

## 22M: 034 Engineering Math IV: Differential Equations

### Fall Semester 2007 Syllabus

**Class:** MWF 11:30 – 12:20, 221 MLH  
**Office Hours:** MWF 10:30 – 11:20 AM  
**E-mail Address:** [dmoreira@math.uiowa.edu](mailto:dmoreira@math.uiowa.edu)

**Instructor:** Dr. Diego Moreira  
**Office:** B1G MHL  
**Phone:** (319) 335-0755

**Goals and objectives of the course:** This course will give you a basic knowledge about differential equations. The main goal is to present basic methods and techniques to solve certain classes of first and second order ordinary differential equations. The course will also cover some basic theoretical and qualitative analysis of solutions to ODEs. The use of differential equations to deal with some concrete problems will be presented. The expectation is that by the end of the semester you should be familiar and comfortable in solving and analyzing these basic classes of ODEs.

#### **Prerequisites:**

- 22M:032 Engineer Math II: Multi-Variable Calculus
- 22M:033 Engineer Math III: Matrix Algebra

**Textbook:** *Elementary Differential Equations and Boundary Value Problems, Eighth Edition* by William E. Boyce and Richard C. DiPrima, John Wiley & Sons.

**Other Course Materials:** Occasional handouts to complement theory in the book.

**Course Webpage:** Assignments and other information about the course will be given at <http://www.math.uiowa.edu/~dmoreira>. Look in the teaching section. Students are responsible for checking regularly the course webpage

**Course Outline:** We expect to cover the following chapters from the book

- a. Chapter 1 – Introduction
- b. Chapter 2 – First Order Differential Equations
- c. Chapter 3 – Second Order Linear Equations
- d. Chapter 5 – Series Solutions of Second Order Linear Equations
- e. Chapter 6 - Laplace Transform
- f. Chapter 7 – Systems of First Order Linear Equations

This plan course may be modified during the semester. Such modifications will be announced in advance during class periods and in the course webpage. It is the student responsibility to keep track of such changes.

**Class Procedures:** It is strongly advised to read the material to be discussed before coming to class. Therefore, if there is a difficult point, you will know beforehand where it arises. This way, you can benefit from the lecture more effectively.

**Grading Policy:** For a solution to a problem in a test or in the homework to be considered perfect it is not only required the answer to be correct, but also that an outline of the reasoning or calculation leading to it be given as well, and that it be correct. In many cases a correct answer alone will give you a failing grade.

**Homework:** The HW will be assigned weekly on Wednesdays and they are due in class the following Wednesday. Late assignments will not be accepted **unless** by a documented medical or religious excuse. The two lowest homework grades will be dropped. Presentation of your results is very important. Scratch paper will be not accepted. In order to facilitate and make the grading process more effective, please turn in your HW in a clean and organized way

**Exams:** There will be three in-class midterm exams. There will also be a comprehensive final exam. The schedule is the following:

- Midterm #1 --- 09/28/2007 (Friday)
- Midterm #2 --- 10/31/2007 (Wednesday)
- Midterm #3 --- 11/30/2007 (Friday)
- Final Exam --- 12/17/2007 (Monday), 2:15 pm.

The Midterm exams will have duration of 50 minutes and they will take place during the regular class period. The final exam is scheduled by the university (as above) and will have 2 hours duration. Only under exceptional circumstances will a student be permitted to change time of the examinations. **No calculator will be allowed during the tests.**

**Grading Procedures:** The final grade will be based on three midterms tests, homework and final exam as follows:

- a. Each Midterm exam will account for 15% of the course grade;
- b. Homework assignments will account 20% of the course grade;
- c. The final exam will account for 35% of the course grade;

The table below will be used for grades. It provides the minimum percentages for the grades

50	53	57	60	65	70	75	80	85	90	$\geq 97$
D	D+	C-	C	C+	B-	B	B+	A-	A	A+

Eventually, if necessary, an average grading (curving) will be used for the grades.

**Attendance:** Regular attendance will be expected. Poor attendance may result in lowering your final grade. If you miss a class, you are still responsible for the material discussed in class and for all the announcements made in class. You will be required to sign an attendance sheet for the exams.

Notes to Student: The Department of Mathematics has offices in 14 MLH. To make an appointment to speak with the chair of the department, call 335-0714 or contact the Departmental Secretary in 14 MLH.

**Academic Fraud:** Plagiarism and any other activities that result in a student presenting work that is not his or her own are academic fraud. Academic fraud is reported to the departmental DEO and then to the Associate Dean for Academic Programs and Services in the College of Liberal Arts and Sciences.  
[www.clas.uiowa.edu/students/academic\\_handbook/ix.shtml](http://www.clas.uiowa.edu/students/academic_handbook/ix.shtml)

**Making a Suggestion or a Complaint:** Students have the right to make suggestions or complaints and should first visit with the instructor, then with the course supervisor if appropriate and next with the departmental DEO. All complaints must be made within six months of the incident. [www.clas.uiowa.edu/students/academic\\_handbook/ix.shtml#5](http://www.clas.uiowa.edu/students/academic_handbook/ix.shtml#5)

**Accommodations for Disabilities:** A student seeking academic accommodations first must register with Student Disability Services and then meet with a SDS counselor who determines eligibility for services. A student approved for accommodations should meet privately with the course instructor to arrange particular accommodations. See [www.uiowa.edu/~sds/](http://www.uiowa.edu/~sds/)

**Understanding Sexual Harassment:** Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. Visit [www.sexualharassment.uiowa.edu/](http://www.sexualharassment.uiowa.edu/) for definitions, assistance, and the full policy.

**Administrative Home of the Course:** The administrative home of this course is the College of Liberal Arts and Sciences, which governs academic matters relating to the course such as the add / drop deadlines, the second-grade-only option, issues concerning academic fraud or academic probation, and how credits are applied for various CLAS requirements. Please keep in mind that different colleges might have different policies. If you have questions about these or other CLAS policies, visit your academic advisor or 120 Schaeffer Hall and speak with the staff. The CLAS Academic Handbook is another useful source of information on CLAS academic policy:  
[www.clas.uiowa.edu/students/academic\\_handbook/index.shtml](http://www.clas.uiowa.edu/students/academic_handbook/index.shtml)