Dear NS professional students and faculty:
Here is some information (mostly Durham-based, with some Marine Lab news) that may be helpful to you in planning your academic program for the Spring 2019 semester. We have included changes to the schedule of Nicholas School courses and alerted you to changes in faculty whereabouts. Please refer to the course synopsis in DukeHub or in the catalogue to examine a course’s content in more depth. We continue to encourage faculty to paste syllabi and other course information there.

- Professor Deb Gallagher, Director of Professional Studies
  & Cynthia Peters, Assistant Dean

Faculty/Staff Information

**Faculty on Sabbatical**
Dalia Patino-Echeverri, Academic year 2018-19
Jennifer Swenson, Academic year 2018-19
Charlotte Clark, Spring 2019
Susan Lozier, Spring 2019
Avner Vengosh, Spring 2019
Brian Silliman, Spring 2019, will be in Australia but not on sabbatical. He will offer ENVIRON 273LA/773LA Marine Ecology in the spring.

**New faculty:**
Professor David Gill has come to the Duke Marine Lab. He has a background in marine biology and natural resources management. He will be teaching ENVIRON 50A Marine Protected Areas in spring 2019, Block C

Professor Mozhgon Rajaee, Visiting Assistant Professor of Environmental Health and Justice. Her research focuses on environmental health issues through an environmental justice lens, investigating disparities in pollution exposures and health outcomes for racial and ethnic minorities and low-income communities. She will be teaching ENVIRON 790.60 Built Environment: Community Design for Health & Sustainability in spring 2019.

Joe Bachman, Executive in Residence in Natural Resource Finances. He will be teaching ENVIRON 790.70 Valuing Ecosystems for Investment and Conservation and ENVIRON 790.75 Secrets: Weapons of Success Construction in spring 2019.

Durham
**Changes to Existing Courses:**

ENVIRON 717 Markets for Electric Power will be taught by Professor Luana Lima while Professor Patino-Echeverri is on sabbatical.

ENVIRON 720S Land Conservation in Practice will be taught by Dean Urban while Jennifer Swenson is on sabbatical.
ENVIRON 724 Landscape Analysis and Management, Dean Urban, will be taught in spring 2019. Students should note, however, that Dean Urban will be on leave next year and it is likely that neither ENVIRON 714 nor ENVIRON 724 will be taught in 2019-2020.

ENVIRON 790.30 Time Series Analysis Energy Data will be taught by Professor Luana Lima, MW 10:05-11:20

Durham
New Crosslist:

ENVIRON 590.50 Fundamentals of Solar Project Development, Professor Bennear and Cullen Morris, W 3:05-5:35, 100C Gross Hall

While most of the electricity in the U.S. is generated using fossil based fuels, there is growing demand for power from renewable sources. Market factors and societal pressures are pushing electric utilities to consider, and in some cases, embrace renewable power generation throughout the U.S. Increased regulatory costs threaten the coal industry, while public awareness of climate change drives corporations and municipalities to demand clean electricity. Meanwhile the installed cost of solar and wind power has plummeted over the last ten years. In this course, we will explore these drivers of change while examining how utility-scale solar energy projects are built. The intent is to provide a practical introduction to the process of developing utility-scale solar projects in the U.S. by examining the major players and steps in a complex process. Students will learn that professionals with expertise in law, engineering, real estate, public policy, regulation, finance, environmental consulting, and construction must work together over a period of years to get a solar generation facility built.

Durham
New Courses:

ENVIRON 790.60 Built Environment: Community Design for Health and Sustainability, Professor Mozhgon Rajaee, MW 4:40-5:55

This course examines the environmental and public health impacts of the built environments where people live, work, play, worship, and learn, and the transportation systems connecting them. This includes how neighborhoods, cities, and regions impact environmental sustainability and health, particularly major public health challenges around air quality, climate change, obesity, walkability, chronic disease, mental health, health disparities, and injuries. Students will translate scientific evidence into designing and developing interventions for more sustainable and healthy communities. The course will focus on the impacts and design of urban environments and social equity.

ENVIRON 790.70: What’s It Worth: Valuing Ecosystems for Investment and Conservation, Joe Bachman, Th 4:40-7:10

Ecosystem Valuation seeks to teach core skills and develop understanding of the role valuation plays in forest and conservation finance through a competitive simulation approach. Students will take an iterative approach in developing a deep perspective on ecosystem values but exploring the value of a
part of Duke Forest first as a single stand of timber and broadening that understanding throughout the term by increasing the time horizon and area under consideration. The class will explore integrating additional ecosystem values such as water, wetlands, carbon and real estate development. These perspectives will be developed through interactive lectures in the classroom; field trips; visiting experts in the field and work in small groups. The exploration will progress via a competitive simulation in which students will compete in small groups in an investment acquisition simulation in which they will build their case for purchase of the area. The area under consideration by their investor clients. Student teams will be challenged and have their proposals evaluated by an investment committee comprised of stakeholders in the field of ecosystem finance and from within the Duke community. The competition will culminate with the selection of a winning team based on their submission of their bid for the property and how well it is supported by their due diligence activities.

