BSC 2862 Syllabus

Global Change Ecology and Sustainability
Class Periods and Location: T period 6 (12:50-1:40) MCC 0100; R Period 6-7 (12:50-2:45) ARCH 0423
Academic Term: spring 2024

Instructor

Stephen Mulkey, PhD
smulkey@ufl.edu
Office: 621 Carr Hall
Please contact through the Canvas website
Office Hours: By appointment through Zoom
Phone: 208.596.3234 (Please use respectfully and protect my privacy)

Only contact through the Canvas website with questions about course materials.

Course Website

 http://elearning.ufl.edu/ Class material including the syllabus, weekly comprehension quizzes, exam results, lecture slides, and other information related to the course will be posted on the course e-Learning website. **The *course lectures will not be recorded* so long as the course meets face-to-face in the classroom**. A pdf of each lecture is provided with each module. You are responsible for all announcements made in lecture and those posted on the course website. For help with e-Learning, call the UF Computing Help Desk at 352.392.4357, or visit the e-Learning support website: https://lss.at.ufl.edu/help.shtml

Course Description and Objectives

This course uses ecological principles and processes to describe the major anthropogenic changes that are occurring globally, regionally, and locally. Fundamental concepts include changes in land use, alterations in the major elemental cycles (water, nitrogen, phosphorus, and carbon), climate change, redistribution of species, ecosystem disruption, loss of biodiversity and extinctions, and the threat of climate and biosphere disruptions to human civilization. We consider best management practices, technologies, policies, and human behaviors that can mitigate negative human impacts on the climate and biosphere and promote sustainability. Natural science and the scientific method will provide the basis for understanding sustainability science as a framework for mitigation and adaptation. The humanities and social sciences will contribute to our understanding of how we engage with the biosphere. The course includes critical analysis of global neoliberal economics and its impacts on our home and future.

Objectives of the course will be achieved if, by its conclusion, students can:

- identify the major factors that influence land use change, alteration in water, nutrient, and carbon cycles, climate change, redistribution of species, and extinctions on a global scale.
- compare different practices, technologies, policies, and human behavior that can promote sustainability.
- provide cogent scientifically based criticisms of economics.
- have sufficient ecological literacy to apply basic concepts of ecology to understand human impact on global systems.
- be able to explain in detail why climate change is a threat to civilization.
- identify the major carbon processes driving climate change and be able to explain why the living biosphere and the climate system are interdependent and must be managed as an integrated Earth System.

Course Communications
Please use the Canvas Inbox Tool. Inquiries received Mondays through Fridays will usually receive a reply with 24 hours of receipt; however, if you have not received a reply within 48 hours, please resend your inquiry.

Optional suggested references - **not required**

Environment and You. 2018. Christensen. Edition 3. Pearson. ISBN-13: 978-0134646053

The Climate Book. 2023. Thunberg (ed.) Penguin Press. ISBN: 0241547474

These texts are listed as reference materials only. Exams will be entirely long-format essay and based on lectures and assigned readings. **There will be no assigned readings from these texts.** Thunberg's *The Climate Book* has sections by world renown experts. I should be useful as a starting point for your essay exams.

Additional Resources

Additional readings and media are included through the Canvas pages for each week through the UF Library. For resources unavailable through the UF Library, PDF documents are provided. If alternative versions of these resources are needed for any reason, please contact me and I will make accommodations for you.

UF VPN

This is essential for your success in this course. You should install and learn how to use UF VPN on your personal computer. This will allow you access to all UF Library holdings directly from the journal publisher when you are not on campus. This is an essential tool for scholarship. The UF Library proxy service is confusing and often fails to directly link to a publication. It is time consuming, and I don't recommend it.

Expectations

This course has high standards for student scholarship and critical thinking. Each student is solely responsible for reading and following the instructions, guidelines, and schedules in this syllabus, on the course webpage, or announced in class. Independent research by students and collaboration with a group will be significant portion of assessment. Not having read or followed the instructions will not constitute an excuse for missing an assignment, exam, or other assessment. Please set your preferences in Canvas so that you receive timely notifications of course announcements and other information. Check Announcements in Canvas regularly as e-mail notifications from Canvas do not always go through.

You may not under any circumstances turn in assignments or use Canvas from an iOS device such as a phone or an iPad. Canvas does not support an app for these devices. UF IT Help does not support any app for these devices. The reason for this restriction is that Canvas does not reliably retain such iOS documents.

