Math 3331 – Ordinary Differential Equations

Semester: Spring 2018 CRN 30750
Meeting times: MWF 12:00-12:50 pm
Room: MCS 219
Instructor: Dr. Danny Arrigo
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Webpage: www.danielarrigo.com
Office location: MCS 201
Office telephone No.: 450-5668
Office hours: MW 2:00-4:00pm, TTh 1:00-2:30pm
Textbook:
1) Ordinary Differential by Tenenbaum, Dover Publications
2) Schaum's Outline Differential Equations by Bronson

Use of cell phones (including texting), MP3 players, web browsers, ear buds/plugs is **NOT ALLOWED during class time**. **Cell phones must be turned off.** Instructor may also disallow use of any other technology not relevant to the instruction. Use of any type of laptop during class time requires consent of the instructor.

1. Prerequisite: Math 1592 Calculus II

2. Introduction
This is an introductory course in ordinary differential equations. The emphasis will be on techniques of solving ordinary differential equations with a focus on applications.   As students who have proceeded through the calculus sequence with the notation of "what's the point," this course gathers the knowledge learned from those courses enabling us to formulate power tools to solve problems typically encountered in science and engineering. Hopefully, students will walk away from this course with the notation of "Oh, I see the point now!"

3. Course Outline (tentative)
    1. Introduction to differential equations with modeling applications
    2. First-order differential equations
    3. Modeling with first-order differential equations
    4. Differential equations of higher order
    5. Modeling with higher order differential equations
    6. Systems of linear first-order differential equations

4. Student Learning Outcomes.
  Upon successful completion of the course, the student will be able to:

• Solve a number of typical first order differential equations, including separable equations, linear equations, exact equations, homogeneous equations, and Bernoulli's equations.
• Solve linear higher order equations with constant coefficients and Cauchy-Euler equations.

• Solve linear systems of differential equations with constant coefficients.
• Solve some initial value problems and boundary value problems.
• Analyze the stability of an equilibrium of an equation.
• Use differential equations to model real problems arising from physics, chemistry, biology, and other areas.

4. Grades

Your grade for this course will be determined by homework, tests, and a project involving a seminar and paper. Your homework will be assigned every class and collected Friday's. The homework will count as 15% of your final grade. There will be 3 tests throughout the semester counting 60% of your final grade. There will be two scheduled meetings with the instructor to discuss projects, 5% of the grade. The remaining 20% of your final grade will reside in a paper and seminar.

Seminar: Students will form a group of two-three students and give a 15-20 minute seminar to the entire class. The subject matter of the seminar is to present a mathematical model (*i.e.* an ordinary differential equation) drawn from science or engineering. The topic chosen will be one that is in agreement with the group and the instructor. The seminar is to entail the formation of the model, mathematical analysis and conclusions (or lack of). The seminar may also be a topic related to this course that has not been covered in class.

Paper: This will consist of a write up of the seminar with considerably more details than in the seminar itself (with references).

Timeline:
  1) Topic must be selected and approved by the 7th week.
  2) Outline of the paper must be presented to the instructor by 9th week.
  3) First Draft must be presented by 11th week.
  4) Final draft of the paper by 13th week

Tests: The following are the tentative dates for the tests: Feb. 9, Mar. 9, April 13.
There will be **no** make-up tests.

Grade		Grade Scale	
Homework:	15%	90% - 100%	A
Tests:	60%	80% - 89%	B
Meetings:	5%	70% - 79%	C
Seminar:	10%	60% - 69%	D
Paper:	10%	0% - 59%	F.

Attendance
Attendance is highly recommended. If you are absent for approximately 10% without a valid excuse, where appropriate, you will be dropped from the course. It is a good idea to form small groups to work together in doing homework problems. You will learn from each other and your progress will be more rapid. However, joint work (or copying) during tests and exams is forbidden – the University has an academic dishonesty policy that you can find in the student handbook. Severe penalties apply.

An **Emergency Procedures Summary (EPS)** for the building in which this class is held will be discussed during the first week of this course. EPS documents for most buildings on campus are available at http://uca.edu/mysafety/bep/. Every student should be familiar with emergency procedures for any campus building in which he/she spends time for classes or other purposes.

Academic Integrity: The University of Central Arkansas affirms its commitment to academic integrity and expects all members of the university community to accept shared responsibility for maintaining academic integrity. Students in this course are subject to the provisions of the university's Academic Integrity Policy, approved by the Board of Trustees as Board Policy No. 709 on February 10, 2010, and published in the Student Handbook. Penalties for academic misconduct in this course may include a failing grade on an assignment, a failing grade in the course, or any other course-related sanction the instructor determines to be appropriate. Continued enrollment in this course affirms a student's acceptance of this university policy.

Americans with Disabilities Act statement: The University of Central Arkansas adheres to the requirements of the Americans with Disabilities Act. If you need an accommodation under this Act due to a disability, please contact the UCA Office of Disability Services, 450-3613.

Please familiarize yourself with all other policies listed in the Student Handbook. For example, the sexual harassment policy and the various academic policies.