ENVIRON 790.75 Secrets: Weapons of Success Construction, Joe Bachman, Tu 4:40-7:10

The course seeks to equip students with frameworks, methodologies and knowledge that will advance their immediate effectiveness in today’s complex modern organizations. Management science has run the spectrum over the last three decades from strictly quantitative regimes dictating choices to softer approaches taking a softer “self-help” path more focused on the development of the individual manager. Texts by management “gurus” have long been the fodder for business pop culture. While not all of this work is useful to the modern-day manager, familiarity is critical as it becomes part of the language of business and familiarity, if not fluency can mean the difference between being part of a conversation or being left out. Furthermore, there several points of wisdom in these works and this course attempts to extract and process them in ways that increase the managerial effectiveness of the individual student. This course seeks to familiarize students early in their career with this conversation helping them develop both an awareness and vocabulary that will help elevate both their consciousness and their effectiveness with regards to management. While students already get an active exposure to working in teams at Nicholas, this course seeks to prepare students for succeeding in a wider variety of organizations and situations. The course is designed to introduce concepts, readings and management structures from a perspective of critical thought and inviting students to think about developing their own sense of management style. This approach seeks to move the management discussion away from the self-help, popular flavor of the month discussion towards a more practical, actionable and personal style created by the individual.

ENVIRON 790SA.02 Law and Policy for the Oceans (Spring Break Travel Course), Professor Steve Roady

This short course explores the manner in which laws and policies can affect ocean resources. We focus on several specific case studies, which involve federal statutes (and occasionally international laws) that play an important role in the protection and sustainable management of these resources. Statutes include the Magnuson-Stevens Fishery Conservation and Management Act, National Environmental Policy Act, Endangered Species Act, and Clean Water Act. As time permits, we also will consider possible actions under the United Nations Convention on the Law of the Sea. Spring Break trip to the Duke Marine Lab.

ENVIRON 872L Environmental Data Analytics, Professor Kateri Salk, TuTh 11:45-1:00

Environmental Data Analytics introduces fundamental data skills needed to conduct research. We explore a variety of techniques and technologies for obtaining, re-formatting, managing, and visualizing
diverse datasets with an emphasis on developing reproducible workflows and sharing both methods and results. We will use actual environmental data (hydrologic, demographic, energy, etc.) in class exercises, but students will have the opportunity to involve their own datasets. We begin with exploring databases, using MS Access, to develop SQL statements to manage and manipulate data beyond what simple spreadsheets can do. And from there, we learn the fundamentals of Python, a scripting language that ultimately strips away many of the barriers to complete data analysis imposed by most spreadsheet and database software. Finally, we take a quick look at the R language which offer many of the benefits of Python, discussing the tradeoffs in choosing which one to settle in on. We also examine a number of useful open-source tools that facilitate data analysis. These include OpenRefine, which can take the tedium out of cleaning messy data sets, and GitHub which greatly facilitates script writing/revision, collaboration, and dissemination of one's hard work.

**ENVIRON 996 DEL-MEM Capstone, Professor Rebecca Vidra**

Students will propose a Capstone Pathway and provide a detailed explanation why this choice meets their master’s project goals. A final leadership capstone project, which will integrate all DEL leadership sessions, particularly the DC leadership seminar, capstone courses, and interviews; project not limited to an academic paper. An interview protocol will be developed to ensure thoughtful conversations around issues of leadership that the student is interested in. The Capstone must be a rigorous experience, integrating coursework, outreach, and reflection.

**Duke Marine Lab**

**New Courses:**

**ENVIRON 504A Marine Protected Area Monitoring and Management**, Professor David Gill, taught at the Marine Lab.

An interdisciplinary course that addresses concepts, issues, and approaches relevant to marine protected areas (MPAs) and their impacts on marine ecosystems and coastal people. MPAs are socioecological systems, comprising of actors, governance systems, resources, and resource systems (Ostrom 2009 Science). Thus, any assessment of MPA management and performance will require an understanding of both the social and ecological processes that shape and are shaped by MPA outcomes. While not exhaustive, the course revolves around three key themes: 1) the emergence, design, and management of MPAs; 2) monitoring and measuring MPA socioecological impacts, and; 3) contextual factors that shape MPA implementation and impacts. With a focus on sensitive marine ecosystems (e.g. coral reefs, mangroves) and resource dependent communities (e.g. fishing and tourism), the course will cover concepts such as impact evaluation, ecological responses to protection, social equity, and socioecological fit. They will also be introduced to methodological approaches such as causal inference, quasi-experimental design and natural experiments.

**ENVIRON 865SA College Teaching and Course Design**, Professor Grant Murray, taught at Marine Lab.

Designed for doctoral graduate students seeking to teach an independent course at Duke and beyond; topics include models of course design, syllabus construction, critical thinking, college student development, clarifying learning objectives, variety in assignments, and classroom assessment techniques.
Duke Marine Lab
New Format/Other:

**ENVIRO 726A Deep-Sea Science and Env Management**, Professor Lisa Campbell, taught at the Marine Lab. New course number, previously listed under ENVIRON 512A

**ENVIRO 754A Research Design for Environmental Social Sciences**, Professor Lisa Campbell, taught online

The purpose of the course is to: 1) examine the concept of ‘research’ (philosophy and epistemology, as well as practice) in general and the environmental social sciences specifically; 2) overview types of data used by environmental social scientists, and some specific methods for collecting them. Although a range of methods and data sources are scoped, the focus is on qualitative data and the methods used to ‘collect’ data from/with people; 3) introduce approaches to and methods for analyzing qualitative data and presenting it. Although topics and methods are relevant to social sciences generally, readings, examples, and activities highlight the relevance and utility of research methods for understanding human uses, values, interactions, and beliefs about the environment. The course is an online course. Lectures, readings, activities, assignments, and assessments are all on the Sakai site. Students have a set period of one week within which to complete all requirements for individual units. Professor Campbell is resident at the Duke Marine Lab in Beaufort, NC.