

## Syllabus

### BIOS 692: Topics in Computational Biology

#### Spring 2004

**Instructor: Michael A. Thomas, Ph.D.**

Office: 256 Gale Life Science  
Office Hours: 11am – 12 pm, Tuesday & Thursday  
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**Class meets:**

Wednesday, 9:30-10:30am in LS 244.

**Overview**

This seminar class will consist of a small group of graduate students and faculty interested in bioinformatics and computational biology, reading recent papers on bioinformatics tools development and usage. The goals and content of the class will depend upon the students who take it - I will propose a number of topics and papers at the beginning of the semester and allow the students to help guide the class to make it as useful as possible for them. The format will be simple: each person will take a turn presenting a paper of his/her choice, providing a list of references pertinent to that topic. There will be about 5-6 students, so each person will do this twice during the semester. Every week, each student will email me a 1 paragraph discussion of the paper before class, and these will be the basis of the grade.

**Topics covered**

Here are some topics that I think would be interesting:

- Novel/new approaches to sequence alignment & searching,
- Approaches to whole-genome phylogenetics,
- Novel combinations of tools to solve problems we didn't know we had,
- New tools for gene discovery,
- Approaches to shotgun/scaffold sequence assembly,
- New approaches to gene expression analysis (microarray, etc),
- Novel database development (perhaps for sequenced genomes).

You are welcome to insert your topic of interest.

**Prerequisites**

A background in molecular genetics and experience with the Unix computing environment will be helpful but not essential.

## Readings & References

I have online subscriptions to a couple journals that the library doesn't carry: Bioinformatics, Genome Research. I'd be happy to subscribe to other journals... Please see this list for a number of relevant journals:

<http://www.brc.dcs.gla.ac.uk/~actan/bioinformatics/journals.html>

All journals that I subscribe to are available in LS 244 (the Bioinformatics Lab).

## Grading

Your grade will consist of the following components, weighted as shown:

Weekly summaries:	40%
Discussion facilitation:	50%
Intangibles:	10%

Final letter grades will depend upon the overall performance and may be adjusted upward only.

### Weekly summaries

Each student will submit (*via* email) a weekly summary of the primary paper to be discussion that week. Summaries are due before the start of class. It is expected that students will provide thoughtful syntheses of the assigned paper, relating it to the topic covered that week and placing it within the context of contemporary computational biology. For example, the following questions might be considered: What problem do the authors address? How does their bioinformatics approach solve this problem? Is their approach superior to traditional (or other bioinformatics) approaches? How is their approach related to other recent advances?

### Discussion facilitation

Each student will facilitate two stimulating discussions during the course of the semester. Discussion topics will be assigned the first day of class; the student will choose a primary paper based on this topic. The week prior to each discussion, the student will provide a PDF file for the primary paper, a list of 5-10 additional references, and a list of discussion questions. Distribution of the PDF and reference list to the group will be *via* email. It is expected that the discussion leader will facilitate a thought provoking conversation. To accomplish this, the successful facilitator will have read and digested the primary paper and additional references, compiled a list of questions to pique the interest of the participants, and become an expert in the topic being discussed.

### Intangibles

A small portion of your grade will consist of items not easily measured and categorized. These include elements like class participation, meetings with the instructor, keeping up with the readings, using the course message boards & mailing lists, etc.

### Late policy

Assigned work in this course must be turned in by the specified due date. Late work will **not** be accepted.