MATH 275
CLASS SYLLABUS Spring 2013

Course: Ordinary Differential Equations
Section Number 3360, TTH 3:35-5:00 p.m.
CMS room 29

Instructor: Dr. R. L. Smazenka
Office Hours: TTH: 1:00-3:00 p.m.
Or by appointment
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Text: **Differential Equations with Modeling Applications**, 9th edition
Dennis G. Zill, author

Important Dates: Last day to drop without a "W": Monday, 2-18-13
Last day to drop with a "W": Friday, 3-3-13 (in person)
Sunday May 5 (internet)
Date of Final: Tuesday, May 28, 2012, 5:30-7:30 PM

Course Outline
We will cover most of the first eight chapters of the textbook. After introducing some basic definitions we begin by treating the cases of separable and exact equations. Solutions by numerical methods and substitution are also covered. A brief introduction to qualitative analysis for autonomous equations using phase portraits is given. Selected first order linear and nonlinear models are covered next. We next treat higher order linear initial-value and boundary-value problems. Methods here include reduction of order, undetermined coefficients, and variation of parameters. Solving a system of such equations is introduced and the Cauchy-Euler equation is treated. Models for both damped and undamped spring-mass systems are studied next. Series solutions about both ordinary and singular points are covered next. We next develop the Laplace transform and apply this technique to equations with only piecewise continuous input functions. Our last topic introduces solutions of systems of linear differential equations.
I personally feel that success in more advanced mathematics courses depends to a large extent on a basic understanding of mathematical logic. The ability to read and understand theorems and definitions and follow a proof requires that the student be able to translate a statement into a proper logical proposition, understand when the proposition is true or false, and consider logically equivalent propositions. For this reason I will introduce these topics as they arise and are related to topics from the textbook.

Homework and Exams
Homework will be assigned at each class meeting and previously assigned work will be discussed. This homework will not be collected nor graded. There will be nine short quizzes. No make-up quizzes will be offered however I will drop your lowest two quiz scores. Each quiz will be taken from the homework exercises assigned since the previous quiz. These quizzes will count as 10% of your grade. Success in this course strongly depends on diligently completing all homework in a timely fashion. Doing so will help ensure your success on the quizzes and prepare you for the exams and final. I cannot stress this last point enough! In addition to the quizzes we will have four exams and a comprehensive final. No make-up exams will be given. I will replace the lowest exam score with the score from the final exam. Successful students should plan to spend at least 4 hours of study outside of class for each hour of discussion. This translates into a minimum of 12 additional hours per week.

Prepare for the Lecture: The textbook is very good with appropriate level of mathematical rigor. I strongly encourage you to read the text carefully. The lectures are designed as a supplement to and not an alternative for the textbook. Read the lecture topics before you come to class. All topics are listed below on a lecture by lecture schedule. Use it to be prepared.

Class comportment
All students are expected to arrive on time. Late arrivals are disruptive to both the lecturer and students. Once you are seated, refrain from leaving your seat until class is over since such comings and goings are disruptive. Students must turn off all pagers and cell phones while in class. Students are encouraged to ask questions and make comments on the lecture material. This should be done in a courteous manner by raising one's hand and being recognized. Side conversations between students that disrupt the flow of the lecture will not be tolerated. It is the student's responsibility to manage his or her academic workload. Should a student decide to stop attending class it is their responsibility to drop the class. All students appearing on the grade roster will receive a grade regardless of whether they are attending classes or not.

Grading
Your final grade is based on the homework and exams with percentage contribution to your grade as follows.

Quizzes (Best 7 of 9)	10 %
Exams	65 %
Final	25 %

Schedule Math 275
Spring 2013

Week	Date	Tuesday	Thursday
1	February 5	1.1 – 1.2	2.1-2.2
2	February 12	2.2 – 2.3 **Quiz 1**	2.4-2.5
3	February 19	2.5, 1.3 **Quiz 2**	3.1-3.3
4	February 26	4.1 Exam 1 Review	**Exam Ch 1, 2, 3**
5	March 5	4.1 **Quiz 3**	4.1-4.3
6	March 12	4.3, 4.5 **Quiz 4**	4.5-4.6
7	March 19	4.6-4.7 **Quiz 5**	5.1 Exam 2 Review
8	March 26	**Exam Ch 4**	**No Class** Non-Instruction Day
9	April 2	**Spring Break** **No Class**	**Spring Break** **No Class**
10	April 9	5.2-5.3	5.3, 6.1
11	April 16	6.1 **Quiz 6**	6.1-6.2
12	April 23	7.1 Exam 3 Review	**Exam Ch 5, 6**
13	April 30	7.1-7.2 **Quiz 7**	Appendix II
14	May 7	Appendix II 8.1 **Quiz 8**	8.1-8.2
15	May 14	8.2-8.3 **Quiz 9**	8.3 Exam 4 Review
16	May 21	**Exam Ch 7, 8**	**Final Exam Review**
17	May 28	**Final exam** 5:30-7:30 pm	

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Course Objectives

1. Classify differential equations; solve initial values problems.
2. Solve differential equations by separation of variables, by substitution and numerical methods.
3. Solve linear and nonlinear equations and systems; solve modeling problems.
4. Solve higher order differential equations; solve equations with constant or variable coefficients; solve equations using the Cauchy-Euler method.
5. Solve linear and non-linear boundary value problems.
6. Solve linear equations by power series about ordinary and singular points.
7. Determine Laplace transforms and their inverses; solve differential equations using Laplace transforms and translation theorem.
8. Solve homogenous linear first-order systems.

Student Learning Outcomes
Upon successful completion of the course students should be able to:

1. Formulate an appropriate differential equation to model and solve applied problems.

2. Solve higher-order constant-coefficient linear differential equations and systems of differential equations using the method of undetermined coefficients.

3. Find Laplace transforms and inverse transforms, and apply these to solve differential equations.

4. Apply power series methods to find solutions of linear differential equations.