

Forest Ecosystem Resilience

FOR 6155

1 Overview

- 3 Credits
- 100% Online
- Fall 2020
- Location: *elearning.ufl.edu*

Course Description: Graduate students will learn to connect how stages of forest development, tree species characteristics and disturbance (fire, pathogens etc.) affect forest ecosystem resilience. New and traditional methods for detecting forest change, or resistance to change, will be examined so that students appreciate the methods in ecosystem science that are available to them during their graduate study.

Prerequisite Knowledge and Skills: Graduate student standing. Previous course(s) in ecology, silviculture, or biology are recommended but are not required.

Instructor: Jason G. Vogel
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352-846-0879

Office Hours: Open door for on campus students, or by appointment for all distance learners. Direct email or email via Canvas are the best ways to reach me and then we set up a time to talk.

Response: Email is my preferred way to communicate. During the weekday, I will usually respond within 24-36 hours and will respond either Sunday evening or Monday morning to emails sent over the weekend.

Course Website: *elearning.ufl.edu*

Readings: Select **required** readings will be made available on the course reserves part of webpage and a citation list found under the 'Course Content' section below.

Background Reading: The following books offer background or reference material that would benefit students with a minimal background in forest ecology, silviculture, or ecology. However, the books are not required and no assignment will derive from them.

Forest Ecology/Silviculture

Smith, D.M., Larson B.C., Kelty M.J., and Ashton P.M.S. 2014. *The Practice of Silviculture: Applied Forest Ecology*. Covers ecological terminology, concepts, and science at the intersection of forestry (silviculture) and ecology.

Resilience theory

Walker, B. and Salt D. 2006. *Resilience Thinking: Sustaining Ecosystems and People in a changing world*. A layperson's primer on resilience theory.

Complex adaptive systems/Resilience in Forest management

Messier, C.M., Puettman, K., and Coats D. 2013. *Managing Forests as Complex Adaptive Systems: Building Resilience to the Challenge of Global Change*. Provides case studies of managing forest for resilience.

Online Resource: A fantastic resource is the *Silvics of North America* series (https://www.srs.fs.usda.gov/pubs/misc/ag_654/table_of_contents.htm) created by the U.S. Forest service. It covers the basic information (ecology, management, use) of all major tree species in the continental United States and Canada/Alaska. Much of its content has been incorporated into Wikipedia but the sourcing for information is better in this the original document.

2 Learning Outcomes

Student Learning Outcomes (SLOs) related to this course are described below. **At the end of this course, each student will be able to:**

- 1) Critically evaluate the scientific literature, analyze and synthesize information, understand experimental and/or descriptive research methodologies, and effectively communicate scientific information about the controlling factors on forest change.
- 2) Describe and explain the theories and concepts of resilience theory and forest ecosystem health in a way that is relevant to the individualized focus of the student's research area and degree program.
- 3) Apply the social, economic, and ecological context of forest health and resilience to an abiotic disturbance or an insect/pathogen outbreak, and formulate management recommendations for preventing, responding, and restoring a forest in response to the disturbance.

3 Course Logistics

This course is entirely web-based and students may access lectures, readings, and supporting materials as they become available each week in the Canvas environment.

Weekly learning modules consist of lecture(s), readings, supporting material, and a quiz. These are provided Sunday night online for each topic and are available the entire week. Learning modules build on previous modules so you should complete the learning modules in the order presented.

Each learning module has required readings beyond the lecture. This information will be covered on quizzes. All files will be made available for you to view on your computer, save, or print. There may be references to additional (optional) readings and resources if you desire further investigation of a topic. Other literature (journal articles and books) are often available online through UF libraries.

Technology Requirements:

- A computer or mobile device. A high-speed internet connection is recommended.
- A headset and/or microphone and speakers; a web cam is suggested.
- Latest version of web browser. Canvas supports only the two most recent versions of any given browser. [What browser am I using?](#)

Grading Policies

| Assignment | Percentage |
|------------------------------|------------|
| Quizzes | 25% |
| Participation and Discussion | 35% |
| Paper | 25% |
| Paper review | 10% |

3.1 Assignments & Deliverables

Exam: There are no exams in this course.

Quizzes: Bi-weekly online quizzes will be made available during the semester. These will be short answer or multiple choice and will focus on the lectures and readings. Quizzes are designed to keep students up-to-date on important concepts introduced during class. They are available at the beginning of a week and through to the end of the week.

Participation and Discussion: This grade is made up of four parts.

Part 1: Week 1 Course Mechanics Assignments. Many of the assignments for this week are meant to organize the class (e.g. biography) and make sure everyone understands the syllabus and available resources. In total, these small assignments represent 5% of the course grade.

- Post your biography in Discussions** –Tell your classmates and me about yourself. Feel free to post a picture of yourself or anything that you think reflects your interests (2%).
- Create three slides related to a tree species or forest ecosystem type**—Ideally this assignment would be a species or forest ecosystem

type that is near where you live! **Go out and take a picture.** Even better if this is the species you will write your paper about. See “Introduction” lecture for hints and resources (1%).

