

Course Title		
MLI26C707	Environmental Economics	6 cr
Learning Outcomes and Content		

Outcome: Learning outcomes for this course, upon successful completion, include the ability to: 1) know essential concepts and dynamics in environmental economics, 2) develop basic and critical appreciation of economics as applied to the environment and natural resources, 3) understand the connection between environmental quality and the economic behavior of individuals and other key economic agents, 4) relate environment and resource analysis to real world issues and circumstances through the use of practical problems and policies.

Content: The primary focus of the course is to understand the nature, scope and key concepts of environmental economics and the relationship between the economy and the environment, including the notion of optimal level of pollution. The tools of environmental analysis, the principles of demand and cost and the elements of economic efficiency in market and in non-market activities are also explored, a key notion here is that of Market failure. Key techniques of environmental analysis (like cost benefit analysis) are addressed. Attention is also given to concepts and dynamics of Polluter Pays Principle and public policy instruments (e.g. environmental taxes, subsidies, permits). Theories on the optimal allocation of renewable resources with specific application to forestry and fisheries are developed. This is followed by an investigation of the main theoretical and practical issues relating to exhaustible resources (e.g. energy). The analytical tools and principles developed earlier are applied to current developments in environmental policy in the EU and globally.

Instructor Name and Profile

Dr. Richard McGrath is Professor of Economics in the economics department of the Parker College of Business at Georgia Southern University in Savannah, Georgia, United States. He teaches and researches across a range of microeconomics and policy-related subjects, including public finance, immigration, environmental economics, and transportation economics. He has delivered classroom and research lectures in a number of countries in addition to leading numerous international study trips for students. He is a past-President and Fellow of the Academy of Economics and Finance.

Email Address

RMcGrath@GeorgiaSouthern.edu

Office Hours

Office hours by Zoom immediately following live class each day.

Zoom appointments are available on request by email. Please keep time differences in mind when requesting appointments. Savannah, GA is UTC-4 (EDT). Lecturing is my first activity of the day.

Required Reading

Environmental Economics, An Introduction, 8e, Barry C. Field and Martha K. Field. McGraw Hill.

Additional Readings will be linked or loaded to the session page on MyCourses.

Students will each choose a different climate fiction novel from a list provided by the instructor. Access to a selection of books on the list will be made available by Jaana Santala, the Mikkeli campus information specialist. Other books may be chosen at the student's expense with permission of the instructor.

Course Schedule

This is a synchronous course with mandatory class meetings via Zoom, in strict keeping with the university attendance policy. Class meetings will be held from 16.00 to 18.00 (UTC+3, EEDT), Monday through Friday. Students in other time zones should convert time schedules carefully with respect to daylight savings, where appropriate. Participation in class meetings is required beyond simply observing class meetings.

Except for Session 1, all readings and videos must be completed prior to class meetings. Students will be assumed to have learned the basic content of the readings prior to the lecture.

Discussion board posts will be employed to complete the student-to-student and student-to-faculty interactions in the course.

Exams will be completed on MyCourses with a substantial window of availability.

Session 1: Monday	Topics	
28 June 2021	Course outline	
Course Outline,	Course requirements including individual and group	
Course Requirements,	assignments	
Key Environment	Key environment Issues	
Issues		
	Readings	
	Field & Field Ch.1	
	OECD (2012), "Executive Summary", in OECD Environmental Outlook to 2050: The Consequences of Inaction, OECD Publishing, Paris. Read it online HERE	
	https://doi.org/10.1787/env_outlook-2012-3-en	
Assignment: Discussion Forum - Introduce yourself	Start 18.00 on 28 June, End 23.59 on June 29	