As presently mandated by the State of Florida, this course will meet face-to-face. No recordings will be made of the lectures. Class attendance is required, and obvious repeated absences will negatively affect your grade. Attendance is your choice, but you will not learn the most important aspects of this course if you do not attend. Do not inform me when you miss class unless it is an excused absence. If it is an excused absence, notify me in writing by email and not in person.

I am happy to answer your questions, but I would appreciate it if you would use this syllabus first. When you have a question, check the following sources first to see if it is already answered, before e-mailing me:

- Course Syllabus
- e-Learning announcements (this is the primary means that I have to communicate with you in a timely manner)
- e-Learning Discussion General Posts

If you still cannot find the answer to your questions:

- If it is a question that others might find useful to know the answer to as well, post it in the e-Learning Discussion section.
- If it is a question specific to you (e.g., account or grade specific), e-mail Stephen. Barring unusual circumstances, expect a reply within 24 hours (Monday through Friday). E-mails and e-Learning Discussion posts are checked at least once per day, but sometimes not more than that.

A Promise to You

If you regularly attend lectures, turn in the assignments on time, and interact with me and your classmates, you will do _very well i_n this course. The amount of material can be daunting. It is my job to make this material accessible and help you work your way through the modules. Please keep me informed of your individual progress and alert me if you need help. Lectures are given in person and will not be recorded for class use. I may from time to time record a lecture on my phone as a legal record. If I do this, you will be informed as a class before I do so. _Absences due to COVID will be treated as any other excused absence due to sickness._ As per State of Florida law, you may record lectures on your personal recording device for personal use only.

Required Readings & Media

You are responsible for understanding all assigned readings and media. Not all reading and media materials will be covered in the course lectures.

Assignments/Quizzes/Exams

You are required to complete online quizzes and assignments. Please contact me if at any time you have questions about these assignments. A schedule will be posted on e-Learning with the due dates for each assignment. Most assignments are due by 11:59 P.M. (ET) on the date specified in the course schedule, usually a Sunday night, but not always. All assignments must be completed by the stated due date and time for full credit. Extensions will not be given because of technical or personal issues that occur within 24 hours of the assignment deadline. Many assignments will also have a set time limit, so make sure you have time to devote to that assignment before you begin. You are expected to work by yourself on the assignments and cheating will not be tolerated. Note that all due dates for assignments are clearly posted on course website and reflect the most up-to-date information.

Make-up Policy

Requirements for class attendance, make-up exams, assignments, and other work in this course are consistent with university policies that can be found in the [Undergraduate Catalog Academic Regulations](#).

Required Equipment

You must have a personal computer or laptop. This class depends on reliable internet connectivity. The download speed should be at least 50 mbs. This course cannot be reliably accessed from your phone or a tablet because the webpages on canvas are not optimized for mobile devices. Contact me if you require special consideration with respect to equipment or its use in this course.

Zoom Conferencing

Zoom is a video conferencing tool that allows for screen sharing and real-time communication at a distance. It also allows for synchronous communication to be recorded for viewing later. View the Zoom Privacy Policy here. I may occasionally use Zoom to deliver material outside of the regular lecture and discussion periods. If I become ill and contagious, but I am still able to be at my desk, your lectures will be delivered on Zoom until I am cleared to return to class.

Possible Course Schedule spring 2024

Please read this: The lecture schedule will change periodically due to unfolding logistics as the course proceeds. Please check this syllabus on a regular basis. Unless stated otherwise all assignments are due on Sunday at 11:59 the week of the module where they appear. You are responsible for scheduling your time to avoid multiple assignments due at the last minutes. Unless otherwise specified, exams will be timed and become available in the morning on Thursday and are due by Friday at midnight of the week when they occur.

