

BSC 2862
Global Change Ecology and Sustainability
Class Periods: M Period 2-3 (0830-1025); W Period 2 (0830-0920)
Location: M: FLG 0285; W: CSE E119
Academic Term: fall 2019

Instructor

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Please contact through the Canvas website. Use regular email for personal questions such as grades, special circumstances, and needed accommodations.

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. 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 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.

Required Textbook

Environment: The Science Behind the Stories. 2018. Withgott and Laposata. Edition 6. Pearson. ISBN 9780134873633

Either a paperback or *etext* version (any vendor) of the text may be used, depending on what is most accessible for each student. The text will be used for readings and clarification; no access to text-associated activities (through the publisher) is required for this course. See your Announcements for instructions for accessing the publisher version of the *etext*. This version appears to be the least

expensive offered *by the publisher* for the recent edition of this text. Exams will be based primarily on the lectures, but you should read carefully those parts of the text that are covered in the lectures. Bookmark <https://console.pearson.com> to easily access the publisher's materials.

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 have been provided. If alternative versions of these resources are needed for any reason, please contact your instructor and accommodations will be provided.

Course Description and Objectives

This course will use ecological principles and processes to describe the major anthropogenic changes that are occurring globally. 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 will consider best management practices, technologies, policies, and human behavior 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.

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 and contrast different practices, technologies, policies, and human behavior that can promote sustainability.
- have sufficient ecological literacy to apply basic concepts of ecology to understand human impact on global systems.

Expectations

This course has high standards for student creativity and scholarship. 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 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.

When you have a question, check the following sources first to see if it is already answered, before e-mailing your instructors:

- Course Syllabus

- e-Learning announcements (this is the primary means that your Instructor has 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.

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/Quiz/Exams

As part of BSC2862 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 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's Academic Regulations](#).

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 at a later time. View the [Zoom Privacy Policy here](#). We will occasionally use Zoom to deliver material outside of the regular lecture and discussion periods. Instructions for use will be posted to Canvas.

Course Schedule fall 2019

The lecture schedule will change periodically due to unfolding logistics as the course proceeds. Please check this syllabus on a regular basis.

Module	Day	Date	Topic/Activity	Assigned Readings & Media	Exam / Assignment
Module 0	W	21 August	Introductory lecture	Smithsonian: What Is the Anthropocene & Are We in It? Will Steffen TEDx: The Anthropocene. Osborn & Traer TEDx: Generation Anthropocene. How to read a scientific article.	Required: Fill out your student profile and introduce yourself to the class on the Discussion board.
Module 1	M	26 August	Biomes and biogeography	Chapter 4: pp 92-98	
Module 2	W	28 August	Evolution, Ecology, and Demography	Chapter 3 except 3.4 Chapter 8	Quiz 1 posted due 11:59 01.09.19
	M	Labor Day			
	W	4 September	Review, discussion, group projects		
Module 3	M	9 September	Biodiversity & extinction	Chapter 3: 3.4 only Chapter 4: case study & closing the loop Chapter 11	
	W	11 September	Lecture catch up, group projects; Review for exam 1 (in class if time, otherwise at 6 pm location TBA)		Quiz 2 posted due 11:59 15.09.19
Module 4	M	16 September	Communities & ecosystems	Chapter 4 all except 4.3 Chapter 5 intro, 5.1-5.2	Optional Field Trip 1 – Sweetwater Thursday 19 September – 8-10:30 am meet behind Bartram-Carr
	W	18 September	Exam 1		Exam 1
Module 5	M	23 September	Climate change 1: Paleoclimate and measuring climate change	James Hansen: Why I must speak out on climate change. Dave Roberts: Climate change is simple. Chapter 5.1 Chapter 18 through 18.2	

	W	25 September	Discussion of Hothouse Earth	Rockström: Hothouse Earth	Quiz 3 posted due 11:59 29.09.19
Module 6	M	30 September	Climate change 2: Impacts	Excerpts from Florida Climate Institute review. Chapter 18.3 and end of chapter	
	W	2 October	Review for Exam 2		
Module 7	M	7 October	Biogeochemical cycles	Chapter 5.3	
	W	9 October	Water; review for exam 2 (6 pm location TBA)	Chapter 15	Quiz 4 posted due 11:59 13.10.19
Module 8	M	14 October	Land use: Agriculture and forestry	Chapter 9 Chapter 10 Chapter 12	Optional Field Trip 2 – Siembra Farms Thursday 17 October - 8-10:30 am meet behind Bartram-Carr
	W	16 October	Exam 2		Exam 2
Module 9	M	21 October	Environmental change and human health	Chapter 14 Chapter 17	
	W	23 October	Discussion, group projects		
Module 10	M	28 October	Energy systems	Chapter 19 Chapter 20 Chapter 21	
	W	30 October	Urban systems & waste	Chapter 22 Chapter 13	Quiz 5 posted due 03.11.19
Module 11	M	4 November	Natural climate solutions & geoengineering		
	W	6 November	Lecture catch-up, group projects		
Module 12	M	11 November	Scaling up & sustainability science	Chapter 24 Chapter 1	
Module 13	W	13 November	Economics & ethics, Review for Exam 3 (6 pm TBA)	Chapter 6	Quiz 6 posted due 17.11.19
	M	18 November	Group presentations		