Session 2: Tuesday 29 June 2021 Key Concepts of Environmental Economics Session 3: Wednesday 30 June 2021 Applying the Techniques of Economics to Environmental Issues	 Topics Defining environmental and natural resource economics The environment as an economic and social asset A model of the economy Reading Field & Field Ch. 2 The Circular Economy: A Simple Explanation Cillian Lohan TEDxYouth@EEB3 (13:13) Topics Benefits and costs Supply and demand The Equimarginal principle Efficiency V equity Markets and social efficiency 	
	Reading • Field & Field Ch. 3 & Ch. 4	
	Additional materials on MyCourses	
Assignment: Discussion Forum 1	Start 18.00 on 30 June, End 23.59 on 2 July	
Session 4: Thursday 1 July 2021 A General Model of Pollution Control and the Framework of Benefit Cost Analysis	Topics The model Pollution damage & damage functions Abatement costs Efficient level of emissions Equimarginal principle	
Book selection for	 Structure of Benefit-Cost Analysis Private Benefit Cost Analysis 	
final paper and presentation due in	Reading	
discussion forum by	Field & Field Chs. 5, 6	
22.00 EEDT.		
Session 5: Friday 2 July 2021 Benefit Cost Analysis (conclusion) and Criteria for Evaluating Environmental Policies.	 Social Benefit Cost Analysis Intergeneration Benefit Cost Analysis Criteria for Policy Evaluation Efficiency Cost-Effectiveness Fairness Enforceability Flexibility Incentives for Innovation Moral Considerations 	
How do the science fiction stories by Sheckley and Barnett exemplify the importance of treating intergenerational discounting differently from social discounting?	 Barnett, Barbara, The perfect coordinates to raise a child, Daily Science Fiction, October 8, 2013. http://dailysciencefiction.com/science-fiction/future-societies/barbara-a-barnett/the-perfect-coordinates-to-raise-a-child. Sheckley, Robert, The cost of living, Galaxy Science Fiction, December 1952, http://www.gutenberg.org/ebooks/29458 Field & Field Ch 9 	

Exam 1: 60 minutes.	This exam covers all topics from Sessions 1 to 5. The 28 hour	
Available from 8.00	window to take the exam provides enough flexibility for	
Monday 5 July to	students in any time zone to prepare and take the exam.	
noon Tuesday 6 July,		
EEDT (Mikkeli)		
Session 6: Monday	Topics	
5 July 2021	Liability laws	
Policy instruments at	Property rights	
the extreme:	Voluntary action	
decentralized policies	Types of standards	
and command &	 The economics of standards, incentives, and enforcement. 	
control.	Reading	
	Field & Field 10 & 11	
Aggiggment	Additional Materials posted on MyCourses Stort 18 00 on 5 light End 23 50 on 6 light	
Assignment: Discussion Forum 2	Start 18.00 on 5 July, End 23.59 on 6 July	
	Tanias	
Session 7: Tuesday	Topics The economics of emission charges	
6 July 2021	The economics of emission charges	
Price-based policy instruments:	Cost effectiveness and innovation Discription to the description to the description of the description	
	Principles behind emission trading	
Emissions charges and transferrable	Problems with emissions trading	
	Non-uniform emissions	
permits	Enforcement of emissions charges	
	Transferrable permits	
	General principles behind emission trading	
	Problems with emissions trading	
	Non-uniform emissions	
	Enforcement of transferrable permit regulations	
	Reading	
	Field & Field Chs.12 & 13	
	Additional Materials posted on MyCourses subject to	
	revision	
Watch the videos on Canada's carbon taxes.		
	 Carbon pricing is here to stay in Canada. What is it anyway? 	
	The Globe and Mail	
	 What to know about the federal carbon tax - CBC News 	
	 Carbon pricing: How does a carbon tax work? Canada 	
	Ecofiscal Commission	
	Fighting disinformation on Canada's carbon tax - Global News	
	EU Emissions Trading	
	The EU Emissions Trading System explained - EEA	
	EU Emissions Trading System (EU ETS) - EEA	

