

University of Waterloo
Department of Economics
ECON 255 – Introduction to the Economics of Natural Resources
Fall 2019

Instructor: Nafeez Fatima

Office: Hagey Hall 162

Phone: 519-888-4567, ext. 30174

E-mail Address: n2fatima@uwaterloo.ca

Office Hours: Thursdays from 2.30 pm to 4.00 pm

(other times by appointment only)

Lecture Hours and Location: Tuesdays and Thursdays from 1.00 pm to 2.20 pm in RCH 309

Where to find this course outline: This course outline is available at LEARN web site <http://learn.uwaterloo.ca/>

Note

Regarding e-mail communication, students should use the university e-mail address. When sending email, "ECON 255" must appear in the subject line and the message must include your full name and ID number.

Course Description

The objective of this course is to introduce students to the issues specific to the use and management of natural resources. Natural resource economics is a branch of neoclassical economics that uses the tools of standard economics to the topic of non-renewable and renewable natural resources. The study of natural resource economics draws from both microeconomics and macroeconomics, but primarily from microeconomics. It uses the standard microeconomic tools to understand how to extract and harvest or use natural capital inputs. In this course, we will seek to understand the meaning and implications of natural resource scarcity and how the insights of economics might be used to promote a more sustainable path for our future. We begin with basic economic concepts such as static and dynamic efficiency, property rights and market failures. We then apply these concepts to the management of key resources such as energy resources, fisheries, forestry, and water.

Prerequisites

ECON 101 or ECON 100/COMM 103

Required Textbooks

The required textbook for this course is:

Tom Tietenberg & Lynne Lewis, "*Environmental & Natural Resource Economics*", 11th Edition, Routledge, 2018. **(Tietenberg)**

Recommended Textbooks: (purchase not necessary)

1. Herman Daly & Joshua Farley, "*Ecological Economics: Principles and Applications*", 2nd Edition, Island Press, 2010. **(Daly)**
2. Roger Perman, Yue Ma, James McGivary & Michael Common, "*Natural Resource & Environmental Economics*", 3rd Edition, Pearson, 2003 **(Perman)**

Resources

Course related materials including lecture notes and course outline will be posted on Learn at:

ECON 255 - Fall 2019

The lecture notes for each relevant topic will be posted on Learn. The content of the exams including practice problems will be announced in class and on Learn. Students are responsible for visiting this site frequently. It is highly recommended that students attend the lectures and read the textbook ahead of time. Lecture notes are provided as a supplement to the text book.

Course Evaluation

Student evaluation for this course will consist of two in-class midterm exams and a final exam. Final exam will be comprehensive; it will include all materials covered in this course. The final exam schedule will be released by the Registrar's Office on September 27. The final exam period for Fall Term 2019 is from December 6 to December 21. Students are expected to be available during this time. An alternative final exam time is not allowed on the ground of travel plans.

Exam Schedule & Mark Breakdown

Exams	Date	Time	Syllabus	Weight
Midterm 1	Tuesday, October 22, 2019	In class exam	Chapters 1-5	25%
Midterm 2	Tuesday, November 19, 2019	In class exam	Chapters 6-9	25%
Final	TBA	TBA	Comprehensive	50%

Policy for Missed Exams

No make-up midterm exam will be provided for this course. Students who do not have a relevant medical certificate will receive a mark of zero on any missed exam and their final grade will be assigned in accordance with the formula specified above. For students who have valid medical certificate (approved by the instructor), the weight of the missed exam will be transferred to the final exam. Students who are unable to write the scheduled final exam for valid cause supported by appropriate documentation must submit a petition along with supporting documentation to the undergraduate office. Students are advised to notify the instructor in person about the missed exam as soon as they are better (within one week). E-mail notification about the missed exam is not accepted.

Grades

Exam marks will be posted on Learn. Posting grades in public places or sending grades by e-mail are prohibited by university regulations.

Remarking Policy

If any student feels that the exam is not marked properly, he/she must inform the instructor within 6 days of the date on which the grades are posted on Learn. Please be advised that the entire test will be remarked and the grade may improve, remain unchanged or perhaps even decrease as a result of the remarking process.

