

Economics of Sustainability ECO 2310

Term: Spring 2023

Instructor: Michelle A. Phillips Email: michellephillips@ufl.edu

Time: Tuesdays and Thursdays, 9:35am-11:30am. Location: MAT 119.

Office hours: Tuesdays 11:20am-12:10pm in MAT 336
 Thursdays 11:20am-12:10pm in MAT 336
 Thursdays 3-3:50pm in MAT 336

Note: I will hold extra office hours before each exam. These will be announced via email and on Canvas.

Course description

The course will examine issues in sustainability from an economics perspective with a focus on climate change. A detailed list of topics that will be covered in class is listed in the course topics section of this syllabus. **This course deals primarily with the Economics of Climate Change.** Important: *This course does not count as an economics elective, as it is a 2000 level course but it does count for the Sustainability major and minor¹.*

Required Textbook

1. “The Climate Casino: Risk, Uncertainty, and Economics for a Warming World” by William Nordhaus. ISBN: 978-0300212648. Note: The paperback version is exactly the same as the hardcopy version and as the e-book version. Any version is fine.
2. Material available through Canvas

Course Topics and Calendar are available on the last pages of this syllabus. The easiest way to keep up with the course is to attend every lecture. Attendance is expected. If you miss class, it is your responsibility to contact a classmate to figure out what you missed. Office hours cannot be used as a substitute for in-class attendance.

Evaluation of Grades

Your grade will be determined by your performance on the following:

Exam 1	32%
Exam 2	33%
Attendance/In-class assignments/Professionalism score	20%
Research Paper	15%

¹ In the past, this course was taught as a 4000 level course and did count as an economics elective. However, this is no longer the case because the course is now a 2000 level course. This course does not count as an Economics elective but it does count for the Sustainability major requirements. **You should not take this course if you’ve taken the Quest 2 Climate Change Economic impacts course.**

Grading Policy

The following scale will be used to determine your final grade:

Name:	Range:	
A	100 %	to 94.0%
A-	< 94.0 %	to 90.0%
B+	< 90.0 %	to 87.0%
B	< 87.0 %	to 84.0%
B-	< 84.0 %	to 80.0%
C+	< 80.0 %	to 77.0%
C	< 77.0 %	to 74.0%
C-	< 74.0 %	to 70.0%
D+	< 70.0 %	to 67.0%
D	< 67.0 %	to 64.0%
D-	< 64.0 %	to 61.0%
F	< 61.0 %	to 0.0%

**** Important:** There will be no rounding under any circumstances.

Class Attendance and Make Up Policy

Excused absences are consistent with university policies in the undergraduate catalog² and require appropriate documentation. Documentation must be provided within a week of the absence. Excused absences will be accepted for exams.

From the catalog: “In general, acceptable reasons for absence from or failure to participate in class include illness, serious family emergencies, special curricular requirements (e.g., judging trips, field trips, professional conferences), military obligation, severe weather conditions, religious holidays, and participation in official university activities such as music performances, athletic competition or debate. Absences from class for court-imposed legal obligations (e.g., jury duty or subpoena) must be excused.” Note that I require proof for all exam absences.

A makeup midterm and makeup final exam will be provided for students who miss either exam due to extreme, documented circumstances. These can only be taken on the scheduled make up dates and generally take place 2 weeks after the regularly scheduled exams. I require exam absences to be verified by the DSO.

This course has an attendance grade. In class assignments/attendance points cannot be made up but I will drop 3 attendances at the end of the term. If you need to miss more than 3 lectures, I can help you navigate a medical withdrawal. The course also has a professionalism grade based on in-class behavior. Please see Canvas for details on this policy.

Important: Please communicate any issues you are experiencing with me as early as possible so I can work with you.

² <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Disability Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester. I cannot adjust exam times on the day of the exam, so please provide me with your letter as soon as you get it (and ideally at least 5 days before the first exam). It is your responsibility to schedule accommodations before the deadlines set up by the DRC.

