Ordinary Differential Equations
Math 1270 Winter 2010, CRN 14004

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Course Information

- **Classes**
  This class is Mathematics 1270, CRN 14004, Differential Equations.
  The classes are in Thackeray 627, Tuesdays and Thursdays 7.20-8.35pm.
  The first class is Thursday January 7th, 2010.
  The last class is Thursday April 29th, 2010.

- **Instructor** George Sparling
  Office 609 Thackeray
  Text/Phone 1-412-576-1429

- **e-mail** gnilraps@gmail.com

- **webpage** http://www.math.pitt.edu/ sparling.

- **Office hours**
  For the period 19/1/10-5/3/10, Mondays 3-4pm, Tuesdays and Thursdays, 4.15pm-5.55pm
  In the Math Lounge, 705 Thackeray, or by appointment.

- **Grader**
  The grader for the homework is Xuanzi Tong, GSCC127, xut1@pitt.edu

Class Schedule

- Every second week, there will be a quiz or an exam.
- Quizzes and exams will be open book.
- Every week there will be a homework due.
- Homeworks will be six problems each at five points.
- **Schedule**

Thursday January 7th	Homework 1 assigned
Thursday January 14th	Homework 1 due, Homework 2 assigned
Thursday January 21st	Homework 2 due, Homework 3 assigned
	Quiz 1
Thursday January 28th	Homework 3 due, Homework 4 assigned
Thursday February 4th	Homework 4 due, Homework 5 assigned
	Quiz 2
Thursday February 11th	Homework 5 due, Homework 6 assigned
Thursday February 18th	Homework 6 due
	Exam 1
Thursday February 25th	Homework 7 due, Homework 8 assigned
Thursday March 4th	Homework 7 due, Homework 8 assigned
	Quiz 3
Thursday March 18th	Homework 8 due, Homework 9 assigned
Thursday March 25th	Homework 9 due, Homework 10 assigned
	Quiz 4
Thursday April 1st	Homework 10 due, Homework 11 assigned
Thursday April 8th	Homework 11 due, Homework 12 assigned
	Exam 2
Thursday April 15th	Homework 11 due, Homework 12 assigned
Thursday April 22nd	Homework 12 due, Homework 13 assigned
	Quiz 5
Thursday April 29th	Homework 13 due
	Final Exam in class, Thackeray 627, 6.00pm

Grading

There are thirteen homeworks, five quizzes, two midterm exams and a final exam during the term.

Grading Scheme

Best 10 homeworks at 30 points each	300pts
Best 4 quizzes at 40 points each	160pts
Two midterm examination at 120 points each	240pts
One final examination at 200 points	200pts
Maximum Possible Score	**900pts**

Grading is curved and based on your total score only, provided you pass the final.

If you pass the final, your grade will be in the A+ to B- range, unless your other work is severely lacking.
If you fail the final, your grade will be in the range C+ to F.

Textbook and Syllabus

- **Text**
  The text for this course is:
  Differential Equations with Boundary Value Problems, by John Polking, Albert Boggess and David Arnold
  Second edition ISBN 0-13-186236-7.

Syllabus; Problem Sets

Week 1 to 1/7
Modeling; 1st order equations

$1.1 : 1 - 11$
$2.1 : 1 - 6, 12 - 15$

Week 2 to 1/14
Variable Separation; Plotting

$2.2 : 1 - 18, 33 - 35$
$2.3 : 8 - 10$
$2.4 : 1 - 21$
$2.5 : 1 - 10$

Week 3 to 1/21
Modeling; DFIELD

$3.1 : 10 - 13,$
$3.3 : 3 - 5$
$3.4 : 1 - 10$

Week 4 to 1/28
Second order equations

$4.1 : 1 - 20$
$4.3 : 1 - 36$
$4.4 : 1 - 12$

Week 5 to 2/4
Second order equations

$4.5 : 1 - 29$
$4.6 : 1 - 10$
$4.7 : 3 - 6, 12 - 15$

Week 6 to 2/11
Numerical methods

$6.1 : 1 - 5$

Week 7 to 2/18
Systems

$8.1 : 1 - 16$
$8.2 : 13 - 16$ (use PPLANE7)
$8.3 : 1 - 6$

Week 8 to 2/25
Constant coefficient systems

$9.1 : 1 - 8, 16 - 23$
$9.2 : 1 - 27, 58 - 59$
$9.3 : 1 - 23$

Week 9 to 3/4
Geometry of non-linear systems

$10.1 : 1 - 18$
$10.2 : 1 - 4$
$10.3 : 1 - 16$

Week 10 to 3/18
Laplace transforms

$10.5 : 1 - 24$
$5.1 : 1 - 29$
$5.2 : 1 - 41$

Week 11 to 3/25
Laplace Transforms

$5.3 : 1 - 36$
$5.4 : 1 - 26$
$5.5 : 1 - 25$

Week 12 to 4/1
Laplace Transforms

$5.6 : 1 - 9$

Week 13 to 4/8
Fourier series

$12.1 : 1 - 17$
$12.3 : 1 - 32$

Week 14 to 4/15
Heat equation

$13.1 : 1 - 9$
$13.2 : 1 - 18$

Week 15 to 4/22
Review

Week 16 to 4/29
Review