

**Economics 4535**  
**Natural Resource Economics**  
**Spring 2018**

**Instructor:** Billy Mertens  
**Office:** ECON 12  
**E-mail:** [mertens@colorado.edu](mailto:mertens@colorado.edu)  
**Web:** <https://learn.colorado.edu/>  
**Office Hours:** T 10:45am – 12:20pm & 3:15 – 4:35pm, TH 10:45am – 12:20pm, and by appointment (please give 2 weeks' notice for appointments).

**Course Description**

This course is designed to give you an introduction to the implications of natural resources as economic concepts. It presents theories of efficient utilization of natural resources and discusses issues related to current practices of use of resources. We will study natural resources used in the economy, the value of natural resources to society, and the allocation of renewable and non-renewable resources. We also discuss issues of sustainability, conservation, and preservation. The course extensively uses graphical analyses and some mathematical models. In addition to learning about the methods that economists use to analyze natural resource problems and issues, you will be challenged to frame problems in economic terms and propose solutions to these problems.

A much more detailed outline of covered material is posted separately.

**Prerequisites**

Students must have completed ECON 1078, 1088, 2010, 2020, 3070 and 3818. I assume that you did not only take the class, but also that you understand and remember the content. It is **very** important that you fulfill the prerequisite **before** you take this course, and **still** understand the materials in the prerequisite. If you have any uncertainty as to whether you are under or over qualified to take the course, please talk to me ASAP. The prerequisites must be strictly enforced.

I will use calculus in the course. Materials learned in 3070 will form a foundation for what we will do in 4535. I will cover the relevant micro theory in my lectures, but cover it more quickly than when it was presented to you in intermediate microeconomic theory. It is important that you have successfully completed Intermediate Micro Theory. If you are an environmental studies major who has doubts about their knowledge of economics, talk to me – soon!

While this is not a micro-theory course, economics without theory is not economics. You will need micro theory to understand and explain the allocation of natural resources. Some of the theory and terms you will need to know include: the *theory of the firm*, the *theory of the consumer*, *efficiency*, when the market equilibrium will and won't be efficient, *market failure*, types of market failures, corrections for market failure, *discounting* and *present value*, *public goods*, *property rights*, *common property*, and *externalities*.

A strong math background will make this course easier. Math involves rigor and a way of thinking that facilitates economic thinking. In addition, graphs and simple mathematical descriptions of economic problems provide insights that would be difficult to convey with only words.

### **Prerequisite Quiz**

To be sure you are prepared for the material to be covered in this course, you will take a preliminary quiz. The quiz will cover some basic statistics and calculus. The quiz may have an impact on your overall grade. Two items are very important for passing this course: a good math foundation, and a willingness to strive to find answers even when they are not obvious. For this reason, you either need to score 80% or more on the prerequisite quiz, or at least continue to attempt to solve the problems given for a full 45 minutes. If you do not either spend 45 minutes on the quiz, or score above 80%, then your overall grade will be reduced by 10%. I will also score the exams and give you feedback and possible options going forward. If you do very poorly despite a serious effort, we will discuss your prerequisites or other options.

### **Policy on Cheating:**

**If you are found to have violated the honor code (see below), by both the honor code council and myself, you will automatically fail the course!**

### **Electronics in the Classroom**

Laptops, tablets, and even phones can actually play a roll and benefit learning in many types of classes. There are many pros and cons of allowing consistent use of these devices during the class period. However, it has become abundantly clear to me that these devices are more of a distraction than a learning aid in most (but not all) situations. In addition, taking notes by hand has actually been shown to be [more effective than taking them on a laptop or tablet](#). Therefore, electronic devices will only be allowed in class in the last two rows of the classroom (this includes cell phone use for texting, etc.). **You also cannot use any form of electronic device during Group-Led-Discussions (GLDs), or Group Assignments (it defeats the purpose of working together). If you use them on those days, you will automatically receive a zero for that day's assignment. On GLD days, you must put your phone away! Do Not even set it on your desk!** If you are expecting an important call or text, then simply put your phone on vibrate, sit near the door, and step out when the call/text comes through. Of course, if you have a disability services related need for these devices they will be allowed – in that case notify me of your exception ASAP. Some people write out their notes into a tablet; in this case, an exception may be made – again notify me ASAP.

