

BIOL 7010 Special Topics in Ecology and Evolution (2 credits)
Tree of Life

Instructor: Dr. Catherine M. Bush
Office: Bailey Science 1108
Office hours: Tuesday and Thursday 10-11 am; or by appointment
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Lecture (BSC 2022): Thursdays 5 – 6.50 pm

Prerequisite: Acceptance into the graduate program in biology or permission of the instructor

BIOL 7010 Description: In-depth analysis of a current issue in ecology and evolution requiring student presentations and extensive background reading. The specific topic with ecology and evolution will change each time the course is offered. The course may be taken one additional time for credit with the permission of the instructor.

Topic and Description: This course will focus on what is currently understood about the phylogeny and classification of life. Primary literature representing the major clades of organisms on Earth will be discussed and analyzed. The goal of the class to create our own hypothesis for a revised, accurate, and morphologically relevant classification of life.

Course Objectives:

1. Develop an appreciation for the **diversity** of life on this planet.
2. Develop an understanding of **where** major clades of organisms fit in the tree of life, based on morphological synapomorphies.
3. Develop skills in and appreciation for **classification**.
4. Develop an understanding of how **phylogenetic trees** are created (data, analyses, etc.) and how they are interpreted.
5. Develop skills in **reading** and analyzing primary literature, articulating scientific thoughts and **presenting** ideas in a clear and organized manner.

Format:

After the initial introduction, every week we will discuss a paper(s) as a class. Two-three students each week will be assigned the responsibility of leading the class discussion (powerpoints are discouraged). I will be explaining items and giving impromptu lessons as we go, so you should keep a notebook handy for future reference on techniques, analyses, etc.

Grading:

There will be no examinations in this class. Grades will be comprised solely of your **participation each week** (evidence that you read the paper, tried your best to understand it, and you brought questions of what you did not understand) AND the

two class periods where you **led the discussion**. Grades for leading the class discussion will follow a rubric that determines if you were prepared, organized, knowledgeable and thorough in your discussion. Each class discussion is worth 200 pts. and you can earn a maximum of 10 participation points per class period you are not leading the discussion (12 weeks). Estimated total points = 520.

Class Attendance/Behavior:

If you need to miss a class because of an emergency, let me know. If appropriate, you can be excused for the participation points that day and it will not affect your grade. If there is no excuse presented promptly, you get a 0 in participation points. Please try not to miss your discussion time.

Since you are all graduate students, I expect nothing less than respectful behavior towards your instructor and all your classmates. Do make sure your cell phones are off when you enter class.

Disabled Students:

Students requiring special accommodations because of disability should discuss their needs with me as soon as possible. Those needing accommodations that are not registered with the Special Services Program must contact the Access Office for Students with Disabilities located in Farber Hall. The phone numbers are 245-2498 (voice) and 219-1348 (tty).

Privacy Act (FERPA):

The Family Educational Rights and Privacy Act (FERPA) prohibits the public posting of grades by social security number or in any manner personally identifiable to the individual student. No grades can be given over the telephone or over email because positive identification can't be made.

Tentative Schedule:

Week	Topic	Paper
18-Aug	Intro to Phylogenetics	http://evolution.berkeley.edu/evolibrary/article/phylogenetics_01
25-Aug	Root of Tree	Ochman 2009; Brinkmann and Phuluppe 1999
1-Sep	Eubacteria	Galtier 2007; Yarza et. al., 2008
8-Sep	Archeae	JianDong et al., 2010; Wu et. al., 2009
15-Sep	Eukarya overview	Hampl et. al., 2009; Yoon et. al., 2008; Baldauf 2008
22-Sep	Chromalveolates' + Rhizaria	Hackett et. al., 2007
29-Sep	Alveolata and Stramenopila	Rodriguez-Ezpeleta et. al., 2007
6-Oct	Archaeplastida	Nozaki et. al., 2003
13-Oct	Viridiplantae	Wodniok et. al., 2011; Stiller 2007
20-Oct	Embryophyta	Mathews 2009; Graham 2009
27-Oct	Excavata	Simpson 2003
3-Nov	Amoebozoa	Pawlowski 2009
10-Nov	Fungi	Wang et. al., 2009; McLaughlin et. al., 2009
17-Nov	Animal	Lartillot and Philippe, 2008; Brinkman and Philippe 2008
1-Dec	Developing a new kingdom system	Adl et. al., 2005; class discussion