## **Course Objectives**

* Understanding energy issues through the lens of economics. All energy challenges involve economic issues and tradeoffs. This course teaches basic economic reasoning and analytical tools using examples from energy policy.
* Understanding the functioning of markets and the impacts of policy on markets for major categories of energy including: petroleum products, natural gas, coal, electricity, renewable energy, transportation.
* Critical analysis of the role of economic analysis in both fostering systemic racism and combating systemic racism.  Students will understand how economists analyze questions of energy injustice, develop an appreciation for the limits of economic analysis, and understand efforts to promote inclusion of distributional concerns in energy policy.

#### **Specific Learning Objectives**

* Students will develop a basic economic vocabulary and apply it to energy challenges.
* Students will learn to apply economic reasoning to explain contemporary energy issues reported in the popular press.
* Students will learn how energy problems can be framed as market failures.
* Students will learn economic models of non-renewable resource management.
* Students will learn how petroleum markets function and the impact of major policies on the functioning of these markets.
* Students will learn how electricity markets function and the impact of major policies on the functioning of these markets.
* Students will learn how renewable energy sources integrate into electricity markets function and the impact of major policies on integration of renewable energy.
* Students will learn about distributional analyses of major energy policies including energy efficiency policies for home appliances and automobiles.

#### **Intended Audience**

This course is required of all Energy and Environment students in the Master of Environmental Management (MEM) program and is designed for those students.  Other professional degree students included MPP, Law, Business, and Engineering Management students are welcome as long as they have completed the pre-requisites.  Professional degree students with significant economics background, including an undergraduate course in environmental or resource economics should speak to Professor Bennear to ensure that this course will not be repetitive for them.

Undergraduate students who are NOT economics majors, but have completed at least one semester of microeconomics and one semester of calculus may also take this course.

Economics majors should take the Environmental Economics course taught in the Economics Department by Professor Chris Timmins.  MA students in Economics should NOT take this course and instead enroll in the more advanced courses in Resource and Environmental economics taught by Professors Martin Smith and Steve Sexton.

#### **Prerequisites:**

**Students are required to have taken ENV520—Environmental and Resource Economics I (or equivalent).**  ENV520 is taught in the first half of the fall semester in the same time slot as ENV635.  Mastery of the material in ENV520 is essential for success in ENV635.

#### **Required Readings:**

There are two required books for the course.  Throughout the syllabus these readings will be abbreviated as KO and VHV.  Both books are available as electronic resources through Duke Library.  Visit library.duke.edu to download pdfs of both books.

KO:                 Keohane, Nathaniel O. and Sheila M. Olmstead. Markets and the Environment (Washington, D.C.:  Island Press, 2007).

VHV:              Viscusi, Kip W., Joseph E. Harrington, Jr., and John M. Vernon.  Economics of Regulation and Antitrust. (Cambridge, MA: The MIT Press).

In addition there are readings that will be made available on Sakai.

#### **Software and Connectivity**

**High-quality Remote instruction requires access to a range of software tools and reliable internet connectivity.**Students should have good internet access, ideally that permits video transmission.  Wired ethernet access is highly recommended for best performance.

#### ***This course will use the following software, all of which are available at no cost to students enrolled in the course.  However, the students must be able to download, install, and manage these software programs.***

#### ***Sakai—Sakai is the course management software for the course.  All of the readings, lectures, and other materials will live in Sakai.***

#### ***Zoom—Students will use Zoom to access the class during the required synchronous class times.  These class times will be used for collaborative activities.***

Gradescope—Students will submit all problems sets and the final exam using Gradescope.

#### ***Spreadsheet software—Students must have access to Microsoft Excel or Google Sheets. We will do some exercises building spreadsheets to analyze economic phenomena.***

#### **Assessment and Grading**

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| 50% | Problem Sets | Problem Sets.  Problem sets are due every Friday by 11:59 pm in Gradescope.  There are five problem sets each worth 10% of your grade. |
| 10% | Lecture Engagement and Comprehension | Each pre-recorded lecture module contains several questions on the material in that lecture that will be graded.  Each question has a point total.  Multiple choice, select all, and fill-in-the-blank questions will be automatically graded and you will receive feedback in real-time while watching the lecture.  Open-ended questions must be graded by the instructional staff after you have completed the video.  Polls do not get graded.  I will drop the lowest two scores. |
| 10% | Online Discussion Participation | Students are required to complete the daily reflection and discussion activities on the Forum in Sakai.  There is a separate forum for each discussion group so that these can be more easily managed.  Students in each discussion group will be assigned to Group A or Group B.  Each week one group posts an original comment on the discussion prompt and the other group responds and gets true discussion going.  The next week the roles switch.  This will be clarified at the first meeting of the discussion sections.Online discussion participation will be graded on a 3 point scale—0 = failure to participate, 1 = some participation on all discussions, but participation is of limited quality, 2 = high-quality productive participation.  The lowest weekly participation score will be dropped when calculating the final grade. The key is that participation must be **productive.**Differences of opinion and constructive debate are highly encouraged.  Hostile comments (particularly if directed at another student), off-topic comments, and speaking just to hear yourself speak are not productive.  Despite the fact that we are never in the same physical space, we are trying to build community of scholars.  The instructor and TAs will hold students accountable for behavior in the forums or during class time that are not conducive to building such a community. |
| 10% | Synchronous discussion participation | Because this is a flipped classroom, participation in the weekly discussion activities is critical.  Each week there will be activities, problems, discussions, etc. that will be completed during the discussion section.  Participation will be graded on a three-point scale--0 = failure to participate (including unexcused absence), 1 = limited participation, 2 = high-quality productive participation. |
| 20% | Final Exam | The final exam will be administered in Gradescope on ??? |

Letter Grades will be assigned based on weighted grade in the course using the following base schedule:

A+       >=99%

A         94-98

A-        90-93

B+       87-89

B         83-86

B-        80-82

C+       77-79

C         73-76

C-        70-72

F          <70

Professor Bennear reserves the right to curve grades, based on difficulty of the exams/quizzes in a particular year.

#### **Short-Term and Long-Term Illness**

Please notify Professor Bennear if you will miss a discussion section.  Professor Bennear will not meet with students to go over material missed in class.  You are expected to watch the missed lectures and get notes from other students to make up missed classes.

Remember that if you are sick Duke asks that you refrain from attending classes so that illness spreads less rapidly.  If you have a fever of greater than 100 degrees Fahrenheit, please do not attend class until you have been free of fever for 24 hours.

If you are ill and cannot complete and assignment on-time, please email me BEFORE the assignment is due.

If you are ill on exam day, please email Prof. Bennear before the beginning of the exam to make arrangements.

#### **Nicholas School Honor Code**

All activities of Nicholas School students, including those in this course, are governed by the Duke Community Standard:

**The Duke Community Standard**

Duke University is a community of scholars and learners, committed to the principles of honesty, trustworthiness, fairness, and respect for others. Students share with faculty and staff the responsibility for promoting a climate of integrity. As citizens of this community, students are expected to adhere to these fundamental values at all times, in both their academic and non-academic endeavors.

#### **The Pledge**

Students affirm their commitment to uphold the values of the Duke University community by signing a pledge that states:

1. I will not lie, cheat, or steal in my academic endeavors, nor will I accept the actions of those who do.
2. I will conduct myself responsibly and honorably in all my activities as a Duke student.