Course Info:
MATH 290 (383 Lab) - ODE Computational Lab
Fall 2014 - Section 001

Time/Place:
Tu: 6:00 PM - 8:00 PM, Phillips Hall 228 - Section 001.

Instructors:
Jeremy Louis Marzuola and Charles Talbot

Contact Info - Coordinator:
E-mail: marzuola@math.unc.edu
Office: Room 324-D Phillips Hall
Office Hours: Tu: 11 AM-12 PM, Th: 1 PM-2 PM, Fr: 10-11 AM.

Graduate Instructor:
E-mail: ctalbot@live.unc.edu
Office: Phillips 413
Office Hours: TBD.

Topics:
I. Basic Programming and Plotting in Matlab
II. ODE Modeling and Visualization
III. Linear Algebra in Computational Models

Scheduling:
The class will meet once per week and by Friday a small code will be due to Instructor Talbot. It should be written in Matlab Cell Format so he can simply run your code and see the output.

Prerequisites:
The course requires Math 383 or the equivalent to be taken simultaneously or in the past.

Course Texts:
Grading:
The course will be graded on weekly homework assignments (75%) and an individual project (25%).

Homework Assignments:
The homework assignments will be due to the TA’s e-mail by Friday of each week, beginning August 22nd, 2014. The goal will be to have all homework turned back to the students by the following Tuesday for studying purposes. Each assignment will be handed out and described during the lab session Tuesday nights.
Though I encourage communication on the homework assignments, each student should write up the assignment on their own.

Projects:
In this computational course, you will be working with Instructors Marzuola and Talbot to formulate a handful of codes designed to solve various types of ordinary differential equations.
Linear Algebra and Ordinary Differential Equations arise ubiquitously in both complex mathematical subjects like geometry and differential equations, but throughout applications including computational science, data assimilation, physics, chemistry, climate models, economic forecasting, etc. The goal of the project is for you to explore one of these applications in the area of your particular interest by producing a 5–7 page (not including references) report introducing the application, discussing the relevant ideas from linear algebra and doing a model computational simulation to illustrate the idea. The project will be approached in stages with a paragraph suggesting a project idea due by October 7th, 2014. Throughout the semester, there will be further due dates to make sure students are working on the project: a list of references used due by November 3rd, 2014; a rough draft due by November 25th, 2014; the final project due via e-mail by 5 PM on December 9th, 2014.

Honor Code Statement and Course Policies:
It is expected that each student will conduct themselves within the guidelines of the UNC Honor System. Please bring your laptops to class, as we’ll be working on building codes for much of the 2 hour time block.

Make-up and Absentee Policy:
Attendance at every class is strongly encouraged. No make-ups will be given for homework assignments. Missed in-class exams can be made up only if a written medical/coach excuse is provided showing you were unable to attend. No changes are permitted for the final exam without appeal to the Dean.