

Economics of Sustainability ECO 2310

Term: Spring 2025

Instructor: Michelle A. Phillips

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Time: Tuesdays and Thursdays, Periods 5-6 (11:45 AM - 1:40 PM), MAT 14

Office hours: Tuesdays 8:30am-9:20am and 2:10-3:50pm in Matherly 336¹.

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 minor*². This course has several topics in common with Environmental Economics, but the focus is more on climate change. You will learn material not covered in Environmental Economics, but there is some material in common.

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

1. Original Exam weights: For students who do not earn enough bonuses to get the classroom and call-in bonuses

Exam 1: 33%, Exam 2: 33%, Exam 3: 34%.

2. Optional Bonus Exam weight: For students who earn the classroom and call-in bonuses

Exam 1: 20%, Exam 2: 20%, Exam 3: 21%, Exam 1 Bonus: 13%, Exam 2 Bonus: 13%, Exam 3 Bonus: 13%.

¹ Office hours are in person. You can try and attend via Zoom by calling (352) 392-5017 and asking me to log into Zoom. However, students who are in the office will be seen first. The Zoom link is listed on our Canvas site.

² 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.**

Exams

We will have 3 in-person exams. No notes, books, or electronics of any type are allowed during exams³. When answering short-answer or long-answer questions/exercises, you can only get full credit if you show all your work. I have no way of knowing whether you answered a question correctly if you do not show me how you got there. You will always get partial credit for partially correct work. You cannot take an exam if you arrive more than 50 minutes late. Arriving more than 50 minutes late without an excuse or missing an exam without a valid excuse will result in a grade of 0.

Missed exams: Excuses must be provided within 1 week of the absence. Please use the Canvas form. Travel is not generally a valid excuse to miss an exam (with a few, academic and UF-related exceptions), neither are weddings. Some exam absences will be referred to the DSO for further verification. Excuses due to chronic conditions should be handled by the DRC.

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 and I sometimes check to make sure the proof is real. Also note that weather emergencies only take place when UF (or I) send a message saying UF is closed for weather.

Missing Multiple Exams:

If you miss more than one exam, I can help walk you through Medical Withdrawal.

Optional Classwork Bonuses

We will have two types of classwork bonuses: (1) classwork exercises and (2) classwork call-ins.

- Bonus Classwork Exercises

These are short in-class exercises that can only be submitted on the day they are assigned and if you are in class. The goal is to encourage attendance so only those in class can submit. If you submit any classwork that has not been assigned in class, it will not count towards classwork. If you submit classwork when you were not in the classroom you will not get any credit for it. Again, the whole purpose of these bonuses is to encourage attendance. You are required to be in class to complete classwork. You are required to show up on time to submit classwork. You are required to upload it correctly too (you will not get credit for uploading a corrupt file or the wrong file). If you show up after the roll call you will not be able to submit classwork for that

³ I will provide you with a 4-function calculator. If you take the exam at the DRC you must bring your own 4-function calculator or you can borrow one from me in advance. The only exception is students with disabilities that require electronic accommodations for medically necessary electronics, but I must be notified of this by the DRC. If you are caught communicating with anybody during an exam or using a cell phone of any type, you will be referred to the Dean of Students Office for an honor code violation.

day, even if you are there. There are no make ups for this because it is a bonus opportunity (i.e., extra credit). You will upload your classwork to Canvas on the day of the class. I will not reopen Canvas if you forget, as this is done in class.

- Bonus Classwork Call-Ins

You are expected to attend regularly and participate actively in this course. You are expected to have read the assigned material (listed on the last 2 pages of this syllabus and regularly updated on Canvas) before attending class and to be prepared to answer questions based on the readings and material covered in class. I ask a number of directed questions during the lecture period of the course. Students are selected at random (without replacement until everyone has had their turn) to answer questions based on the readings and class materials. The purpose of these questions is to make sure you are keeping up with the material and comfortable with communicating with me and your classmates. An additional purpose is to enhance class participation. I use timers because I need to keep track of time, not because I want to make anyone nervous/anxious. My goal is never to trick you, it is for you to learn and be comfortable asking questions. You can take a pass if you don't feel comfortable answering a question (note that taking a pass counts as a missed bonus opportunity). You will earn points if your answer is incorrect but on the right track. You will not lose points if you get these wrong, but you do lose the opportunity to earn a bonus. Important: My goal is to foster a nice cooperative learning environment. I will remove your call-in points if you show a lapse in appropriate conduct while a classmate is trying to answer a question. It is never okay to be rude or mock anyone in class. *You can use your notes or powerpoints when answering call-ins. You cannot use AI (I will stand behind you to check).

