Ecosystem Engineers

ENV 6932 (Section 3B44)– Fall 2020

Catalog Description: 3 credits. Review and synthesis of organisms that create and modify habitat emphasizing their effect on ecosystem functions and services.

Instructor: Dr. Andrew Altieri, Environmental Engineering Sciences
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Contact: Class website (UF e-Learning): https://lss.at.ufl.edu
Course e-mail: use e-Learning for correspondence
Office Hours: after class and by appointment

Prerequisite: Instructor permission

Time and Location: Tuesday periods 4 (10:40 - 11:30am), online
Thursday period 4-5 (10:40 - 12:35pm), online

Course Description: The structure and function of many ecosystems are defined by ecosystem engineers. Ecosystem engineers are species that modify, maintain, or create habitat. By transforming resources, controlling the flow of energy and materials through an ecosystem, and interacting directly with other species through non-trophic mechanisms, ecosystem engineering can have profound effects on the natural world, including biodiversity patterns, biogeochemical fluxes, and geomorphological features. Understanding the role of ecosystems engineers is therefore crucial for predicting ecological responses to global change factors and is essential for the implementation of restoration, mitigation, management, and environmental design projects.

The course will center on group discussion of the scientific literature built on student leadership and contribution. Over the course of the semester students will specialize on a topic of interest within the ecosystem engineer theme relevant to their own research and interests, and then prepare a professional presentation and contribute to a manuscript on that topic. Students will thus develop a broad understanding of ecosystems engineers from both a conceptual and applied perspective while integrating class themes into a research pursuits and professional development.

Course Materials:
Readings will come from the scientific literature and will be assigned and made available weekly

through the class homepage (https://lss.at.ufl.edu).

Course Expectations:
- Attend class and arrive on time. Details on university attendance policy are available at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx.
- Complete assigned readings and distribute reading guides prior to the class for which they are assigned.
- Participate thoughtfully in class discussions, including your thoughts on the assigned readings. Students will have the opportunity to lead a component of the discussion weekly. The success of the class is dependent on the regular contribution of all students.
- Prepare, present, and offer feedback on class presentation and writing assignments.

Grading Scheme and Assignments:
Discussion leadership and participation: 20%
Reading guides: 10%
Research manuscript: 40%
Presentation to class: 30%

Grading scale: A (≥93), A- (≥90 & <93), B+ (≥87 & <90), B (≥83 & <87), B- (≥80 & <83), C+ (≥77 & <80), C (≥73 & <77), C- (≥70 & <73), D+ (≥67 & <70), D (≥63 & <67), D- (≥60 & <63), E (<60). GPA information can be found: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx.

Discussion leadership and participation: Attendance in class is required via online video and audio link. Students will volunteer to lead discussion on a chosen scientific article from each of the weekly reading lists. Each week, students will choose the article from the following week's reading list for which they will be responsible. They will be expected to read and develop a nuanced understanding of their chosen article prior to class. Students will be responsible for briefly summarizing their paper, prompting discussion with thoughtful and provocative comments/questions, and relating their paper to the other weekly readings in class. Students are also expected to participate in the class discussion based on their understanding of all weekly readings as well as outside literature and resources.

Reading guides: Students will prepare a written one-page summary of their chosen article and distribute to the class by 5pm on the Friday prior to the week during which it will be discussed. Research manuscript: Over the semester, students will contribute to a manuscript, formatted for peer-reviewed publication, on an ecosystem engineering topic developed collectively as a class.

Presentation to class: Students will prepare and give an oral presentation suitable for a scientific conference. The content of the presentation will be based on the topic of the research manuscript. Presenters should be prepared for an extended Q&A / feedback period, and other students will be earn participation points for their involvement in those follow-up discussions. Other formats and/or intended audiences for the presentation may be pursued with instructor approval.

Course Topics and Schedule: This schedule is tentative and subject to change based on the timing of guest lecturer schedules, student interests, and current events.

Field trips: Field trips are typically an important component of this class, but have been suspended due to the coronavirus outbreak. Should in-person meetings including field trips become safe, the field trips may be added over the course of the semester.

Week	Date	Topic	Manuscript Assignment
1	01Sept20	Intro to class. Definitions & related concepts	
1	03Sept20	Definitions & related concepts	
2	08Sept20	Origins of concepts	
2	10Sept20	Origins of concepts	
3	15Sept20	Classic examples	
3	17Sept20	Classic examples	
4	22Sept20	Trait-dependent effects	
4	24Sept20	Trait-dependent effects	
5	29Sept20	Feedbacks and Scale-dependent interactions	
5	01Oct20	Feedbacks and Scale-dependent interactions	
6	06Oct20	Multiple EEs	
6	08Oct20	Multiple EEs	
7	13Oct20	Invasive species	
7	15Oct20	Invasive species	
8	20Oct20	Threats and restoration	
8	22Oct20	Threats and restoration	
9	27Oct20	Guest lecture: living shorelines	
9	29Oct20	Workshop: Brainstorm and outline	
10	03Nov20	Workshop: Brainstorm and outline	
10	05Nov20	1-on-1 meeting: bibliography	Bibliographies due
11	10Nov20	1-on-1 meeting: bibliography	
11	12Nov20	1-on-1 meeting: subsection draft	Subsection draft 1 due
12	17Nov20	1-on-1 meeting: subsection draft	
12	19Nov20	Workshop: figures and presentations	
13	24Nov20	Workshop: figures and presentations	
13	26Nov20	**No Class–Thanksgiving**	
14	01Dec20	Workshop: cover letter and peer-review	Subsection draft 2 due
14	03Dec20	Student presentations	
15	08Dec20	Student presentations	
15	10Dec20	**No Class–Reading Day**	
16	18Dec20 10am-12pm	Workshop: finalize manuscript	Manuscript and cover letter peer-reviews due

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://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-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.

Software Use:
All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Campus Helping Resources:
Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance:
- *University Counseling & Wellness Center*, 3190 Radio Road, 352-392-1575, www.counseling.ufl.edu/cwc/
  - Counseling Services
  - Groups and Workshops
  - Outreach and Consultation
  - Self-Help Library
  - Training Programs
  - Community Provider Database
- *Career Resource Center*, First Floor, J. Wayne Reitz Union, 392-1601, www.crc.ufl.edu

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.

Evaluations:
Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu. 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/.

Commitment to a Safe and Inclusive Learning Environment:
The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:
• Your academic advisor or Graduate Program Coordinator
• Robin Bielling, Director of Human Resources, 352-392-0903, rbielling@eng.ufl.edu
• Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
• Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Sexual Discrimination, Harassment, Assault, or Violence:
If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Statement regarding privacy for online courses
Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

The default setting for the course is to NOT record class meetings. The instructor will notify students prior to recording any class lectures.