ECON 3535: Course Outline

Week	Dates	Tuesday	Thursday	Assignments
1	1/17 - 1/19	`Syllabus` + Intro	Topic 1 - Economic Fundamentals	
2	1/24 - 1/26	`Lecture 2`	`Lecture 3`	
3	1/31 - 2/2	`Lecture 4`	`Lecture 5`	
4	2/7 - 2/9	`Lecture 6`	`Lecture 7`	
5	2/14 - 2/16	*Midterm*	Topic 2 - Energy Resources	Math Assignment
6	2/21 - 2/23	`Lecture 9`	`Lecture 10`	
7	2/28 - 3/2	`Lecture 11`	`Lecture 12`	
8	3/7 - 3/9	`Lecture 13`	Topic 3 - Pollution and Climate Change	
9	3/14 - 3/16	`Lecture 15`	`Lecture 16`	
10	3/21 - 3/23	`Lecture 17`	*Midterm*	
11	3/28 - 3/30	No Class *Spring Break*	No Class *Spring Break*	
12	4/4 - 4/6	Topic 4 - Valuation and Non-Energy Resources	`Lecture 19`	
13	4/11 - 4/13	`Lecture 20`	`Lecture 21`	Writing Assignment
14	4/18 - 4/20	`Lecture 22`	`Lecture 23`	
15	4/25 - 4/27	`Lecture 24`	Review	
Final	05/06 *1:30-4pm*			*Final Exam*

Unit 1: Economic Fundamentals

LECTURE 1

- Intro to Class
- Prisoner's Dilemma Review
- Economic tools for analyzing natural resource problems

Readings for this lecture

- `Robert Frank's The Darwin Economy`

LECTURE 2

- Discounting and Present Value
- Resource taxonomy
- Recyclable resources

Readings for this lecture

- "Static Efficiency", page 21
- "Relating Optimality to Efficiency", page 48
- "Comparing Benefits and Costs Across Time", page 49
- "Choosing the Discount Rate", page 60
- "Resource Taxonomy", page 124

LECTURE 3

- Two-period model with constant MC and fixed supply
- Mineral two-period model

Readings for this lecture

- "A Two-Period Model", page 108
- `Michael Greenstone's Managing Climate Risk` (`online version`).

LECTURE 4

- Marginal user cost
- Markets
- Efficiency
- Welfare theorem

Readings for this lecture

- "A Two-Period Model", page 108
- "Efficient Intertemporal Allocations", page 127

LECTURE 5

- Property rights
- Coase theorem
- Bargaining

Readings for this lecture

- "Externalities as a Source of Market Failure", page 25
- Example 2.2 Shrimp Farming Externalities in Thailand, page 27
- "Coase Theorem", page 36

LECTURE 6

- Policy tools
- Local pollutants
- Policy comparisons
- Numerical example

Readings for this lecture

- `Ronald Coase and the Misuse of Economics` (`online version`).
- "The Command-and-Control Policy Framework", page 358
- "Command and control vs market-based policies", page 358

LECTURE 7

- Numerical Exercise
- Taxes and Deadweight Loss
- Corrective Taxes and Subsidies
- Growth and Development
- Trade

Videos

- `Taxes and Deadweight Loss`
- `Pigouvian Taxes`

Readings for this lecture

- "Trade and the Environment", page 480
- Example 20.3 The Natural Resource Curse
- `Carbon Taxes Won't Do Enough to Slow Global Warming` (`online version`).

Math Assignment due 2/14 at 11:59pm

Unit 2: Energy Resources

LECTURE 8

- Energy Overview
- Electricity Industry

Readings for this lecture

- "Will we ever stop using fossil fuels?", pages 117-120
- "Electricity" and Examples 7.5 and 7.6, pages 158

LECTURE 9

- Coal
- Carbon capture and storage
- Nuclear
- Natural Gas

Readings for this lecture

- Renewable energy - the global transition, explained in 12 charts (online version)

LECTURE 10

- Renewables overview
- Wind
- Solar

Readings for this lecture

- Renewables to Account for a Third of Global Power Generation in 2022 (online version).
- Renewables Are Expanding at an Astounding Pace. But It's Still Not Enough to Meet Climate Goals (online version)
- Interview with NREL Researcher: Solar power's greatest challenge was discovered 10 years ago. It looks like a duck. (online version).

`LECTURE 11`

- Energy storage
- Demand response
- Hydroelectric

Readings for this lecture

- `Energy Storage`
- `Demand Response`

Videos

- `The Future of Energy Storage Beyond Lithium Ion`

`LECTURE 12`

- Transportation
- Biofuels

Readings for this lecture

- "CAFE Standards" and "Alternative Fuels and Vehicles", page 380 and 385

Unit 3: Pollution, Climate Change, and Policy

LECTURE 13

- Climate change
- Science overview
- Policy overview

Readings for this lecture

- `The Uninhabitable Earth` (`online version`).

LECTURE 14

- Policies for local air pollution
- US Acid Rain Program
- Programs in France, Sweden, Japan
- International air pollution policies

Readings for this lecture

- `NYTimes' The Daily: Joe Biden's Climate Plan`

Videos

- `A Brief History of Environmental Justice`
- Example: Cancer Alley `Why This Town is Dying From Cancer`

LECTURE 15

- Paris Agreement
- Country-specific climate change policies

Readings for this lecture

- `Most countries aren't hitting 2030 climate goals, and everyone will pay the price` (`online version`).
- `China's Pledge to Be Carbon Neutral by 2060 - What It Means` (`online version`).
- `John Kerry, Biden's Climate Czar, Talks About Saving the Planet` (`online version`).

LECTURE 16

- Environmental taxes
- Double dividend hypothesis

Readings for this lecture

- `The Trump Administration Is Reversing More Than 100 Environmental Rules. Here's the Full List.` (`online version`).
- TBD: about Biden's Climate Efforts

Unit 4: Valuation Methods and Non-Energy Resources

LECTURE 18

- Valuation overview
- Cost/benefit analysis
- Efficiency

Readings for this lecture

- Chapter 3

LECTURE 19

- Different types of value
- Stated preference methods and biases
- Revealed preference methods

Readings for this lecture

- Chapter 4

LECTURE 20

- Ecosystem services
- Bioeconomic systems
- Static fisheries

Readings for this lecture

- Video: `The economic, social and icon value of the Great Barrier Reef`
- `What Is The Real Value Of The Great Barrier Reef?` (`online version`)
- `What bees can teach us about the real value of protecting nature` (`online version`).

LECTURE 21

- Dynamic fisheries
- Open access fisheries

Readings for this lecture

- First half of chapter 12 (Until you get to the dynamic fisheries model)

LECTURE 22

- Forestry

Readings for this lecture

- Chapter 11

Writing Assignment due 4/15 at 11:59pm

LECTURE 23

- Land use

Readings for this lecture

- Chapter 10

LECTURE 24

- Food insecurity
- Water
- Waste and Recycling

Readings for this lecture

- Chapter 9
- `Is Recycling Worth It?` (`online version`).