PLP 6905 INTRODUCTION TO APPLIED BIOINFORMATICS IN PLANT PATHOLOGY
(INTRO APPLIED BIOINFO, PLP6905 section 1771)

(Spring 2015)
1 credit hour

Course Description
The course is intended to provide graduate students with the bioinformatic background to conduct genome data analysis. The course will use genomes of plant pathogens as case studies for the analysis. Students will be able to learn about problems in the analysis of biological data such as DNA and amino acid sequences. The course is designed to provide plant pathology graduate students with a good understanding of advanced computer programs for the analysis of genomic data, the exploration of biological databases and visualization of results.

Course and Laboratory Instructor:
Jose Huguet-Tapia, Ph.D.
Room 1444 Fifield Hall
jhuguet@ufl.edu
352-273-4630

Teaching Assistant:
Yucheng Zhang
yuchengzhang@ufl.edu
1444 Fifield Hall

Course Time/ Location:
Lecture: Wednesday Period 8 (3:00 pm - 3:50 pm)/Fifield Hall room 2564,
Lectures will be taught using PowerPoint slides. During each lecture the instructor will introduce the topic of the day, explain the biological concepts of the topics and briefly explain the algorithms for the analysis of the data.
Laboratory: Wednesday Period 9 (4:05 pm - 4:55 pm/Fifield Hall room 2564,
The laboratory will be taught after each lecture. Each student will connect to the server using his or her own computer. The Biolinux system will be installed in each computer. This will be the system to develop all the exercises during the course.
Polycom: Course may be taken via polycom. Please discuss logistics with instructor prior to the first week of class.

Office Hours:
Monday 1:55- 3:50 pm

Required Text
There is no required text for the lab or the lecture

Grading
Grading will be based on attendance (5%), class participation (5%) and homework (10%) and class project presentation (80%). The class project will be based on your own data. This is an upper level course and you are expected to be taking the course to improve your research. The assigned projects are meant to help you gain experience using these methods and synthesize what you have learned. Each student will meet with the instructor to design a small project and apply the concepts learned during the course. A final presentation of your project is required.

Make-up and Attendance Policy

Attending course lectures and labs, completing required project presentation is expected. In this course lectures build on each other. Slides for the lectures will be made available, but notes from missed lectures must be obtained from other students in the course. Please contact the instructor directly regarding any serious illness or prolonged absence.

Course schedule (subject to change)

Week 1: Wednesday Jan-7th
Introduction to bioinformatics 1
Introduction to linux 1 (lab)

Week 2: Wednesday Jan-14th
Sequence analysis and databases search
Blast and HMMER (lab)

Week 3: Wednesday Jan-21th
Genome data analysis 1: Introduction of high-throughput sequencing data analysis.
Fastq manipulation (lab)

Week 4: Wednesday Jan-28th
Genome data analysis 2: Mapping
Short read aligners: Bowtie (lab)

Week 5: Wednesday Feb-4th
Genome data analysis 3: de novo Assembly
De novo assemblers: Velvet and Spades (lab)

Week 6: Wednesday Feb-11th
Genome data analysis 4: Gene prediction and annotation
RAST and introduction to Artemis

Week 7: Wednesday Feb-18th
Genome data analysis 5: Post assembly genome improvement
Abacas, ACT and Mummer (lab)

Week 8: Wednesday Feb-25th
Class project presentations

Academic Honesty, Software Use, UF Counseling Services, Services for Students with Disabilities

In 1995 the UF student body enacted a new honor code and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standard drafted and enacted by students.

In adopting this honor code, the students of the University of Florida recognize that academic honesty and integrity are fundamental values of the university community. Students who enroll at the university commit to holding themselves and their peers to the high standard of honor required by the honor code. Any individual who becomes aware of a violation of the honor code is bound by honor to take corrective action. The quality of a University of Florida education is dependent upon community acceptance and enforcement of the honor code.

The Honor Pledge: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.

On all work submitted for credit by students at the university, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

The university requires all members of its community to be honest in all endeavors. A fundamental principle is that the whole process of learning and pursuit of knowledge is diminished by cheating, plagiarism and other acts of academic dishonesty. In addition, every dishonest act in the academic environment affects other students adversely, from the skewing of the grading curve to giving unfair advantage for honors or for professional or graduate school admission. Therefore, the university will take severe action against dishonest students. Similarly, measures will be taken against faculty, staff and administrators who practice dishonest or demeaning behavior.

Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean, Student Honor Council, or Student Conduct and Conflict Resolution in the Dean of Students Office.

(Source: 2011-2012 Undergraduate Catalog)

It is assumed all work will be completed independently unless the assignment is defined as a group project, in writing by the instructor.

This policy will be vigorously upheld at all times in this course.

Software Use:

All faculty, staff and students 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.

Campus Helping Resources

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, www.counseling.ufl.edu/cwc/
- Counseling Services
- Groups and Workshops
- Outreach and Consultation
- Self-Help Library
- Training Programs
- Community Provider Database

Career Resource Center, First Floor JWRU, 352-392-1601, www.crc.ufl.edu/

Students with Disabilities

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues.

0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/

Grade Points
In accordance with current University of Florida policy, grade points will be assigned as follows.

Letter Grade	Grade Points	Percentage
A	4.0	90 or above
A-	3.67	87-89

B+	3.33	84-86
B	3.0	80-83
B-	2.67	77-79
C+	2.33	74-76
C	2.0	70-73
C-	1.67	67-69
D+	1.33	64-66
D	1.0	60-63
D-	0.67	57-59
E	0.0 56	or below
WF	0.0	NA
I	0.0	NA
NG	0.0	NA
S-U	0.0	NA

Detailed and up-to-date information on grades and grading policies can be found at the UF registrar
Web site, www.registrar.ufl.edu/catalog/policies/regulationgrades.html

Related Courses:
University of Florida offers a number of courses that touch on various aspects of Bioinformatics. Related courses offered through other programs tend to focus on programming or these are part of a bioinformatics minor. This course is specifically designed to introduce graduate students to the analysis of plant pathogen genomes. This course offers bioinformatics consulting to accelerate research projects of graduate students. This course is also distinctive in its emphasis on hands-on application of methods. Each student will present his/her project and we will discuss in class potential solutions for each project. At the end of the course students will be able to develop their own pipeline to analyze their data.