

SAM HOUSTON STATE UNIVERSITY
Department of Biological Sciences
BIOL 4096/5360 Principles of Systematics
Spring 2018 Semester
COURSE SYLLABUS

Lecture Time & Location:	Tuesday, 5-7:50, LDB 139
Instructor:	Christopher Randle
Office/Lab:	Lee Drain Building 141/135
Office Hours ¹ :	M,W,F 9-11 am or by appointment
Phone:	294-1554
Email:	randle@shsu.edu

Course Objectives: Systematics is the study of biological diversity, encompassing the evolutionary origins of this diversity and the construction of classification systems that recognize evolutionary lineages. It is both ancient and modern. In few branches of science is it probable that a researcher will spend a morning translating a centuries-old text written in Latin, and the afternoon analyzing matrices of DNA data on the best parallel processing clusters available to science. Such improbable juxtapositions are commonplace in the life of a systematist. This course will cover the history and philosophy of classification as a whole, from the development of nomenclature to modern techniques of molecular phylogenetics. Important topics will include species concepts, nomenclature, interpreting and inferring phylogenies from many kinds of data, the use of DNA databases, DNA barcoding and alternatives to the Linnaean system of nomenclature.

Reading: We'll be relying on the text "Tree-Thinking: An Introduction to Phylogenetic Biology" by David Baum and Stacy Smith. It will not be in the bookstore, but can be ordered from many places online. I don't care where you buy it from, or the format (e-book or hardback are both fine), or even if you share the book so long as you do the reading. There will be other assigned readings as well.

It is essential that you complete the reading before attending class and are prepared to discuss it.

Format: Our meeting time will consist of lecture, exercises, and discussion of assigned reading. There will also be weekly homework,

Academic Honesty: I expect the highest degree of academic integrity from my students. Though I will often allow you to work together, all work turned in for credit must be your own. Any infringement of the SHSU academic policy will result in a final grade of "F" for the course. SHSU's academic policy can be found in subparagraph 5.3 of the SHSU Student Guidelines:<http://www.shsu.edu/dept/dean-of-students/documents/2016-2018%20Student%20Guidelines.pdf>

¹ I may be in my laboratory: LDB 135. Enter quietly through room 136.

Grading (Undergraduate Students): Grades will be determined as below, except that the final grade assignment will be scaled separately from the graduate students.

Grading: Grades will be determined from two lecture exams (non-cumulative), one research paper (including annotated bibliography, first draft, and final draft), homework, and in-class participation. Your final grade assignment will be scaled based on degree of engagement. This means that effort and curiosity will be rewarded and avoidance

Homework	Every Tuesday	10pts each
Annotated Bibliography :	Tuesday, Feb 13	50 pts
Lecture Exam 1:	Tuesday, March 6	100 pts
First Draft:	Tuesday, March 27	50 pts
Final Draft	Tuesday, May 1	100 pts
Lecture Exam 2:	Tuesday, May 8*	100 pts
<u>Class Participation:</u>		<u>50 pts</u>

*Exam time is 8:30-10PM.

Exams: There will be two lecture exams worth 100 pts each.

Research Paper You will be required to complete a research paper in the review style over the course of the semester. The research paper should be on a topic either related to your own research or, alternatively, a topic in which you are deeply interested. It should 1) illustrate a problem or issue in systematics, 2) include sufficient detail to show mastery of the topic, and 3) be written in the format of a published review, with figures, citations, etc. as needed.

Topic: Your research paper should be over the systematics of a particular taxon or some issue of systematic importance. On January 30, be prepared to present your topic to the class. I will work with each of you to choose a topic that is of the appropriate scale and for which sufficient literature occurs.

Annotated Bibliography: Your paper should draw on sources from the primary literature; peer reviewed articles in published journals. On February 13, you will turn in a brief synopsis of your topic of choice (one or two paragraphs) and a list of five such primary references that you will be citing in your paper. Write these as bibliographic entries—there should be enough information so that I can find each article in a library or online. Each reference should be accompanied by a short explanation of how the findings of that paper are relevant to the topic that you have chosen.

First Draft: I don't want to stifle you with maximum and minimum page limits, but usually 10-20 double spaced pages should do depending on the brevity of your personal writing style. I will gladly provide comments/suggestions/review of any draft turned in to me before March 20. Your first draft will be submitted through blackboard on March 27.

Peer review: On March 28th, you will be assigned a first draft to review. You should provide constructive criticism on all elements of the paper that you are assigned from its substance and scholarship to its grammar, format, and syntax. You will submit your review to me along with a recommended grade by April 3 via e-mail. The grade you assign is not necessarily the grade that the student will receive. The review will be double blinded; the identity of the reviewers and reviewees will not be revealed. Should you fail to submit a review, you will not be allowed to submit a final draft.

