BIOL 649L / EVSS 659L LABORATORY IN COMPARATIVE GENOMICS
SPRING 2018 Zero-Credit Co-Requisite with BIOL 649 and EVSS 659
INSTRUCTORS: SHEDLOCK (Biology)
TECHNICAL SUPPORT: ANDERSON (Computer Science)
TIME: 3:30-6:30 PM TUESDAYS
LOCATION: ROOM 225 School of Science and Mathematics Building (SSMB)
OFFICE HOURS: After class time and by appointment
PREREQUISITES: None required, but undergraduate level courses such as genetics and molecular biology as well as ecology, evolution, and conservation are recommended

COURSE OUTLINE & SYLLABUS:

Weeks 1-3
Module 1: Individual Project Formation
- Identify testable hypotheses
- Develop rationale and justification for proposed research
- Select taxonomic scope
- Design genomic sampling

Weeks 4-8
Module 2: Project Implementation
- Compile data from online or proprietary resources
- Select and test relevant computational tools
- Construct primary data set
- Analyze primary data set

Weeks 9-11
Module 3: Project Synthesis
- Prioritization of pilot results
- Interpretation of statistical significance and trends
- Graphical summary of most relevant comparisons
- Interpretation and discussion of evidence
- Synthesis of arguments for proposed funding
- **Submit proposal outline and justification (Due March 13th; 200 points)**

Weeks 12-14
Module 4: Written and Oral Communication
- Selection of final bibliographic resources
- Written construction of graded pilot proposal
- Preparation of oral presentation of research
- **Oral presentation at student-run symposium (Tuesday April 17; 300 points)**
- **Submit full written proposal (Due by 5 p.m. Tuesday May 1; 400 points)**

Grading based on 1000 points:
Proposal outline and justification (200)
Full Proposal with pilot results and bibliography (400)
Oral Presentation (300)
Participation (100)

Additional Formal Considerations:

Learning Outcomes, Assessment and Grading Scale:
1. Understand fundamental and advanced concepts and the hierarchical scales of biological organization inherent to the investigation of eukaryotic genome content, structure, variation and dynamics.

The instructor will assess learning outcome 1 based on student performance on tests covering materials presented in the co-requisite lectures over the course of the semester. Two exams (one mid-term and one final) will be given that require in-depth review of genome structure and creating graphical representations of data and relating experimental results to the genome science concepts discussed in lecture.

Grade A = Student correctly represents concepts and data provided by lecture material and case studies and relates the experimental results to genomic concepts for at least 90% of each exam.
Grade B = As above for 80-90% of each exam.
Grade C = As above for 60-80% of each exam.
Grade F = As above for less than 60% of each

2. Understand in-depth the primary structure of genomic data and the standard tools and newly emerging technologies and strategies used to interrogate genomes.

The instructor will assess learning outcome 2 by evaluating students based on oral in-class summaries and written outlines of their project development strategies and aims for testing hypotheses established for individual class projects. In-depth understanding will also be evaluated based on performance on tests covering materials presented in lecture and laboratory over the course of the semester. Two exams (one mid-term and one final) will be given that require review of fundamental aspects of genome structure and creating graphical representations of data and relating experimental results to the genome science concepts discussed in lecture and investigated in lab.

Grade A = Student correctly represents concepts and data provided by lecture material, case studies and lab assignments and relates the experimental results to genomic concepts for at least 90% of each assignment or exam.
Grade B = As above for 80-90% of each assignment or exam.
Grade C = As above for 60-80% of each assignment or exam.
Grade F = As above for less than 60% of each assignment or exam.

3. Become familiar with the historical developments, new advances, and future directions of genome science based on review and discussion of the primary literature in genome biology.

The instructor will assess learning outcome 3 through written and oral presentation assignments and active participation in student discussion relating pilot study results to the genome biology concepts discussed in lecture and investigated in lab.

Grade A = Student correctly relates genome data analysis results collected from investigations in lab to genome biology concepts for at least 90% of each assignment.
Grade B = As above for 80-90% of each assignment.
Grade C = As above for 60-80% of each assignment.
Grade F = As above for less than 60% of each assignment.

4. Gain hands-on experience designing an hypothesis-driven genomic investigation, analyzing large-scale genomic data, interpreting results of genomic investigations, and communicating a proposal for funding future work based on pilot results both in writing and orally.

The instructor will assess learning outcome 4 through written and oral presentation assignments and active participation in student discussion relating pilot study results to the genome biology concepts discussed in lecture and investigated in lab.

Grade A = Student correctly relates genome data analysis results collected from investigations in lab to genome biology concepts for at least 90% of each assignment.
Grade B = As above for 80-90% of each assignment.
Grade C = As above for 60-80% of each assignment.
Grade F = As above for less than 60% of each assignment.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

1. **Center for Student Learning:** I encourage you to utilize the Center for Student Learning's (CSL) academic support services for assistance in study strategies, speaking & writing strategies, and course content. They offer tutoring, Supplemental Instruction, study strategy appointments, and workshops. Students of all abilities have become more successful using these programs throughout their academic career and the services are available to you at no additional cost. For more information regarding these services please visit the CSL website at http://csl.cofc.edu or call (843)953-5635.
2. **Center for Disability Services (http://disabilityservices.cofc.edu/for-faculty/faqs.php)**

   The College will make reasonable accommodations for persons with documented disabilities. Students should apply for services at the Center for Disability Services/SNAP located on the first floor of the Lightsey Center,

Suite 104. Students approved for accommodations are responsible for notifying me as soon as possible and for contacting me one week before accommodation is needed

ACADEMIC INTEGRITY STATEMENT

Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when identified, are investigated. Each incident will be examined to determine the degree of deception involved.

Incidents where the instructor determines the student's actions are related more to a misunderstanding will be handled by the instructor. A written intervention designed to help prevent the student from repeating the error will be given to the student. The intervention, submitted by form and signed both by the instructor and the student, will be forwarded to the Dean of Students and placed in the student's file.

Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XXF in the course, indicating failure of the course due to academic dishonesty. This grade will appear on the student's transcript for two years after which the student may petition for the XX to be expunged. The F is permanent. The student may also be placed on disciplinary probation, suspended (temporary removal) or expelled (permanent removal) from the College by the Honor Board.

Students should be aware that unauthorized collaboration--working together without permission-- is a form of cheating. Unless the instructor specifies that students can work together on an assignment, quiz and/or test, no collaboration during the completion of the assignment is permitted. Other forms of cheating include possessing or using an unauthorized study aid (which could include accessing information via a cell phone or computer), copying from others' exams, fabricating data, and giving unauthorized assistance. Research conducted and/or papers written for other classes cannot be used in whole or in part for any assignment in this class without obtaining prior permission from the instructor. Students can find the complete Honor Code and all related processes in the Student Handbook at http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php