Session 8 Wednesday 7 July 2021 Renewable Resources: Forestry & Fisheries	 Forestry as a private industry: optimal harvesting Forestry as an open resource: deforestation The causes of deforestation The role of public policy in reducing deforestation Deforestation and climate change Sustainable forestry Videos first Watch these brief series to learn about optimal harvesting and the conflict between profit maximization and sustainability in forestry and fisheries. Conservation Strategy Fund: Forestry Economics Playlist Conservation Strategy Fund - Fisheries Economics Playlist Reading second: Butler, R. (2020) Amazon Destruction https://rainforests.mongabay.com/amazon/amazon_destruction.html FAO (2020), The Global Forest Resource Assessment, 2020 http://www.fao.org/3/CA8753EN/CA8753EN.pdf
Assignment: Discussion Forum 3	Start 18.00 on 7 July, End 23.59 on 8 July

Session 9: Thursday, 8 July 2021

Energy: Fossil Fuels, Fracking, and Renewable Energy

Topics

- Various sources of energy and their relative importance in a global context,
- Economics and environment issues of fossil fuels.
- Economics and environmental issues related to fracking.
- Trends is cost and use of renewable energy sources.
- Limitations of renewables as replacement for fossils.

Materials posted on MyCourses subject to revision. The links below are a sample. I will edit and reduce the size of the list.

Energy production by type and country. Global Energy Statistical Yearbook 2019

Energy Usage Projections Today in Energy US EIA

Energy production and consumption by region by type BP Statistical review of World Energy 2020 Page 50-57

How fracking works

Hydraulic Fracturing Simulation Noble Energy 5:20 How does fracking work? - Mia Nacamulli 6:03,

Fracking and drinking water

EPA's Study of Hydraulic Fracturing for Oil and Gas and Its Potential Impact on Drinking Water Resources

Fracking and earthquakes

Studies link earthquakes to fracking in the Central and Eastern US -- Science Daily

Renewables

IRENA How Falling Costs Make Renewables a Cost-effective Investment US EIA graphics

Renewable Energy 101 | National Geographic 3:17
IRENA Cost of Renewable Energy 2019 read pp 11-17
https://www.irena.org/costs/Charts/Wind

<u>Is Renewable Energy Worth It?: The Economics of Renewable Energy</u>

Session 10 Friday, 9 July 2021 Non-Degradable Pollution: Plastics	 Extent of plastics pollution Physical degradation vs. chemical degradation Effects of wildlife Effects on humans Remediation possibilities Reading The primary reading for this module is Plastic Pollution - Our World in Data 2018. It gives a comprehensive view of plastic production, use, waste, disposal, and environmental implications. The associated slide deck Our World in Data Slides may be enough. The importance of product packaging - Printex Transparent Packaging is a brief website that discusses the value of plastic packaging. In simple terms, it explains why we can't realistically stop using plastic. Why is plastic so important to corporations? Here is an example: The Secrets Behind Coca Cola's Plastic Waste Environmental Documentary (2:32) Why It's Probably Better for the Planet to Throw Plastic in the Trash RealClear Science (Short read)Thomas Kinnaman Micro-Plastics Toxins in our seafood? 18:52 ABC Science 2016 http://plastic-pollution.org/ Extensive website. Detailed introduction page. Many links to a variety of topics. Optional
Exam 2: 60 minutes. Window from 8.00 Monday 12 July to noon Tuesday 13 July, EEDT (Mikkeli). Session 11: Monday, 12 July 2021 Materials, Business Development, and the Circular Economy	This exam covers all topics from Sessions 6 to 10. Guest speaker Panu Jouhkimo, programme coordinator of EcoSairila at Miksei Mikkeli will discuss closing the material cycle, green and blue business development, and his own experience of the circular economy. Before our speaker visits, please visit the following resources and learn about Miksei Mikkeli and Eco Sairila. Miksei Mikkeli homepage EcoSairila Brochure
Assignment: Discussion Forum 4	Start 18.00 on 12 July, End 23.59 on 13 July

Session	12	Tuesday
13 July 2	202	1

Climate Change

2000 word paper on the economic analysis of the student's chosen climate fiction novel due by 22.00.