Final Draft: On May 1, submit your final draft through blackboard along with a document explaining how you SPECIFICALLY incorporated the comments of your peer reviewer and your faculty reviewer (me).

Class participation and attendance: At this level, attendance is mandatory. Our small class size provides an opportunity to learn from each other through discussion of relevant literature and topics. Therefore it is imperative that all students read the assigned literature critically and come to discussion prepared to offer critical evaluation and to pose pertinent questions. Your participation grade will be based on this. If you *absolutely* need to miss class, please approach me beforehand or if necessary, send an email.

Office hours policy: I have posted a schedule of office hours, but feel free to drop by as needed. If I am too busy to talk to you, I'll let you know, and we can arrange some other meeting time. My lab is in room 135. If I'm not in the office, look for me there. The following is a tentative schedule of course material. It is highly likely that it will be altered at some point to best fit the pace of the class.

Topics: Systematics comprises a large body of theory that is rarely covered in undergraduate classes. The aim of the course is to explore the following topics as deeply as possible. Simultaneously, I want to allow flexibility to move quickly through those topics that the class grasps quickly and to slow down for more challenging material. You are encouraged to help set the pace for the course by interacting during lecture with your questions and insights into the material. Further, I am open to covering additional relevant topics on demand.

The History and Philosophy of Systematics
Linnaean Nomenclature
Species Concepts
The meaning and interpretation of phylogenetic trees
Characters, character evolution, and homology
Relatedness and Taxonomy
Gene trees. Species trees
Parsimony inference
Maximum likelihood methods
Bayesian Methods
Phylogenetic means of testing hypotheses

Holidays/Important Dates

Thursday, Feb 1: Last day to drop without a "Q" and receive 100% refund.

Monday, March 12 – Friday, March 16: Spring break. No Class.

Friday, March 30: Good Friday. No Class.

Friday, April 6: Last day to drop with a Q

ACADEMIC DISHONESTY:

All students are expected to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain honesty and integrity in the academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. The University and its official representatives may initiate disciplinary proceedings against a student accused of any form of academic dishonesty including but not limited to, cheating on an examination or other academic work which is to be submitted, plagiarism, collusion and the abuse of resource materials. For a complete listing of the university policy, see:

[Dean of Student's Office](#)

STUDENT ABSENCES ON RELIGIOUS HOLY DAYS POLICY:

Section 51.911(b) of the Texas Education Code requires that an institution of higher education excuse a student from attending classes or other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. Section 51.911 (a) (2) defines a religious holy day as: "a holy day observed by a religion whose places of worship are exempt from property taxation under Section 11.20...." A student whose absence is excused under this subsection may not be penalized for that absence and shall be allowed to take an examination or complete an assignment from which the student is excused within a reasonable time after the absence.

University policy 861001 provides the procedures to be followed by the student and instructor. A student desiring to absent himself/herself from a scheduled class in order to observe (a) religious holy day(s) shall present to each instructor involved a written statement concerning the religious holy day(s). The instructor will complete a form notifying the student of a reasonable timeframe in which the missed assignments and/or examinations are to be completed. For a complete listing of the university policy, see:

[/dept/academic-affairs/documents/aps/students/861001.pdf](#)

STUDENTS WITH DISABILITIES POLICY:

It is the policy of Sam Houston State University that individuals otherwise qualified shall not be excluded, solely by reason of their disability, from participation in any academic program of the university. Further, they shall not be denied the benefits of these programs nor shall they be subjected to discrimination. Students with disabilities that might affect their academic performance should register with the Office of Services for Students with Disabilities located in the Lee Drain Annex (telephone 936-294-3512, TDD 936-294-3786, and e-mail disability@shsu.edu). They should then make arrangements with their individual instructors so that appropriate strategies can be considered and helpful procedures can be developed to ensure that participation and achievement opportunities are not impaired.

SHSU adheres to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations for students with disabilities. If you have a disability that may affect adversely your work in this class, then I encourage you to register with the SHSU Services for Students with Disabilities and to talk with me about how I can best help you. All disclosures of disabilities will be kept strictly confidential. NOTE: No accommodation can be made until you register with the Services for Students with Disabilities. For a complete listing of the university policy, see:

<http://www.shsu.edu/dept/academic-affairs/documents/aps/students/811006.pdf>

VISITORS IN THE CLASSROOM:

Only registered students may attend class. Exceptions can be made on a case-by-case basis by the professor. In all cases, visitors must not present a disruption to the class by their attendance. Students wishing to audit a class must apply to do so through the Registrar's Office.