Module	Topic/Activity	Exam / Assignment
Module 1	Introductory lecture: Reality and Responsibility in the Anthropocene: An overview of the issues	Required: Fill out your student profile and introduce yourself to the class on the Discussion board.
Module 2	Biomes and biogeography	Quiz 1 Read description of group project assignment Discussion 1
Module 3	Evolution, ecology, and demography	Quiz 2 Discussion 2
Module 4	Biodiversity & extinction	Group project subtopics Exam 1 Questions Posted Discussion 3
Module 5	Communities & ecosystems	Quiz 3 Discussion 4
Module 6	Climate change 1: Causes and processes	Exam 1 – 28 September – 1 October Quiz 4
Module 7	Climate change 2: Impacts	Draft of annotated bibliography Quiz 5

Module 8	Models, Emissions, Water, Carbon Cycle	Discussion 5 Post Exam 2 Questions
Module 9	Agriculture & food security	Quiz 6 Discussion 6
Module 10	Environmental change and human health	Exam 2 – 26-29 October
Module 11	Energy systems and climate mitigation	Final Annotated Bibliography Quiz 7 Discussion 7
Module 12	Natural climate interventions & geoengineering	Review of group presentation dates Quiz 8 Discussion 8
Module 13	Economics & ethics	Quiz 9 Exam 3 Questions Posted Discussion 9
Bonus Lecture	Climate Justice & Activism	
[Dates to be determined]		Presentations Exam 3
[Date to be determined]		Final project reports due

Disclaimer: This syllabus represents my current plans and objectives as of 3 January 2023. As we go through the semester, those plans may need to change to enhance the class learning opportunities and meet logistics. Such changes, communicated clearly, are not unusual and should be expected.

Attendance

Attendance is expected and essential for success in this course. If you are absent from class when an activity requiring your participation occurs, you will receive a zero grade for the activity unless the absence is *excused*. An absence is considered *excused* if there is an *acceptable reason* according to UF policy (https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx). Examples of acceptable reasons are medical illness (including COVID positive test), religious holidays,

military obligation, and the quarantine rule. Documentation of a religious holiday is not required. In all other cases, the following policies apply: It is your responsibility to notify me of an excused absence (via email in writing) and to provide documentation of an acceptable reason. Otherwise, the absence will be considered *unexcused*. Whenever possible, notify me by email prior to the absence, but do not notify me when you simply choose to not attend for logistical reasons or family matters. I should only be notified when you are ill or have a situation described above. When this is not possible (e.g., due to emergency or illness), I should be notified as soon as possible. I encourage you to read the assigned materials before coming to class as this will make it easier to comprehend the lecture material. If you miss class, visit the e-Learning site for any lecture notes and course announcements.

Exams

There will be three long-format essay exams during the semester. The exams are designed to ensure that you have developed an understanding based on systems rather than rote learning. There is no final exam. Exams will be administered during a specified window of opportunity via Canvas*. **In a long-format essay exams you should expect to write MORE THAN THE STANDARD FOUR OR FIVE SHORT PARAGRAPHS as your answer to each essay question***. You will receive a list of 8 possible long-format essay questions at least 10 days in advance of the exam date. A subset of four questions will be drawn from this list and these will appear on the exam.

The long-format essay exams are open book, open internet, and open lecture notes. You may not collaborate with each other in answering these questions. ***A successful strategy for these exams is to answer all possible questions in long-essay format and then simply cut and paste your answer into the exam space during the designated time for the exam.*** Finish your exam by editing your essays for clarity and content.

Please don't cheat. Your exams will be submitted to Turnitin for plagiarism detection. This tool also detects if much of the text and structure of the narrative have been created generative AI (I have submitted my questions to this AI and the answers are in the Turnitin database).

Students with documented need for extra time and resources will be accommodated (see below).

No additional time will be given to complete an exam if you start the exam late. If necessary to reflect class performance, exams will be curved and normalized to a scale of 0 to 100 after the distribution of scores has been assembled. Review of your performance on an exam will be available by appointment by Zoom two weeks after the date of the exam. Exams will not be available for review after the semester has ended.

No make-up exams will be given without prior permission or documentation of illness. Students that will be missing an exam due to a prearranged university-approved excused absence

(sports, etc.) should let the me know a minimum of two weeks in advance. These students may be required to take the makeup exam before the scheduled in-class exam.

In case of illness (including COVID) during the time that the exam is available, a letter from the student's primary care provider or notification by UF Student Health is required. This letter must state that the student was unable to complete the exam on the scheduled date (i.e., **a letter stating only that the student was seen in a clinic is not sufficient**). A personal matter requires a note from the Dean of Students. These notes must be received within five business days after the exam. Make up exams will be long-format essay.

