

**PRACTICAL INFORMATION**

Class hours: TR 9:30–10:50 am  
 Class room: MA 115  
 Instructor: Lars Winther Christensen  
 Office: MA 251  
 Office hours: T 11:00–12:00 am, W 4:00–6:00 pm and R 8:30–9:30 am, or by appointment  
 Phone: (806) 742-2580 x 366  
 E-mail: lars.w.christensen@ttu.edu  
 Course homepage: [www.math.ttu.edu/~lchrste/teaching40005399102](http://www.math.ttu.edu/~lchrste/teaching40005399102)

**COURSE DESCRIPTION**

This is a course on the mathematical foundations of *phylogenetics*: the reconstruction and analysis of evolutionary trees. The mathematics comes, primarily, from graph theory and probability theory. Important areas of application are epidemiology, evolutionary biology, and linguistics.

**Required text:** Charles Semple and Mike Steel: “Phylogenetics,” Oxford Lecture Series in Mathematics and Its Applications No. 24.

**Prerequisites:** No specific classes are required. The textbook is written for graduate students of Biology/CS/Mathematics, but it is accessible to advanced undergraduate students.

**Expected learning outcomes:** After completion of the class, students should master the fundamental concepts of Phylogenetics. Concepts include but are not limited to the following: Rooted and unrooted trees, compatibility of trees, randomly generated trees, consensus trees, phylogenetic forests, the coalescent process, reticulate evolution and co-phylogeny, characters and convexity, character compatibility, parsimony, and sub- and supertree methods.

**LEARNING ASSESSMENT**

Graded assessment is done through homework and exams. Other assessment techniques will also be used; these include direct questioning, and problems to be solved in class. Additionally, problems will be assigned for student self-assessment.

**COURSE ORGANIZATION**

The plan is to cover major parts of chapters 1–6. Precise reading assignments will be posted on the course homepage after every class.

**Exams:** The in-class exam takes place on 4 March and the final exam on 7 May, 1:30–4:00 pm.

**Other important dates:**

Martin Luther King Jr. Day	18 Jan.
Last day to drop a course and receive a refund	29 Jan.
Last day to withdraw and receive a partial refund	10 Feb.
Spring vacation	13–21 March
Last day to drop a course	24 March
No classes	5 April

## ASSIGNMENTS, GRADES, AND GRADING

An in-class exam is given during the semester. Homework will be assigned 12 times during the semester. Students are encouraged to work on the homework problems in groups.

**Grading policy:** On exams and written homework, partial credit for correct steps will be awarded even if the final answer is wrong. Full credit will be given only if the final answer and all intermediate steps are correct. A correct final answer *per se* does not guarantee any credit.

**Deadlines and make ups:** Homework is not accepted after the deadline. In-class exams cannot be made up; the final exam serves as make-up for exams that were missed for legal reasons.

**Final grade:** Homework (10 assignments) and exams (2) are counted towards the final grade with weights as follows: Homework 50% (5% ea.), in-class exam 20%, and final exam 30%.

## GENERAL POLICIES

**Academic integrity:** It is the aim of the faculty of TTU to foster a spirit of complete honesty and a high standard of integrity. Any attempt of students to present as their own any work that they have not honestly performed is regarded by faculty and administration as a serious offense and renders the offenders liable to serious consequences, possibly suspension. Please see more information on-line at [www.depts.ttu.edu/studentaffairs/CampusCrime/documents/integritymatters.pdf](http://www.depts.ttu.edu/studentaffairs/CampusCrime/documents/integritymatters.pdf).

**Civility in the classroom:** You are expected to be courteous to me and your fellow students. This means that your cell-phone should be turned off during the class; you shall not chat with your friends during class, eat meals or snacks, or cause a distraction in any other way.

**Officially approved trips:** Students are allowed to miss class for trips officially sanctioned by TTU. The student must notify the instructor of upcoming trips and present written authorization.

**Religious holy days:** You are allowed to take the time to travel and observe a religious holy day. Prior notice should be given at least 1 day before the absence.

**Students with disabilities:** Any student who, because of a disability, may require special arrangements in order to meet course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's office hours. Please note instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, you may contact the Student Disability Services office at 335 West Hall or 806-742-2405.