COURSE ANNOUNCEMENT FOR SPRING 2006

CSE 280B: Algorithms in Computational Molecular Biology (4 units)

Instructor: Vineet Bafna and Pavel Pevzner (CSE),
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Time: TuTh 5-620pm
Place: CENTR 218
Office hours: by appointment VB: CSE 4218 (phone: 2-4978) PP: CSE 4236 (phone 2-4365)

The course is a graduate seminar devoted to recent research in bioinformatics. The course will be rather self-contained but it implicitly assumes some graduate level algorithmic and mathematical culture. The goal of the course is to introduce students to recent advances in bioinformatics and to provide some research experience by guiding them through an open-ended short-term research project. Students interested in taking this course may contact the instructor.

The course will include 2 types of meetings: (i) lectures given by the instructor and guest speakers and (ii) presentations of research projects given by students.

The course will concentrate on computer science aspects of computational molecular biology and will emphasize the recent advances and open problems in the area. The computational techniques will include algorithms, graph theory, combinatorics, machine learning, etc. The students will be guided through various stages of bioinformatics research: formulating the problem, designing the research plan, studying relevant literature, responding to the criticism of the reviewers and the instructor, reviewing other research projects, preparing the presentation and the paper, etc. The projects in this class may evolve into research papers, for example a number of CSE 202B projects in the recent years evolved into some published and submitted bioinformatics papers. Ideally, we would like every student in the class to submit a research paper inspired by the 206B class project.

Textbooks: There is no required textbook for this class. Students may find the following books useful:


**Grading:** The goal of the course is to emulate work on a short-term bioinformatics research project. Grading in this course will consist of 5 components: (i) research project (50%), (ii) presentation of research (10%), (iii) ability to formulate a research problem (10%), (iv) ability to evaluate other research projects (10%), and (v) take-home final exam based on questions motivated by research projects (20%).

The list of suggested class projects will be distributed in the first week of classes. You may suggest your own well-defined topic and it may be accepted as an extra class project if approved by the instructor. The research projects will be complemented by additional reading/presentation assignments. Reading/presentation assignments will require reading some recent papers (related to your class project) and will result in a class presentation that exposes the participants to the area covered by your research project. To grade your ability to evaluate other research projects, every student in the class will be assigned as a “reviewer” for another class project with the goal to provide critical comments and suggestions.

The class projects have to be posted on the web and the students are expected to make a presentation based on the class project. It is important to select the topic as soon as possible and to file the progress reports reflecting your work on the project according to the following schedule. It is important to complete the projects on time (to allow time for presentations) and the schedule below ensures the timely completion. Deviations from this schedule will negatively affect your grade in the class.

Your class project and presentation will be graded according to the following 10 criteria:

- ability to formulate a computational problem.
- ability to review the previous research in the area.
- ability to write a self-contained and concise abstract and introduction.
- ability to propose efficient algorithmic solutions
- sensible implementation decisions
- sensible benchmarking design
- clear description of results in progress report
- clear presentation of results in the class, appropriate organization, and presentation style
- insightful discussion of major experimental results and further directions
- complete bibliographic review