Building Evolutionary Trees: Methods, Theory & Controversy

PHIL 5192/6192
BIOL 5960/7964
Fall 2010
MW 11:50 – 1:10
CTIHB 459

Instructors:
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Course Website:
http://www.hum.utah.edu/~mhaber/PHIL5192.html

Course Description
The primary aim of this course is to provide students with a thorough understanding of contemporary phylogenetic systematics. The biological field of systematics includes both (i) the discovery and description of biological taxa; and (ii) the determination of the evolutionary phylogenetic relationships of those taxa. Phylogenetics is a theoretical perspective adopted by most contemporary systematists. By integrating methodological, theoretical and philosophical training in phylogenetics, this course provides a unique and interdisciplinary pedagogical approach. These different components will complement each other, helping students develop a deeper understanding of phylogenetics than a focus on a single component would produce. This reflects the state of the art of the field. In philosophy, the expectation has become that to properly do philosophy of biology one must have familiarity and exposure to biological practice, theory and methodology; likewise in phylogenetic systematics, many of the most relevant contemporary debates are over core conceptual issues. The structure and material of this course reflects our commitment to effectively train students to enter these fields.

Texts
We will be using two primary textbooks in this course: Marc Ereshefsky’s The Poverty of the Linnaean Hierarchy, and Lemey, et al’s The Phylogenetic Handbook. Both are available as e-books. Classic and contemporary primary literature will be used to supplement these texts. Additionally, popular phylogenetics software will be introduced, and are a part of the curriculum.
Course Layout

Phylogenetic Systematics: Practice & Philosophy will meet twice a week. On Mondays we will typically discuss conceptual work concerning the foundations of phylogenetic systematics. On Wednesdays we will typically focus on learning phylogenetic techniques and methods. The intent of this course is that these two tracks will be distinct yet not exclusive. In the first half of the semester there will be a very tight (and hopefully obvious) link between the philosophical material and the methods taught. In the second half of the semester the connection between the material is less obvious, but still very important. One of the goals of the course, and something you ought to be cognizant of, is for students to uncover and recognize those connections.

Discussion of conceptual work will be just that: discussions. Do not expect extensive expository lectures on this material; this class is intended to be participatory, and part of your grade will be based on your contribution and participation in classroom discussion of the material (see below).

We will use the course website to post readings, computer software, exercises and other assignments. The course url is: http://www.hum.utah.edu/~mhaber/PHIL5192.html.

Online Components

turnitin.com (http://www.turnitin.com/static/index.html)
All papers must be turned in electronically through turnitin.com. Except by prior arrangement, we will not accept hard copies of any papers, nor will we accept any emailed papers. You will need to register with the course turnitin.com page. Here is the information you will need to do this:
- class id: 3408502
- class password: darwin2010

The Philosophy of Biology Cafe (http://philbiocafe.org/)
The Philosophy of Biology Cafe is an online discussion board set up by Prof. Haber, in part to facilitate teaching courses such as this. You will need to register as a user on this board, and sign up with the ‘Evolutionary Trees – Utah Fall 2010’ group. To do this, follow these instructions:
1. Register with the Philosophy of Biology Cafe. You may choose any username you like.
2. Once registered, click on the ‘User Control Panel’ link in the upper left bar.
3. Select the ‘Usergroups’ option in column on the left.
4. Click the button next to ‘Evolutionary Trees – Utah Spring 2010, select ‘Join selected’ in the drop down menu below, and click on the ‘Submit’ button.

I’ve set up a forum on this discussion board dedicated to our class. It is a private board; nobody can see the posts here except for members of our class. We will use this forum to post the following kinds of threads:
- Administrative information;
- Student questions (either administrative or topic related);
- Topic discussion;
• Other course related threads.
Please feel free to post freely in this forum, and to participate in threads you might find elsewhere on the board!

Course Website (http://www.hum.utah.edu/~mhaber/PHIL5192.html)
• This site contains a weekly topic & reading list. You may download course readings and homework assignments as they become available.

Course Requirements and Grading
The Biology and Philosophy components of this course are considered equally in calculation of the final grade.

In-class participation and online discussion (Philosophy) 15%
Students are expected to actively participate in the course. This means showing up for class prepared, having done the primary reading and assignments, and ready to ask questions or promote discussion about the literature or software.

Online participation is also required, and a private forum has been set up on the Philosophy of Biology Cafe to facilitate this. To get full credit for this unit of the course, students must post questions or thoughtful comments on the assigned reading prior to Monday’s class meeting. Graduate students are expected to prepare questions or comments on the reading every week; undergraduates will get full credit by posting questions ten of the fifteen weeks.

In my experience, an active discussion board greatly facilitates the course. It helps us to identify areas of interest or difficulty, and to tailor the class accordingly. Students have routinely identified this activity as hugely beneficial to their understanding of course material, which becomes ever more important when the subject matter is as complex as what we are covering here.

Take home quizzes 20%
Take home quizzes are, essentially, homework exercises. These will be assigned on a regular basis (e.g., up to weekly) as the course progresses.

Midterm Exam (Biology) 15%
Final Exam (Biology) 15%
Final Paper/Exam (Philosophy) 35%
Undergraduates taking this course may select either to write a final term paper or to take a final exam, in order to satisfy the philosophical component of this course. Graduate students must write a term paper for Prof. Haber.

(Course assignments are subject to revision in response to class progress)
Administrative and Campus Policies
The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations.

I have zero tolerance for plagiarism and cheating. Students are responsible for knowing and understanding the University’s policy on academic misconduct. More information may be found in the Student Code, available at http://www.admin.utah.edu/ppmanual/8/8-10.html#SECTION%20V. According to the Code of Student Rights and Responsibilities, "Plagiarism includes, but is not limited to, representing as one's own, without attribution, any other person's words, phrasing, ideas, sequence of ideas, information or any other mode or content of expression. It does not include honest error." You are welcome to cite sources in your work, but you must do so explicitly and clearly. Please contact me if you have any questions on how to appropriately credit and mark the work of others.