

CENTRAL WASHINGTON UNIVERSITY

Course Syllabus: Math 331

Continuous Models

2:00PM - 2:50PM

MWF / BOUILLON 109

Professor: Dr. Jane Whitmire
Email: whitmire@cwu.edu
Phone: 509-963-2268
Office: Bouillon 123
Office Hours: MW 1:00-1:50, TR 11:00-11:50 and by appointment
Textbook: Nonlinear Dynamics and Chaos w/ Applications to Physics,
Biology, Chemistry, and Engineering
Author: Steven H. Strogatz
Prerequisites: Math 272 with a grade of C or better is required as a
pre-requisite for this course.

Course Description

This course is an introductory survey of applied mathematics with emphasis on modeling of physical and biological problems in terms of differential equations. We will discuss formulation of the problem, derivation of the solution, and interpretation of the results.

Course Outline

Below is a general outline of the topics that we will cover in class. Lecture notes, and handouts can be found on the class website as necessary.

- Review of Ordinary Differential Equations
- Building a Mathematical Model
- One-Dimensional Models
(Examples: Population Growth, RC Circuits, and Radioactive Decay)
- Two-Dimensional Models
(Examples: Predator-Prey, Pendulum, and RLC Circuits)

Homework

Homework will be traditional written assignments at the beginning of the quarter but may involve an increasing computer (*MATHEMATICA* or *Java Applets*) component as the term progresses. The professor reserves the right to refuse homework assignments that do not meet the following criteria.

Students may work with classmates on homework, but students should write solutions using their own words. Homework must be neat, legible, and contain complete sentences where appropriate.

Late homework will not be accepted. Since accidents, car problems, court appearances, deer hunting season, illness, job interviews, oversleeping, overtime, tournaments, and weather happen, the lowest 2 homework grades will be dropped.

DO NOT email homework. DO NOT staple different assignments together. Make sure different assignments are separated. All homework will be completed in pencil, on one side of (preferably engineering) paper, and in numerical order.

Homework problems are graded by the clear and evident content of what is actually written down and nothing more. Your solution to a problem must clearly show a grasp of relevant concepts as well as a correct result for full credit. Organization counts. Neatness counts. If an approach is specified in a problem, then that approach must be used (as indicated by procedures written on the paper) in solving the problem.

Exams

Exam dates are Wednesday October 22, 2008 and Monday November 24, 2008. Exams are comprehensive and cover all material discussed in class since the previous exam. Completing the exam in the time allotted is part of the exam.

Final Exam

The final is comprehensive, covers all material discussed in class, and is to be taken at the time scheduled by the University. Completing the final in the time allotted is part of the final. The final exam for Fall 2008 is Wednesday December 10, 2008 from 12:00 PM to 2:00 PM.

Grading

Keep all exams, homework, quizzes, and other graded material for study and for verifying records. Everyone is graded the same way. NO EXCEPTIONS. Letter grades A/A-/B+/B/B-/C+/C/C-/D+/D/D-/F are based on a strict 93-100/90-92.9/87-89.9/83-86.9/80-82.9/77-79.9/73-76.9/70-72.9/67-69.9/63-66.9/60-62.9/BELOW 60 cutoff. Problems are graded on a 10-point scale: (A) 9 or 10; (B) 8; (C) 7; (D) 6; (F) 0 to 5. The course grade can be calculated at any time using the following proportions:

<i>Quizzes</i>	→ 10%
<i>Homework</i>	→ 30%
<i>Exams</i>	→ 30%
<i>Final</i>	→ 30%

Calculators

Calculators may be used on homework and exams unless specifically announced otherwise in advance. It is the student's responsibility to correctly operate the calculator and to demonstrate an understanding of the solution by providing appropriate detail. For example, if asked to use integration by parts in finding the solution of a particular differential equation, it will be necessary to write down the appropriate substitutions, initial setup, and steps used within the procedure. Calculators with CAS (Computer Algebra Systems) will not be allowed on exams.

Optional Project

Students have the option of completing a final project instead of taking the final exam. The project would require writing a paper and giving a one-hour class presentation on a specific continuous mathematical model that was not emphasized in class. If a student is interested in this option, they must make an appointment and meet with the professor within the first two weeks of class. Be prepared to discuss the specific topic, potential resources for research, established timeline, grading rubric, and desired presentation equipment.

Special Needs Statement

As soon as possible, students with disabilities who wish to set up academic adjustments in this class should provide a copy of their "Confirmation of Eligibility for Academic Adjustments". Eligible students without this form should contact the Disability Support Services Office by visiting Bouillon 205, emailing dssrecept@cwu.edu, or calling the phone number 509-963-2171.