ENVIRONMENTAL ECONOMICS (SPRING 2017)
ECONOMICS 335 (SECTION 1)

OBJECTIVE

Students will learn:

- *about the major environmental challenges of the 21st century;*
- *how a variety of public policies could reduce these challenges; and*
- *how economic theory can improve these policies.*

ADMINISTRATIVE DETAILS

TIME: Mondays-Wednesdays-Fridays, 1:30-2:20 P.M.
PLACE: Planetary Hall, Room 206
INSTRUCTOR: William (Bill) McNaught
EMAIL: wmcnaught1@verizon.net and wmcnaugh@gmu.edu
PHONE: 703-777-3182 (H) and 703-209-2032 (C)

MATERIALS

TEXT

- [TL] Tom Tietenberg and Lynne Lewis, *Environmental and Natural Resource Economics, 10th Edition*

BLACKBOARD

- [CC] C. Candelise in P. Eakins, M. Bradshaw and T. Wates, *Global Energy*: Chapter 18, "Solar Energy: An Untapped Growing Potential"
- [DZ] B. Deese and J. Zients in *Wall Street Journal*, August 19, 2011: "Enlist the Market in the Climate Change Fight"
- [DC] District Department of Environment, *District of Columbia's Ambient Air Quality Trend Report*, Oct 2014: Chapter 1
- [EC] *The Economist*: August 8th-14th, 2015: "A Modern Ark", "If All Else Fails", "Climate Change: Hotter than August" and "Second Best Solutions"
- [AG] A. Gore, The Future: Chapter 1, "Earth, Inc"
- [GH] G. Hardin in K. Conca and G. Dabelko, *Green Planet Blues*: Chapter 3, "Tragedy of the Commons"
- [FI] F. Incropera, *Climate Change: A Wicked Problem*: Chapter 2, "Earth's Climate System"; Chapter 3, "Greenhouse Gases"; Chapter 4, "Global Warming"; Chapter 7, "Public Policy Options"; Chapter 8, "Politics of Global Warming"; Chapter 9, "Dissenting Opinions" and Chapter 10, "Ethics of Climate Change"
- [LM] M. Lehtonen and M. Kainen in P. Eakins, M. Bradshaw and T. Wates, *Global Energy*: Chapter 16, "Nuclear Power After Fukishima; Prospects and Implications"
- [GM] N. Gregory Mankiw, *Principles of Microeconomics*: Chapter 4: "Forces of Supply and Demand"; Chapter 10: "Externalities" and Chapter 11: "Public Goods and Common Resources"
- [MM] M. Maslin, *Climate Change: A Very Short Introduction*: Chapter 3, "Evidence for Climate Change" and Chapter 7, "Politics of Climate Change"
- [MBN] R. L. Miller, D. K. Benjamin and D. North, *The Economics of Public Issues*, 18th Edition: Chapter 7, "All Fracked Up"; Chapter 9, "Are We Running Out of Water?"; Chapter 20, "The Deception of Green Energy"; Chapter 25, "Save That Species"; Chapter 26, "The Economics of Global Warming" and Chapter 28, "The Trashman Cometh"

●[DM] Darrell Moellen, *Global Inequality Matters*: Chapter 6, "Climate Change, Development and Mitigation"
●[JS] Jeffrey Sachs, *Common Wealth*: Chapter 3, "The Anthropocene"; Chapter 4, "Global Solutions to Climate Change" and Chapter 5, "Securing Our Water Needs"
●[UN] U. N. Population Fund in K. Conca and G. Dabelko, *Green Planet Blues*: Chapter 35, "Footprints and Milestones: Population and Environmental Change"
●[GW] Gordon Walker, *Environmental Justice*: Chapter 1: "Understanding Environmental Justice"; Chapter 2: "Globalizing and Framing Environmental Justice" and Chapter 8: "Climate Justice: Scaling the Politics of the Future"

COURSE POLICIES

The instructor assumes that all students have completed an introductory course in microeconomics, probably GMU's Econ 103, but possibly NVCC's equivalent course Eco 202. If a student has not, he/she should notify the instructor. Additional experience with macroeconomics, perhaps through GMU's Econ 104, would also be helpful.

Most sessions the class will examine one or two chapter(s) from the textbook or related books on environmental topics. To refresh students' grasp of the basic microeconomic concepts, the course begins with a quick review of microeconomic theory using Powerpoint slides from Greg Mankiw's textbook *Principles of Microeconomics* (these slides are available on Blackboard.) The instructor will occasionally supplement the textbook with extra readings. Lecture notes for each daily session will be posted to Blackboard.

