

ARIZONA WESTERN COLLEGE
SYLLABUS

MAT 262 INTRODUCTION TO ORDINARY DIFFERENTIAL EQUATIONS

Credit Hours: 3 Lec 3 MAT 2262

PREREQUISITE: MAT 230

COURSE DESCRIPTION

Ordinary differential equations and their solutions that utilize conventional approaches, numerical techniques, matrix methods applied to systems of linear differential equations, and Laplace's transformation.

1. COURSE GOALS

- 1.1 Learn concepts of linear ordinary differential equations.
- 1.2 Explore different methods for solving ordinary differential equations.
- 1.3 Use differential equations to model real world applications.

2. OUTCOMES

Upon satisfactory completion of this course, students will be able to:

- 2.1 solve linear first, second, and higher order differential equations using a variety of approaches.
- 2.2 model physical problems and explore the different forces acting on such problems through initial conditions and boundary values.
- 2.3 solve basic nonlinear differential equations.
- 2.4 categorize and apply different transformations to solve differential equations.

3. AWC GENERAL EDUCATION (GE) OUTCOMES3.1 DIGITAL LITERACY

- Determine the extent of information needed
- Access the needed information effectively and efficiently
- Evaluate information and its sources critically
- Use information effectively to accomplish a specific purpose
- Create content in a digital environment

3.2 QUANTITATIVE ANALYSIS

- Identify and extract relevant data from given mathematical or contextual situations
- Select known models or develop appropriate models that organize the data into: tables or spreadsheets (with or without technology); graphical representations (with or without technology); symbolic/equation format
- Obtain correct mathematical results and state those results with appropriate qualifiers and use the results to: determine whether they are realistic in terms of original data/problem; determine whether the mathematical model/representation of data is appropriate; describe trends in a table, graph, or formula and make predications based on these trends; draw qualitative conclusions in written form; apply them to real world problems

3.3 SCIENTIFIC LITERACY

- Distinguish between a scientific hypothesis and scientific theory
- Describe the scientific method as a process
- Utilize data to communicate and apply an understanding of scientific logic and/or quantitative reasoning
- Analyze an article in popular literature that pertains to science and interpret the findings in terms of public policy, personal experience, or daily life

4. METHODS OF INSTRUCTION

- 4.1 Lecture
- 4.2 Use of computers and/or graphing calculators
- 4.3 Overheads

5. LEARNING ACTIVITIES

- 5.1 Solving problems and applications in the areas of environmental, life, and natural sciences
- 5.2 Participation in classroom lectures
- 5.3 Using computers and/or graphing calculators

6. EVALUATION

- 6.1 Homework and/or project assignments
- 6.2 Class participation
- 6.3 Exams

7. STUDENT RESPONSIBILITIES

- 7.1 Under AWC Policy, students are expected to attend every session of class in which they are enrolled.
- 7.2 If a student is unable to attend the course or must drop the course for any reason, it will be the responsibility of the student to withdraw from the course. Students who are not attending as of the 45th day of the course may be withdrawn by the instructor. If the student does not withdraw from the course and fails to complete the requirements of the course, the student will receive a failing grade.
- 7.3 Americans with Disabilities Act Accommodations: Arizona Western College provides academic accommodations to students with disabilities through AccessABILITY Resource Services (ARS). ARS provides reasonable and appropriate accommodations to students who have documented disabilities. It is the responsibility of the student to make the ARS Coordinator aware of the need for accommodations in the classroom prior to the beginning of the semester. Students should follow up with their instructors once the semester begins. To make an appointment call the ARS front desk at (928) 344-7674 or ARS Coordinator at (928) 344-7629, in the College Community Center (3C) building, next to Advising.
- 7.4 Academic Integrity: Any student participating in acts of academic dishonesty—including, but not limited to, copying the work of other students, using unauthorized “crib notes”, plagiarism, stealing tests, or forging an instructor’s signature—will be subject to the procedures and consequences outlined in AWC’s Student Code of Conduct.
- 7.5 Texts and Notebooks: Students are required to obtain the class materials for the course.
- 7.6 Arizona Western College students are expected to attend every class session in which they are enrolled. To comply with Federal Financial Aid regulations (34 CFR 668.21), Arizona Western College (AWC) has established an Attendance Verification process for “No Show” reporting during the first 10 days of each semester.
Students who have enrolled but have never attended class may be issued a “No Show” (NS) grade by the professor or instructor and receive a final grade of “NS” on their official academic record. An NS grade may result in a student losing their federal financial aid.
For online classes, *student attendance in an online class is defined as the following* (FSA Handbook, 2012, 5-90):
 - Submitting an academic assignment
 - Taking an exam, an interactive tutorial or computer-assisted instruction
 - Attending a study group that is assigned by the school
 - Participating in an online discussion about academic matters
 - Initiating contact with a faculty member to ask a question about the academic subject studied in the course