

## EEBL 606 - Phylogenetics and Comparative Biology

<b>Day:</b>	TR	<b>Location:</b>	TBD
<b>Time:</b>	TBD (75 min.)	<b>Number of Credits:</b>	01 Credit

### Instructors:

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**E-mail will be the primary means of communication for the course.** Check your email often and keep your mailbox below quota! Go to [elearning.tamu.edu](http://elearning.tamu.edu) for course materials.

**Course prerequisites:** Graduate classification.

**Course description:** This sixth component of the Core Sequence in Ecology & Evolutionary Biology examines Phylogenetics and Comparative Biology. Readings will be drawn from contemporary reviews and the primary literature.

### Course requirements:

- Attend all lectures. Absences for previously scheduled activities will only be excused if they are communicated well in advance. If you have not discussed an absence with the instructor ahead of time, it will be considered unexcused unless proper documentation is provided. See <http://student-rules.tamu.edu/rule07>.
- Read all required material (original papers, review papers, and textbook chapters).
- Participate actively in discussions. Each day, one or more students will be responsible for leading discussion on the day's topic and should come prepared with pertinent points.

- A short, take-home, open-book exam to be submitted the day after the last lecture; answer four questions clearly and concisely in about 20 min each. **Late exams** will be downgraded a letter grade for each day late.

**Course goals:** One of the major implications of evolution is that all living organisms are the cumulative product of variation and selection – i.e., life in the present day (and at any time in the history of Earth) is the result of evolutionary processes acting on what was available at earlier times. There are two main sources of information on this cumulative history of life: phylogenies (derived from the organisms themselves) and fossils (derived from the remains of ancient organisms). The goal of this course is to introduce students to the fundamental concepts that allow evolutionary biologists to pose and test evolutionary hypotheses and to use evolutionary and historical relationships to understand life in the present day.

**Grading:** Letter grades will be assigned based as follows: leading in-class discussion: 25%; active participation: 25%; short, take-home essay exam: 50%.

**Grade scale:** 90-100 A; 80-89 B; 70-79 C; 60-69 D; < 60 F

**Americans with Disabilities Act (ADA):** The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit <http://disability.tamu.edu>.

**Academic Integrity:** For additional information please visit: <http://aggiehonor.tamu.edu>. Please pay close attention to guidelines on avoiding plagiarism: <http://aggiehonor.tamu.edu/Descriptions/Plagiarism.aspx>.

“An Aggie does not lie, cheat, or steal, or tolerate those who do.”

#### REQUIRED TEXTBOOK

No required text. Required papers and chapters will be made available through eCampus.

#### SUGGESTED READINGS

Futuyma, D. J. 2013. *Evolution*. 3<sup>rd</sup> edition.  
Hall, B.K. (ed.) 1994. *Homology, the Hierarchical Basis of Comparative Biology*. Academic Press.  
Felsenstein, J. 2004. *Inferring Phylogenies*. Sinauer Associates.  
Harvey, P.H. and Pagel, M.D. 1991. *The Comparative Method in Evolutionary Biology*. Oxford University Press.  
Harvey, P.H, Leigh Brown, A.J., Smith, J.M., Nee, S. (eds.) 1996. *New Uses for New Phylogenies*. Oxford University Press.  
Smith, J.M. and Szathmary, E. 1998. *The Major Transitions in Evolution*. Oxford University Press.

## LECTURES

1. Homology: the Central Concept in Comparative Biology
2. The Origin of Animals and the Radiation of Animal Phyla: Fossil Homologies and Stem Groups
3. Interpreting and Inferring Phylogenies
4. Microbes and the Three Domains of Life: Making Use of Phylogenies to Understand Metabolic Evolution
5. The Comparative Method
6. The Quaternary: Using the Comparative Method to Understand How Present-Day Organisms Reflect the World Their Ancestors Lived In

**Take-home essay exam** due by email at 4 pm the day after lecture 6. *One letter grade will be deducted for each day past the deadline!*