APPM 2360   Differential Equations   Spring 2009

Lecture 010, MWF 8:00–8:50 AM, ECCR 245
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Office Hours: M 9-11, W 9-10

Lecture 020, MWF 10:00–10:50 AM, ECCR 265
Gunnar Martinsson, ECOT 233, 492-2646
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Office Hours: MW 11-12, W 3-4

Lecture 030, MWF 2:00–2:50 PM, ECCR 265
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Office Hours: MW 11-12, W 3-4

Lecture 040, MWF 12:00–12:50 PM, ECCR 245
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Office Hours: M 3-5, W 5-6

What is it all about: Virtually anytime there is change in the world, differential equations can be profitably used to model what is going on. In this course we will learn a little about the black art of modeling, what it means to solve a differential equation, and about the three primary modes for obtaining solutions — analytical, geometrical and numerical.

When you leave this course you should be no longer mystified by compounded interest, or the oscillations of simple mechanical systems. You will recognize a vector field and understand how to interpret it. You may know a little about the complex behavior of simple systems that can lead to ecological disaster.

The course also introduces the basic tools of linear algebra that arise in a wide range of applications in the sciences and engineering — concepts like vectors and matrices, methods for solving linear systems, linear maps, *etc.*

Text: *Differential Equations and Linear Algebra*, by Farlow, Hall, McDill & West (2nd edition).

Course web page: http://amath.colorado.edu/courses/2360/2009Spr/ You will find useful information on the course web page, such as homework assignments and solutions, practice exams with solutions, and where to go if you are having trouble with course material (such as office hours and tutoring options).

Recitations: Recitations meet for 1 hour on Thursdays. The purpose of the recitation is partly to help you with the homework and projects. More importantly, the recitation is intended to further clarify Differential Equations concepts.

Bluebooks: Each student is required to purchase **four** 8.5×11 bluebooks and give them to the TA by the second recitation (Jan. 22). You will be penalized 5 homework points for failing to turn in your blue books on time. The books will be distributed at the exams, so please do not write **anything** (not even your name) on the books.

Homework: To do well in this course, attend the lectures, do (and understand) the homework, and ask questions. Homework will be collected **in recitation** except for midterm exam weeks when they are due at the **end** of Monday's lecture. Late homework will **not** be accepted or graded; you must show all your work in your homework. Homework problems and due dates are available on the course webpage. The problems listed are those that are to be turned in for credit; however, you are encouraged to do as many problems as necessary for you to understand the material and prepare for the exams.

Exams: There will be three unit exams and a comprehensive final. The unit exams will be given on Wednesdays (Feb. 11, March 11, April 15) from 7:00-8:30 PM. The final exam is May 6 from 7:30-10:00am. There will be **no** make-up exams or early exams. If you are ill during a unit exam, please bring a note from your doctor verifying your illness. Your course grade will then be determined by the rest of your course work. No notes, or electronic devices are allowed in the exams. A one–page (double sided) crib sheet is allowed in the exam. If you have any unavoidable schedule conflicts with the exams, including three or more final exams on the same day, you must bring this to the attention of your instructor by Friday, Jan. 30.

Projects: You will turn in three projects for this course. Projects and due dates will be posted on the course web site. You may work in groups of up to three and you may work with students in any section of this course. Only one paper copy and one electronic copy should be submitted for the whole group. All group members will receive the same grade; the instructors will not arbitrate on internal group disputes. Late projects will **not** be accepted or graded. All reports must also be submitted electronically to the AMESS (electronic submission) system (which will be linked from the course homepage). In the projects, you will investigate certain topics in differential equations in more detail, perform some of your analysis in a computer software package (Mathematica, Matlab, or MVT), and write-up of your results in a clear, cogent fashion. APPM 2460 (see below) is specifically designed to help you with the projects. You are encouraged to sign up for APPM 2460 as much of the work there will be directly relevant. Graded projects will be returned in recitation; *please mark clearly on the cover page which group member is responsible for picking up the project.*

APPM 2460 A 1 credit Pass/Fail Lab course can be taken in conjunction with 2360. In this course you will learn more about Mathematical software for visualizing and solving linear algebra problems and differential equations. Students who have not had any programming experience and/or wish to have additional help on their 2360 projects are encouraged to sign up for this Lab. There are four sections: Tuesday at 9AM, 10AM, 12PM and 1PM. Please direct questions about APPM 2460 to the coordinator, Jason Hammond (*Jason.F.Hammond@colorado.edu*).

Extra help: You are encouraged to get extra help whenever you need it. The TAs and instructors each have office hours that are posted on the webpage. You may go to any instructor's or TA's posted office hours, even if they are not your regular instructor or TA. The TAs will hold extra office hours in the computer lab during the week before each project due date. Also, the CU Residence Halls run regular Math Labs and tutoring is available through the dorms or the Engineering Peer Advocates.

Finally, review sessions will be held on Monday and Tuesday evenings, the week of each exam, and in class on the Wednesday of each exam.

Grading mistakes: If an exam or project has been incorrectly graded, you must submit a written request to have it regraded within **two weeks** of the day the exam or project was returned in class. The request must specify why there was an error in the grading; requests such as "please regrade question 3", "too many points were deducted" and "I feel I deserved more points" will not be accepted. Questions about the exams should be directed to your instructor; questions about the projects should be directed to Jason Hammond (*Jason.F.Hammond@colorado.edu*).

Dropping the course: Advice from the Dean's office is recommended before dropping any course. After Jan. 28, dropping the course is possible only with a petition approved by the Dean's office.

Grade determination: There are a total of 800 points for the course. Engineering majors must achieve a grade of C-

Exam 1	100 pts
Exam 2	100 pts
Exam 3	100 pts
Final Exam	200 pts
Homework	150 pts
Projects	150 pts

or better (C for Aerospace). If you obtain 70% of the points you will have a grade no worse than C- (if we grade on a curve, it will be to your advantage). However, in order **to attain a grade of C- or better in the course, you must achieve a grade of at least C- (i.e., 70%) on the exams (overall)**, regardless of your homework and project grades.

Academic Honesty: Students are encouraged to work in groups, however, **all work turned in must be your own**. Violation of the CU Student Honor Code `http://www.colorado.edu/academics/honorcode` or the College of Engineering's Academic Honesty Advising Guidelines will result in an overall grade of F in this course and further sanctions from the university. See also `http://ecadw.colorado.edu/engineering/students/advising.htm`.

Learning Environment: Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. See the policies at `http://www.colorado.edu/policies/classbehavior.html` and at `http://www.colorado.edu/studentaffairs/judicialaffairs/`

Disability Services: A special needs room for people with documented disabilities will be provided for each exam. If you qualify for accommodations because of a disability, you must submit a letter to the instructor as soon as possible (normally no later than Friday, Jan. 30) so that your needs may be addressed. Disability Services determines accommodations based on documented disabilities. See `http://www.colorado.edu/disabilityservices`, or contact disability services at (303)492-8671, Willard 322.

Religious Observances: We will make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, projects or homework assignments. If you have such a conflict you must submit a letter to the instructor no later than Friday, Jan. 30 so that an alternative can be devised. See full details at `http://www.colorado.edu/policies/fac_relig.html`.