BOT6935/ZOO6927 Phylogenomics   ***This syllabus is subject to change.**

Catalog Description

This course will provide studies with an introduction to phylogenomic theory and techniques. Topics to be covered include next-generation sequencing techniques, error assessment, and data handling; transcriptome assembly; ortholog and paralog discovery; tree-building with "large" datasets; assessing genome assembly quality, and gene tree vs. species tree discordance issues.

Credit Hours

2 credit hours

Pre-requisites and Co-requisites

A course in phylogenetics or systematics.

Course Objectives

By the end of the course, the student will be able to do the following:

• Evaluate transcriptome and genome assemblies reported in the literature.
• Design an experiment using NGS technologies and assess various forms of error.
• Assembly transcriptomes and identify orthologous and paralogous genes within and between taxa.
• Work with "big" datasets and build trees with these data.

Instructor Information

Name: Dr. Emily Sessa   Name: Dr. Akito Kawahara   Name: Dr. Jesse Breinholt
Office location: Bartram 521A   Office location: McGuire Center   Office location: McGuire Center
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E-mail: emilysessa@ufl.edu   E-mail: kawahara@flmnh.ufl.edu   Office hours: by appointment
Office hours: Tuesdays 12:45-1:45pm Office hours: by appointment

Course Meeting Time(s)

Tuesday & Thursday, 5th period: 11:45am-12:35pm

Course Meeting Location(s)

Carr Hall, room 222

Course Website

Course materials and related information will be posted on the course E-Learning (Sakai) website at http://lss.at.ufl.edu.

Attendance Policy

Students are expected to be on time for class, and attendance in all class periods is mandatory. Please contact the instructors at least a week in advance if you must be absent.

The policies for allowable absences and make-up work follow the university attendance policies: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx. The student will remain responsible for scheduling any make-up work with the instructor.

Course Outline

Week	Topic: Tuesday	Thursday
1	1/7: Logistics, group assignment (Kawahara)	1/9: Class rescheduled for tree thinking talk (MM)
2	1/14: NGS basics (Breinholt)	1/16: NGS basics (Kawahara)
3	1/21: NGS basics (Sessa)	1/23: HPC demo
4	1/28: Review/synthesis papers, Group I	1/30: Review/synthesis papers, Group 2
5	2/4: Transcriptome assembly (Breinholt)	2/6: Work on assembly project in class
6	2/11: Assembly results, Groups 1 & 2 present	2/13: Assembly results, Groups 3 & 4 present
7	2/18: Orthologs/paralogs (Sessa/Breinholt)	2/20: Work on ortholog project in class
8	2/25: Ortholog results, Groups 3 & 4 present	2/27: Ortholog results, Groups 1 & 2 present
9	3/11: Big trees (Kawahara)	3/13: Paper discussion
10	3/18: Gene & species trees (Sessa)	3/20: Work on tree project in class
11	3/25: Tree results, Groups 1 & 2 present	3/27: Tree results, Groups 3 & 4 present
12	4/1: Recent genomes, Group 3 presents	4/3: Recent genomes, Group 4 presents
13	4/8: Work on projects/paper discussion	4/10: Work on projects/paper discussion
14	4/15: Final presentations, Groups 1 & 2	4/17: Final presentations, Groups 3 & 4
15	4/22: Final discussion	

Conduct in Class
- Please be courteous and do not talk during lecture. This can be distracting to other students and the instructor.
- Only approved electronic devices may be used in class. Approved electronic devices are laptop computers (when used to take notes or otherwise participate in classroom activities) and voice recording devices. Unapproved electronic devices include cell phones, video recorders, digital cameras and MP3 players.

Grading
- Presentations: 4 @ 20 points each (80% of final grade)
- Class Participation: 20 points (20% of final grade

Grading Scale

Point Range (%)	Letter Grade	GPA equivalent
≥ 90.00	A	4.0
86.7 – 89.9	A-	3.67
83.3 – 86.6	B+	3.33

80.0 – 83.2	B	3.0
76.7 – 79.9	B-	2.67
73.3 – 76.6	C+	2.33
70.0 – 73.2	C	2.0
66.7 – 69.9	C-	1.67
63.3 – 66.6	D+	1.33
60.0 –63.2	D	1.0
56.7 – 59.9	D-	0.67
< 56.7	E	0

Note that a "C-" will not be a qualifying grade for critical tracking courses. In order to graduate, students must have an overall GPA and an upper-division GPA of 2.0 or better (C or better). Note: a C- average is equivalent to a GPA of 1.67, and therefore, it does not satisfy this graduation requirement. For more information on grades and grading policies, please visit: http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html

UF Counseling Services
- Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:
  - o UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, psychological and psychiatric services.
  - o Career Resource Center, Reitz Union, 392-1601, career and job search services.
- Many students experience test anxiety and other stress related problems. "A Self Help Guide for Students" is available through the Counseling Center (301 Peabody Hall, 392-1575) and at their web site: http://www.counsel.ufl.edu/.

Honesty Policy
- All students registered at the University of Florida have agreed to comply with the following statement: "I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University."
- In addition, on all work submitted for credit the following pledge is either required or implied: "*On my honor I have neither given nor received unauthorized aid in doing this assignment.*"
- If you witness any instances of academic dishonesty in this class, please notify the instructor or contact the Student Honor Court (392-1631) or Cheating Hotline (392-6999). For additional information on Academic Honesty, please refer to the University of Florida Academic Honesty Guidelines at: http://www.dso.ufl.edu/judicial/procedures/academicguide.html.

Accommodation for Students with Disabilities

- Students who will require a classroom accommodation for a disability must contact the Dean of Students Office of Disability Resources, in Peabody 202 (phone: 352-392-1261). Please see the University of Florida Disability Resources website for more information at: http://www.dso.ufl.edu/drp/services/.

- It is the policy of the University of Florida that the student, not the instructor, is responsible for arranging accommodations when needed. Once notification is complete, the Dean of Students Office of Disability Resources will work with the instructor to accommodate the student.

Software Use

All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.