Disability Policy

A few students may need accommodations for a disability, usually involving extra time during tests. The instructor, who himself is disabled, appreciates the special needs of disabled students and will do his best to make accommodations for students who present him with GMU's form certifying their disability.

Honor Policy

The instructor, a graduate of the U. S. Air Force Academy, believes strongly in academic integrity. Students using someone else's work without propter attribution will be reported to GMU's Honor Council.

Office Hours and Other Items

As an adjunct, the instructor does not have formal office hours so students wishing to meet are advised to email their wishes to meet ahead of time. Most students will find it easier to ask questions by email. However if they would like to meet personally, the instructor will try to be in the adjunct office in the Economics Department from 11:00 to noon each Wednesday. Students wishing another view on the economics of externalities may wish to know the instructor is also treaching Econ 309 Mondays, Wednesdays and Fridays in Robinson B-220 at 9:30 AM. He will be discussing externalities in this course on February 10th and climate change on February 13th and 15th.

GRADES

Grades will be determined through two graded exams and a short paper. Additionally, students may write an extra credit paper. All assignments will be graded on a standard 100-point scale and averaged to determine the final numerical grade. Letter grades probably will be set using the traditional grade scale of 90-100 A, 80 to 89 B, etc. Within each letter range the instructor will award some "+"s and "-"s. For example, an 81 would be a B- and a 98 would be an A+.

Exams

The midterm exam covering only chapters 1 through 9 in the text-book will be given on March 10th. The final exam covering only material covered since the midterm will be given on May 10th. Both exams will combine multiple-choice questions, matching of terms and two short-answer questions. Matching and multiple-choice questions will test students' knowledge of key economic terms mentioned in the readings and lectures. Each short-answer question will ask students to summarize one of the economic concepts mentioned in the text. Students will write their answers on the exam itself and do not need to bring blue books. The instructor has already posted a study guide for the midterm exam to Blackboard. The final will have a similar design.

Paper(s)

The required paper should be from 4 to 5 pages (double-spaced including diagrams) and present the student's understanding of an important environmental issue, namely climate change. The paper might begin with a short description of the student's understanding of the importance of climate change as a global environmental threat. A second section might describe the policies that could reduce this threat, e. g., command-and-control regulation, taxation of carbon energy sources and marketable permits for emissions. The final and most important section should use economic tools gained during the course to analyze which of these policies offers the best chance of reducing the effects of climate change at the minimal cost. Students also might wish to comment on the climate change policies of the Trump Administration. A sample outline of this paper is posted to Blackboard.

Additionally, students may write a second 4-to-5-page paper for extra credit. The extra credit paper may be used to replace any of the other three graded assignments although in the past most students in this course have often opted to write an extra credit paper in order to skip the final exam. The extra credit paper should address one of the following topics related to environmental economics:

- cost-benefit analysis (Chapter 3),
- depletable resource allocation (Chapter 6),
- stationary-source pollution (Chapter 15) or
- mobile-source pollution (Chapter 17.)

If a student wishes to write a paper on another topic, perhaps as part of a course in his/her environmental studies major, he/she should propose a topic for this paper to the instructor. The required paper is due on May 5th and the extra credit paper is due prior to the final exam on May 10th.

COURSE SCHEDULE

JAN 23: COURSE OVERVIEW AND MICROECONOMICS REVIEW
REQUIRED READINGS: TL (Chapter 1)
RECOMMENDED READINGS: JS (The Anthropocene) and AG

JAN 25: MICROECONOMICS REVIEW
REQUIRED READING: GM (Forces of Supply and Demand)

JAN 27: PUBLIC GOODS AMD COMMON RESOURCES
REQUIRED READING: GM (Public Goods and Common Resources)

JAN 30: PROPERTY RIGHTS
REQUIRED READING: TL (Chapter 2)

FEB 1: ECONOMIC EFFICIENCY
REQUIRED READING: TL (Chapter 2)

FEB 3: EXTERNALITIES
REQUIRED READING: TL (Chapter 2)
RECOMMENDED READING: GM (Externalities)

FEB 6: BENEFIT-COST ANALYSIS (PART 1)
REQUIRED READING: TL (Chapter 3)

FEB 8: BENEFIT-COST ANALYSIS (PART 2)
REQUIRED READING: TL (Chapter 3)

FEB 10: VALUING THE ENVIRONMENT (PART 1)
REQUIRED READING: TL (Chapter 4)

FEB 13: VALUING THE ENVIRONMENT (PART 2)
REQUIRED READING: TL (Chapter 4)

FEB 15: SUSTAINABLE DEVELOPMENT (PART 1)
REQUIRED READING: TL (Chapter 5)

FEB 17: SUSTAINABLE DEVELOPMENT (PART 2)
REQUIRED READING: TL (Chapter 5)

