

FOR6340, Section 235C

Physiology of Forest Trees - Spring 2018

Instructor: Dr. Tim Martin
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Office Hours: Feel free to drop in anytime if my office door is open; Otherwise by appointment
Course Website: UF Canvas Site

Class Meetings: Wednesday, Periods 5-6 (11:45 a.m. – 1:40 p.m.), 327 MAEA (Mechanical and Aerospace Engineering A)
Friday, Periods 6-7 (12:50 p.m. – 2:45 p.m.), 222 Newins-Ziegler Hall (note different room)

Learning Objectives:

I. To develop an understanding of the physiological ecology of forest trees, with special emphasis on carbon and water relations and:

- (a) unique morphological and physiological adaptations that set trees apart from other plants;
- (b) 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. To become familiar with current issues in ecophysiological research through discussions of the literature.

III. To become familiar with current experimental and measurement approaches used in ecophysiological research.

Textbooks (optional):

Lambers, H., F.S. Chapin III and T.L. Pons. 2008. Plant Physiological Ecology, Second Edition. Springer-Verlag, New York. 610 p.

Pallardy, S.G. 2007. Physiology of Woody Plants, Third Edition. Academic Press, San Diego. 480 p.

Both books are readily available used and new online.

Grades:

Exams 60% of course points

There will be one midterm exam (25% of course points) and one comprehensive final exam (35% of course points). You will be responsible for material from the lectures and literature discussions. *The final exam will be held on the last day of class on Wednesday, April 20, from 11:45 a.m. – 1:40 p.m. in 219 Newins-Ziegler.*

Participation in literature discussions 40% of course points

We will periodically discuss papers from the peer-reviewed literature. I will give you the citation for the paper to be discussed at least one week in advance. Responsibility for leading discussions will be spread around the class by randomly assigning each figure or table to a student, who will describe the methods used to generate the data presented, highlight the key interpretations of the figure/table, and lead a pertinent discussion. To ensure that all students become familiar with the material, figure/table assignments will be made on the day of the discussion. We may on occasion try alternative discussion formats, but the one described here will be used the majority of the time.

Final grades will be assigned as: 93.4-100% A, 90-93.3% A-, 86.7-90 B+, 83.4-86.6 B, 80-83.3% B-, 76.7-80 C+, 73.4-76.6 C, 70-73.3% C-, 66.7-70 D+, 63.4-66.6 D, 60-63.3% D-, < 60% E

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UNIVERSITY OF FLORIDA POLICIES YOU NEED TO KNOW:

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. 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>.

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

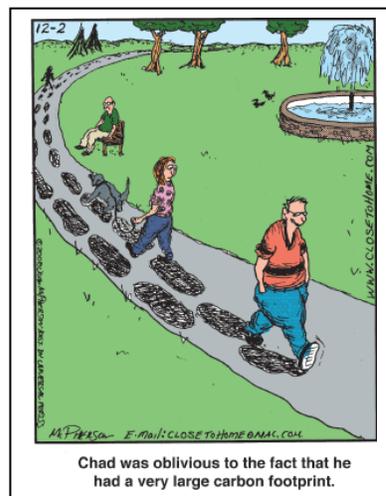
The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student 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, www.dso.ufl.edu/drc/

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
Wellness Coaching
- *Career Resource Center, First Floor JWRU, 392-1601, www.crc.ufl.edu/*



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Lecture and Discussion Schedule

Date Wednesdays 11:45-1:40 327 MAEA	Lecture Topic	Suggested Reading in Lambers, Chapin and Pons, 2 nd Edition (chapters are similar in 1 st Edition)	Date Fridays 12:50-2:45 222 Newins- Ziegler	Topic or Paper for Discussion
Jan 10	Course introduction; Review material on plant morphology and structure.	Chapter 1, “Assumptions and Approaches”	Jan 12	Optional review lecture on tree primary and secondary growth.
Jan 17	Carbon dynamics I: Photosynthesis, C isotope discrimination	Chapter 2A, “Photosynthesis”	Jan 19	C dynamics I (cont)
Jan 24	Photosynthesis – response to environment	Chapter 2A, “Photosynthesis”	Jan 26	Paper discussion: Nicotra <i>et al.</i> 2003. Sexes show contrasting patterns of leaf and crown carbon gain in a dioecious rainforest shrub. <i>Am.J.Bot.</i> 90:347-355.
Jan 31	Carbon dynamics II: CHO transport, storage and utilization	Chapter 2C, “Long- Distance Transport of Assimilates” Chapter 7, Section on “Allocation to Storage”	Feb 2	Carbon dynamics II
Feb 7	Respiration	Chapter 2B, “Respiration”	Feb 9	Paper discussion: TBD
Feb 14	Respiration (finish)	Chapter 2A, “Photosynthesis”	Feb 16	
Feb 21	NPP and NEP	Chapter 10B, Section 2, “Ecosystem Biomass and Production”	Feb 23	Exam 1 – In Class
Feb 28	NPP and NEP (finish up)		Mar 2	Field trip to see flux tower
Mar 7	Spring Break, No Class		Mar 9	Spring Break, No Class
Mar 14	Water relations I: Water potential; uptake, transport and storage of water	Chapter 3, “Plant Water Relations”	Mar 16	
Mar 21	Water relations II: Regulation of transpiration at the leaf, tree, and canopy scales	Chapter 3, “Plant Water Relations”	Mar 23	NO CLASS, MARTIN TRAVEL
Mar 28	Radiation effects on tree morphology and physiology (Online Lecture, Retrieve from course website)	Chapter 7, Section 5.1, “Growth as Affected by Irradiance”	Mar 30	Flex Day
Apr 4	Water relations II (finish)	Chapter 3, “Plant Water Relations”	Apr 6	
Apr 11	Water relations III: Hydraulic architecture	Chapter 3, “Plant Water Relations”	Apr 13	Paper discussion: TBD
Apr 18	Water relations III (cont.)		Apr 20	Exam Review
Apr 25	FINAL EXAM – In Class			