Math 354: Mathematical Modeling
Instructor: Dr. Fred Park
Fall 2015

Course Description

This is a semester long course in mathematical modeling. Topics covered include: population dynamics, traffic flow including traveling shock waves in this media, phase plane analysis, and the calculus of variations. Some applications in mathematical image processing and computer vision will also be covered. Prerequisite is completion of math 242 with a passing grade.

Instructor Information

Instructor: Dr. Fred Park
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Phone: 562-907-4200, ext. 4880
OH's: MWF 3:30-5pm

1 Course Information

Times and Location: MWF 2:30-3:20 in UV 210
Textbook: *Mathematical Models* by Richard Haberman
Additional course readings will be placed on *Moodle*

2 Course Breakdown

Scheme #1:

- HW/Projects 20%
- Class Presentation 10%
- MT 30%
- Final 40%

Scheme #2 (Emergencies Only!!):

- HW/Projects 20%
- Class Presentation 10%
- Final 70%

No makeup exams whatsoever. I highly recommend you taking both midterm exams since scheme #2 is only for emergencies. I will automatically take the higher of both schemes at the end of the course when determining your final grade.

Grading Scale

In this course, I will utilize an A-F scale with +/- grading. The percentage breakdowns based on the highest average from scheme #1 and #2 above are as follows:

- 90-100% A Range
- 80-89.9% B Range
- 68-79.9% C Range
- 58-67.9% D Range

The minimum grading guidelines in terms of percentage of the class are as follows:

- 20% of the class will be in the A Range
- 30% of the class will be in the B Range
- 35% of the class will be in the C Range
- 15% of the class will be in the D/F range

To obtain an "A" grade in my course, you will have to work very hard. In general, there are no easy "A's" in my courses or in any of the courses in the Math Department.

3 Final Course Evaluations

Final Evaluations: 1% total bump in course grade. For example if your final total course average from the higher of scheme #1 and #2 is an 89% total (B+ grade), your final average gets bumped to 90% (Now an A- grade). I highly recommend that everyone does the final course evaluations.

4 Exam Dates

The exam dates are set in stone and will not change. Please write these down in your scheduler ASAP.

- Midterm: Weds Oct 28th (Take home).
  Distributed in class on 10/28. Due in class Friday Oct 30th.
- Final: Weds Dec 16th, 10:30-12:30 in UV 210

5 Homework

HW is due at the beginning of class each Weds no later than 2:35 PM. No HW will be accepted after the 2:35 PM deadline. Please do not walk up and attempt to turn your assignment into the front of class after the deadline since it will not be accepted. Moreover, such action would be deemed as disruptive to the class.
There are 10 assignments total. You are allowed to drop 2 of the assignments. Please make sure to keep up with the homework after each lecture.

6 Class Presentations

Class presentations will involve you discussing a class project in detail in front of the class. This may involve a powerpoint presentation and a live demo of your work. More details will be given in class.

Class Attendance

Class attendance is mandatory. If you will miss more than 4 total lectures throughout the course, you will be asked to drop the course.

7 Study Time and Class Expectations

For every 1 hour of lecture you should be studying 3+ hours outside of class. That is at least 12 hours a week outside of class of studying and HW. Math is a difficult and time consuming subject. Please keep up with the work and do not 'Cram' for any exams or HW deadlines since this usually results in very poor results. I recommend at least 15+ hours a week of study outside the classroom for this course.

Cheating

Cheating will absolutely not be tolerated in any way, shape, or form in this course!! I have not had any issues in the past and do not plan on starting. Cheating in any form will be recorded and the student will be sent to the Dean. Cheating has far reaching consequences that can affect your future career path. Quite simply put: Don't Do It!

Computer Labs

This course will involve some computer work with Matlab, a high level programming language and industry standard in science and engineering. The class will be a Bring Your Own Device (BYOD) in regard to computers. If you have a laptop with wifi, you will be able to access the software from any location on campus. If you do not have a laptop, you can borrow one from library. I will specify days for you to bring in your computer.

Group Work

I encourage group work and you may work together. But you must have your own write ups of your HW and only if you completely understand the problem being solved.

Disruptive Behavior

Disruptive behavior will absolutely not be tolerated in any way, shape, or form in this class. This includes cell phone use (talking, texting, email, etc), computer use, talking, chatting, or any other general disruptions. If you are being disruptive in the class to the instructor and your fellow students, you will be asked to leave.