University of Southern California
Department of Mathematics

MATH 245 Mathematics of Physics and Engineering I
Spring 2012

Lectures:	MWF 10:00-10:50 am in MHP 105
Instructor:	Konstantin Zuev
Office:	KAP 424A
Email:	kzuev@usc.edu (please include "245" in the subject line)
Phone:	(213) 740-2393
Office Hours:	MF 1:30-2:30 pm, W 2:30-3:30, or by appointment
Discussions:	TTh 8:00-8:50 am, 9:00-9:50 am, 10:00-10:50 am in KAP 159
Teaching Assistant:	Andrew Williams

Course Description

Differential equations are used in all fields of science and engineering. The main goal of this course is to provide an introduction to some fundamental properties of differential equations, and to present some of the main methods for finding their solutions. Topics will include: first-order differential equations; second-order linear differential equations; determinants and matrices; systems of linear differential equations; Laplace transforms.

Prerequisites

MATH 226 Calculus III

Textbooks

J.R. Brannan and W.E. Boyce, *Differential Equations: An Introduction to Modern Methods and Applications*, 2nd ed., Wiley, 2011.

Course Plan

The following is a tentative outline of the material to be covered this term.

Sections	Topic	No. of Lectures
§ 1.1,1.2,1.4	Introduction	2
§ 2.1 – 2.5	First order differential equations	6
§ 3.1-3.6	Systems of two first order equations	6
§ 4.1 – 4.7	Second order linear equations	8
§ 6.1 – 6.6	Systems of first order linear equations	7
§ 5.1-5.8	The Laplace transform	8
§ 7.1 – 7.3, 7.5	Nonlinear Differential Equations	4

Grading

Quizzes:	10%
First Midterm:	25%
Second Midterm:	25%
Final:	40%

Homework

Suggested homework problems will be posted on the course website after each lecture. These problems will be assigned but not collected for grading. Homework is considered to be a vital part of the learning experience in the class, and is of crucial importance to successful completion of the course. A respectable performance on quizzes and exams

can be realized by all students if attention and energy are given to the timely completion of assigned homework problems.

Quizzes

A quiz will be given each week on Tuesday, except for the first week of class, and for the two weeks when midterms are held. The quiz problems will be similar to homework problems assigned in the previous week. For example, the quiz problems on Jan 17 will be similar to homework problems assigned on Jan 9, 11, and 13. The two lowest quiz grades will be dropped in the final grade calculations. All quizzes are closed-book and no calculators are allowed or needed.

Midterm Exams

There will be two (one hour) midterm exams: Monday, February 13 (exam 1) and Monday, March 26 (exam 2). The 2nd exam will cover material after the 1st exam. Both exams will be given in regular class time. The place will be announced later. Both exams are closed-book. No calculators are allowed or needed.

Final Exam

The final exam will be comprehensive and it will be held at the time specified in the University Schedule of Classes: Monday, May 7, 8-10am, location to be announced. The final exam is closed-book and no calculators are allowed or needed.

Important Dates

HW:	Weekly on Mondays, Wednesdays, and Fridays
Quizzes:	Jan 18, 24, 31, Feb 7, 21, 28, Mar 6, 20, Apr 3, 10, 17, 24
First Midterm:	Monday, February 13
Second Midterm:	Monday, March 26
Final:	Monday, May 7, 8-10am

Expectations

Official announcements, homework assignments, and midterm solutions will be posted on the course website. You are expected to check the course website on a regular basis. You are encouraged to read the appropriate sections of the textbook in advance and discuss the homework assignments with other students.

Behavior

Behavior that persistently or grossly interferes with classroom activities is considered disruptive behavior and may be subject to disciplinary action. Such behavior inhibits other students' ability to learn and an instructor's ability to teach. A student responsible for disruptive behavior may be required to leave class pending discussion and resolution of the problem and may be reported to the Office of Student Judicial Affairs for disciplinary action. In particular, the use of cell phones during class or conversation is disruptive behavior.

Academic Integrity

All students are responsible for maintaining standards of academic integrity. The university regards cheating as a very serious issue and recommends F in the course for any violation. In particular, collaboration, use of notes, or any electronic devices during quizzes, midterms or the final are strictly prohibited.

Useful Links

Course website:
http://www-bcf.usc.edu/~kzuev/teaching/2012Spring/Math245.html
Grades will be posted on: https://blackboard.usc.edu/

This syllabus is not a contract, and the Instructor reserves the right to make some changes during the semester.