

**ENV 520**  
**Resource and Environmental Economics 1**  
**Fall 2015**

Dr. Steven Sexton  
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**Instructor Office Hours:**

W 3:30-4:30pm 101 Gross Hall;  
Th 10-11am, 101 Gross Hall.

**Graduate Student Instructors and Office Hours:**

Justin Kirkpatrick

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M 4:30-6:30pm, 4100 Environment Hall

Brian Prest

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T 10-12noon, 100C Gross Hall

**Course Description:** This course provides a survey of environmental economics, including the analytical tools and methods used to identify suboptimal resource allocations and policies that correct suboptimal environmental outcomes. It is expected to stimulate critical thinking about contemporary environmental challenges and policies designed to overcome them. The course first considers circumstances in which free markets fail to provide efficient resource allocations, and then introduces a suite of policy instruments intended to correct market failures, including market-based approaches, command and control regulation, behavioral interventions, and economic instruments. The efficiency criterion, Kaldor–Hicks cost–benefit analysis, and the cost–effectiveness criterion are introduced as methods to determine which environmental programs should be implemented. Methods for valuing environmental amenities and ecosystem services are introduced. Analytical methods are applied to contemporary challenges, and the course draws upon relevant examples from across the spectrum of environmental and natural resource policy.

**Prerequisites:** Students are required to have completed an introductory microeconomics course, e.g., ECON 55D. Students should be familiar with basic microeconomic concepts such as: supply and demand functions, consumer and producer surplus and deadweight loss, opportunity cost, marginal analysis, and time discounting. Students must also have completed one semester of college-level calculus and should be familiar with basic calculus concepts such as derivatives and integrals.

**Course website:** All course materials, including announcements, readings, and assignments, will be posted to the course Sakai site available at [sakai.duke.edu](http://sakai.duke.edu).

**Communications:** Announcements regarding assignments, exams, and course logistics will be made in lecture and on the course website. Every effort will be made to respond within 24-hours to questions posed via email, though substantive questions related to course material

should be reserved for office hours or lectures. Questions related to assignments should be posed more than one day in advance of respective deadlines.

**Lecture:** W 4:40-7:30pm, 107 Gross Hall. Students are responsible for all materials presented in class. Lecture notes will be posted to the course website following each lecture. Their review alone, however, should not be considered a substitute for lecture attendance.

**Readings:** Required readings include academic and popular press articles published on the course website, as well as:

Keohane, Nathaniel O. and Sheila M. Olmstead, *Markets and the Environment*, 2007, Island Press, Washington, DC.

**Assignments:** Students are responsible for completing three problem sets throughout the course. Each assignment will be due no less than one week after it is assigned. Students are allowed to collaborate on problem sets in groups of four or fewer students, though each student is responsible for submitting his own, original work and shall not copy another student's work. Each member of a group must clearly indicate with which other students he collaborated, if any. Any collaboration that does not adhere to these policies will constitute cheating and a violation of the Duke Standard. Problem sets shall be due at the beginning of lecture on the assigned date and shall be formatted according to instructions provided in class. Late problem sets will be accepted for 24 hours beyond the due date; grades for late problem sets will be reduced by 10 percentage points. Problem sets will not be accepted beyond 24 hours post due date.

Students will also complete one written assignment to be announced by the third lecture.

**Exams:** Student learning is evaluated by one comprehensive final exam. The exam will be comprised of analytical and short answer questions. University policies regarding academic honesty and accommodations will be honored and enforced.

**Grades:** Grades will be determined as follows:

Problem sets . . . . .	45%
Written assignment . . .	15%
Exam . . . . .	40%

**Course Outline:**

1. Introduction and Welfare Economics
2. Market Failures
3. Command and Control Regulation and Non-coercive Interventions
4. Economic Instruments and Instrument Choice
5. Decision Criteria and Program Evaluation
6. Non-market Valuation
7. Optimal Extraction/Harvest of Natural Resources