FEB 20: DEPLETABLE RESOURCES
REQUIRED READING: TL (Chapters 6)

FEB 22: ENERGY (PART 1)
REQUIRED READING: TL (Chapter 7)
RECOMMENDED READING: MBN (Deception of Green Energy)

FEB 24: ENERGY (PART 2)
REQUIRED READINGS: MBN (All Fracked Up) and CC
RECOMMENDED READING: LM

FEB 27: RECYCLING (PART 1)
REQUIRED READING: TL (Chapter 8)

MAR 1: RECYCLING (PART 2)
REQUIRED READING: TL (Chapter 8)
RECOMMENDED READING: MBN (The Trashman Cometh)

MAR 3: WATER (PART 1)
REQUIRED READING: TL (Chapter 9)

MAR 6: WATER (PART 2)
REQUIRED READINGS: JS (Securing Our Water Needs) and MBN (Are We Running Out of Water?)

MAR 8: SESSION HELPING STUDENTS PREPARE FOR THE MIDTERM EXAM
REQUIRED READINGS: none

MAR 10: MIDTERM
REQUIRED READINGS: None

MAR 13 TO MAR 17: NO CLASSES DUE TO SPRING BREAK

MAR 20: MIDTERM REVIEW
NOTE: Graded midterm exams will be returned and discussed; students who did not take the exam on March 10th should take a makeup exam

MAR 22: LAND
REQUIRED READING: TL (Chapter 10)

MAR 24: FORESTS
REQUIRED READING: TL (Chapter 11)

MAR 27: COMMON-POOL RESOURCES (PART 1)
REQUIRED READING: TL (Chapter 12)

MAR 29: COMMON-POOL RESOURCES (PART 2)
REQUIRED READING: TL (Chapter 12)

MAR 31: ECO-SYSTEM SERVICES
REQUIRED READING: TL (Chapter 13), MBN (Save That Species)
RECOMMENDED READING: EC (Modern Ark)

APR 3: OVERVIEW OF THE ECONOMICS OF POLLUTION (PART 1)
REQUIRED READING: TL (Chapter 14)

APR 5: OVERVIEW OF THE ECONOMICS OF POLLUTION (PART 2)
REQUIRED READING: TL (Chapter 14)

APR 7: STATIONARY SOURCE POLLUTION (PART 1)
REQUIRED READING: TL (Chapter 15)

APR 10: STATIONARY SOURCE POLLUTION (PART 2)
REQUIRED READING: TL (Chapter 15)

APR 12: CLIMATE CHANGE (PART 1)
REQUIRED READING: TL (Chapter 16), MM (Evidence for Climate Change)
RECOMMENDED READING: EC (Hotter Than August), FI (Global Warming)

APR 14: CLIMATE CHANGE (PART 2)
REQURIED READINGS: TL (Chapter 16), FI (Earth's Climate System)
RECOMMENDED READING: FI (Greenhouse Gases)

APR 17: CLIMATE CHANGE (PART 3)
REQURIED READING: MBN (Economics of Global Warming), MM (Politics of Climate Change)
RECOMMENDED READINGS: EC (Second-Best Solutions), EC (If All Else Fails), EC (Modern Ark), DZ

APR 19: CLIMATE CHANGE (PART 4)
REQUIRED READINGS: JS (Global Solutions to Climate Change) and FI (Politics of Global Warming)
NOTE: Class Movie: Al Gore's *Inconvenient Truth*

APR 21: MOBILE SOURCE AIR POLLUTION
REQUIRED READING: TL (Chapter 17)
RECOMMENDED READING: DC

APR 24: WATER POLLUTION
REQUIRED READING: TL (Chapter 18)

APR 26: TOXIC SUBSTANCES
REQUIRED READING: TL (Chapter 19)

APR 28: ENVIRONMENTAL JUSTICE (PART 1)
REQUIRED READING: GW (Understanding Environmental Justice)
RECOMMENDED READING: DM

MAY 1: ENVIRONMENTAL JUSTICE (PART 2)
REQUIRED READING: GW (Globalizing and Framing Environmental Justice)
RECOMMENDED READING: FI (Ethics of Climate Change)

MAY 3: POLITICS OF CLIMATE CHANGE (PART 1)
REQUIRED READING: GW (Climate Justice: Scaling the Politics of the Fulture), FI (Politics of Global Warming)

MAY 5: POLITICS OF CLIMATE CHANGE (PART 2)
REQUIRED READING: FI (Dissenting Opinions), UN
NOTE: Session helping students prepare for the final exam; Required paper due

MAR 10: FINAL (1:30 – 3:00 PM)
READINGS: None
NOTE: Extra credit paper due