SYLLABUS

Math 333 — Differential equations with matrix theory
Section 1400, BSU/Micron, Fall 2011

Instructor: Shari Ultman
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Office: MG 236D (BSU campus)

Office hours: MTu after class (Micron), MTuW 9:40–10:30am (BSU campus), W 11:40am–12:30pm (BSU campus), and by appointment.

Course Information: Assignments, announcements and documents for this course will be posted on the course website: [http://math.boisestate.edu/~shariultman/teaching/fall11/333fall11.html](http://math.boisestate.edu/~shariultman/teaching/fall11/333fall11.html)

Class Meetings: MTu from 1:00–3:00pm at Micron, Building 17C Room 128B. I do not take attendance. You are responsible for all information covered in class, posted on the course website or distributed via e-mail.

Prerequisites: Math 175. This course requires a solid foundation in the calculus of functions of a single variable: differentiation and integration are both central to this class.


Course Overview and Learning Objectives

Math 333 is an introduction to differential equations whose solutions are functions of a single variable. The main objects of study are first order equations, second order linear equations and systems of first order equations. Roughly speaking, we will discuss three main methods of deriving information about solutions to these: analytic, qualitative and numerical methods. Analytic methods involve finding explicit solutions to equations. Qualitative methods are used to gain information about solutions without explicitly solving an equation. Numerical methods are used to approximate a solution.

We will also cover basic matrix theory and see how it can be applied to solving systems of linear algebraic equations and systems of linear differential equations.

By the end of this course, you should be able to:

- Define what constitutes a solution to a differential equation, and recognize when a given function is a solution to a particular equation.
- Classify differential equations according to various criteria and, where applicable, identify and implement techniques that can be used to find explicit solutions.

- Employ qualitative analysis to gain information about solutions to equations without explicitly solving them.

- Use matrix theory to solve systems of linear algebraic equations and systems of linear differential equations.

- Construct and interpret models involving differential equations for a number of physical processes.

**Evaluation**

- **EXAMS (60%).** There will be two midterm exams and a final exam, all taking place during normal class meeting times. The final will be cumulative. The three exams will contribute equally to the course grade. Make-up exams will be granted at my discretion, and only for verifiable reasons.

  **EXAM DATES:**
  - Midterm 1: Tuesday 27 September 2011, 1:00–3:00pm
  - Midterm 2: Tuesday 8 November 2011, 1:00–3:00pm
  - Final: Monday 12 December 2011, 1:00–3:00pm

- **QUIZZES (30%).** Quizzes will be given at the beginning of class on Tuesdays. The lowest quiz score will be dropped. There will be no make-up quizzes.

- **HOMEWORK (10%).** Homework will be collected at the beginning of class on Tuesdays. Late homework will not be accepted. Homework consisting of answers copied from the back of the book will receive a score of zero.

**Grading Scale:** The default grading scale is: 90%–100% an A, 80%–89% a B, 70%–79% a C, 60%–69% a D and below 60% an F. I reserve the right to assign “pluses” or “minuses” to letter grades within these ranges. Any changes to this scale will be such that a higher letter grade is assigned to a lower percentage.

**Calculators**

You will be allowed to use a scientific calculator for quizzes and exams. The use of graphing calculators will not be permitted.
**Academic Honesty**

It is your responsibility to be familiar with BSU’s policies regarding academic honesty. For more information, see:

[http://registrar.boisestate.edu/catalogs/online/general-policies.shtml](http://registrar.boisestate.edu/catalogs/online/general-policies.shtml)

**Requests for Academic Accommodations**

Students who plan to request academic accommodations should arrange to meet with me early in the semester. Students making such requests are required to provide documentation from the Disability Resource Center, located in room 114 of the Administration Building.