

University of Colorado Boulder

**Econ 4535 – Natural Resource Economics
Fall 2026**

Professor: Daniel Kaffine
Office: Economics 208C
Phone: (303) 492-6652
Email: daniel.kaffine@colorado.edu

Lectures: Tuesday and Thursday, 8:00-9:15am ECON 119

Office hours: Tuesday and Thursday 11:00am-12:30pm (and as need be – just ask!)

Course Description: This course in natural resource economics will introduce students to the interlinkages between natural resources and the economic system. Classic allocation problems for renewable and nonrenewable resources will be examined. This course will also consider the fundamental role of institutions in shaping natural resource use. Understanding the incentives faced by users of natural resources will allow us to consider market failures and the important question of whether or not policy interventions are justified on economic grounds. Because natural resources play a central role in many current energy and environmental policy debates, this course will also address policy issues related to climate change, renewable energy, and the energy transition.

Course Organization: This course will be a mix of lecture and discussion. The first half of the class (Units I-III) will focus on the theory of natural resource economics, with the Midterm covering this material midway through the course. The second half of the class (Units IV-V) will focus on application to natural resource, energy, and environmental policy, with the Final (primarily) covering the material for the last half of the semester. Canvas will be used for course materials and communication.

Textbooks: The required textbook is:

Tom Tietenberg and Lynne Lewis, *Environmental and Natural Resource Economics* 12th ed, Prentice Hall, 2024. (9th and 10th and 11th edition are also acceptable – alternative pages for each of these editions are provided on the separate Reading List on Canvas – let me know if discrepancies arise).

Additional readings (journal articles, etc) will be posted on Canvas.

Grading:

Class Participation	10%
Unit assignments	20%
Computational paper	10%
Midterm Exam	30%
Final Exam	30%

Class Participation: Students are expected to have read assigned materials from the Reading List and should be prepared to discuss and answer questions regarding the readings. Lecture and discussion will comprise a large component of our in-class time, and students are expected to attend class and contribute. In addition, there will be a low-stakes question at the end of most weeks (due the following Tuesday in class) that pertains to the chapter readings for that week.

Unit Assignments: At the end of each of the five units, a unit assignment will be due. This assignment should be worked on with another student with a single submission from the group (alternative arrangements can be discussed with me). The unit assignments are substantial and consist of three components: First, students will produce a Unit Discussion, which is a roughly 3-page discussion of the material covered in the readings and lectures. This is the primary check-up on the readings from the textbook. The document is expected to analyze the unit material covered and discuss open and unresolved questions or debates related to the unit. Note, these should not be simple summaries of the lecture notes. Second, each unit assignment will also include a calculus-based mathematical problem based on a model developed during the unit. Finally, there will also be a computational problem to be solved in Mathematica. I will provide more details when the first unit assignment is assigned.

Computational Paper: The mathematics required to answer many interesting questions related to natural resource economics are beyond the scope of the prerequisites for this course. Nonetheless, we will take advantage of the mathematical programming language Mathematica to tackle some of them. Simply follow the link here: <https://oit.colorado.edu/software-hardware/software-catalog/mathematica> to get free access to the software. We will cover a number of examples in class, and for the computational paper you will come up with your own question and answer it using Mathematica. More details will be provided after the midterm.

Exams: The exams will be short answer plus numerical problems. I will provide example questions from past exams as study aides prior to the test date. The Midterm Exam will be in class (roughly mid-October) and cover material from Units I-III. The Final Exam is comprehensive, but weighted towards Unit IV-V, and is scheduled for Thursday Dec 10th 7:30-10:00pm (ugh).

Tentative Schedule

The five units for the class are listed below. We will spend the first few lectures covering some overarching introductory ideas before diving into Unit I. I expect to spend approximately 2-3 weeks on each unit, depending on the volume of the material and general class interest in the unit. For each unit, key topics are also listed.

