EEBL 607 - Evolutionary Genomics

Day: TR   **Location:**   TBD
Time: TBD (75 min.)   **Number of Credits:** 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 for course materials.

Course prerequisites: Graduate classification.

Course description: This seventh component of the Core Sequence in Ecology & Evolutionary Biology examines the field of evolutionary genomics. The students will be exposed to new techniques for generating large amounts of genetic data, including thousands of single-nucleotide polymorphisms and whole-genome sequence data. The course will then discuss how whole-genome data can transform the study of evolutionary biology and the interpretation of evolutionary phenomena. Main areas of focus include population genomics, the study of adaptation, phylogenomics and speciation.

Course requirements:
- Attend <u>all</u> 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.
- Participate actively in discussions.
- A take-home exam to be submitted by email the day after the last lecture. **Late exams** will be downgraded a letter grade for each day late.

Course goals: The goal of this course is to provide an understanding of the application of next-generation sequencing approaches to the study of evolutionary phenomena. The students will be expected to understand the molecular techniques involved, the statistical issues associated with these large datasets, and the implications of these datasets with respect to the evolutionary process.

Grading: Letter grades will be assigned based as follows: active participation: 50%; 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 READINGS
Required readings will originate from the primary literature and will be assigned by email or during class.

LECTURES
1. Comparative genomics and methods.
2. Population genomics.
3. Signatures of selection and adaptation.
4. Phylogenomics.
5. Genome structure and evolution.

6. Speciation genomics and sex-chromosome evolution.

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!*