



## **COURSE INFORMATION**

**Course Number and Title:** ECON322 Environmental and Natural Resource Economics

**Credits:** 3

### **Description**

Energy and environmental issues are critically important to the modern global economy. This course examines public policies to address climate change, air pollution, water quality and natural resource management.

This study of environmental issues and policies is focused through the lens of economic theory. We study supply, demand, and efficiency in markets, the incentive structure that leads to environmental problems and seek to examine why energy and environmental markets have historically been subject to extensive government intervention.

This course is intended to equip you with the conceptual, graphic and algebraic tools used in environmental economics and in the analysis of environmental policies. Our concerns are centered on issues of efficiency and equity in the study of environmental policies

Our objective in this course is to:

- 1) highlight the role of incentives in leading to behaviors that cause environmental problems and,
- 2) show that economic incentives in environmental policy have the potential to provide flexible mechanisms for achieving environmental policy goals in a least cost manner.

## **COURSE DETAILS**

### **Readings**

We will read peer-reviewed journal articles and discuss them in class.

No textbook is required for this class. If you would like to read a textbook, I would recommend:

1. Environmental and Natural Resource Economics 11th edition, Thomas Tietenberg and Lynne Lewis
2. Economics of the Environment: Selected Readings 6th edition, Robert Stavins.

## Course Structure

The course will follow this general pattern:

- Monday and Wednesday, 10:00am – 10:50am: We will have structured class meetings to discuss the course materials.
- Friday:
  - Open office hours from 10:00am – noon.
  - Weekly video lecture will be uploaded to blackboard that will serve as a foundation for the material in the week that follows.

## Course Grading

Achievement in this course will be assessed through completion of the following activities:

| Assessment Name    | Percentage | Date                                          |
|--------------------|------------|-----------------------------------------------|
| Homework           | 20%        |                                               |
| Attendance/Quizzes | 15%        |                                               |
| Midterm Test       | 30%        | 9:00 a.m. – 11:59 p.m. Monday, March 15, 2021 |
| Final Test         | 35%        | 2:00 p.m. - 5:00 p.m. Tuesday, May 11, 2021*  |
| Total              | 100%       |                                               |

### ***Attendance/Participation***

***section 1: RSOF remote synchronous course meetings:*** 15% of the course grade will be based on class attendance.

***section 2: RA remote asynchronous:*** 15% of the course grade will be based on weekly quizzes due every Friday at 5pm. The quizzes are a combination of true/false and multiple-choice questions. You will have one attempt to complete the quiz. No late submissions will be accepted.

## ***Homework***

The homework assignments will provide you with an avenue to critically assess the theory underlying the evaluation of environmental policies and apply these principles to real world problems. The homework assignments involve the reading and discussion of assigned published papers in environmental economics.

These assignments will focus on real life policy questions. Grading will stress two things: (1) the degree to which you have made a strong effort to integrate the relevant course material into your discussion; and (2) the extent to which your work is polished and professionally done.

It is crucial that you complete these assignments on time. Note that there will be a deduction of 10% per day for late submissions.

## ***Tests***

The two tests will be made up of true/false and short response answers that mirror some of the questions you will have seen in the quizzes but provide for a more comprehensive assessment of your achievements in the course.

The tests are one hour in length. You can take the test any time during the test availability window. The final exam will be available between Tuesday, May 11 and Sunday, May 16.

## **Grading Scale**

Grades are determined by a cumulative point total as follows:

| <b>Letter</b> | <b>Percentage</b> |
|---------------|-------------------|
| A             | 93%+              |
| A-            | 90-92%            |
| B+            | 87-89%            |
| B             | 83-86%            |
| B-            | 80-82%            |
| C+            | 77-79%            |
| C             | 73-76%            |
| C-            | 70-72%            |
| D             | 60-69%            |
| F             | 59% or less       |

# Outline of the Course

The course is broken up into seven (7) modules. The following outline presents the topics to be covered in each module

## **1. Foundations of Economic Analysis**

- 1.1. Producer Behavior
- 1.2. Consumer Behavior

## **2. Environmental Valuation**

- 2.1. Use of Environmental Valuation in Litigation, Benefit-Cost Analysis, and Economic Analysis
- 2.2. Stated Preferences
- 2.3. Revealed Preferences
- 2.4. Considerations in the Use of Environmental Valuation

