MATH 302-011 Ordinary Differential Equations
MWF 10:10–11, EWG 207 Spring 2004
Web Page: http://www.math.udel.edu/~edwards/download/m302/s04home.html

Instructor: Prof. D. A. Edwards Office Hours: T 9:30–10:30 F 12:15–1:15, or by appointment
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Introduction

Welcome to Ordinary Differential Equations! Since many of you are not mathematics majors, the focus of this course will be on the *applications* of ordinary differential equations, rather than the *theory* behind it (except when explaining the theory will enhance your understanding of the concepts). I will be passing around a sheet today asking each of you what your major is. Then I will try to present examples from those subjects so that you can see how ODEs are applied to your area of interest.

The text for this course is *Differential Equations and Boundary Value Problems: Computing and Modeling,* 3rd ed., by Edwards and Penney. **The text is required**, since you will be assigned both reading and homework problems from the books. In addition, I may also be lecturing from various other sources, so class attendance and participation is necessary for successful mastery of the material.

If you have any questions, contact me during my office hours or make an appointment. **Extra copies of handouts are available at the Web page listed above.**

Please turn off portable phones, pagers, etc. before entering the classroom. You may bring a tape recorder with you to class, if you wish; however, unattended tape recorders will not be permitted. There will be no makeup classes for snow days.

The Computing Environment

In this course you will continue your usage of Maple to assist you in solving problems and visualizing concepts. In class we will be using the Linux version of Maple 9. For best results, you should use Maple 9 as well. You will be asked to use Maple to solve certain homework and exam problems. For homework assignments, you may use whatever Maple platform (*e.g.*, Mac OS, Windows, Linux, or UNIX) that you wish. More information on this subject appears on the first homework assignment, which is attached.

In order to access electronic files which I may post, the computers in this room have a Web browser on them. However, this is not a free hour for you to surf the Web using the mathematics department machines. Doing so will distract you and others from my presentation of the material. If you wish to surf the Web, please do so at some other location.

Assessment

Your grade for the course will be determined in two stages. First your *raw score* will be calculated from your exam scores, with the final counting as two exams. However, if including your homework scores will improve your score, I will let them count for 20% of your grade. Therefore, doing the homework *can only help* your grade. (In the past, it has been my experience that the vast majority of students improve their grades significantly by using their homework scores.) Then each of the raw scores will be scaled to determine final grades.

Homework

Homework will be distributed on Wednesdays during lecture (the first assignment is attached to this introduction), and it will be due at the beginning of class the following Wednesday. The homework will cover material up through the Friday after it is distributed. **ABSOLUTELY NO LATE HOMEWORK WILL BE ACCEPTED!** If you must miss a due date because of University business, it is your responsibility to make sure the homework gets to me ***before*** the due date. Since mathematics is a subject where the material for one section builds on the section before, it is critical that you keep up to date on the homework: hence the stringent policy. However, to calculate your semester-long homework average, I will drop your two lowest homework scores. Therefore, low scores for assignments where you were pressed for time can be erased as long as you don't have too many of them.

Though you may not copy directly from another's paper or use someone else's ideas as your own, I encourage you to discuss the homework problems with your classmates. Any scientific endeavor is rarely done in a vacuum; therefore it is to your advantage to learn the benefits of collaborating. Model homework solutions will be placed on reserve in Morris after the assignment is due. Hopefully these will assist you in learning the material.

Homework assignments should be folded like a book with the following information on the "front cover:"

Name
Math 302-011—Edwards
Assignment Number
Date

You will turn in your assignments this way so that I may put your grade on the inside, thus ensuring your privacy. I will make every effort to ensure that your graded homework is returned in a timely manner.

Each homework assignment will consist of ten questions. Of those, some randomly selected problems will *not* be graded. For these questions, you will receive one point if you attempted the problem. For the problems that will be graded, you may receive up to four points, depending on the completeness and accuracy of your solution.

Obviously, I can assign only a select few homework problems to be turned in. Therefore, I choose ones which, if mastered, show adequate understanding of the material. The examinations will largely be based on the material covered in the homework assignments. However, you are encouraged to try other problems in the book for practice.

Electronic Communication

The Web page for this course is listed on the top of the first page. There you will find copies of handouts available for downloading, as well as any important announcements (corrections to typographical errors, etc.). Also at the URL

`http://www.math.udel.edu/~edwards/download/suggest.html`

you will find an anonymous suggestion box.

Particularly important messages regarding this course may also be e-mailed to you directly. In addition, you may send me e-mail with questions regarding the course, homework assignments, etc. For more information on how to use electronic resources, contact the Help Center (x6000).

Exams

There will be four exams in the course; the dates are listed on the attached schedule. **NO MAKEUP EXAMS WILL BE GIVEN!** The first three will be 45 minutes long and will take place during a regular lecture period. The final exam will be two hours long. Please be prepared to show picture identification in order to enter the examination room. Attached to each examination will be a course evaluation form, so that I may receive your suggestions for how the course could be improved. These forms will be seen only by me, so if you have comments that you wish the department to hear, please contact them directly.

When the exams are returned, they will have a numerical score and a letter grade on them. The numerical score is your score for the exam; *the letter grade is your grade for the course* to that point, including all homework scores.

Tentative Schedule

Note: This is only a tentative schedule; there may be deviations from it.

February 11–13: Sections 1.1, 1.3–1.5
- February 11: Homework 1 distributed

week of February 16: Sections 1.5, 2.1, 2.4, 2.5, 3.1
- February 18: Homework 1 due; homework 2 distributed

week of February 23: Sections 3.1–3.3
- February 25: Homework 2 due; homework 3 distributed

week of March 1: Sections 3.3, 3.4
- March 3: Homework 3 due; homework 4 distributed

week of March 8: Sections 3.4, 3.5
- **March 10: Exam I** (covers chapters 1, 2, sections 3.1–3.3)

week of March 15: Sections 3.5, 3.7, 4.1
- March 17: Homework 4 due; homework 5 distributed

week of March 22: Spring Recess

week of March 29: Sections 4.1, 5.1, 5.2, 6.1
- March 31: Homework 5 due; homework 6 distributed

week of April 5: Sections 5.2, 5.4, 5.6, 6.1
- April 7: Homework 6 due; homework 7 distributed
- **April 12: Exam II** (covers sections 3.4–3.6, 4.1, 5.2, 6.1)

April 14–16: Sections 5.6, 7.1, 7.2

week of April 19: Sections 7.2–7.6
- April 21: Homework 7 due; homework 8 distributed

week of April 26: Sections 7.6–8.3
- April 28: Homework 8 due; homework 9 distributed

May 3–5: Section 8.3
- **May 7: Exam III** (covers chapter 7, sections 5.2, 5.4, 5.6, 6.1, 8.1, 8.2)

week of May 10: Sections 8.3–8.5, 9.1, 9.2, 9.5
- May 12: Homework 9 due; homework 10 distributed

May 17: Sections 9.1, 9.2
- May 19: Homework 10 due; supplemental study problems distributed

May 19: Formal review session

May 26: Informal review session
- **May 28, 1–3: Final Exam** (covers entire class, but especially sections 8.3–8.5, 9.1, 9.2, 9.5)