Topics

- Describe economic changes that must accompany mitigation of climate change.
- Explain linkages among climate change, sea level rise and risks to coastal cities
- Explain the relationship of climate change to water insecurity
- Describe the effects of climate change on financial and property risk.

Reading

- Field & Field Ch 18
- Additional Materials on MyCourses
- How Carbon Pricing Can Save the World | Johan Eyckmans | TEDxKULeuvenBrussels (19:16)

The Science

Overview of Greenhouse Gases - EPA

The Economy

- <u>Ten Facts about Climate Change and Climate</u>
 <u>Policy</u> Brookings Oct 2019
- Climate Change Facts and Effect on the Economy The Balance June 2020

The Glaciers

 A water crisis looms for 270 million people as South Asia's glaciers shrink Nat Geo July 2020

Session 13 Wednesday 14 July 2021

Globalization, Environment, and Climate Change

Topics

- Competing views of climate change among industrialized and developing economies.
- The cost of caring about the global environment
- Pushing costs from industrialized to non-industrialized countries.

Reading

Field & Field Ch 20

Additional reading materials and videos will be available on MyCourses.

Hein et al (2018) Deforestation and the Paris Climate Change Agreement: An Assessment of RESS+ in the National Climate Action Plans. *Forest Policy and Econ*omics. Volume 90, May 2018, pages 7-11.

https://www.sciencedirect.com/science/article/pii/S1389934117305373

Session 14 Thursday 15 July 2021		
Exam 3: 60 minutes. Window from 16.00 to 18.00 Thursday 14 July, EEDT (Mikkeli)		
Session 15 Friday 16 July 2021	Student Presentations. Students will present an economic analysis of a work of climate fiction selected from a list made available at the beginning of the course.	

Course Requirements and Values	
	maximum points 10%
	10%
6 slides)	20%
	20%
	20%
	20%
Total	100
Conversion scale Final gra	
5	
4	
3	
2	
1	
0	
	Total Final gra (official so 4 3 2 1

ECTS GUIDELINES

This course is a 6 ECTS unit course, following the ECTS (European Credit Transfer System) guidelines of Aalto University School of Business. The number of hours the average student is expected to work in the course is 160 (including in-class and out-of-class work).

ECTS Student Workload	
	Number of Hours
Faculty-led engagement (May include synchronous sessions and asynchronous interaction, eg viewing recorded lectures, distance teamwork and other peer interaction such as threaded discussions.)	45
Self-study hours (May include acquisition of content and assignment completion.)	115

Work with course materials, eg required reading	75
Exam preparation	20
Individual research & writing	20
Team projects (meetings, research, preparation, etc.)	
Other	
Total of all student workload hours	160

Academic Policy Statements

TEXTBOOK POLICY

All required textbooks and other course materials are the responsibility of the student. It is the expectation of faculty that all students will have access to the textbooks and other reading material. If a student is not able to purchase his/her own copy of the textbook or other required reading materials, it is nonetheless the student's responsibility to find a way to complete the reading for the course.

COURSE PARTICIPATION

A hallmark of the Mikkeli program is student engagement in the classroom, which for this course is an online learning space. Students are expected to participate actively in the course and follow lectures and other presentations, whether synchronous ("live") or asynchronous (recorded). Assignment deadlines will be enforced as for regular courses. As always, faculty will evaluate your achievement of the learning outcomes of the course through assessment methods approved by the program director. A passive approach to the course will negatively affect your grade. In practical terms, this means that the instructor for the course will take attendance in the synchronous sessions. Any student who is absent for 25% or more of the synchronous sessions may be dropped from the course. The decision to drop a student from a course will be made by the instructor, who will inform Mari Syväoja, Manager of Academic Operations: mari.syvaoja@aalto.fi.

CODES OF CONDUCT

Academic excellence and high achievement levels are only possible in an environment where the highest standards of academic honesty and integrity are maintained. Students are expected to abide by the Aalto University Code of Academic Integrity, other relevant codes and regulations, as well as the canons of ethical conduct within the disciplines of business and management education.

