

MATH 107Q - Fall 2004

Mathematical Modelling

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Class: MWF 9:00-9:50 in Arjona 407
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and by appointment

Textbook

Elementary Mathematical Modeling: Functions and Graphs by Mary Ellen Davis and C. Henry Edwards, Prentice Hall (ISBN 0-13-096202-3)

Who Should take this course ?

The course is intended primarily for students who are prepared for college-level algebra, but do not intend to take calculus. If you do plan to take calculus, you should be in math 109Q. If you are just looking for the easiest "Q" around, math 102Q is a safer bet.

Course Outline and Grades

We will use mathematical models to gain an understanding of real world problems and situations. We will study the use of linear, quadratic, natural, exponential, logarithmic, and polynomial models. The exams are *tentatively* scheduled as follows:

- Exam I: Ch.1 and Ch.2 on September 24th (in class)
- Exam II: Ch.3 and Ch.4 on October 22nd (in class)
- Exam III: Ch.5 and Ch.6 on November 19th (in class)
- Final Exam : cumulative (i.e. Ch.1 through Ch.8) *probably* on December 13th

Each in class exam is budgeted at 45 minutes and counts for 20% of your grade, the final is on the common exam day for math classes and counts for 25%. Quizzes and homeworks will count for 15% of your final grade.

There will not be a curve, but there will be 10% extra credit on each exam. The letter grade will be assigned according to the standard table: 93-100 gives A, 90-92 gives A-, 87-89 gives B+, 83-86 gives B, 80-82 gives B-, 77-79 gives C+, 73-76 gives C, 70-72 gives C-, 67-69 gives D+, 63-66 gives D, 60-62 gives D-, and 00-59 gives F.

Notes on the Calendar

There will be no classes on September 6th (Labor Day weekend), and December 22nd, 24th and 26th (Thanksgiving Break). The last day to withdraw is September 13th and the Add/Drop deadline is November 1st.

Calculator Policy

A graphing calculator can be handy, but is not at all necessary for the course. In fact, you are encouraged to purchase a simple scientific calculator. As long as it has *sin*, *cos*, *tan*, *log* and *exp* on it, you should be fine. If you are spending more than \$20, you are probably already buying more than you need.

Class Conduct

Class atmosphere will be quite relaxed. Just a few guidelines to make sure:

- Arriving a few minutes late is tolerated as long as you make an effort to minimize the disturbance for other students.
- Eating and drinking in class should be reduced to a minimum. It is not forbidden, but please make sure that you are not disturbing others with noise and enticing aromas.
- Dozing off in an early morning class is not a cardinal sin, but be sure not to make a spectacle of yourself. It is extremely disrespectful to do this in an ostentatious manner.
- Turn off all cell phones or don't even bring them.
- If you cannot make it to class for whatever reason, make sure that you know what happened during the lecture that you missed. It is your responsibility, and nobody else's, to do so!
- If you have to leave a class early, inform your instructor in advance. It is very rude to simply walk out in the middle of a lecture.
- If you make an appointment with your instructor keep it, or at least notify your instructor a.s.a.p. that you cannot make it. You would also do this for your physician, plumber or car mechanic. Your instructor deserves the same respect.

Makeups

If you have a valid reason for a makeup exam, inform your instructor a.s.a.p. A valid reason is a medical emergency, a death in the family, and, quite frankly, very little else. In all cases, you will be expected to bring in proof.

Student Athletes

If you are a student athlete, inform your instructor a.s.a.p. of interferences with your commitments as an athlete (especially conflicts with exam dates). You will be expected to bring in a letter from the athletics department. The sooner you notify us, the better that we will be able to accommodate you.

Students with Disabilities

Inform your instructor a.s.a.p. of special needs that you may have like larger printouts of quizzes and exams or extra time on an exam. You will be expected to bring in a letter from the center for students with disabilities. The sooner you notify us, the better that we will be able to accommodate you.

Academic Integrity

A fundamental tenet of all educational institutions is academic honesty; academic work depends upon respect for and acknowledgment of the work and ideas of others. Misrepresenting someone else's work as one's own is a serious offense in any academic setting and it will not be condoned. Academic misconduct includes, but is not limited to, providing or receiving assistance in a manner not authorized by the instructor in the creation of work to be submitted for academic evaluation (e.g. papers, projects, examinations and assessments - whether online or in class); presenting, as one's own, the ideas, words or calculations of another for academic evaluation; doing unauthorized academic work for which another person will receive credit or be evaluated; using unauthorized aids in preparing work for evaluation (e.g. unauthorized formula sheets, unauthorized calculators, unauthorized programs or formulas loaded into your calculator, etc.); and presenting the same or substantially the same papers or projects in two or more courses without the explicit permission of the instructors involved. A student who knowingly assists another student in committing an act of academic misconduct shall be equally accountable for the violation, and shall be subject to the sanctions and other remedies described in The Student Code. Sanctions shall include, but are not limited to, a letter sent to the Dean of Students of the University; a grade of 0 on the assignment, quiz or exam; a grade of F for the course. It is well known that in some courses cheating is not punished as harshly as described above. This is not such a course.

Recommended Exercises

- 1.1 p. 11 # 2,3,8,11,15,16,20,21,25,28,33,36,40
- 1.2 p. 22 # 1,2,7,8,11,14-16,19,22,26,31
- 1.3 p. 37 # 1,2,5,8-10,13,16-18,21,25,26
- 1.4 p. 50 # 1,2,5,6,9,10,15

- 2.1 p. 70 # 2,5,6,9,10,15,18,21,22,29,30
- 2.2 p. 84 # 1,2,3,6,8,9,16,19,20
- 2.3 p. 96 # 1,2,9,10,17,21,22

- 3.1 p. 112 # 1-10,20,21
- 3.2 p. 125 # 1,2,6,7,11,12,16,17,26
- 3.3 p. 137 # 1-8,17,18,30
- 3.4 p. 151 # 1,2,9,10,11,15,16,21

- 4.1 p. 170 # 1,3,8,11,12,15,17,18,21
- 4.2 p. 182 # 17,18,22,25-27,29
- 4.3 p. 197 # 1-4,7,8,21,22

- 5.1 p. 218 # 1-5,11,14
- 5.2 p. 233 # 1-4,7,15,18,21
- 5.3 p. 245 # 1,2,5,6,11,12,23
- 5.4 p. 260 # 1,4,9,14,19,24

- 6.1 p. 282 # 1-4,7,11-15,18,21
- 6.2 p. 290 # 1,3,6,7,10-13

- 7.1 p. 307 # 1-5,7,14-16,29
- 7.2 p. 317 # 1,2,7,8,23

- 8.1 p. 348 # 1-5,19,22,23
- 8.2 p. 355 # 1-5,20,21