

BOT 6726/ZOO 6927
Principles of Systematic Biology
Spring 2021

Instructors:

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- Pam Soltis (301 Dickinson; phone: 273-1964; e-mail: psoltis@flmnh.ufl.edu)
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- Lucas Majure (Herbarium (Dickinson); phone: 273-2102; email: lmajure@floridamuseum.ufl.edu)

Office Hours: By appointment.

Credits: 4

Schedule:

Lecture	MW	3rd period (9:35-10:25am) in FLG 210
Discussion/lab	F	3rd-5th period (9:35–12:35) in FLG 210

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 and interim updates)
- 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.

A NOTE ON OUR HYFLEX CLASS THIS SEMESTER

This course consists of two sections, an online and a face-to-face, which are *simultaneous*, i.e., they occur at the same meeting days and times. This means that some students in our class, and the instructor, will be participating from the assigned classroom, while others will be participating remotely (e.g., via Zoom) from their preferred location.

As this is a new format for us, we want to ensure that you are aware of the following:

- This course has been assigned a physical classroom with enough capacity to maintain physical distancing (6 feet between individuals) requirements. Please utilize designated seats and maintain appropriate spacing between students. Please do not move desks or stations. Since our rooms hold significantly fewer students than normal, the number of students *in* the classroom will be quite small – in this section, there will be 8 students in person, with the remaining 17 participating online.
- Students who have signed up for the *in-person* section are expected to attend class on every scheduled meeting day and time, as indicated in the course syllabus. Likewise, students who signed up for the *online* section are expected to attend class virtually on every scheduled meeting day and time, as indicated in the course syllabus.
- In-person students (and faculty) are required to wear approved face coverings at all times during class and within buildings, and to maintain physical distancing of at least six feet at all times. Following and enforcing these policies and requirements are all of our responsibility. Failure to do so will lead to a report to the Office of Student Conduct and Conflict Resolution.
- Face-to-face students and instructors are expected to clean their spaces (desks, chairs, podium) at the end of every class period. Sanitizing supplies are available in the classroom.
- Technology in the classrooms has been updated, but is still insufficient to allow communication between face-to-face and virtual students. The instructor will be the only one able to communicate with both populations, but will have to do so while remaining behind the podium (due to microphone placement). The instructor will have to repeat any questions or comments from face-to-face students for the benefit of the virtual students.
- If face-to-face students wish to join the Zoom call from the classroom, they will have to provide their own computers and, crucially, headsets, in order to avoid interference from the various microphones.
- Instructors will make every effort to incorporate both cohorts of students simultaneously, although this will require a lot of trial and error and a great deal of patience on all our parts.

This will be a different experience for all of us, but we are doing our best to comply with university mandates while still fulfilling the goals and objectives of our courses and providing you with the best possible educational experience. We appreciate your understanding.

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):

11 Jan	NC	Course Overview. Introduction to “tree-thinking”, contributions of Darwin and Hennig (with definitions of basic terms)
13 Jan	NC	Classification construction
15 Jan	NC	Biological nomenclature and Phylogenetic Taxonomy
18 Jan		No Class (MLK Day)
20 Jan	NC	Intro to species and speciation
22 Jan	NC	species concepts + Discussion
25 Jan	DS	Tree construction, conceptual introduction to parsimony
27 Jan	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.
29 Jan	DS/PS	Introduction to characters, homology decisions, states and their delimitation; ordering character states in transformation series; Polarity decisions, the outgroup method; Rooting networks; brief survey of other methods of polarizing characters Discussion of characters, alignment, states, etc. Optimizing character state distributions on trees, ACCTRAN, DELTRAN, trees; continuation of previous lecture. LAB: Manual cladistics workshop
1 Feb	PS	Estimating reliability of phylogenetic trees—modern approaches

3 Feb	DS	Simultaneous and partitioned analyses
5 Feb	PS	Supermatrix vs. Supertree approaches LAB: manual supertrees
8 Feb	PS	Neighbor-joining and UPGMA
10 Feb	PS	Maximum likelihood methods
12 Feb	PS	Bayesian methods Discussion: Comparison of methods
15 Feb	PS	Gene tree vs. species tree reconciliation
17 Feb	DS	Cytological methods in systematics
19 Feb		Virtual tours
22 Feb	PS	Intraspecific variation
24 Feb		RECHARGE DAY #1
26 Feb		Virtual tours
1 Mar	PS	Hybridization, polyploidy, and reticulation
3 Mar	DS	Phylogeny and developmental evidence (evo-devo)
5 Mar		Exam 1 through Mar 1
8 Mar	DS	Integrating molecular and morphological analyses
10 Mar	LM	Biogeography
12 Mar		Virtual tours
15 Mar	DS	Phylogeography
17 Mar	PS	Fossils and systematics

19 Mar		LAB: Tau Ceti workday
22 Mar	PS	Divergence time estimation
24 Mar		RECHARGE DAY #2
26 Mar		LAB: Tau Ceti workday
29 Mar	PS	Population genetics, conservation
31 Mar	PS	DNA Barcoding
2 Apr		LAB: Tau Ceti workday
5 Apr	DS	Spatial Phylogenetics
7 Apr	PS	Digitization and Global Resources
9 Apr		Exam 2: Putting it all together
12 Apr		Tau Ceti Workday
14 Apr	all	Tau Ceti presentations
16 Apr	all	Tau Ceti presentations
19 Apr	all	Tau Ceti presentations
21 Apr	all	Tau Ceti presentations