Notes

Although it is not mandatory, attendance is highly recommended. Some of the materials covered in the class will not be included in the lecture notes so it is strongly advised that students attend classes regularly. Student participation in class is also strongly encouraged. Since, the course contents are technical in nature; a person to

person communication is preferred in answering questions. Students are welcome to ask any questions during regular office hours.

Chapters (Tietenberg)

Chapter 1: Visions of the Future

Chapter 2: The Economic Approach: Property Rights, Externalities, and Environmental Problems

Chapter 3: Evaluating Trade-Off: Benefit-Cost Analysis and Other Decision-Making Metrics

Chapter 4: Valuing the Environment: Methods

Chapter 5: Dynamic Efficiency & Sustainable Development

Chapter 6: Depletable Resource Allocation: The Role of Longer Time Horizons, Substitutes, and Extraction Cost

Chapter 7: Energy: The Transition from Depletable to Renewable Resources

Chapter 8: Recyclable Resources: Minerals, Papers, Bottles and E-Waste

Chapter 9: Water: A Confluence of Renewable and Depletable Resources

Chapter 10: A Locally Fixed, Multipurpose Resource: Land

Chapter 11: Storable, Renewable Resources: Forests

Chapter 13: Ecosystem Goods & Services: Nature's Threatened Bounty

Chapter 20: The Quest for Sustainable Development (Time permitting)

Tentative Class Schedule & Reading List

Week	Date	Lecture Topics and Related Readings
1	September 5	Introduction to the course and course outline
2	September 10	Chapter 1: Visions of the Future & Chapter 2: The Economic Approach: Property Rights, Externalities and Environmental Problems
2	September 12	Chapter 2: The Economic Approach: Property Rights, Externalities and Environmental Problems
3	September 17	Chapter 3: Evaluating Tradeoffs: Benefit-Cost Analysis and Other Decision making Metrics
3	September 19	Chapter 3: Evaluating Tradeoffs: Benefit-Cost

		Analysis and Other Decision making Metrics
4	September 24	Chapter 4: Valuing The Environment Methods
4	September 26	Chapter 4: Valuing The Environment Methods
5	October 1	Chapter 5 : Dynamic Efficiency and Sustainable Development
5	October 3	Chapter 5: Dynamic Efficiency and Sustainable Development
6	October 8	Chapter 6: Depletable Resource Allocation: The Role of Longer Time Horizons, Substitutes, and Extraction Cost
6	October 10	Chapter 6: Depletable Resource Allocation: The Role of Longer Time Horizons, Substitutes, and Extraction Cost
7	October 15	Reading Week- No Class
7	October 17	Reading Week- No Class
8	October 22	Midterm Exam 1 - Chapters 1, 2, 3, 4 & 5
8	October 24	Chapter 7: Energy: The Transition from Depletable to Renewable Resources
9	October 29	Chapter 7: Energy: The Transition from Depletable to Renewable Resources
9	October 31	Chapter 8: Recyclable Resources: Minerals, Papers, Bottles and E-Waste
10	November 5	Chapter 9: Water: A Confluence of Renewable and Depletable Resources
10	November 7	Chapter 9: Water: A Confluence of Renewable and Depletable Resources
11	November 12	Chapter 10: A Locally Fixed, Multipurpose Resource: Land
11	November 14	Chapter 10: A Locally Fixed, Multipurpose Resource: Land
12	November 19	Midterm 2: Chapters 6, 7, 8 & 9
12	November 21	Chapter 11: Storable, Renewable Resources: Forests
13	November 26	Chapter 11: Storable, Renewable Resources:

		Forests
13	November 28	Chapter 13: Ecosystem Goods & Services: Nature's Threatened Bounty
14	December 3	Chapter 13: Ecosystem Goods & Services: Nature's Threatened Bounty & Chapter 20: Quest for Sustainable Development

Tentative Class Schedule and Reading List

******This course schedule is tentative. There may be addition or slight modification in this schedule given the pace of the class.******

Journal Articles: (time permitting will be discussed after each topic)

