Instructor and Course Information

Instructor: Brittany Erickson  
Office: NH M315  
Email: berickson@pdx.edu  
Course Website: www.web.pdx.edu/~be3/Math_451_551.html  
Course Meeting Times: T/Th 10-11:15 a.m. in NH 385  
Required Text: Numerical Analysis, Burden and Faires, 9th ed.  
Optional Text: Numerical Linear Algebra, Trefethen and Bau  
Office Hours: Tues. 11:30-12:30 p.m., Wed. 1-2 p.m. or by appointment

Course Outline

This is the first part of a year long sequence covering the basics of introductory numerical analysis and numerical linear algebra. During the fall quarter we will cover: round-off error, computer arithmetic, bisection, newton’s and secant method for root finding and fixed points, interpolation, divided differences and various quadrature methods. The winter quarter will cover methods for the numerical solution to initial-value problems (ordinary differential equations) and more aspects of numerical linear algebra. In the spring we will focus on finite difference methods for solving boundary value problems and partial differential equations, and direct and iterative methods for solving linear systems. This is subject to change.

Homework

Weekly homework assignments will be posted on the course website and due on Thursdays, at the BEGINNING of class. If you cannot attend class that day, please leave homework in my mailbox in the Mathematics and Statistics department on the 3rd floor of NH (it must be in my box by 10 a.m. on the date due). Those enrolled in 551 will be assigned extra homework problems. Those enrolled in 451 are welcome to do these extra problems for extra credit (see Grading section below). Any changes to due dates etc. will be posted in the Announcements section on the course website. I will choose about half of the assigned homework problems (at random) to grade, and your score will be based on these. Your assignments must be clearly written, show your work, and given with full explanations. If you cannot meet these requirements I suggest you use a word processor.

Software

Some assignments will require minor programming. You may program in whichever language you prefer. If you have little experience programming, I suggest you use MATLAB, which can be accessed in many of the computer labs on PSU’s campus (or you can purchase a Matlab student version). Similar (and free) software packages, such as Octave (https://www.gnu.org/software/octave/) or Julia (http://julialang.org), can be used as well.

MATLAB Tutorials

I will offer an (optional) 1-hour introductory programming tutorial (in the Math Computer Lab, NH 96) during which I will show you the basics of using MATLAB and how to write simple programs. These will be offered Thursday Oct. 2 from 2-2:55 p.m. or Tuesday Oct. 7 from 9-9:55 a.m. Please plan on attending one of these tutorial sessions (although not required). Mathworks has a website offering many MATLAB tutorials (http://www.mathworks.com/academia/student_center/tutorials/launchpad.html).

Final Projects

During the Spring Term a Final Project will be assigned that will require you to use what you have learned over the past academic year. If you would like to do an alternative project related to your research area, please discuss this with me in the Spring (so keep this in mind as the year progresses).

1Subject to change
Exams
There will be one midterm and one final exam on the dates given below.
Midterm: Thursday, Oct. 30th, 2014 in class.
Final: Tuesday, Dec. 9th, 2014 10:15-12:05. Room TBD - check course website for announcements.

**Those enrolled in 551 will be required to do extra problems on exams.

Make-Up Policy
** I will NOT accept late homework and there will be NO MAKE-UP exams without prior approval, so mark
dates on your calendar now. If you know that you will not be able to meet a deadline, please contact me at
least 1 week before the deadline to make arrangements. The only exception is sudden illness, injury, or family
emergency in which case you must notify me as soon as possible.

Grading
Your course grade will be based on your percentage of points received on six Homework assignments, one Mid-
term, and one Final Exam. If you receive 90-100% of the available points you will receive at least an A- in the
course, 80-89% a B- etc.

Students enrolled in 451:
- Homework: 300 points (6 assignments, 50 points each).
- Midterm Exam: 150 points
- Final Exam: 300 points

**For extra credit, on each homework assignment you are welcome to do ONE of the extra problems assigned
to 551 students. Each extra problem you do is worth at most 5 points. Since there are 6 assignments, the most
you can earn is 30 extra points.

Students enrolled in 551:
- Homework: 450 points (6 assignments, 75 points each)
- Midterm Exam: 200 points
- Final Exam: 400 points

Academic Integrity, Collaboration and Plagiarism
Any academic misconduct will be taken seriously and dealt with according to university regulations, see
http://www.pdx.edu/dos/academic-misconduct
You are encouraged to work together on homework assignments and study for exams together. What you turn
in however, must reflect your own work and your own understanding. If I require that you turn in code, along
with an assignment, I will look VERY CLEARLY at your code to make sure it was not directly COPIED from
another student. If your code is identical to another student’s, both students will receive a 0 on that assignment.
You are permitted to talk about general algorithmic strategies, tips for debugging, etc. Googling for code is
often a waste of time and will be detrimental to your performance on exams and projects. Any code found on
the internet must be cited with a web address as well as an indication of the extent of usage. Changing variable
names, whitespace, and/or comment in a function does not make it your own. Nor does printing out the function
and typing it back in. (Use your best judgement and common sense here. Copying how to plot a dashed line or
set up a structure for a MATLAB routine are not considered plagiarism. When in doubt, cite your source!)

Getting Help
I strongly encourage you to come to my office hours for assistance with homework, and in preparation for the
exams. Emailing me with homework/coding questions is NOT a reliable method for getting help.

Disability Resource Center
If you are a student with a disability please register with the Disability Resource Center (http://www.pdx.
edu/drc/) and contact me immediately to assist with accommodations. All discussions will remain confidential.