Important

For each exam: For the Optional Classwork Bonuses to be counted as part of your grade, you will need to have submitted 4 prior to each exam (this includes both submission of classwork and answering call-ins). If you submit less than 4 of the offered bonuses on an exam, you will not get a bonus and will instead have the relevant exam take the original weight. Note that if you exceed 4 bonuses for exam 1 and are missing bonuses for exam 2, I will not move them to the next exam.

Example: If you submit 3 or less bonuses for Exam 1 you will have Exam 1 weighted at 33%. If you submit at least 4 of Exam 1 bonuses, you will be able to weigh Exam 1 as 23% and the bonus as 10%. If you exceed 4 submissions for the relevant exam, I will drop the lowest submissions so only the top 4 are counted. Example: If you have 6 submissions for Exam 2, I will only count your 4 highest. Also note that if the bonus lowers your grade, I can remove it by request (this is extremely unusual). Note that 4 submissions are required for *each* exam. If you meet the bonus for exam 1 but not for exam 2 and 3, your weight will adjust accordingly (i.e., exam 1 will count for 23%, exam 1 bonus for 10%, exam 2 for 33% without a bonus, and exam 3 for 34% without a bonus). In other words, each bonus is calculated independently and calculated based on the number of bonuses achieved on that exam only. Also note that you will get at least 6 opportunities per exam for bonuses (6 opportunities in total for both call ins and classwork, not for each).

Missing a lecture (when there is no exam)

I take attendance in case you medically withdraw. You should always contact me (with proof) if you miss an exam. You should not contact me if you miss a non-exam lecture unless you have something big going on that you think I should be aware of (example: death in family or broken leg). You should get notes from a classmate if you miss a lecture.

Office hours' information and expectations

Extra office hours before exams will be announced in class.

Office hours are for asking clarifying questions, getting help with class exercises or concepts you are struggling with, and discussing personal circumstances when needed. They are not a substitute for missing class and failing to read the required readings. If you miss class, you should get notes from a classmate. I will not re-teach a lecture during office hours but am happy to walk you through areas you are struggling with. Please attend lectures (or get lecture notes) and read the relevant reading before attending office hours

Grading Policy

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

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%

Class Attendance and Make Up Policy

Excused absences are consistent with university policies in the undergraduate catalog⁴ and require appropriate documentation. Documentation must be provided within a week of the absence for exams via Canvas upload (do not email me if you miss a lecture where we do not have an exam). 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,

⁴ <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

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 exam will be provided for students who miss an exam due to extreme, documented circumstances. *These can only be taken on the scheduled make up exam date listed on the Syllabus calendar (see last page).*

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

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.

If you miss a lecture, only email me to let me know if you have missed an Exam. Do not email me to let me know you will miss a regular lecture.

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-conductcode/>). 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.

We will cover the following topics in class using roughly this order. Please note that if you have taken the Climate Change Economic Impacts (Quest 2) 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

Academic Dishonesty 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 (inc. 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 data. While collaboration on classwork is permitted, any work that you submit for evaluation and grading should be your own. Collaboration on exams is never permitted.

Generative Artificial Intelligence. The Department of Economics faculty assume that all work that is submitted for grading is written by the student whose name it bears, and that it represents their ideas and work. Accordingly, students are not permitted to use generative AI when completing assignments, quizzes, exams, or other graded work unless their instructor has expressly granted that permission. Unauthorized use of generative AI may constitute cheating and/or plagiarism. Such violations of the UF Student Honor Code will be reported to the UF Dean of Students Office and will be subject to severe sanctions.

Students Requiring Accommodations. Students with disabilities requesting accommodations should first register with the Disabilities Resource Center (392-8565; <https://disability.ufl.edu/>), providing appropriate documentation. Once registered, students will receive an accommodation letter that can be presented to the instructor when requesting accommodations. Please register at the beginning of the course if seeking accommodations. Accommodations are not applied retroactively or without the DSO's letter.