Unless conditions warrant, during fall 2022 absences due to COVID will be accommodated and treated as any other excused absence due to illness. You will have ample time to make up material missed. PDFs of lectures are posted for everyone. Please do not come to class if you are ill.

Long-format essay exams will require several days for me to grade. Please be patient while I carefully read and evaluate your answers. A grading rubric is provided for these exams, and I advise you to carefully read and understand the criteria for grading.

Comprehension Quizzes

There will be 9 online quizzes to assess comprehension during the semester. You will be allowed two attempts for each question and the highest score received will be recorded for that quiz. All quizzes must be completed by the stated date and time. **Extensions will not be given because of technical or personal issues that occur within 24 hours of date of the quiz.** Quizzes will have a set time limit. Students are expected to work independently on the quizzes. The lowest quiz score will be dropped.

Term Group Project

Each of you will be assigned a group by Canvas. Each group will pick from a limited number of themes for development as a research project. Each member of the group will select an aspect or topic that is part of the theme for construction of an annotated bibliography and peer-reviewed presentation. Each of you will write a final report with citations on the entire group project summarizing the primary results in your own words.

- Part 1: Submission of individual topic description (1-2 paragraphs) of each topic chosen by each group members. Submitted by each group member. (graded as complete/incomplete)
- Part 2: An annotated bibliography written by each on one of the assigned individual topics within a theme. Submitted by each group member.
- Part 3: Group presentation by designated member(s) of group
- Part 4: Peer review of two presentations based on criteria provided in the instructions.

- Part 5: Submit final project report written by each in their own words drawing on the collective literature reviewed by the group. Submitted by each group member.

More detailed instructions and deadlines are posted separately for each aspect of the assignment.

Online Discussions

Associated with selected modules I will pose 8 Discussion topics derived from the readings and lectures. Your online participation in these will be noted and recorded as part of your grade as indicated in the grading scale. Note that

Discussions are 15% of your grade and thus should exhibit scholarship and critical thinking. Your response to comments by your peers must not be trivial and should reflect thoughtful reading of their comments.

Grades

Assessment	Points	Percentage weight of Final Grade
In-class Exams (3 @ 100 pts each)	300	25
Online quizzes (8 @ 20 pts each drop lowest of 9)	160	8
Attendance at outside speaker events or video lectures (4 @ 5 pts each)	20	2
Group Project Initial Assignments (2 @ 5 pts each)	10	2
Online Discussions (9 at 10 pts each)	90	15
Presentation on Term Project	100	12
Annotated Bibliography on Term Project	120	12
Project Report Peer Review (2 @ 10 pts each)	20	2
Final Project Report	100	20
totals	920	100

Grading Scheme

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%
E	< 61.0 %	to 0.0%

Note that the current UF policy for assigning grade points is available at the following undergraduate catalog web page: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Students Requiring Accommodations

Students with disabilities requesting accommodations for online programming should first register with the Disability Resource Center (352-392-8565, https://www.dso.ufl.edu/drc) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu/evals. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the

University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class. This course will use Turnitin to identify plagiarizing.

Use of Generative AI

Note that AI has certain limitations that will not allow you to pass a long-format essay exam in this course. These limitations will also fail when applied to Discussion boards and Reflection assignments. For example, recent research in the literature is not correctly represented in AI-generated answers. AI is unlikely to give appropriate responses that reflect your personal experience. The following guidelines will help you decide how and when to use AI. Please do not use AI as a means of cheating. I think you will find that it is more effort than it is worth.

If I find that you have used generative AI on any key assignments in the course, you will get no points for that assignment. It will be treated a plagiarism. If you violate this policy more than once, I will report you as violating the UF Honor Code, and appropriate consequences will ensue.

The use of AI tools (e.g. ChatGPT, Dall-e, Grammarly, etc.) is permitted for:

- Brainstorming and refining your ideas
- Fine-tuning your research questions
- Drafting an outline to organize content
- Checking grammar and style.

All final written assignments must be fully written by you. **The use of AI is NOT permitted for:**

- Impersonating you on Discussion boards
- Impersonating you on Long-format Essay Exams
- Impersonating you on the Final Report
- Writing sentences, paragraphs, or papers to complete assignments

In-Class Recording (the following statement is required by state law)

As required by state law, 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.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html

Academic Resources for Getting Help

E-learning technical support: Contact the UF Computing Help Desk at 352-392-4357 or via e-mail at helpdesk@ufl.edu.