- c. **Syllabus Quiz**—This is meant to get you to read the syllabus and take note of important sections (1%).
- d. **Respond to emailed/announcements “zoom quiz” poll** (1%). The poll is meant to determine optimal zoom meeting times.

Part 2: Engage your classmates in the weekly online discussion. You will respond to the instructor’s or classmates guiding question and discuss the assigned articles. If you are having a difficult time deciding what to say about a series of articles, feel free to connect the ideas in the paper to another article you have read (and link to it) **or something you have observed in your local forests/ecosystems.** If you are still having trouble with this part of the assignment please let me know. (20%)

Part 3: Lead 1-2 weeks of online discussion. Beginning the third week of class, the students will lead the discussion on the papers for at least 1 week and potentially 2 weeks (depending on enrollment). I will provide an example of this in the first couple of weeks but leading means posting guiding questions and following up on questions from classmates. Students should supplement the required readings with at least one related scientific article of interest (5%).

Part 4: Attend four of the six scheduled zoom meetings. (5%)

Meeting times will be determined by the emailed zoom quiz poll.

***Everyone should attend the first meeting. I will cover the syllabus and any questions about the course. If there is no way you can attend the designated time, then please view the recorded zoom session.**

I will use the zoom meetings to bring attention to anything important that has come up in discussion or in questions from students. It is also a way to keep in touch.

Paper: Students will write the equivalent of a scientific review paper on a topic of choice related to the course material (est. 10-15 pp. without references). Sections are due throughout semester. Sections will be cumulative but paper reviews by other students and myself will be done on each of the sections. Comments will be returned within 1 week of paper section submission.

- **Introduction:** Description of species or forest ecosystem type (est. 3-6 pp).
- **Factor(s) that Affect Resistance/Resilience of Species/System** (est. 1-2 pp)
- **Methods of Monitoring/Measurement** (est. 2-4 pp.)
- **Proposed Management Scheme to Build Resistance or Resilience** (2-5 pp).
- Revise (if needed or desired) and Resubmit final paper.

A more detailed description of this assignment is found in the “Paper Assignment” folder.

POINTS BREAKDOWN AND SLO ASSESSMENT

- Posting biography, tree species/forest ecosystem type and threats, syllabus quiz, respond to 'quiz' on Zoom times (50 pts).
- Discussion responses are worth 15 points each week (190 pts). SLO 1 is assessed with Discussion.
- Quizzes are 35-45 pts each. They are timed to occur every two weeks (250 pts). SLO 2 is assessed with the Quizzes.
- Serving as Discussion Lead and posting a new paper (50 pts). This might be serving 2x for 25 pts each or 1x for 50 pts. SLO 1 and 2 are assessed with this assignment.
- Attend 4 of 6 zoom meetings (50 pts).
 - Help with Zoom here: <https://video.ufl.edu/conferencing/zoom/>
- Paper (250 pts). SLO 3 is assessed with this assignment.
 - Introduction (75 pts)
 - Factor(s) that Affect Resilience of Species/System (50 pts)
 - Methods of Monitoring/Measurement (75 pts)
 - Proposed Management Scheme to Build Resistance or Resilience (25 pts)
 - Revised and Resubmit (25 pts)
- Paper section peer review. You will only review sections and not the final paper (25 pts / each, 100 pts total).

3.2 Grades & Grading Scale

Rounding example: A grade of 91.45 is rounded to 92 for final grade.

Grading Scale (%)

A 92-100
A- 90-91.99
B+ 85-89.99
B 80-84.99
C+ 75-79.99
C 70-74.99
D+ 65-69.99
D 60-64.99
E < 60

For information on current UF policies for assigning grade points, see <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

4 Course Content

Learning modules (week), assignments, and readings. I recommend you read the articles in order for a given week (example read Holling and then May in week 2).