## **3. The Economics of Pollution Control**

- 3.1. Ecological Values and the Political Response: The Comprehensive Environmental Response, Compensation and Liability Act
- 3.2. The Efficient Level of Pollution Control

## **4. The Economic Approach: Market Failure and the Role of Government**

- 4.1. Market Failures: Transaction costs, externalities and public goods
- 4.2. The Theorem of Coase
- 4.3. Public goods
- 4.4. Externalities

## **5. Industrial Organization and the Regulation of Markets**

- 5.1. Natural Monopolies: Electric Power and Utilities
- 5.2. Monopoly Pricing and Regulation

## **6. Environmental Policy Instruments**

- 6.1. Climate Change and Energy Policy: The Clean Power Plan and the Clean Air Act
- 6.2. Oil and Gas Markets
- 6.3. Emissions Markets
- 6.4. The Clean Water Act
- 6.5. Water Treatment and Supply

## **7. Natural Resource Management**

- 7.1. Tragedy and Management of the Commons
- 7.2. Management of the Commons: Reputation, reputation, trust and cooperation.
- 7.3. Fisheries Management
- 7.4. Chesapeake Bay Program

| Date                                                                                   | Module                                                                   | Topic                                                                                                                                                                 | Notes            |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Wednesday, January 27, 2021<br>Friday, January 29, 2021                                |                                                                          | Introduction and Course Overview                                                                                                                                      |                  |
| Monday, February 1, 2021<br>Wednesday, February 3, 2021<br>Friday, February 5, 2021    | Foundations of Economic Analysis<br>Foundations of Economic Analysis     | Producer behavior<br>Household behavior                                                                                                                               |                  |
| Monday, February 8, 2021<br>Wednesday, February 10, 2021<br>Friday, February 12, 2021  | Valuing the Environment<br>Valuing the Environment                       | Revealed Preferences Methods<br>Survey Based Methods: Contingent Valuation                                                                                            | Spring Break     |
| Monday, February 15, 2021<br>Wednesday, February 17, 2021<br>Friday, February 19, 2021 | Valuing the Environment<br>Valuing the Environment                       | Stated Preferences Methods<br>Why Value the Environment? Definition of a Cynic: "[a person] who knows the price of everything and the value of nothing" - Oscar Wilde | Assignment 1 Due |
| Monday, February 22, 2021<br>Wednesday, February 24, 2021<br>Friday, February 26, 2021 | The Economics of Pollution Control<br>The Economics of Pollution Control | Ecological Values and the Political Response: The Superfund Act<br>Efficient Level of Pollution Control                                                               |                  |
| Monday, March 1, 2021<br>Wednesday, March 3, 2021<br>Friday, March 5, 2021             | The Economic Approach<br>The Economic Approach                           | Efficient Level of Pollution Control and Market Failures<br>The Theorem of Coase                                                                                      | [Spring Break]   |
| Monday, March 8, 2021<br>Wednesday, March 10, 2021<br>Friday, March 12, 2021           | The Economic Approach<br>The Economic Approach                           | Public Goods<br>Externalities                                                                                                                                         | Assignment 2 Due |
| Monday, March 15, 2021                                                                 | MIDTERM EXAM                                                             |                                                                                                                                                                       |                  |
| Wednesday, March 17, 2021<br>Friday, March 19, 2021                                    |                                                                          |                                                                                                                                                                       | Spring Break     |
| Monday, March 22, 2021<br>Wednesday, March 24, 2021<br>Friday, March 26, 2021          | Regulation of Markets<br>Regulation of Markets                           | Natural Monopolies: Electric Power and Utilities<br>Electric Power and Utilities: Monopoly Pricing and Regulation                                                     |                  |
| Monday, March 29, 2021<br>Wednesday, March 31, 2021<br>Friday, April 2, 2021           | Environmental Policy Instruments<br>Environmental Policy Instruments     | Climate Change and Energy Policy: The Clean Power Plan and the Clean Air Act<br>Oil and Gas Markets                                                                   | Assignment 3 Due |
| Monday, April 5, 2021<br>Wednesday, April 7, 2021<br>Friday, April 9, 2021             | Environmental Policy Instruments                                         | Emissions Markets                                                                                                                                                     | Spring Break     |
| Monday, April 12, 2021<br>Wednesday, April 14, 2021<br>Friday, April 16, 2021          | Environmental Policy Instruments<br>Environmental Policy Instruments     | The Clean Water Act<br>Water treatment and supply                                                                                                                     |                  |
| Monday, April 19, 2021<br>Wednesday, April 21, 2021<br>Friday, April 23, 2021          | Natural Resource Management<br>Natural Resource Management               | Tragedy of the Commons<br>Governance of the Commons - Repetition, reputation, trust and cooperation                                                                   | Assignment 4 Due |
| Monday, April 26, 2021<br>Wednesday, April 28, 2021<br>Friday, April 30, 2021          | Natural Resource Management                                              | Citizen Suits and SLAPP; Chesapeake Bay Program                                                                                                                       | Spring Break     |
| Monday, May 3, 2021<br>Wednesday, May 5, 2021<br>Friday, May 7, 2021                   | Natural Resource Management                                              | Chesapeake Bay Program: Water Quality<br>Overview: Summary                                                                                                            | LDOC             |
| Tuesday, May 11, 2021                                                                  | FINAL EXAM                                                               |                                                                                                                                                                       |                  |