Miscellaneous:

1. You will only get full credit for written answers and exercises if you show all of your work (this means showing all math steps).
2. If my office hours are busy, I will limit each student's visit to 10 minutes so that I can see everyone. You are welcome to get back in line after your 10 minutes are up.

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.

More Health Counseling, Emergencies, Services:

U Matter, We Care: If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS): Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

UF Food Pantry: For students experiencing food insecurity.
<https://pantry.fieldandfork.ufl.edu/>

Recording of class:

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.

If I make any major changes to the syllabus, I will announce them via email and will list each change here: This is syllabus version 1.0.

Calendar Exam dates are fixed and will not change (unless UF closes on the day of the exam for an emergency or weather). All dates for material other than exams are tentative since I sometimes go faster or slower depending on student questions.

Topics will be covered in the order listed below, but I reserve the right to remove or add topics. Please read the book chapters and readings in the order listed on Canvas. Note: Bonus in class activities and call ins will be given throughout the term. They are due during class and are unannounced due to their nature. Note that while I try to follow the dates, the pace of the class may result in some material covered at different dates than listed. Canvas will have an up to date list of what we covered during each lecture by the end of each lecture day.

M=Module (on Canvas), L= Lecture. Ex: M2L1 = Module 2, Lecture 1. / T= Tuesday / Th = Thursday.

M1L1

T Jan 14 – Syllabus, Course Procedures, Introductions.

M1L2

Th Jan 16 – Course overview, climate change impacts, tipping points, negative externalities. Nordhaus Ch. 1-2.

M2L3

T Jan 21 – Law and economics, international agreements and incentives, economics approach introduction. Nordhaus Ch. 3.

M2L4

Th Jan 23 – Why is climate change an economics problem?, Decarbonization.

M3L5

T Jan 28 – Modeling (DICE model), public goods, Ice on fire part 1.

M3L6

Th Jan 30 – Ice on fire part 2. Nordhaus Ch. 4

M4L7

T Feb 4 – Carbon intensity, science/future climate change, special topic: collusion

M4L8

Th Feb 6 – Exam 1 Review

M5L9

T Feb 11 – **EXAM 1**

M5L10

Th Feb 13 – Past climate, tipping points (continued), Nordhaus Ch.5-6.

M6L11

T Feb 18 – Public goods (continued), ice cores. Nordhaus Ch. 7.

M6L12

Th Feb 20 – Systems, management mechanisms, impacts on farming and human health. Nordhaus Ch. 8-9.

M7L13

T Feb 25 – Farming, US Health, IAM performance, Yale climate survey

M7L14

Th Feb 27 – Unmanageable risks, ocean acidification. Nordhaus Ch. 10.

M8L15

T Mar 4 – Fleeing Climate Change

M8L16

Th Mar 6 – Exam 2 Review

M9L17

T Mar 11 – **EXAM 2**

M9L18

Th Mar 13 – Wildlife and species loss, valuation. Nordhaus Ch. 11.

No Lecture

T Mar 18 – Spring Break

No Lecture

Th Mar 20 – Spring Break

M10L19

T Mar 25 – Adaptation, mitigation, geoengineering. Nordhaus Ch. 12-14

M10L20

Th Mar 27 – Adaptation, mitigation (continued), climate disclosures, Nordhaus Ch. 15-16

M11L21

T Apr 1 – Climate negotiation

M11L22

Th Apr 3 – Costs of slowing down climate change, climate policy, Nordhaus Ch. 17-18

M12L23

T Apr 8 – Carbon pricing, cap and trade, border tax adjustment. Nordhaus Ch.19-21.

M12L24

Th Apr 10 – Additional topics (these vary by term but could include: Firms focus on climate change, ESG, Greenwashing,etc)⁵

M13L25

T Apr 15 – Harmonized policies, Weitzman and Pindyck models, Climate Clubs

M13L26

Th Apr 17 – Exam 3 Review

M14L27

T Apr 22 – **EXAM 3**

For those who missed either Exam 1, Exam 2, or Exam 3 with an excused absence:

5/1/2025 @ 10:00 AM - 12:00 PM is the make up exam date for any exam missed with an excused absence. You must submit proof within a week of a missed exam via Canvas.

⁵ Note: The additional topics lecture may be removed if we lose a lecture (for example, if UF cancels classes due to a weather event).