Tsinghua University Prof. Jing Cao

Department of Economics Fall 2023

**ENVIRONMENTAL AND RESOURCE ECONOMICS**

**Course Syllabus *Teaching Staffs:***

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***Course Website*** http://learn.tsinghua.edu.cn

***Course Description:***

This course is an introduction of Environmental and Natural Resource Economics. The objective of this course is for students to learn how basic economic theory can be used to understand and analyze environmental pollution and resource degradation problems. The course covers both conceptual and methodological topics and recent applications in China, US and European countries. Examples of local, regional, national and international environmental and natural resource issues are presented and discussed.

This course is structured into four parts. The first part of this course is an introduction to the basic principles of environmental and resource economics; cost and benefit analysis. In the second part the focus is on environmental economics and policy, including economics of pollution control, valuing the environment, regional and global air pollution, water pollution and so forth. The third part is focused on natural resource economics, both renewable and nonrenewable resources. The last part is on sustainable development and macroeconomic aspect of environmental policy.

***Prerequisites:***

Intermediate Microeconomics is required for taking this course.

***Gradings:***

Problem sets 20%

Final 50%

In-class exercises, 30%

presentation, attendance

and classroom performance

***Total 100%***

***Problem sets:***

Four problem sets will be assigned. The problem sets are designed to help you learn the material and they will also be a good study guide for the exams. They will be graded on a 100-point scale. Printed hard copy is strongly encouraged and will be collected in class (we don’t accept email submission). Late problem sets will be marked down by 10% for each day late (submission after class will be treated as one day late, late problem sets need to submit to my office in person).

***Attendance policy:***

Attendance for class is required. If you miss the class, you may miss in-class exercises, which are important for your final grade. In addition, all material covered in class, including videos, handouts, in-class games and student presentation, will be fair game for problem sets and examples (for instance, game materials and videos will be posted on the course websites).

**Weekly Schedule:**

1. Introduction to Environmental and Resource Economics; Basic Pessimist Model vs. Basic Optimist Model
2. Basic Tools and Economic Principles for Environmental and Resource Economics

Property Rights, Externalities, and Environmental Problems, Public Goods, Coase Theorem

1. Cost-Benefit Analysis
2. Cost Estimation Methods and Application
3. Benefit Estimation Methods and Applications
4. Economic Instruments for Pollution Control; Stationary-Source Local Air Pollution
5. Regional Pollution: Acid Rain

Montreal Protocol and Ozone Depletion

1. Climate Change: Science, Policy and Models

Stern Review and Critiques; IPCC Report, New Climate Economy and etc.

1. Air Pollution, Pollution Exposure and Health, and Individual Behavior Changes (Empirical Studies, Peltzman Effects)
2. Optimal Extraction & Use of Non-renewable Resources
3. Depletable, Non-recyclable Energy Resources, Energy Economics, Price Control and Impacts, OPEC
4. Fishery Economics
5. Forestry Economics, Sloping Land Conversion Program in China; Payment for Ecosystem Services
6. Sustainability, Economic Growth and the Environment
7. Final Exam (in-class exam)