## **COURSE POLICIES**

### **Late Assignment Policy**

It is very important that work be turned in on time or students will find it very difficult to catch up. All work in the course (e.g. discussion, quizzes, and exams) will be due by 5:00 pm EST on the date noted on the class calendar

### **Faculty Communication and Feedback**

Please should give 48 hours for me to get back to you for any communication and one week for grading turnaround time.

We will have weekly zoom meetings as a group that are a great place to ask questions about the course. Any course content related questions that I get by email within 48 hours of our group meeting will be addressed in the meeting. I am also happy to meet with you in a one-on-one setting through zoom.

If you have concerns about communication or feedback reach out to the instructor first. I am always happy to set up a zoom meeting to facilitate discussion, especially when email can be slow or may need additional follow up questions.

### **Online Learning Student Expectations**

All students are expected to contribute to their own learning as active and well-prepared participants. Learning modules will provide various opportunities for reading, reflection, applied experiences, discussion and writing. Since these activates are woven through the entire week you should log on a few times a week to keep up with the material. You should plan on spending the same amount of preparation and “class time” on this course as you would if you were taking a course in a face-to-face environment.

## ***Logging on***

The learning activities for each week are carefully sequenced, so you can accomplish a reasonable amount of work throughout the week. You should log on to the course website regularly to work through course materials and participate in course discussions.

## ***Posting Responses***

Interaction between students and faculty is an important part of this course and requires prompt postings and responses. In an attempt to be efficient with our time and considerate of everyone's schedules – beyond the requirements of this course – we will operate under a consistent time structure for posting assignments and responses.

## ***Submitting Assessments.***

Individually completed assessments should be submitted to the appropriate assessment page. Unless otherwise noted, assessments will be due by 5:00 pm EST on the date noted on the course calendar.

## **Academic Integrity and the Honor Code**

The origin of our Honor Code at William & Mary dates back to 1736 when the college first demonstrated its highest commitment to the character of its students. The Honor Code has evolved along with the college and has gone from being a “gentlemen’s code” into a codified student honor system promoting individual responsibility on the part of all who are members of the William & Mary community relating to a student’s honor. The same high commitment to student character exists today, and the Honor Code is administered by the student body to help build a community of trust.

Upon matriculation at William & Mary, all students are asked to sign the Honor Code, expressing their commitment to not lie, cheat, or steal.

"As a member of the William & Mary community, I pledge on my honor not to lie, cheat, or steal, either in my academic or personal life. I understand that such acts violate the Honor Code and undermine the community of trust, of which we are all stewards."

Upon graduation, the Honor Code becomes the brand with which all William & Mary alumni will be judged. Our conduct during our time as students and beyond reflects our character and the character of our college. Therefore, we encourage students to be actively committed to safeguarding the Honor Code's "community of trust of which we are stewards."

## **Accessibility Services**

William & Mary accommodates students with disabilities in accordance with federal laws and university policy. Any student who feels they may need an accommodation based on the impact of a learning, psychiatric, physical, or chronic health diagnosis should contact Student Accessibility Services staff at 757-221-2509 or at [sas@wm.edu](mailto:sas@wm.edu) to determine if accommodations are warranted and to obtain an official letter of accommodation. For more information, please see [www.wm.edu/sas](http://www.wm.edu/sas)