In addition, the BScBA Program has strict exam regulations in force which must be followed in all test-taking situations.

Additional Information

Exams

Exams may consist of a series of theoretical or discussion questions and/or essays. Students' written exams will be assessed in terms of their ability to demonstrate knowledge and understanding of the topics presented and breadth of reading. Students are allowed access to books and notes but may not discuss exams with others until they are graded. Because time constraints will limit the value of books and notes when taking exams, students should not overly rely on them when planning for exams.

Discussion Boards

There will be a required personal introduction plus four graded discussion boards, graded based on the guidelines below. Discussion boards can be a great part of the course. Don't just try to get them done. Be thoughtful and add to the conversation. Each discussion board assignment will have additional instructions

- Read all the other posts first.
 - You are not dropping a monologue into empty space. You are engaging in conversation
- What are you adding to the conversation?
 - o If you agree with a post, explain and expand, don't just agree.
 - If you disagree, do so politely and with details about why you disagree.
 Polite disagreement is valuable on discussion boards.
 - Cite sources. Don't say "I read that." Repeating what you read on social media is not a contribution unless you are analyzing what was said.
 - Add links to supporting information to help move the conversation forward.
- Write out your full comment in a separate document and save it. Expectations:
 - You address a significant portion of the question.
 - The answer avoids triteness and unsupported generalizations.
 - The ideas reflect critical thinking and insight.
 - There is some originality in the writer's response.
 - The content has depth and substance.
 - o There are virtually no errors in punctuation or spelling, grammar or usage.
 - Sentences are smooth and carefully constructed.
 - The words chosen are clear, accurate, and precise.
 - The answer or response holds the reader's interest.
- Decide where to post it.
 - Are you replying to a thread in general, or to a particular comment in a thread? Those have separate buttons. Know which is which.
 - Start a new thread only if your thoughts do not fit into an established thread. Subject lines should be descriptive of the topic to invite readers. I suggest writing the subject line after drafting the post.
- Grading.
 - Adherence to the above guidelines will be the focus of grading.
 - o Political and social viewpoints will not affect grading.

2000 word paper (and book selection/acquisition)

Students will each write a 2000 word essay on a single environmental issue based on the reading and analysis of a climate fiction or environmental fiction book approved by the faculty member. Students may not use the same book, and must claim the rights to a book on a discussion board, first-come, first-served. I suggest choosing books as quickly as possible. There is a pre-approved list in two parts: 1) Jaana Santala, the college

information specialist, has ordered 15 different books and can ship them to you. 2) the remainder of the approved list can be purchased at your own expense or borrowed from a library. I am amenable to book requests off the list. Email the link to a bookseller's listing for my approval.

Additional information on the assignment will be provided on MyCourses. It is expected that the standard of writing and presentation is appropriate to advanced university study. This means submitting a work that has been proof read, corrected and legible. I expect to receive a structured work which has well developed themes and logical argument. Late papers will be penalized without an approved excused absence. Papers must comply with the Citation and Referencing Guide https://into.aalto.fi/display/enbscba/Citation+and+Referencing+Guide and the Style Guide https://into.aalto.fi/display/enbscba/Style+Guide+and+Cover+Page+Template+for+Assignments. Due Tuesday 12 July 22.00.

Presentation and feedback on other presentations

Students will be required to make a 10-minute presentation on the key components of the analysis from the 2000 word paper. Guidance for these presentations will be provided on MyCourses. Students are also expected to actively contribute to the discussion of other presentations. Slides must be uploaded 30 minutes before presentations begin to allow an orderly progression through presentations. Presentations will be approximately ten minutes to leave time for questions and discussion. Clarity and insight will be the primary characteristics sought from presentations and discussion.

Class preparation and participation

The active exchange of ideas and observations is important in a policy-oriented course. This requires advance preparation and participation by students. This is particularly important when students are assigned to find their own sources of information to contribute to the class discussion. Attendance alone in not sufficient for a quality participation grade.

<u>Please note that late assignments will not be accepted except upon approval for urgent reasons.</u>