Syllabus
Introduction to Mathematical Software
Math 399, 3 credits
Fall Quarter, 2014

Prerequisite:
MTH 252 and MTH 341 or 306.

Course Content:
This course is designed to familiarize students with the use of software resources commonly utilized in the mathematical sciences. Students will learn how to use modern computing environments such as MATLAB and Mathematica for the purpose of symbolic and numerical problem solving and visualization. Students will become acquainted with the syntax and usage of each system through computer-aided lectures as well as through projects. The relative merits and disadvantages of each system will also be discussed. Basic programming paradigms and concepts will be introduced where appropriate.
This course will also introduce LaTeX, the de facto standard for the communication and publication of mathematical and scientific documents.

Learning Outcomes:
A successful student in MTH 399 will be able to use MATLAB and Mathematica to:
1. Solve basic numerical and symbolic mathematics problems.
2. Visualize and present data.
3. Create simple programming scripts and functions.
4. Understand and apply basic programming techniques and paradigms
In addition, a successful student will be able to typeset and communicate mathematical results using LaTeX.

Meeting times:
Tuesday and Thursday, 10:00am-11:20am, KIDD 033.

Text:
In lieu of a text, relevant information will be posted on blackboard:
http://www.my.oregonstate.edu

Professor:
Dr. David Koslicki ("cause-lick-ee")
Office: KIDD 354
Phone: 514-737-5172
Email: david.koslicki@math.oregonstate.edu
Office Hours: By appointment and
T, R: 8-9am
No appointments are required during office hours.
Homework:
Homework assignments (along with their due dates) are contained in the course notes posted on blackboard. The due date for each homework assignment will typically be 3-7 days after it is assigned. Please attend class and keep an eye on the blackboard website for the homework assignment due dates. There will be at least 10 homework assignments, with the lowest two scores being dropped.

Exams/Projects:
In lieu of exams/quizzes, you will complete a final project. This project will consist of taking a math, science, or data related problem and writing a Matlab or Mathematica program to solve it. You will then summarize your results (including figures) in a LaTeX document and submit this (along with the source code) during finals week. Briefly, you will be graded on correctness and completeness of the source code (including how well commented the code is), along with how well written and presented the LaTeX document is.
There are a couple of example projects posted on blackboard. You may either choose to perform one of these projects, or come up with your own. Please make an appointment with me (before dead week) to discuss what you project will consist of.
Some other project ideas include: personal analytics (via location-based apps, email frequency analysis, personal genomics, etc.), constructing an interactive Fractal plotting program, investigating cellular automata, bioinformatics applications (e.g. visualization of de Bruijn graphs).
I am more than happy to look at your code/LaTeX document and give feedback about your project (but I will not be making any meetings during finals week, so start working on this early!).

Grading Policy:
The grading of the course is on a points-based system:
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<tr>
<th>Grade</th>
<th>Points</th>
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<tr>
<td>A</td>
<td>369-400 points</td>
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<td>A-</td>
<td>360-368 points</td>
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<td>B+</td>
<td>342-359 points</td>
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<td>B</td>
<td>323-341 points</td>
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<td>B-</td>
<td>320-328 points</td>
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<td>C+</td>
<td>311-319 points</td>
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<td>C</td>
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<td>D</td>
<td>240-279 points</td>
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I reserve the right to alter this grading scheme at the end of the term, but only to your advantage.

Help:
Make a note of my office hours. I will be glad to help you whenever I can - just ask!
Your classmates are an important resource. There are many locations on campus for study groups to meet and work. The Mathematics Learning Center is an excellent place to study and meet with your classmates. Be sure you are working together towards understanding the solution, not just "getting the answer". Tutoring (free of charge) is available in the Mathematics Learning Center (Kidd 108) and in the Library.

Disability Access Services:

Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 541-737-4098. More information is available at http://ds.oregonstate.edu.

Academic Dishonesty:

Students are expected to be honest and ethical in their academic work. Academic dishonesty is defined as an intentional act of deception in one of the following areas:

Cheating - use or attempted use of unauthorized materials, information or study aids; Fabrication - falsification or invention of any information; Assisting - helping another commit an act of academic dishonesty; Tampering - altering or interfering with evaluation instruments and documents; Plagiarism - representing the words or ideas of another person as one's own.

If evidence of academic dishonesty is found, University procedures will be followed, including the assignment of a grade of “F” for the guilty parties. For more information about academic integrity and the University's policies and procedures in this area, visit the Student Conduct web site at http://www.orst.edu/admin/stucon/achon.htm.