### **Readings**

The required text for this course is “Environmental and Natural Resource Economics” by Tietenberg and Lewis (T&L) is pretty good. The ninth edition can be found online. The T&L text has enough relevant material that I have specified the corresponding chapters in the course outline. We will skip around and omit some material (especially the material targeted to the environmental class), and some of what will be presented is a little above this text. Some of that material may be found in:

<https://eclass.unipi.gr/modules/document/file.php/NAS247/tselepidis/ATT00106.pdf>

There will be additional assigned readings for nearly every topic we cover. These readings will be posted separately on the course website.

### **Class format**

The first portion of the course will be a fairly basic introduction to the tools used in analyzing natural resource issues. We will then cover some general natural resource topics, and analysis techniques. Finally, we turn to applied problems, and public policy issues. A **much** more detailed course outline will be posted on the course website.

### **A Note on Learning Systems and Assessments**

This course is a little more traditional than many of the other classes I teach. Lecture is still the primary component, but group assignments and discussions are taking on a slightly larger role. One of the most important changes from prior semesters is that all exams will be cumulative, and we will spend at least a little time reviewing for each exam. A little more detail on these systems is given below:

#### **Learning systems:**

1. Lecturing: explaining difficult material not easily learned on your own with text, groups, etc.
2. Exams: exams should be learning tools as well as assessment tools! We will go over each exam in depth in class. Reviewing exams is one area where in-class discussion and explanation are most effective. Just reading answers on a key has been shown to be one of the worst ways to learn material. Therefore, exam reviews will be the one area of class where no notes, associated pictures or keys will be posted.
3. Group-Led-Discussions: we will cover both classic and more recent relevant articles from scholarly journals. Group-led-discussions are a mix of presentations and discussions. The more creative you can be with these, the more you will get out of them (and the better will be your grade). Finding interesting ways to engage the class in discussion of these articles will teach you critical skills that will not only solidify the current information, but will also aid in your learning for other classes. Presentation of material is one of the most instructive learning systems because:
  - a. *If you are going to inform others about what you know, you must first fully understand it yourselves. If you cannot explain a concept to others you may not fully understand it yourself.*
  - b. *You must research the topic, which may expose you to new ideas and sources of material. These sources could help in other coursework.*
  - c. *Most “real-world” careers require some form of presentation skills.*
  - d. *You will start to learn how to defend specific points of view in front of others. This is a critical professional skill!*
  - e. *Help you learn to organize information in a clear & concise way. Your audience will want to hear the most relevant information in the most clear and understandable fashion.*
  - f. *Help you learn presentation tools, formats and devices.*
  - g. *You learn how to practice presentations and fit information into a set time period (very important in business).*
  - h. *You can discern what it takes to teach others.*
  - i. *It will teach you how to respond to critical questions in front of others.*
  - j. *Learn to analytically and reasonably justify a specific economic rationale.*
4. Group scholarship: we will work some practice problems in groups, which can help your understanding of the material whether you already understand it fairly well, or are struggling a bit. The Group-Assignment dates are listed in the course outline – do **not** miss these days!
5. Self-study: reading the articles and solving the review questions.

#### **Group Assignments:**

These cooperative learning exercises (detailed above) are extremely important. The group assignment dates are listed in the course outline. It is important not to miss these days without an excused absence.

### **Group-Led Article Discussions, Quizzes and Participation**

We will review several relevant academic articles on different issues in natural resource economics. You will be required to understand these articles, and you will work in teams of 3-5 people to present one of the articles and lead the discussion for that article. When you are not in the discussion group you are still expected to have read the article and there will be a short quiz.

