

## Math 2413 Information



**Professor:** John Etnyre  
**Office:** Skiles 163  
**Phone:** 404.385.6760  
**Fax:** 404.894.4409  
**e-mail:** etnyre "at" math.gatech.edu

**Office Hours:** To be announced.

**Lectures:** MWF 9:05-9:55 in Skiles 108B

**Recitation Sessions:** TTh 9:05-9:55 in Skiles 108A

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### Course Assistant

Name: Nate Berglund  
Office: Skiles 142  
Phone: 404.894.6695  
e-mail: berglund "at" math.gatech.edu  
Office Hours: To Be Announced.

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### Textbook

The textbook for the course is "*Differential Equations and Boundary Value Problems: Computing and Modeling*" (third edition), by Edwards and Penney. We will cover most of chapters 1-3, and 5-8. I view the book as a good reference and some of the homework problems will be taken from the book, but the tests will be based on what is covered in class and on the homework assignments.

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### Course Outline

1. 1st Order ODE's
  1. Easiest Equations
  2. Separable Equations
  3. Linear Equations
  4. Substitution
  5. Exact Equations
  6. Slope Fields (Geometric View of ODE's)
  7. Autonomous Equations
  8. Existence and Uniqueness of Solutions
  9. Approximations Techniques
2. Linear Equations
  1. Review of Linear Algebra
  2. Learn ODE's
  3. Constant Coefficient ODE's
  4. Nonhomogenous ODE's
3. Linear Systems
  1. Existence and Uniqueness
  2. More Linear Algebra

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  3. Systems of ODE's
  4. Incomplete Eigenvalues
  5. Fundamental Solutions
  6. Nonhomogeneous systems
  4. Nonlinear Systems
  5. Laplace Transforms
  6. Power Series Solutions
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## Grading Policy

The course grade will be based on the following.

Homework: 15%

Two Midterms: 25% each

Final Exam: 35%

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## Homework Policy

Each Tuesday I will assign several [homework](#) problems. They will be due the following Tuesday by 5:00 pm and should be turned in to your TA.

**No late homeworks will be accepted.**

Homework counts for 15% of the final grade. The lowest homework score will be dropped. This is intended to take care of extraordinary circumstances: I was really sick; the dog ate my homework; I was abducted by aliens. So you get one break, but that's it.

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## Exam Information

Midterm 1 is **tentatively** scheduled for Monday, September 26

Midterm 2 is **tentatively** scheduled for Wednesday, November 2

Final Exam is **tentatively** scheduled for Wednesday, December 14 from 8:00 till 10:50.

Showing up for the exams is the most basic requirement of the course. If there is an absolutely unavoidable conflict, you may discuss the matter with me, but you must do so well **in advance**.

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Honors Differential Equations, Math 2413  
Course Syllabus  
Spring Semester 2001

Instructor: Andrzej Swiech

Lectures: MWF 12-1 PM, Skiles 271

Office: Skiles 266

Office Hours: M 2-3 PM, WF 1-2 PM

Phone: (404) 894-2705

E-mail: swiech@math.gatech.edu

Course web page: <http://www.math.gatech.edu/~swiech/2413s01.html>

TA: Bryan Rasmussen, Skiles 142, (404)-894-6434, bryanras@math.gatech.edu

Recitations: TR 12-1 PM, Skiles 171,

Textbook: Blanchard, Devaney, and Hall **Differential Equations**.

Course Description: The course introduces the students to the basic theory of differential equations. The emphasis is put on formulation of differential equations and interpretation of their solutions. In particular we will discuss modeling of physical phenomena by differential equations, numerical methods, and nonlinear equations. We will cover the following topics:

1. First order differential equations, Chapter 1, 11 lectures.
2. Systems of first order equations, Chapter 2, 7 lectures.
3. Linear autonomous systems of two equations, Chapter 3, 10 lectures.
4. Non-homogeneous and non-autonomous equations; forcing and resonance, Chapter 4, 5 lectures.
5. Nonlinear systems, Chapter 5, 6 lectures.
6. Laplace transforms, Chapter 6, 4 lectures.

Grading: There will be three tests (January 26, February 26, and April 2), homework assignments, one lab project and the final exam. Your final score will be scaled to 100% and calculated according to the following rule: Homework will count for 10% of the final score, computer assignment for 5%, each test for 15%, and the final exam for 40%. You will get an A, respectively B, C, and D if your final score is greater than 88%, respectively 75%, 62%, and 50%. These requirements may be lowered if the overall average score of the class is low (i.e. your grade may get curved up). Improvement will be taken into account in assigning final grades.

Lab project: You will be required to do a lab project. You can use MAPLE or another computer algebra system to work on it. Further details about the project will be given later. It will be due on April 20. The School of Mathematics Computing Lab is located in Skiles 156 and is open to all students. The software available

in the Computing Lab includes Mathematica 4.0, Maple V Release 4, and Matlab 5.3.0.10183.

Homework: Homework will be collected every other week on Thursdays in recitations and will be graded by the TA. You are required to do all assigned problems however only selected problems will be graded. Please check the news and announcements section of the course web page for the precise information about what is due and when. Late homework will not be accepted however the worst homework score will be dropped so you can even miss one assignment.