COLBY COLLEGE
Department of Mathematics
and Computer Science

CS358 **Allen B. Downey**
Spring 1999

Syllabus

Professor: Allen B. Downey (abdowney)
Office: Mudd 417, x3672
Class time: Tuesday and Thursday from 2:30 to 3:45pm.
eb page: The handouts that I produce (as opposed to the ones I photocopy from other sources) will be available from the class web page. The URL is http://rocky.colby.edu/cs358
Class-related email: I don't use a Macintosh, so please send me email in plain text.

1 Coursework

Work in this class will primarily consist of a semester-long project. At various checkpoints during the semester, you will be asked to prepare a written proposal, one or two progress reports, and a final paper.

In addition, you will give frequent informal oral presentations during class, and at least one formal oral presentation. Also, at the end of the semester there will be a poster session where you will present your project to a campus-wide audience.

I expect that most of you will work in groups of two, although one and three are also acceptable for special reasons. If you do not already have a project, there are several ways to go about finding one:

- Join an existing project.
- Contact faculty in other departments.
- Contact me.
- Read popular science books and periodicals.

The total course load is intended to be 12 hours per week (including class time). We will spend 3 of those hours in class together. It is up to you to SCHEDULE an additional 9 hours per week that will be dedicated entirely to work on your project. I will ask you to keep a journal of the time you work and the progress you make.

Grading: Final grades are determined by the quality of your project work, by the effort you put into it, by written quizzes and assignments, and by your participation in in-class discussions. As the project progresses, I will try to give you feedback about possible final grades.

Exams: There are no exams scheduled, but there may be written quizzes on some of the lecture topics. There is a final exam slot reserved for this class. Please keep it free; I have not decided yet how we will use it.

Assignments: There may be written assignments on some of the lecture topics.

Reading: There is no textbook for this class, but you will be expected to review literature relevant to your project, and I will distribute readings on some of the lecture topics.

2 Lecture topics

We will probably spend about half of the in-class time discussing projects, in the form of a research group meeting. Each of you will present your project to the class at several points during the semester, and the class will discuss it with you. I hope that this kind of forum will be a valuable educational experience, and will help direct the projects in fruitful ways.

In addition, there are a number of topics that I think will be applicable to more than one project. I will prepare lectures on at least some of the following:

Topic 1: Scientific inquiry, falsifiability and probability.
Topic 2: Random number generation and Monte Carlo simulation.
Topic 3: Modeling.
Topic 4: Queueing theory.
Topic 5: Event-driven simulation.
Topic 6: Visualizing quantitative information.
Topic 7: Data-intensive computing.
Topic 8: Genome databases, the MEME project.
Topic 9: Architectures for scientific computing: sequential, parallel, distributed.
Topic 10: Distributed computing, persistent objects, CORBA.

There may be additional topics, depending on the projects the class selects.