Course: Mat 413: Ordinary Differential Equations
Room: SB 306A
Schedule: WF 11:00 - 12:15
Instructor: L. Pedro Poitevin, Assistant Professor
Office: Sullivan Building 308B
Office hours: MWF: 1-3; TuTh: 12:30 - 1:30
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Course description: This course is an introduction to methods for solving linear and elementary nonlinear differential equations, including applications.

Course goals:

1. To provide students with a working knowledge of the uses of ordinary differential equations and their applications;
2. To develop students’ ability to formulate models of physical phenomena using differential equations;

Learning objectives: A student who passes this course should be able to:

1. Solve first-order ordinary differential equations by analytical, graphical, and numerical methods;
2. Solve linear ordinary differential equations, especially second order with constant coefficients;
3. Solve linear systems of differential equations;
4. Solve exemplary nonlinear differential equations;
5. Use Laplace transform methods for solving ordinary differential equations;

Attendance policy: An advance notice for an absence to class is typically an e-mail sent to me 12 hours or more in advance of the class meeting the student will not attend. Permission for absence is typically an e-mail from me to the student to acknowledge receipt of an advance notice. Excused absences are absences for which I have advance notice, and for which the student has a permission for absence. Excused absences, if not excessive in number, will not negatively affect a student’s grade. An unexcused absence during a day when an assignment, quiz, or exam is due will result in a grade of zero for the assignment,
quiz, or exam. Initially, I will not take attendance, but this may change if desirable. I reserve the right to penalize students with more than three unexcused absences by reducing their final grade by one letter grade or more. In the event that I wish to exercise this right, notice will be given to students in advance. **The student is responsible for completing all course requirements and for keeping up with all that goes on in the course (whether or not the student is in attendance).**

**Textbook:** Edwards & Penney, *Differential Equations and Boundary Value Problems: Computing and Modeling*, Prentice Hall. (Required)

**Class format:** These lectures will follow an active learning approach. A fraction of class time will be devoted to lectures, and the rest to class work. Lectures will help you gain expertise in understanding, constructing, solving, and interpreting differential equations. Class work will allow you to gauge your understanding of the subject matter in the company of peers who will help you through the learning process. It will also give you an opportunity to explain to others what you have learned, which is a very effective way of solidifying one’s understanding. During class work, I will oversee your work and provide helpful hints. As a further element of your active participation in this class, you will often be asked to spend a minute responding to a short feedback question at the end of the lecture. I will listen and respond to this feedback.

**Reading assignments:** Students will often be asked to read sections of the book prior to the following class period. Because of our class format, it is very important that students do these assignments. A student who has read the relevant section of the book before class meets will get much more out of it than someone who has not done so.

**Exams:** There will be three exams: two midterms and a final. Each midterm will count for 20% of the course grade. The final will count for 30% of the course grade. The exams are scheduled as follows:

- **Midterm I**  
  
  *Tentatively* Tuesday, October 17 (in class)

- **Midterm II**  
  
  *Tentatively* Tuesday, December 7 (in class)

- **Final**  
  
  Tuesday, December 19 8:00 - 10:00

**Quizzes:** There will be quizzes every week. At the end of the semester, I will drop the lowest quiz score and compute the average of the remaining scores to account for 20% of the student’s final grade. Quizzes will be based closely on the assigned worksheets.

**Worksheets:** Worksheets will be assigned every week but not collected. Worksheet problems—many of them taken from the book—will show up frequently in quizzes. Often we will spend a significant portion of class time solving problems from the worksheets in small groups. Problems which are not solved during class time are to be thought of as homework. It is crucial for students to dedicate a substantial amount of time on homework outside of class. Only this can guarantee that you will acquire a good understanding of the material. Besides, the weekly quizzes will be based on the worksheets handed out.

**Participation:** Because worksheets and group work will play an important role in this class, participation will play a role in calculating students’ grades. Students who consistently do
the reading assignments, ask questions, and offer help will get full marks. Participation accounts for 10% of the student’s final grade.

**Statement on Equality of Access:** Salem State College is committed to providing equal access to educational experience for all students in compliance with Section 504 of The Rehabilitation Act and The Americans with Disabilities Act and to providing all reasonable academic accommodations, aids and adjustments. Any student who has a documented disability should speak with the instructor immediately. Students with disabilities who have not previously done so should provide documentation to and schedule an appointment with the Office for Students with Disabilities and obtain appropriate services.