

University of Waterloo
Department of Economics
Econ 255 – Introduction to the Economics of Natural Resources
Spring –2023

Instructor: Nafeez Fatima

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Office Hours: Tuesdays and Thursdays from 9.30 am to 11.00 am

(Video chat on WebEx, other times by appointment only)

Where to find this course outline

This course outline is available at two locations for the duration of the term:

- Department of Economics website:
<https://uwaterloo.ca/economics/undergraduate/courses/outlines>
- LEARN web site (requires UW userid and password): <http://learn.uwaterloo.ca>

Note: The course schedule, evaluation scheme, methodology, assessments, lab and tutorial attendance, testing and final exam policies have been planned based on current public health guidelines. Should these guidelines change, any adjustments will be communicated to students.

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)**

Communication with Instructor

Regarding email 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 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 June 2nd. The final exam period for Spring term is from August 4 to August 19. 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	Syllabus	Weight
Midterm 1	Tuesday, June 20, 2022	Chapters 1-5	25%
Midterm 2	Tuesday, July 18, 2022	Chapters 6-9	25%
Final	TBA	Comprehensive	50%

Policy for Missed Midterm Exam

Students are permitted to self-declare illness due to COVID-19 but will require a virtual Verification of Illness Form if they missed an exam due to mental health or non-covid-19 related illness. If a student is unable to write the exam for documented reasons, with approval, the weight of the exam will be transferred to the final.

Policy for Missed Final Exam

For detailed instruction regarding missed final exam, visit the following webpage: <https://uwaterloo.ca/economics/undergraduate/resources-and-policies/deferred-final-exam-policy>.

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.

Attendance Policy

Although it is not mandatory, attendance is highly recommended for tutorial sessions. Student participation in tutorial sessions is also highly encouraged. Students are welcome to ask any question during the regular office hours.

Chapters (Titenberg)

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 (Time permitting)

Chapter 20: The Quest for Sustainable Development

Tentative Class Schedule & Reading List

Week	Date	Lecture Topics and Related Readings
1	May 9 May 11	Introduction to the course and course outline Chapter 1: Visions of the Future & Chapter 2: The Economic Approach: Property Rights, Externalities and Environmental Problems
2	May 16 May 18	Chapter 2: The Economic Approach: Property Rights, Externalities and Environmental Problems
3	May 23 May 25	No class – Monday Schedule Chapter 2: The Economic Approach: Property Rights, Externalities and Environmental Problems
4	May 30 June 1	Chapter 3: Evaluating Tradeoffs: Benefit-Cost Analysis and Other Decision-making Metrics
5	June 6 June 8	Chapter 4: Valuing the Environment Methods Chapter 5: Dynamic Efficiency and Sustainable Development
6	June 13 June 15	Chapter 5: Dynamic Efficiency and Sustainable Development & Review

7	June 20 June 22	Midterm Exam 1: Chapters 1-5 Chapter 6: Depletable Resource Allocation: The Role of Longer Time Horizons, Substitutes, and Extraction Cost
8	June 27 June 29	Chapter 7: Energy: The Transition from Depletable to Renewable Resources
9	July 4 June 6	Chapter 8: Recyclable Resources: Minerals, Papers, Bottles and E-Waste
10	July 11 July 13	Chapter 9: Water: A Confluence of Renewable and Depletable Resources
11	July 18 July 20	Midterm Exam 2: Chapters 6, 7, 8 & 9 Chapter 10: A Locally Fixed, Multipurpose Resource: Land
12	July 25 July 27	Chapter 11: Storable, Renewable Resources: Forests
13	August 1	Chapter 20: Quest for Sustainable Development & Review for Final Exam

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.