1. K. Arrow *et al* (2005), "Economic growth, Carrying Capacity, and the Environment", *Ecological Economics*, 15, p. 91-95
2. Herman Daly (September 2005), "Economics in a Full World", *Scientific American*, p. 100-107.
3. Jeremy Brown (April 2005), "Travelling the Environmental Kuznets Curve", *Fraser Forum*, p. 16-17.
4. Severin Borenstein (2012) "The Private and Public Economics of Renewable Electricity Generation", *Journal of Economic Perspectives*, 26, 67-92.5.3
5. Christopher Costello, S. Gaines, and J. Lynham (2008) "Can Catch shares Prevent Fisheries Collapse?", *Science*, 321, p. 1678-1681
6. S. Olmstead and R. Stavins (2009) "Comparing Price and Nonprice approaches to Urban Water Conservation", *Water Resources Research*, pg.45
7. D. Pearce, B. Groom, C. Hepburn, and P. Koundouri (2003) "Valuing the Future: recent advances in Social Discounting", *World Economics*, 4(2), p.121-41.
8. James Smith (2009) 'World oil: market or mayhem?', *Journal of Economic Perspectives*, 23(3), p. 145-164.
9. James Smith (2012) 'Does Speculation drive Oil Prices?', *Resources Magazine*, 181, Resources for the Future.
10. Sustainable Prosperity (2011) 'Economic instruments for Water Management in Canada: Case studies and barriers to implementation', Policy Brief, Sept. 2011
11. Katherine Keil, Victor Matheson and Kevin Golembiewski (July 7, 2009), "Luck or Skill? An Examination of the Ehrlich-Simon Bet", Can be retrieved from

http://www.holycross.edu/departments/economics/RePEc/Kiel-Matheson_EhrlichSimon.pdf

12. Thomas Princen (2001), "Consumption and its Externalities: Where Economy Meets Ecology", in *Global Environmental Politics*, 1(3), p.11-30

University Statements

Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo are expected to promote honesty, trust, fairness, respect and responsibility. See the [UWaterloo Academic Integrity](#) webpage and the [Arts Academic Integrity](#) webpage for more information.

Discipline: A student is expected to know what constitutes academic integrity, to avoid committing academic offences, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to [Policy 71 - Student Discipline](#). For typical penalties check [Guidelines for the Assessment of Penalties](#).

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. [Read Policy 70 - Student Petitions and Grievances](#), Section 4. When in doubt, please be certain to contact the department's administrative assistant who will provide further assistance.

Appeals: A decision made or penalty imposed under Policy 70 - Student Petitions and Grievances (other than a petition) or Policy 71 - Student Discipline may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to [Policy 72 - Student Appeals](#).

Note for Students with Disabilities: [The AccessAbility Services office](#), located on the first floor of the Needles Hall extension (1401), collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the AS office at the beginning of each academic term.

Mental Health Support

All of us need a support system. The faculty and staff in Arts encourage students to seek out mental health supports if they are needed.

On Campus

- Counselling Services: counselling.services@uwaterloo.ca / 519-888-4567 ext 32655
- [MATES](#): one-to-one peer support program offered by Federation of Students (FEDS) and Counselling Services
- Health Services Emergency service: located across the creek from Student Life Centre

Off campus, 24/7

- [Good2Talk](#): Free confidential help line for post-secondary students. Phone: 1-866-925-5454
- Grand River Hospital: Emergency care for mental health crisis. Phone: 519-749-433 ext. 6880
- [Here 24/7](#): Mental Health and Crisis Service Team. Phone: 1-844-437-3247
- [OK2BME](#): set of support services for lesbian, gay, bisexual, transgender or questioning teens in Waterloo. Phone: 519-884-0000 extension 213

Full details can be found online at the Faculty of ARTS [website](#)

Download [UWaterloo and regional mental health resources \(PDF\)](#)

Download the [WatSafe](#) app to your phone to quickly access mental health support information

Territorial Acknowledgement

We acknowledge that we are living and working on the traditional territory of the Attawandaron (also known as Neutral), Anishinaabeg and Haudenosaunee peoples. The University of Waterloo is situated on the Haldimand Tract, the land promised to the Six Nations that includes six miles on each side of the Grand River.