

## Math 0290-1060 (Spring 2020; 3 credits)

### Differential Equations

Lectures: MoWeFr 11:00-11:50 am, Lawrence Hall 207

---

#### Course Information

- Instructor: Dr. Gregory Handy (he/him/his pronouns)
  - Email Address: gregoryhandy@pitt.edu
  - Office Hours: TBD and by appointment, Thackeray Hall 503
  - Textbook: *Differential Equations with Boundary Value Problems* (2nd Edition)  
C. Polking, A. Boggess, & D. Arnold  
ISBN: 9780131862364
  - Class website: **Blackboard** will be used regularly (posting homework, grades, etc.)
- 

#### Course Goals and Description:

The theory of differential equations is an important branch of mathematics. Differential equations have a rich mathematical formalization, as well as a very successful history of being applied to important problems in physics, chemistry, engineering, and biology. This course will introduce primarily linear, first and second order differential equations. Solution techniques for separable equations, homogeneous and inhomogeneous equations, as well as an intuition for modeling-based applications will be presented. The application of Laplace transforms to differential equations, systems of linear differential equations, linearization of nonlinear systems, and phase plane methods will be introduced. Fourier series and their application to simple partial differential equations will be treated. The idea of approximating and visualizing solutions using a computer, such as with MATLAB, will be introduced early in the term and students are expected to use MATLAB as a resource in their work for this course.

---

#### MATLAB:

Computers are often used to study solutions to differential equations in physics, biology, chemistry, and engineering. Right from the outset, we will discuss how MATLAB can help us to visualize the behavior of solutions of differential equations and to approximate these solutions and we will give an introduction to numerical solution techniques. MATLAB will not be available on quizzes/exams, however, and will not factor heavily into statements of homework problems; mostly, it is a tool that can help you understand the material better and check your solutions.

---

#### Grading Policy:

- Homework (25%; best 9 out of 11 assignments):
  - There will be weekly homework assignments. The assignments will be posted on **Blackboard each Friday** and will be **due on the following Friday at the beginning of class**. Be sure to show all work.
  - Students are welcome to work together on homework. However, each student must turn in his or her own assignments, and no copying from another student's work is permitted.
  - Optional problems will also be posted, and are highly recommended.
  - Solutions to the homework will be posted online the day they are due, and therefore, late homeworks will not be accepted.
  - Please feel free to come ask me questions about homework and other course material during office hours or to contact me to schedule alternative appointments. **Your questions are always welcome.**

- Two In-class Exams ( $2 \times 20 = 40\%$  total)
  - Students will have two in-class exams, fifty minutes in length, which will make up a total of 40% of your course grade.
  - The dates of the exams are **Friday, February 21 and Friday, April 3.**
  - Make-up midterms will not be offered unless the student notifies me before the day of the exam that he/she will be unable to attend and provides documented proof of significant illness, etc.
- Final Exam (35%)
  - The cumulative, departmental final exam will be given on **Thursday, April 23, 10:00 a.m.-11:50 a.m.** in Lawrence Hall 207.
  - You will not be allowed to make-up the final exam with the exception of truly extreme circumstances.
  - According to department policy, your course grade will not exceed your final exam grade by more than one letter grade. So if you receive a C on the final, your final grade in the course will be at most a B.
    - \* I will also allow for the reverse: your grade in the course will not be less than your final exam grade by more than one letter. So if you receive an A- on the final, your final grade in the course will be at least a B-.
    - \* Keep in mind that the first of these occurs more often than the second, so it is not recommended to blow off the homework and midterms expecting to ace the final!
- Grading Scale (may be adjusted to benefit all students of the class)

A+	A	A-	B+	B	B-	C+	C
> 97%	(97-93]%	(93-90]%	(90-87]%	(87-83]%	(83-80]%	(80-77]%	(77-73]%
C-	D+	D	D-	F			
(73-70]%	(70-67]%	(67-63]%	(63-60]%	< 60%			

**Academic integrity:** The University of Pittsburgh Academic Integrity Code is available at: <https://www.as.pitt.edu/faculty/policies-and-procedures/academic-integrity-code>. The code states that “A student has an obligation to exhibit honesty and to respect the ethical standards of the academy in carrying out his or her academic assignments.” The website lists examples of actions that violate this code. Students are expected to adhere to the Academic Integrity Code, and violations of the code will be dealt with seriously.

**ADA Statement:** The University of Pittsburgh seeks to provide equal access to its programs, services and activities for people with disabilities. If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and Office of Disability Resources and Services (visiting <https://www.studentaffairs.pitt.edu/drs/students/> or calling 412-648-7890) as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course. Please note: Requests for academic accommodations must be made for each term.

**Important Dates:**

Classes begin ..... Monday, January 6  
 Spring Term add/drop period ends ..... Friday, January 17  
 Deadline to submit Monitored Withdrawal forms ..... Friday, March 6  
 Final Exam Conflict Form Submission Deadline ..... Friday, March 6  
 Classes end ..... Friday, April 17  
 Final Exam ..... Thursday, April 23

**Disclaimer:** This syllabus has been created as a preview to the course and I have tried to make it as accurate as possible. However, I reserve the right to make fair changes to the policies above.