	W	20 November	Exam 3		Exam 3
	M	25 November	Group presentations		
	W	Thanksgiving recess			
	M	2 December	Group presentations		
Module 14	W	4 December	Conclusions		
			Final project reports due 9 December 11:59		

Attendance

Attendance is expected. If you are absent from class when an exam or other 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, religious holidays, military obligation, and the twelve-day rule. For religious holidays, students are required to notify the instructor prior to the absence, but documentation of the religious holiday is not required. In all other cases, the following policies apply: It is your responsibility to notify the instructor of an excused absence and to provide documentation of an acceptable reason. Otherwise, the absence will be considered *unexcused*. Whenever possible, notify the instructor by email prior to the absence. When this is not possible (e.g., due to unexpected emergency or illness), the instructor should be notified as soon as possible. You are strongly encouraged to read the assigned chapters 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 50-minute exams during the semester. There is no final exam. Exams will be administered during the normal semester and during normal class meeting times. Exams will be objective and emphasize lecture materials and assigned readings and media. Exams will be given via Canvas while you are in the classroom and will be proctored and timed. You must access the exam from your personal laptop (mac or pc) and you are required to be in the classroom for the exam. You will be using the LockDown Browser program during the exam. iPads are compatible with LockDown Browser, but Chromebooks are not. You should arrange to borrow a compatible laptop if you do not have one. If you are using a laptop that is not your normal mode of accessing Canvas, you should familiarize yourself with UF login procedures on that laptop prior to the exam. You should take the practice test that will be provided (it will not be graded for credit) and verify that LockDown Browser works for you.

Each student must bring her/his Gator ID to class on exam days. No student will be allowed to start an exam after the first student to complete an exam leaves the classroom. No additional time will be given to complete an exam if you arrive late. 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 one week 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 instructor 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 on exam day, a letter from the student's primary care provider 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 (P202 Peabody Hall). These notes must be received within five business days after the exam. Make up exams may be short-answer or essay format.

Comprehension Quizzes

There will be 6 online quizzes to assess comprehension during the course of 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 and to not use notes.

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 group selection of theme for group to be submitted by each group member with Part 2.
- Part 2: Submission of individual topic description (1-2 paragraphs) of each topic chosen by group members. Submitted by each group member.
- Part 3: An annotated bibliography written by each individual on one of the assigned individual topics within a theme. Submitted by each group member.
- Part 4: Submit an outline format of your individual presentation plans. Submitted by each group member.
- Part 5: Peer presentation given by your group.
- Part 6: Provide feedback to two peers based on criteria provided in Canvas.
- Part 7: Submit final project report written by each individual 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

Periodically your TA or instructor will pose questions 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.

Grades

Assessment	Points	Percentage weight of Final Grade
In-class Exams (3 @ 50 pts each)	150	25
Online quizzes (6 @ 20 pts each)	120	20
Online Discussions (up to 50 pts @ 2 pts each)	50	5
Presentation on Term Project	100	10
Annotated Bibliography on Term Project	100	15
Project Report Peer Review (2 @ 25 pts each)	50	5
Final Project Report	100	20
Total	670	100

Grading Policy

Percent	Grade	Grade Points
90.0 - 100.0	A	4.00
87.0 - 89.9	A-	3.67
84.0 - 86.9	B+	3.33
81.0 – 83.9	B	3.00
78.0 - 80.9	B-	2.67
75.0 - 79.9	C+	2.33
72.0 – 74.9	C	2.00
69.0 - 71.9	C-	1.67
66.0 - 68.9	D+	1.33
63.0 - 65.9	D	1.00
60.0 - 62.9	D-	0.67
0 - 59.9	E	0.00

More information on UF grading policy may be found at:

<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#grades>

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

Students Requiring Accommodations

Students with disabilities requesting accommodations 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.

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>

Getting Help

For technical issues related to Canvas, please contact the UF Help Desk at <http://helpdesk.ufl.edu>, 352.392.HELP (4357), or walk-in at HUB 132.

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.

Use of Course Imagery and Multimedia

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

Materials for Projects and Discussion

Books and Essays

The Sixth Extinction: An Unnatural History

Elizabeth Kolbert

Holt and Company 2014

ISBN-13: 978-1250062185

Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming

Paul Hawken

Penguin Books 2017

ISBN-13: 978-0143130444

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 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](#)