Unit I. Extraction of non-renewable resources
Mineral products
Oil and gas
Groundwater

Unit II. Extraction of renewable resources

- Fisheries
- Forestry
- Agriculture

Unit III. Property rights and institutions

- Open access
- Common property
- The Resource Curse and economic growth

Midterm Exam (mid-October)

Unit IV. Natural resource policy

- Regulating externalities
- Policy interventions
- Property rights approaches

Unit V. Climate change and the Energy Transition

- Costs of climate change
- Climate policies
- Energy transition and renewables
- Electricity sector

Final Exam (Thursday Dec 10th 7:30-10:00)

Important Stuff

Honor Code

All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to the [Honor Code](#). Violations of the Honor Code may include but are not limited to: plagiarism (including use of paper writing services or technology [such as essay bots]), cheating, fabrication, lying, bribery, threat, unauthorized access to academic materials, clicker fraud, submitting the same or similar work in more than one course without permission from all course instructors involved, and aiding academic dishonesty. Understanding the course's syllabus is a vital part of adhering to the Honor Code.

All incidents of academic misconduct will be reported to Student Conduct & Conflict Resolution: StudentConduct@colorado.edu. Students found responsible for violating the Honor Code will be assigned resolution outcomes from Student Conduct & Conflict Resolution and will be subject to academic sanctions from the faculty member. Visit [Honor Code](#) for more information on the academic integrity policy.

Accommodation for Disabilities, Temporary Medical Conditions, and Medical Isolation

If you qualify for accommodations because of a disability, please submit your accommodation letter from Disability Services to your faculty member in a timely manner so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities in the academic environment. Information on requesting accommodations is located on the [Disability Services website](#). Contact Disability Services at 303-492-8671 or DSinfo@colorado.edu for further assistance. If you have a temporary medical condition, see [Temporary Medical Conditions](#) on the Disability Services website.

If you have a temporary illness, injury or required medical isolation for which you require adjustment, a simple email will suffice.

Accommodation for Religious Obligations

Instructional faculty members must make every reasonable effort to accommodate all students who have conflicts with scheduled exams, assignment deadlines or required attendance due to a religious observance. Whenever possible, students must notify the instructional faculty member at least two weeks in advance of the expected exam, assignment deadline, or attendance conflict to request an accommodation for religious observance. If the start date of the course is less than two weeks before the date of requested accommodation, students must notify the instructional faculty member on the start date of the course. See the Student Academic Accommodations for Religious Observances Policy for more information.

Preferred Student Names and Pronouns

CU Boulder recognizes that students' legal information does not always align with how they identify. If you wish to have a name other than your legal name appear on your instructors' class rosters and in Canvas, or if you wish to choose pronouns to appear on your instructors' class rosters and in Canvas, visit the Registrar's website for instructions on how to change your personal information in university systems.

Classroom Behavior

Students and faculty are responsible for maintaining an appropriate learning environment in all instructional settings, whether in person, remote, or online. Failure to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, marital status, political affiliation, or political philosophy.

Additional classroom behavior information

- [Student Classroom and Course-Related Behavior Policy](#).
- [Student Code of Conduct](#).
- [Office of Institutional Equity and Compliance](#).

Sexual Misconduct, Discrimination, Harassment and/or Related Retaliation

CU Boulder is committed to fostering a productive and welcoming learning, working, and living environment. University policy prohibits [protected-class](#) discrimination and harassment, sexual misconduct (harassment, exploitation, and assault), intimate partner abuse (dating or domestic violence), stalking, and related retaliation by or against members of our community on- or off-campus. Denial of an approved accommodation for disability, religious observance, or pregnancy or pregnancy related medical conditions may be discriminatory.

The [Office of Institutional Equity and Compliance \(OIEC\)](#) addresses these concerns, and individuals who have been subjected to misconduct can contact OIEC at 303-492-2127 or email OIEC@colorado.edu. Information about university policies, [OIEC reporting options](#), and [OIEC support resources](#) including confidential services can be found on the [OIEC website](#).

Faculty and graduate instructors are required to inform OIEC when someone discloses misconduct regardless of when or where it occurred. This is to ensure that those impacted receive outreach from OIEC about resolution options and support resources. To learn more about reporting and support options for a variety of concerns, visit the [Don't Ignore It page](#).

Mental Health and Wellness

The University of Colorado Boulder is committed to supporting students' mental health and overall wellbeing. If personal, academic, or emotional challenges are affecting your wellbeing or success, [Counseling and Psychiatric Services \(CAPS\)](#), is here to help. CAPS offers counseling, referrals, psychiatric care, crisis support, and much more. Visit CAPS in the C4C, or call (303) 492-2277, 24/7.