Career Connections Center: Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.

Library Support: Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center: Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.

Writing Studio: 2215 Turlington Hall*,* 352-846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints On-Campus: Visit the Student Honor Code and Student Conduct Code webpage for more information.

On-Line Students Complaints: View the Distance Learning Student Complaint Process.

Health and Wellness

If you have or develop a chronic health issue during the semester you may not ask me to repeatedly change your assignment due dates. It is not my proper role to help you with such an issue. You must process your concerns with the office of the Dean of Students or the DRC. If you have a DRC claim, then it must be brought to my attention very early in the semester. I will not make retroactive assignment extensions.

U Matter, We Care: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit U Matter, We Care website to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: Visit the Counseling and Wellness Center website or call 352-392-1575 for information on crisis services as well as non-crisis services.

Student Health Care Center: Call 352-392-1161 for 24/7 information to help you find the care you need or visit the Student Health Care Center website.

University Police Department: Visit UF Police Department website or call 352-392-1111 (or 9-1-1 for emergencies).

UF Health Shands Emergency Room / Trauma Center: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; Visit the UF Health Emergency Room and Trauma Center website.

Use and Commercial Sale of Course Lectures

The content presented in the class is the property of UF and may not be duplicated in any format without permission from UF and may not be used for any commercial purposes. Students violating this policy may be subject to disciplinary action under the UF Conduct Code.

No part of the PowerPoints or other instructional content posted on Canvas may be reproduced, shared, or posted in any form outside of the class without permission in writing from Stephen Mulkey. Please see statement above regarding in-class recording by students.

Materials for Projects and Discussion

Books and Essays

The New Climate War
Michael E. Mann
Public Affairs 2021
ISBBN-10: 1541758234

Our Fragile Moment
Michael E. Mann
Public Affairs 2023

The Climate Book
Greta Thunberg (ed.)
Penguin Press 2023

The Sixth Extinction: An Unnatural History
Elizabeth Kolbert
Holt and Company 2014
ISBN-13: 978-1250062185

Drawdown 2020-2023: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming (download from website)

Merchants of Doubt
Naomi Oreskes and Erik M. Conway
Bloomsbury Press 2011
ISBN-13: 978-1596916104

21 Lessons for the 21st Century
Yuval Noah Harari
Spiegel & Grau 2018
ASIN: B079WM7KLS

Sustainability Science
Ariane König and Jerome Ravetz (eds.)
Routledge 2017
ISBN-13: 978-1138659285

Thinking in Systems: A Primer
Donella H. Meadows (author) and Diana Wright (editor)
Chelsea Green Publishing 2008
ISBN-13: 978-1603580557

Silent Spring
Rachel L. Carson
Houghton Mifflin Harcourt 2002 (Anniversary Edition)
ISBN-13: 978-0618253050

The Unsettling of America: Culture and Agriculture
Wendell Berry
Counterpoint 2015
ISBN-13: 978-1619025998

Half-Earth: Our Planet's Fight For Life
E. O. Wilson
Liveright 2017
ISBN-13: 978-1631492525

Transitioning Toward Sustainability: Advancing the Scientific Foundation
Brose, D. et al.
National Academies Press
ISBN 978-0-309-44375-3

Sustainability Key Concepts 2nd Edition
Leslie Paul Thiele
Polity Press
ISBN-13:978-1-5095-1106-8

Journals *

Proceedings of the National Academy of Sciences US

Nature

Nature Communications

Science

Science Advances

Scientific Reports

Earth's Future

Nature Climate Change

PLOS One

[Global Change Biology](#)

[Ecology Letters](#)

[Environmental Research Letters](#)

[Trends in Ecology and Evolution](#)

[Sustainability Science](#)

[Biological Conservation](#)

   *All are freely available if accessed from UFL.EDU

Sources of Literature Reviews and Assessment

[US Global Change Research Program](#)

[Intergovernmental Panel on Climate Change](#)

[Skeptical Science](#)

[International Energy Agency](#)

Letters of Recommendation: *Please do not request a letter of recommendation unless you have cultivated a professional relationship with me over more than one semester. Getting an A in my course is not sufficient.* I need to know much more about your professional development before I can write a meaningful letter. A letter that simply recapitulates what can be read on your transcript will not help you with admission to professional school and it is not respectful of my time.