior, territoriality, reproductive behavior, and social behavior. In addition, students will design, conduct, write up, and present a group research project as part of their coursework. Prerequisites: PSY 001 or BIO 013 or NSCI 001.

Econ 109

Public Economics

Brian Phillip Vander Naald

Analysis of public sector revenue and expenditure issues including taxation, public goods, externalities, public choice questions, and intergovernmental fiscal relations. Prereq.: ECON 002.

BIO 167

Population and Community Ecology

Bryan Murray

Prerequisites include BIO 118L and STAT 060/BIO 099. Corequisites are BIO 167L

BIO 111

Evolved Foodways

Nanci Ross

Exploration of interactions of environment, culture, and plant biology as they relate to human food plants. Discussions focus on impact of diverse global environments on evolutionary adaptations in native plant species and exploitation of these adaptations by native human cultures to produce fascinating foodways important for human health and culture. Features student-led discussions and cooking regional cuisine.

BIO 113

Vertebrate Biology

Muir Daniel Eaton

An introduction to vertebrate biology including fish, amphibians, reptiles, birds, and mammals. Lecture material will emphasize evolutionary history, including major morphological transitions, and taxonomy, behavior, and ecology among the major extant vertebrate groups. Pre-reqs: BIO 001, 012, 013, or 018. Co-requisite lab BIO 113L.

BIO 152

Field Botany

Thomas Rosburg

General principles of plant taxonomy and plant ecology. Emphasis on classification and nomenclature, botanical terminology, recognition of plant families, use of plant keys, Iowa plant species identification and ecology and plant collecting and voucher preparation. Lecture, lab, field trips. One weekend field trip required. Offered spring semester of alternating years. Prereq: BIO 001, 012, 013, or 018, or consent of instructor. Co-requisite lab BIO 152L.

New!

Sustainability and Resilience Major

Sustainability is the ability to continue important functions indefinitely without a decline in quality. *Resilience* is the ability to thrive in the face of change. Together, these two concepts identify today's key social, economic, and environmental goals: to create systems that enhance, rather than degrade, the world around them, and in turn that can withstand inevitable shocks from environmental and technological changes.

Building sustainability and resilience requires understanding *whole systems*, rather than just individual pieces; being able to use *quantitative* and *qualitative* data to make choices; being able to work with diverse *stakeholders* to build consensus around plans for progress; and the ability to develop *specialized skills* to bring ideas to fruition.

The Sustainability and Resilience (S & R) major at Drake was designed with these goals in mind, to help students develop critical thinking, integrative abilities to succeed in a field of constant change. Drake S & R students do hands-on work throughout their studies, solving real-world problems in class and in internships to emerge with critical, marketable skills, applicable both in their careers and personal lives.

Course Objectives

Because each student's path and interests are unique, the sustainability and resilience curriculum is organized around four key outcomes for majors:

1. **Choice Analysis** - Students will be able to identify, analyze, and communicate the impacts of collective and individual choices on environmental, economic, and social systems.

2. **Systems Thinking** - Students will employ whole-systems thinking to understand the nature of sustainability and resilience challenges and to design successful responses.

3. **Stakeholder Engagement** - Students will develop appropriate skills for communicating among various constituencies that have a stake in sustainability and resilience choices, and be able to integrate concerns from multiple perspectives into proposed solutions that are appropriate to local political, social, and economic conditions.

4. **Professional Skills** - Students will develop the skills necessary for employment or graduate study in fields related to Sustainability and Resilience.

Professor Spotlight: Bryan Murray

It is Professor Murray's first semester teaching at Drake, within the ENSP department. The current courses he is teaching include: Ecology, Ecology Lab, and Geographic Information Systems. We asked Professor Murray some questions to learn how he is adjusting to teaching these courses, as well adjusting to life as a Bulldog and the Des Moines community!

How are classes going so far? What is your favorite thing about Drake thus far?

My family and I moved from Indiana just a few weeks before classes started so it was quite the adjustment to get moved in to a new house in a new city and start classes right away. The students and faculty have been extremely supportive in helping me settle in. I am greatly enjoying working with Drake students, especially in lab courses with the opportunity for extended hands-on learning experiences. These courses have also provided great opportunities to get to know the students well and become acquainted with the Des Moines area.

Are you looking forward to teaching any particular classes?

I'm very excited about teaching both Population Ecology and Applied GIS in spring semester. Population ecology explores how numbers of animal and plant populations vary in space and time, and how they are influenced by changes in the environment. These principles lie at the core of conserving threatened and endangered species, and sustainably managing our natural resources.

Student Research Projects

Amanda Muir (Junior) and Rainie Schulte (Sophomore) work at the Blank Park Zoo studying animal behavior and citizen science research. They work with the zoo staff to convey positive conservation messages through projects like bird identification and tiger tracking. They are also creating and perfecting a general ethogram for ratites.

Grace Baumgartner worked in the Chichaqua Bottoms Greenbelt tracking the endangered ornate box turtle with radio telemetry and drift fences. She also performed bird counts at the Bottoms and a local farm to compare communities in restored prairies and grazed pasture habitat.

Josh Eiler (Sophomore) and Brain Parker (Junior) worked as assistants under Dr. Rosburg to do grant funded research for the Natural Resource Conservation Service. The students sampled soil and massed dried plants in order to identify Iowa prairie productivity.

Katie VanDooren (Sophomore) and Thomas Ehlinger (Senior) worked with Dr. Levi to investigate the spatial and temporal dynamics of nutrients related to water quality in the Raccoon River. They collected water and sediment along the Raccoon to better understand the denitrification processes taking place.