

FOR 6340 - Physiology of Forest Trees - Fall 2021

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Course Website: UF Canvas Site

Office Hours: Mondays 1:00-2:00 eastern time, or by appointment. I can meet in-person or on Zoom. I will keep the Monday slot open on my calendar, but please contact me if you would like to meet during that time. I am also available for appointments at other times, just email me.

Class Structure

This is an asynchronous, online course. However, I will arrange the course material into approximately weekly modules, and I encourage you to pace yourself so that you can finish the course on time, without getting behind. In addition, since the discussion board topics are synchronized with the lecture topics, you will find the discussions easier and more enjoyable if you are caught up on lectures. Although I know some prefer to work ahead, since this is the first time I am offering this course in this format, I will probably not be able to post material very far ahead of time.

The course is built around recorded lectures posted on Canvas, supplemented with readings, videos, and other outside materials. Discussion boards and live (optional) discussion sessions provide opportunities for students to interact with each other and the instructor.

Learning Outcomes

Students completing the course should be able to:

- I. Apply concepts of the physiological ecology of forest trees to their work or research in forests and natural resources, with special emphasis on
 - (a) the unique morphological and physiological adaptations that set trees apart from other plants;
 - (b) the integration of physiological function across levels of biological organization from the cell to the landscape; and
 - (c) interactions among the environment (including forest management), physiology, and tree and forest productivity.
- II. Critically analyze ecophysiological research literature and integrate physiological concepts into their research.
- III. Formulate research methodology implementing ecophysiological experimental and measurement approaches.

Textbooks (optional resources)

Lambers, H., and R.S. Oliveira. 2019. *Plant Physiological Ecology*, Third Edition. Springer-Verlag, New York, 763 p. (or previous editions)

Pallardy, S.G. 2007. *Physiology of Woody Plants*, Third Edition. Academic Press, San Diego. 480 p. (or previous editions)

Both books in their several editions are readily available used and new online, and some editions are available as e-books through the UF library.

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Grades

Quizzes 25% of course grade

To help keep you on track and focused on the material, an open-book quiz will be associated with each module. Your lowest quiz grade will be dropped.

Exams 40% of course grade

There will be four open-book exams administered on Canvas

Participation in discussion boards 20% of course grade

Over the course of the semester, I will open approximately six discussion boards on various topics: a paper from the literature, a measurement technique, or some other topic. Each discussion board will have a closing date, so make sure to pay attention to timing. You should provide at least two posts to each discussion thread. Your posts will be graded based on a rubric associated with the discussion assignment. Your lowest discussion board grade will be dropped. There will also be a general discussion board for the class in which you can ask questions or start discussions on other topics. Posts to the general discussion board will not be graded.

Annotated Bibliography 15% of course grade

Prepare an annotated bibliography on 10 papers from the peer reviewed literature that use physiological techniques to explore a topic of interest to you or associated with your research. The entry for each paper should include a citation of the paper, and a short paragraph which describes: the hypothesis or question addressed in the paper; the type of physiological measurements used in the research; a brief summary of the results; any additional thoughts or observations you have on the paper.

Final grades will be assigned as:

Score range (percent)	Letter grade
89.5-100	A
86.7-89.4	B+
83.4-86.6	B
79.5-83.3	B-
76.7-79.4	C+
73.4-76.6	C
69.5-73.3	C-
66.7-69.4	D+
63.4-66.6	D
59.5-63.3	D-
< 59.5	E

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Topic Schedule

Although the lectures, quizzes, and exams associated with the modules are not due until the end of the course, I **strongly** suggest you complete one module each week. This will both enable you to keep up with the course material, and will also allow you to more knowledgeably engage with the discussions, which are timed to coincide with the module topics.

Module (suggested starting date)	Topic	Discussion Board Topic See each discussion board assignment on Canvas for details and rubric
1 (Aug 23)	Course introduction; Review material on plant morphology and structure.	Post a text or video introduction to yourself. Due September 19
2 (Aug 30)	Primary growth	
3 (Sep 6)	Secondary growth	
4 (Sep 13)	Carbon dynamics I: Photosynthesis, C isotope discrimination	
5 (Sep 20)	Carbon dynamics II: Photosynthesis – response to environment	Measuring net photosynthesis and gas phase limitations Due October 13
6 (Sep 27)	Carbon dynamics III: Carbohydrates and their transport and storage	
7 (Oct 4)	Carbon dynamics IV: Respiration	Anthropomorphism and science communication Due October 17
8 (Oct 11)	Water relations I: Water potential; uptake, transport and storage of water	
9 (Oct 18)	Water relations II: Regulation of transpiration at the leaf, tree, and canopy scales	Measuring xylem pressure potential and pressure-volume curves with a pressure chamber Due October 31
10 (Oct 25)	Water relations III: Hydraulic architecture	
11 (Nov 1)	Radiation effects on tree morphology and physiology	Xylem hydraulics Due November 21
12 (Nov 8)	Energy balance	
13 (Nov 15)	Reproductive biology of trees	
14 (Nov 22)	Genetics of forest trees	Highlight a paper from your annotated bibliography Due December 8
15 (Nov 29)	Forest tree improvement	

Opportunities for synchronous meetings

Although this course is designed as an entirely online, asynchronous course, I wanted to provide some opportunities for students to meet each other and the instructor. At each of these dates and times, I will be available on Zoom to meet with students. I have scattered the dates throughout the semester, and scheduled the times both during the day and in the evenings, in the hope that you all will be able to attend at least a few of the events. There is no grading or credit associated with these meetings; just come to meet each other, and to discuss anything that interests you. Each meeting will be open for one hour. The Zoom links and schedules will be posted on the Canvas site.

Daytime meetings, all times eastern	Evening meetings, all times eastern
Tuesday, August 31, noon-1:00 p.m.	Thursday, September 2, 7:00-8:00 p.m.
Wednesday, September 15, 4:00-5:00 p.m.	Thursday, September 16, 8:00-9:00 p.m.
Monday, September 27, 2:00-3:00 p.m.	Monday, September 27, 7:00-8:00 p.m.
Wednesday, October 20, noon-1:00 p.m.	Wednesday, October 20, 8:00-9:00 p.m.
Tuesday, November 16, 2:00-3:00 p.m.	Tuesday, November 16, 7:00-8:00 p.m.

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Additional Information

Grades and Grade Points

For information on current UF policies for assigning grade points, see <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>.

Attendance and Make-Up Work

Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at: <https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>.

Online Course Evaluation Process

Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at: <https://gatorevals.ua.ufl.edu/students/>. 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.ua.ufl.edu/public-results/>.

Academic Honesty

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, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to 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>.

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.

Services for Students with Disabilities

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation 0001 Reid Hall, 352-392-8565, <https://disability.ufl.edu/>

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.

- *U Matter We Care*: If you or someone you know is in distress, contact umatter@ufl.edu, 352-392-1575, or visit <http://www.umatter.ufl.edu/>
- *University Counseling & Wellness Center*, 3190 Radio Road, 352-392-1575, <http://www.counseling.ufl.edu>
- *Career Connections Center*, Reitz Union Suite 1300, 352-392-1601, <https://career.ufl.edu/> .
- *Hitchcock Field and Fork Pantry*: No-questions-asked food for anyone with a Gator1 card, <https://fieldandfork.ufl.edu/>

Student Complaints:

- Residential Course: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>.
- Online Course: <http://www.distance.ufl.edu/student-complaint-process>