The class will take a 10-minute quiz at the beginning of the hour to be sure everyone is ready to discuss, and during that time, you will set-up and prepare your discussion (you get 100% for that day's quiz!). Participation/discussion on GLD days will add to your quiz grade.

You should be able to keep the class engaged in discussion for at least 50 minutes (this does not include the quiz time). **You will be graded down if you cannot keep the class engaged in an interesting and informative discussion about the paper for that time. If you choose to have an activity or game as a part of your GLD, it is important to have that activity portray what is being explained in the article (there should not be much uncertainty, unless the paper calls for it).** I will also discuss some major points of the paper after the GLD, or on the following class day.

If you are not leading the GLD that day, then you must have read the relevant articles and be prepared to take the brief quiz and participate in the discussion. If you take the quiz and leave, then you will get credit for the quiz, but you will be marked absent for the day. **You cannot use any form of electronic device during Group-Led Discussions (it is rude to those leading the activities). If you use them on those days, you will automatically receive a zero for that day's quiz. On GLD days, you must put your phone away! Do Not even set it on your desk!** If you are expecting an important call or text, then simply put your phone on vibrate, put it in your pocket, sit near the door, and step out when the call/text comes through.

There will also be quizzes on some days that we will be covering already posted notes. On those days, you should read the notes in advance and be ready to discuss the topics involved. **On all quizzes, I use the No-Nonsense rule, meaning that if you did not do the required reading, it is better for you to simply state that than to try and guess your way through the quiz.**

### **Exams**

There will be two cumulative exams and a cumulative final. Tests will consist of short-answer questions and some longer problems. The exams will all be cumulative, and the material does build on itself so it is important to understand all of the concepts as we go. **Exams will be given in class on the days listed. If you miss an exam with a valid excuse (e.g. a note from your doctor or Wardenburg), then the weight of your final will be increased. Undocumented illnesses do not count as valid excuses (as long as this is not in conflict with a University policy). Note that the exam dates below are not tentative – exams will be given in class on the days listed. NO EXAMS WILL BE DROPPED!!**

#### **Exam Schedule**

Exam I: Thursday, March 1<sup>st</sup> (day 14)

Exam II: Thursday, April 12<sup>th</sup> (day 24)

Final Exam: Sunday, May 6<sup>th</sup> at 4:30pm in our usual room.

#### **Final Exam Conflicts**

Official University Policy states that: If you have three or more final exams scheduled on the same day, you are entitled to arrange an alternative exam time for the **last** exam or exams scheduled on that day. To qualify for rescheduling final exam times, you must provide evidence that you have three or more exams on the same day, and arrangements must be made with your instructor no later than the end of the tenth week of the semester (before spring break!).

### Attendance Policy

There are many studies showing a clear relationship between class attendance and student achievement. For this reason, there is a strict attendance policy for this course. Daily attendance will be taken. If you miss (unexcused absences) more than 10% of the course (more than 3 days), 10% will be subtracted from your overall percentage. If you miss (unexcused absences) more than 5 days, you will receive an automatic F. A sign-in sheet will be circulated daily *when necessary*. **It is your responsibility to make sure that you have signed in for each class (having someone else sign your name is a violation of the honor code).** Excused absences require documentation!! Just an email saying “I’m sick” is not sufficient!

**In addition, you may be administratively dropped if you do not attend each (all) of the first 3 days of class.**

### Grading

Group Assignments	6%
Group-Led Discussion	10%
Quizzes (and Participation)	15%
Exam I	20%
Exam II	23%
Final Exam	26%

### Incompletes, Extra Credit, etc.

I adhere strictly to the University guidelines on Incompletes (“An I is given only when students, *beyond their control*, have been unable to complete course requirements. A substantial amount of work must have been *satisfactorily completed* before approval for such a grade is completed.”). Bad grades, unsatisfactory performance, too many credit hours, work conflicts, etc. are not reasons for an incomplete.

**I am adamant about giving each student an equal opportunity to perform well in the course, so there will be no extra credit opportunities that are not offered to the entire class. You should focus your efforts on learning the material and doing well on the exams.**

### Grading Scale:

Your Score	Grade
92% to 100%	A
90% to 91%	A-
88% to 89%	B+
82% to 87%	B
80% to 81%	B-
78% to 79%	C+
72% to 77%	C
70% to 71%	C-
68% to 69%	D+
62% to 67%	D
60% to 61%	D-
Below 59.5%	F

## **Additional Notes**

### *Honor Code*

All students of the University of Colorado at Boulder are responsible for knowing and adhering to the academic integrity policy of this institution. Violations of this policy may include: cheating, plagiarism, and of academic dishonesty, fabrication, lying, bribery, and threatening behavior. All incidents of academic misconduct shall be reported to the Honor Code Council ([honor@colorado.edu](mailto:honor@colorado.edu); 303-725-2273). Students who are found to be in violation of the academic integrity policy will be subject to both academic sanctions from the faculty member and non-academic sanctions (including but not limited to university probation, suspension, or expulsion). Additional information on the Honor Code can be found at <http://www.colorado.edu/policies/honor.html> and at <http://www.colorado.edu/academics/honorcode>

### *Disabilities*

If you qualify for accommodations because of a disability, please submit to your professor a letter from Disability Services in a timely manner (for exam accommodations provide your letter at least one week prior to the exam) so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities. Contact Disability Services at 303-492-8671 or by e-mail at [dsinfo@colorado.edu](mailto:dsinfo@colorado.edu).

If you have a temporary medical condition or injury, see Temporary Injuries under Quick Links at [Disability Services website](#) and discuss your needs with your professor.

### *Religious holidays*

A comprehensive calendar of the religious holidays most commonly observed by CU-Boulder students can be found at <http://www.interfaithcalendar.org/> Review this list and the class syllabus. After reviewing the syllabus, please see the instructor if you believe that you need an accommodation for religious reasons. The instructor should be notified within the first two weeks of classes. Campus policy regarding religious observances states that faculty must make *reasonable* accommodation for them and in so doing, be careful not to inhibit or penalize those students who are exercising their rights to religious observance. For more see [http://www.colorado.edu/policies/fac\\_relig.html](http://www.colorado.edu/policies/fac_relig.html)

### *Code of Behavior*

Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail 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 differences of race, color, culture, religion, creed, politics, veteran's status, sexual orientation, gender, gender identity and gender expression, age, disability, and nationalities. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. See policies at <http://www.colorado.edu/policies/classbehavior.html> and at [http://www.colorado.edu/studentaffairs/judicialaffairs/code.html#student\\_code](http://www.colorado.edu/studentaffairs/judicialaffairs/code.html#student_code)

*Policy on Discrimination and Harassment*

The University of Colorado Boulder (CU-Boulder) is committed to maintaining a positive learning, working, and living environment. The University of Colorado does not discriminate on the basis of race, color, national origin, sex, age, disability, creed, religion, sexual orientation, or veteran status in admission and access to, and treatment and employment in, its educational programs and activities. (Regent Law, Article 10, amended 11/8/2001). CU-Boulder will not tolerate acts of discrimination or harassment based upon Protected Classes or related retaliation against or by any employee or student. For purposes of this CU-Boulder policy, "Protected Classes" refers to race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, or veteran status. Individuals who believe they have been discriminated against should contact the Office of Discrimination and Harassment (ODH) at 303-492-2127 or the Office of Student Conduct (OSC) at 303-492-5550. Information about the ODH, the above referenced policies, and the campus resources available to assist individuals regarding discrimination or harassment can be obtained at <http://www.colorado.edu/odh>

**Any University policies that are in conflict with my own policies will supersede my policy!**

A reply from one student to another on the discussion board for one of my colleague's online classes: "If you read the course syllabus you will find the answer to your questions. If you do not understand what you read I recommend you read multiple times. After reading the syllabus if you still have questions come back and I will try to help you as much as possible."