| Week | Topic | Assignment Due + Date | Reading(s) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| 1 | Course Introduction | Post biography / Tree or Forest type selection / Syllabus Quiz / Zoom time quiz | Review Syllabus and Introductory Lecture |
| 2 | A brief history of ecosystem resilience and systems thinking | Discussion 1 Due 9/5 (First comments due) | Holling 1973; May 1977 |
| 3 | A review of how forests (and trees) establish, grow and die | Discussion 2 Due 9/12 Quiz 1 Due 9/13 | Oliver 1980; Lorimer 1980; Waring 1987 |
| 4 | Traditional methods for detecting and understanding change in forests | Discussion 3 Due 9/19 | Hall et al. 2002; Henry and Swan 1974; Phillips et al. 1998; |
| 5 | New methods for detecting and understanding change in forests | Discussion 4 9/26 "Introduction" 9/26 Quiz 2 (short) 9/25 | FIA factsheet; McDowell et al. 2015; Sarris et al. 2013 |
| 6 | Drivers of change, resilience, and resistance in forests | Discussion 5 10/3 Peer review 10/3 | Halpern 1988; Vale et al. 2001 |
| 7 | Pathways to a new forest ecosystem: Climate | Discussion 6 10/10 Paper Section "Factors that affect resistance/resilience" 10/10 Quiz 3 10/9 | Millar and Stephenson 2015; Allen et al. 2014; |
| 8 | Pathways to a new forest ecosystem: Disturbance regimes | Discussion 7 10/17 Peer review 10/17 | Johnstone et al. 2010; Gilliam and Platt 1999; Enright et al. 2015 |
| 9 | Pathways to a new forest ecosystem: Soil, Insects, and Pathogens | Discussion 8 10/24 "Methods of Monitoring / Measure" 10/24 Quiz 4 (short) 10/23 | Sullivan et al. 2013; Anderegg et al. 2015; Santini et al. 2013 |
| 10 | Socio-Ecological Resilience and Forests | Discussion 9 10/31 Peer feedback 10/31 | Spies et al. 2014; Cumming et al. 2013 |
| 11 | Formulating Adaptive Forest Management Plans: Naturally regenerated forests | Discussion 10 11/07 Quiz 5 11/13 | Lindenmayer et al. 2016; Franklin et al. 2007; Churchill et al. 2013 |
| 12 | Forest Management Plans for Health and Resilience: Plantations | Discussion 11 11/14 "Management Scheme" 11/21 | D'Amato et al. 2013; Wingfield et al. 2015 |
| 13 | Review of material | Discussion 12 11/21 Peer feedback 11/28 Final paper* 11/28 | TBD |
| 14 | No Class Thanksgiving week | No Discussion | No readings |
| 15 | Putting the pieces together | Discussion 13 12/05 Final Revised Paper 12/08 | Millar et al. 2007; Shiffley et al. 2017 |
| *The final paper is not a new product but an opportunity to address all comments. I will look at this and return if I think it can improve. Otherwise, I think you can send back to me as a final paper on week 15. | | | |

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6 Policies and Requirements

This syllabus represents current plans and objectives for this course. As the semester progresses, changes may need to be made to accommodate timing, logistics, or to enhance learning. Such changes, communicated clearly, are not unusual and should be expected.

6.1 Late Submissions & Make-up Requests

It is the responsibility of the student to access on-line lectures, readings, and quizzes, and to maintain satisfactory progress in the course.

Computer or other hardware failures, except failure of the UF e-Learning system, will not excuse students for missing assignments. Any late submissions due to technical issues MUST be accompanied by the ticket number received from the Helpdesk when the problem was reported to them. The ticket number will document the time and date of the problem. You MUST e-mail your instructor within 24 hours of the technical difficulty if you wish to request consideration.

For computer, software compatibility, or access problems call the HELP DESK phone number—352-392-HELP = 352- 392-4357 (option 2).

Requirements for class attendance, assignments and other work are consistent with university policies that can be found at:

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

6.2 Semester Evaluation Process

Student assessment of instruction is an important part of efforts to improve teaching and learning.

At approximately the mid-point of the semester, the School of Forest Resources & Conservation will request anonymous feedback on student satisfaction on various aspects of this course. These surveys will be sent out through Canvas and are not required, but encouraged. This is not the UF Faculty Evaluation!

At the end of the semester, students are expected to provide UF with feedback on the quality of instruction in this course using a standard set of university and college criteria (UF Faculty Evaluations). These evaluations are conducted online at

<https://evaluations.ufl.edu>. Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>.

6.3 Netiquette: Communication Courtesy

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats. Failure to do so may result in loss of

participation points and/or referral to the Dean of Students' Office.
<http://teach.ufl.edu/docs/NetiquetteGuideforOnlineCourses.pdf>

6.4 Academic Honesty Policy

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: *"We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity."*

You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit 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."*

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct or appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: <http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>.

6.5 University Policy on Accommodating Students with Disabilities:

Students requesting accommodation for disabilities must first register with the Dean of Students Office (<http://www.dso.ufl.edu/drc/>). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

6.6 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.

7 Getting Help

For issues with technical difficulties for e-learning in Canvas, please post your question to the Technical Help Discussion in your course, or contact the UF Help Desk at:

- Learning-support@ufl.edu | (352) 392-HELP - select option 2 | <http://elearning.ufl.edu>
- Library Help Desk support <http://cms.uflib.ufl.edu/ask>
- SFFGS Academic Hub <https://ufl.instructure.com/courses/303721>

7.1 Student Life, Wellness, and Counseling Help

- Counseling and Wellness resources <http://www.counseling.ufl.edu/cwc/>
- U Matter, We Care <http://www.umatter.ufl.edu/>
- Career Resource Center <http://www.crc.ufl.edu/>
- Other resources are available at <http://www.distance.ufl.edu/getting-help> for online students.

7.2 Student Complaint Process

The School of Forest Resources & Conservation cares about your experience and we will make every effort to address course concerns. We request that all of our online students complete a course satisfaction survey each semester, which is a time for you to voice your thoughts on how your course is being delivered.

If you have a more urgent concern, your first point of contact should be the SFFGS Academic Coordinator or the Graduate/Undergraduate Coordinator for the program offering the course. You may also submit a complaint directly to UF administration:

- Students in online courses: <http://www.distance.ufl.edu/student-complaint-process>
- Students in face-to-face courses (not applicable in this course): https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf