

BOT 6726/ZOO 6927
Principles of Systematic Biology
Spring 2025

Instructors:

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Office Hours: By appointment.

Credits: 4

Schedule:

Lecture	MW	3rd period (9:35-10:25 am) in Carr Hall 221
Lecture/discussion/lab	F	3rd-5th period (9:35–12:35 pm) in Carr Hall 221

Lab manual: Will be provided as a PDF on Canvas.

Textbooks:

Recommended: Baum and Smith. 2013. *Tree Thinking: An Introduction to Phylogenetic Biology*. Greenwood Village (Colorado): Roberts and Company Publishers. [especially Chapters 6, 8, and 10]

Optional: Stuessy, Crawford, Soltis, and Soltis. 2014. *Plant Systematics. The Origin, Interpretation, and Ordering of Plant Biodiversity*.

Other books, not required, but useful:

- *Phylogenetic Analysis of Morphological Data* by J. J. Wiens (ed.). Smithsonian Institution Press, Washington, D.C. [2000] [Chapter 5]
- *Plant Systematics: A Phylogenetic Approach*, 3rd edition by Judd et al. Sinauer Assoc., MA. [2008] [Chapters 1 & 2]

Additional readings from the primary literature will be assigned during the semester, and extracts from numerous other articles will be provided as they relate to lecture topics: These will be made available as PDFs on Canvas.

Grading:

- Two exams: 30% each
- Tau Ceti: 20% (one presentation)
- Participation: 20%

Grade based on total number of points, with 90% or above an "A", 89-80% "B", 79-70% "C", 69-60% "D", and below failing; plus grades will be used.

Attendance and make-ups:

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found in the online catalog at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

If you are experiencing COVID-19 symptoms ([click here for guidance from the CDC on symptoms of coronavirus](#)), please use the UF Health screening system and follow the instructions on whether you are able to attend class. [Click here for UF Health guidance on what to do if you have been exposed to or are experiencing Covid-19 symptoms](#). Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work. Refer to the above link for more information on the university's attendance policy.

Accommodations:

Students who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluations:

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 gatorevals.aa.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 ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at gatorevals.aa.ufl.edu/public-results/.

Academic Integrity:

"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 (<http://www.dso.ufl.edu/sccr/process/student-conduct-honorcode/>) 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.

Resources Available to Students:***Health and Wellness***

- *U Matter, We Care*: umatter@ufl.edu; 392-1575
- *Counseling and Wellness Center*:
<http://www.counseling.ufl.edu/cwc/Default.aspx>; 392-1575
- *Sexual Assault Recovery Services (SARS)*: Student Health Care Center; 392-1161

- University Police Department: <http://www.police.ufl.edu/>; 392-1111 (911 for emergencies)

Academic Resources

- E-learning technical support: Learningsupport@ufl.edu; <https://lss.at.ufl.edu/help.shtml>; 352-392-4357 (opt. 2)
- Career Resource Center: Reitz Union; <http://www.crc.ufl.edu/>; 392-1601
- Library Support: <http://cms.uflib.ufl.edu/ask>
- Teaching Center: Broward Hall; 392-2010 or 392-6420
- Writing Studio: 302 Tigert Hall; <http://writing.ufl.edu/writing-studio/>; 846-1138

Procedure for Conflict Resolution:

Any classroom issues, disagreements or grade disputes should be discussed first between the instructor and the student. If the problem cannot be resolved, please contact the Graduate Coordinator or the Department Chair. Be prepared to provide documentation of the problem, as well as all graded materials for the semester. Issues that cannot be resolved departmentally will be referred to the University Ombuds Office (<http://www.ombuds.ufl.edu>; 392-1308) or the Dean of Students Office (<http://www.dso.ufl.edu>; 392-1261). For further information refer to https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf (for residential classes) or <http://www.distance.ufl.edu/student-complaintprocess> (for online classes).

Schedule (subject to change)

Jan 13	NC	Course Overview. Introduction to “tree-thinking”, contributions of Darwin and Hennig (with definitions of basic terms)
Jan 15	NC	Classification construction
Jan 17	NC	Biological nomenclature Lab: Discussion
Jan 20		NO CLASS (MLK Day)
Jan 22	NC	Phylogenetic Taxonomy
Jan 24	NC	Phylogenetic Taxonomy Lab: Discussion
Jan 27	NC	Introduction to species and speciation
Jan 29	NC	Species concepts
Jan 31	NC	Species concepts Lab: Discussion

Feb 3	DS	Tree construction, conceptual introduction to parsimony
Feb 5	DS	Computerized tree construction, incl. parsimony as an optimization criterion (in molecular and morphological analyses), tree-searching methods, heuristic and branch-and-bound, branch-swapping, addition sequences, etc.
Feb 7	DS	Introduction to characters LAB: Introduction to Tau Ceti Manual
	EOV	LAB: Introduction to HiPerGator
Feb 10	EOV	Maximum likelihood methods
Feb 12	EOV	Bayesian methods
Feb 14	EOV	LAB: Discussion on comparison methods and hands-on exercises
Feb 17	PS	Estimating reliability of phylogenetic trees—modern approaches
Feb 19	PS	Simultaneous and partitioned analyses
Feb 21	PS	Supermatrix vs. Supertree approaches, Neighbor-joining and UPGMA LAB: hands-on exercises on comparison methods
	EOV	
Feb 24	EOV	Gene tree vs. species tree reconciliation
Feb 26	JN	Integrating molecular and morphological analyses
Feb 28		EXAM 1
Mar 3	JN	Intraspecific variation
Mar 5	JN	Trait evolution
Mar 7	JN	Comparative methods
Mar 10	JN	Comparative methods
Mar 12	DS	Cytology for systematics
Mar 14	DS	Hybridization, polyploidy, and reticulation

	NC	Collections Tour
Mar 17		SPRING BREAK
Mar 19		SPRING BREAK
March 21		SPRING BREAK
Mar 24	DS	Phylogeny and developmental evidence (evo-devo)
Mar 26	DS	Fossils and systematics
Mar 28	PS	Divergence time estimation
	NC	Collection Tours
Mar 31	DS	Phylogeography
Apr 2	JN	Biogeography
Apr 4	JN	LAB: Tau Ceti workday
	NC	
Apr 7	PS	Population genetics, conservation
Apr 9	PS	DNA Barcoding
Apr 11	PS	Spatial Phylogenetics
		LAB: Tau Ceti workday
Apr 14	PS	Digitization and Global Resources
Apr 16	All	TAU CETI PRESENTATIONS
Apr 18		EXAM 2: Putting it all together
Apr 21	All	TAU CETI PRESENTATIONS
Apr 23	All	TAU CETI PRESENTATIONS