Course Evaluation

I would appreciate it if you filled out a teaching evaluation for this course. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Class Demeanor

Students are expected to arrive to class on time and behave in a manner that is respectful to the instructor and to fellow students. Please avoid the use of cell phones during class. Opinions held by other students should be respected in discussion, and conversations that do not contribute to the discussion should be held at minimum, if at all. Please be professional in e-mails to me and your classmates. Class Demeanor is graded and part of your Attendance score.

Notes about Email:

Email is for answering short clarifying questions and is not a substitute for in-class questions or in-class attendance or office hours. I try to get to emails quickly but there are days when I teach all day and cannot do so. I will answer all emails within 2 business days of receiving them. This means that if you email me on a Friday at 5:30pm, I may not be able to get back to you until Tuesday at 4pm. Please plan accordingly and make sure you ask questions in class if you want an immediate response.

University Honesty Policy

You are expected to abide by the University's rules for academic honesty as outlined in the UF Student Honor Code (<https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>). All suspicious evidence of cheating, plagiarism, making false statements, and any other violation of these rules will be reported to the Dean of Students Office. Additionally, I will advocate for the strictest of available sanctions (including dismissal from the University of Florida) for any student who is found responsible for violating these rules. It is important to note that cheating and plagiarism are not the only forms of academic dishonesty. "Making a false or misleading statement for the purpose of procuring an improper academic advantage" is also a violation of the UF Student Honor Code. This includes making false statements to your instructor and/or presenting forged documents (e.g., doctors' notes). I verify all suspicious claims and documents, for example, by contacting a student's medical provider or by reviewing a student's UF systems connection data. While collaboration on homework is permitted, any work

that you submit for evaluation and grading should be your own. Collaboration on exams is strictly prohibited.

Counseling and Wellness Center and other resources

Contact information for the Counseling and Wellness Center: <https://counseling.ufl.edu/> (352) 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies. If you are experiencing hunger, UF has a food pantry. <https://pantry.fieldandfork.ufl.edu/> Alachua Crisis Center: 352-264-6785. National Suicide Prevention Hotline: 1-800-273-8255.

Course Website

We will be using Canvas. The address is: <http://elearning.ufl.edu/>. You log-in using your Gatorlink ID and password and the course should automatically appear as one of your e-learning options. If it does not, check to make sure you are properly registered for the course. If that is not the issue, contact the UF Computing Helpdesk at: <http://helpdesk.ufl.edu/>. Do not contact me about access issues. I cannot help you and the help you do need will only be delayed if you do. Most course materials and grades will be posted here. Important: Any assignment that requires you to upload a document will not be regraded if you upload the wrong version of your document or if you upload a blank file. It is your responsibility to download all of your uploads to make sure you've uploaded the correct document.

Research Paper

Students will complete a 8-12 page research paper on a sustainability issue of their choice. The papers are written in **groups of 5 students**. You can choose a group or I can assign you a group. The issue studied must be approved by the instructor. A detailed outline (two page proposal) will be due at the date specified on the modules. Details about the format and citations will be made available on the course website. Both the proposal and paper must be submitted online. You are welcome to submit earlier than the deadline. Plagiarism will result in a grade of 0 (this includes self-plagiarism). Groups will present their work to the class during the last month of class.

Group work rules

You will work on Google Docs and add me to your document so I can check and see who did what on your research paper. I will check the log for every group. The last page of your research paper will have a section titled "Group work" where you will submit a list of all your team members and what each team member's contribution was, including your own. If a student's work on Google Docs is less than 1/5th of the paper's contribution and if their peer ratings are lower than 50%, their grade for the research paper will fall by 20 percentage points.

Important:

1. You are expected to apply what you learn in class during exams. You will be expected to be able to apply the framework learned in class to other contexts.

2. I provide curves to exams when necessary. For this reason I do not round grades up at the end of the term under any circumstances. I am aware that certain jobs, scholarships and even

graduation require you to have a grade above a certain level. I will be more than happy to help you study and prepare for exams, but I will not, under any circumstances, raise your grade because you need a high grade for a job or graduation. Grades are earned, not negotiated nor “given” by the professor. Grades are based on performance only. Furthermore, one course is not to blame for you missing a grade cut off. Preparing just for the last exam is not sufficient. I will help you prepare for exams if you ask for help throughout the term. I cannot help you if you come to my office hours the last two weeks of class trying to learn an entire semester of lectures in a few weeks.

3. I will answer emails within 2 business days from the day in which I receive them. If a student sends too many emails in one day, I will ask them to talk to me after class or during office hours instead. Part of the college experience is preparation for the workforce.

4. With the exception of cases where the points have been added wrong, if you want me to regrade an exam question but don't have a specific complaint or question about it, I will regrade the entire exam, which could result in a higher or lower grade. Sometimes a mistake is made, and regrading is called for. The following system has been instituted to ensure that my time is spent re-reading exams where there has been a serious mistake and there is a legitimate concern and not spent re-reading correctly graded exams.

5. All exams are in person during the scheduled class time and location. You will get an automatic grade of 0 if you arrive more than 20 minutes late to the exam. Please refer to the make up policy if you have a valid reason to miss an exam and must take a make up.

6. If you are stressed out or experiencing difficulties, UF offers several services such as the Counseling and Wellness Center and GatorWell. Please use these resources, your health is important.

7. Expectations: You are responsible for all the material covered in class, and all the chapters covered from the textbook.

8. The majority of classwork in this class will be done in person and in the classroom in paper/pencil. Please come prepared with a notebook and paper/pencil. All exams are in person in paper/pencil. You will need a laptop/cell phone on certain days that are denoted on the syllabus.

9. If you miss the exam and then miss the make up exam: I do not offer make up exams for missed make up exams, but I can help you navigate medical withdrawals.

10. Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor. A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session. Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a

recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

11. Penalties for late work submission are listed on the Canvas website.

12. For Exams: Short essay answers are not the same as writing just a number or just a word. An essay is a short piece of writing on a particular subject. This means that for essay type questions, you must show your work explicitly. I have no way of knowing how much you know about something if you don't explain it to me. This also means that when you solve an exercise involving an equation, you need to write down the equation, why you are using the equation, and how you solved the equation. All exam questions require an explanation unless they explicitly say "no explanation necessary".

Some lecture slides, notes or exercises used in this course may be the property of the textbook publisher or other third parties. All other course material, including but not limited slides developed by the instructor, the syllabus, assignments, course notes, course recordings, and examinations or quizzes are property of the University or of the individual instructor who developed them. Students are free to use this material for study and learning. Republishing or redistributing this material, including uploading it to web sites or linking to it through services like iTunes or CourseHero, violates the rights of the copyright holder and is prohibited. There are civil and criminal penalties for copyright violation.

We will cover the following topics in class using roughly this order. Please note that if you have taken the Climate Change Economic Impacts course, you will not benefit from taking this course since the topics and textbook are very similar. Also note that this course has several topics in common with Environmental Economics, but it is fine to take this class in addition to Environmental Economics because they cover different material.

Negative externalities / Unregulated markets and externalities
Tipping points
Resistance to reducing GHG emissions
Relevant court cases
Free riding
Net Present Value
Why is climate change difficult to tackle from an economics perspective?
DICE model and other climate change models
Public goods
Evidence of human caused climate change.
Direct measurements (Hawaii data)
Indirect measurements (ice core data)
Uncertainty regarding projections?
Case study on pollution, health and the economy
What tipping points are we concerned about with climate change?
Managed and Unmanaged systems
Optimal Point of Emissions Reductions
Expected Impacts on: Farming, Health, Oceans, etc.
Adaptation
Using Economics to Adapt our Models
Challenges with Predictions about the Future
Sea Level Rise (thermal expansion, ice melting, concerns with SLR, what countries are most affected, etc)
Ocean Acidification
Hurricanes (hurricane management and costs)
Island Nations
Market failures, valuing ecosystems, contingent valuation
Adaptation, Mitigation, Geoengineering
Technologies for reducing CO₂
CO₂ reduction methods, economic vs. engineering approach, country participation, economic efficiency, discounting and its effect on calculations.
Economic incentives to deal with CO₂ externalities (carbon pricing, price signals, etc)
Standards
Cap and Trade, Safety Valves, Allowance Banking
Acid Rain program
Energy Efficiency

Enforcement, border tax adjustment, etc

Economics of innovation

Lecture dates when you should bring a laptop/ipad or cellphone:

February 16, March 21, March 28, April 18

What we will cover, [When it is due³], {What to read}

Module	Date: Topic [Due]	Date: Topic [Due] {Read}
1	Jan 10: Syllabus, course information	Jan 12: Introduction, Tipping points, Law, [Group selection] {Ch 1, Ch2}
2	Jan 17: Carbon pricing [Changes] [Proposal work, add me to Google Docs]	Jan 19: Climate Casino Ch 3, Decarbonization, NPV {Ch 3}
3	Jan 24: Modeling, DICE, [Carbon intensity]	Jan 26: Work on Proposal (<i>no lecture</i>)
4	Jan 31: Ice on Fire, [Quiz]	Feb 2: Modeling cont'd, [Proposal due] {Ch 4, Ch 5}
5	Feb 7: Future climate change, ice cores	Feb 9: Climate Casino Ch 5 {Ch 6, Ch 7}
6	Feb 14: From climate change to impacts	Feb 16: Farming, IAM performance [Yale, bring laptop] {Ch 8, Ch 9, Ch 10}
7	Feb 21: Unmanageable risks [Bitcoin]	Feb 23: Exam 1 Review
8	Feb 28: Fleeing climate change [Quiz]	March 2: [Exam 1]
9	March 7: Hurricanes, wildlife species, CV	March 9: Adaptation, geoengineering slowing climate change. {Ch 11, Ch 12, Ch 13, Ch 14}
<i>None</i>	<i>March 14 Spring Break</i>	<i>March 16 Spring Break</i>
10	March 21: Work on Research paper (bring laptop). Exam back.	March 23: Fires {Ch 15, Ch 16}
11	March 28: Climate negotiation [extra credit 1, bring laptop] [Research paper due]	March 30: Cost of slowing down, balancing costs and benefits {Ch 17, Ch 18}
12	April 4: Carbon prices, Cap and Trade [Group presentation pptx due]	April 6: Group presentations 1 [presentation day 1 quiz] {Ch 19, Ch 20}
13	April 11: Group presentations 2 [presentation day 2 quiz]	April 13: Carbon prices, Paris agreement, Climate club
14	April 18: [Evals], [Extra credit 2, bring laptop], Saving the Amazon	April 20: Exam 2 Review
15	April 25: [Exam 2]	

³ Everything is due in class (paper format), during our lecture, unless otherwise specified.

Course Summary:

Date	Details
Thu Jan 12, 2023	Group work
Tue Jan 17, 2023	Changes
Tue Jan 24, 2023	Carbon intensity
Tue Jan 31, 2023	Quiz Ice on Fire
Thu Feb 2, 2023	Proposal
Thu Feb 16, 2023	Yale public climate communication survey
Tue Feb 21, 2023	Bitcoin discussion
Tue Feb 28, 2023	Fleeing climate change quiz
Thu Mar 2, 2023	Exam 1 (in person)
	extra credit exam 1: climate negotiation
Tue Mar 28, 2023	Research paper
Tue Apr 4, 2023	Research Paper presentation
Thu Apr 6, 2023	Research paper quiz 1
Tue Apr 11, 2023	Research paper quiz 2
Tue Apr 18, 2023	extra credit exam 2: carbon pricing calculator
Tue Apr 25, 2023	Exam 2 (in person)