Math 381A, Winter, 2007

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http://www.math.washington.edu/~greenbau/Math_381/

Textbook, Notes, References:

There is no required textbook. Course notes are available on the course web page.
There is no single book which covers the material in 381 exactly. Several books which may be useful to you will be put on reserve in the Math Research Library by the middle of next week. See the webpage for a list and for additional references.

Course Project:

A major feature of this course is the development of a modeling project to be handed in at the end of the quarter. You are strongly encouraged to work in groups of 2 or 3 on this project. You will choose the topic of your project; I will hand out a list of suggestions (from which you may choose one or pick your own) later in the quarter. The mathematics needed might involve ideas from any of several areas, such as graph theory, probability, optimization, and dynamic programming, as well as some programming in Matlab. The first half of the quarter will give an introduction to these areas of mathematics. The second half of the quarter will involve a sequence of writing and programming assignments intended to help you with aspects of your project. We will read some papers from the literature and you may be asked to report on a paper related to your project topic.

Homework:

There will be several homework assignments, sometimes small assignments due in the following class and sometimes longer problem sets or writing assignments. Homworks will often be discussed in class and will be collected but not always graded in detail. Late homework will not be accepted unless accompanied by a valid and well-documented reason (e.g. illness together with a note from your doctor).

Exams:

There will be one in-class midterm exam tentatively scheduled for Friday, February 9. There is no final exam; the course project is due at the time scheduled for our final – Monday, March 12, at 8:30. At that time we will have some presentations of final projects.
Grading:

Grades for the course will be based on the following:

Homework: 30%, Midterm: 20-30%, Course Project: 40-50%.

Note: You cannot pass the course without submitting an acceptable course project.

Class participation:

It is essential that you come to class each time. Much of what we will discuss is not in the notes or readily found in textbooks. This is particularly true of the material in the latter part of the course, which will involve class participation in the discussion of papers from the literature. I will often ask you to think about modeling issues between classes and expect you to come to class prepared to contribute to the discussion.

Writing assignments:

Students in Math 381 earn W-credit—this is a writing course. For this reason, homework and the course project will be graded partly on the basis of writing style and clarity of explanations. Some homework assignments will also require writing descriptions of modeling problems or algorithms. Some homework assignments will involve some programming in Matlab.

Math Sciences Computing Center:

You may use the PC’s in the Math Sciences Computing Center (MSCC). To use a PC, login as user “lab” with no password. Consultants are always available in the Lab to help with basic questions. A consultant for problems concerning MATLAB will also be available, but with more limited hours.

Computer programming:

Extensive computer programming is not required for this course, but you will be expected to learn to program in MatLab as the course progresses. Class may meet in the MSCC once or twice to help you get started using Matlab.

Copy Quick Card:

To print the notes in the MSCC lab or another lab on campus, you will need to purchase a Copy Quick Card. These cards are available at any Copy Center on campus. There also are dispensers in the libraries.

Material covered:

The first chapter of the Lecture Notes contains an introduction to mathematical modeling and lists the types of problems and mathematical techniques that we will study.

Other resources:

The course notes are not intended to be a complete textbook, but to give an outline of some things discussed and to give some examples. You are responsible for augmenting these notes as needed by reading appropriate textbooks depending on your background. Some books will be on reserve in the Math Research Library (see the list on the webpage). In addition, there are many other books that discuss mathematical modeling and each of the topics we will discuss.