

Math 3324

Course Syllabus



This syllabus is current and accurate as of its posting date, but it will not be updated. For the most complete and up-to-date course information, contact the instructor.

Contact Information

Instructor: Dr. Dennis Hall

Office: MCS 220J

Office Hours: Monday/Wednesday/Friday: 11:50AM – 2:00PM

Tuesday/Thursday: 1:45PM-3:30PM

E-mail: dennis.hall@angelo.edu

Phone: 325-486-5426

Course Information

Course Description: Application of mathematical principles to the analysis of engineering problems using linear algebra and ordinary differential equations (ODE's).

Textbook: *Notes on Diffy Qs: Differential Equations for Engineers* by Jiří Lebl. This is a free online book available here: <https://www.jirka.org/diffyqs/>. If you prefer a hardcopy version, it is available for about \$17 here: <https://smile.amazon.com/dp/1706230230>. The ASU bookstore does not carry this book.

Prerequisite Courses: Mathematics 2415 (Calculus II) or equivalent.

Course Delivery: This is a face-to-face course with online components that students are expected to access in [Blackboard](#).ⁱ

MyOpenMath: The free electronic resource MyOpenMath will be used in this course. To access MyOpenMath, click the various homework links in Blackboard. You DO NOT need to purchase access.

Technology Requirements: This course will be using the free online homework system MyOpenMath. This homework system requires a somewhat modern computer with reliable internet access. The computer lab in MCS is available to students, if needed.

Communication: Most email will receive a response within 24 hours during working hours Monday through Friday. Please include your course name (Calculus III, Finite Math, etc.) in your messages for the quickest reply.

Course Content: The following chapters and content will be covered.

1. Integrals as solutions, Slope fields, Separable equations, Linear equations and the integrating factor, Autonomous equations, Numerical methods: Euler's method.
2. Second-order linear ODEs, Constant coefficient second-order linear ODEs, higher-order linear ODEs, Mechanical vibrations, nonhomogeneous equations, forced oscillation and resonance.
 - A. Vectors, mappings, and matrices, Matrix algebra, Elimination, Determinant.
3. Intro to systems of ODEs, Linear systems of ODEs, Eigenvalue method, Two-dimensional systems and their vector fields, Second-order systems and applications, Multiple eigenvalues, Diagonalization.
4. Boundary Value problems, The trigonometric series

Course Evaluation

Your grade for this course will be determined by your performance on exams and homework. Final grades will *be based on a standard 10-point grading scale*.

Tests: 60%

Final Exam: 20%

Homework: 20%

Tests (60%): There will be three tests during this semester. The two tests with the highest score will count 25% each. The test with the lowest score will count 10%. The tests will be given in-person on paper. You may not use any notes or outside resources *other than a scientific calculator*.

Final Exam (20%): In addition to the tests above, there will be a comprehensive final examination. This comprehensive final exam is in-person on paper.

Homework (20%): Homework will be completed online in Blackboard using MyOpenMath. You are welcome to receive help on homework from any source: me, students, solutions manuals, online, etc. However, it is encouraged that you work the homework on your own first, since this will be the best way to practice for tests. Homework is always due at 11:59pm on the day it is due.

Academic Honesty for Tests and Exams:

Tests and exams in this class should be completed entirely on your own without the help of formula sheets (except where allowed by the professor), notes, online resources, books, etc. No phones are allowed to be used during tests and exams.

Other Information

All students are required to follow the policies and procedures presented in these documents:

- [Angelo State University Student Handbook](#)ⁱⁱ
- [Angelo State University Catalog](#)ⁱⁱⁱ

Academic Integrity

Students are expected to maintain complete honesty and integrity in all work. Any student found guilty of any form of dishonesty in academic work is subject of disciplinary action and possible expulsion from ASU.

The College of Science and Engineering adheres to the university's [Statement of Academic Integrity](#)^{iv} (Page 97).

Accommodations for Students with Disabilities

ASU is committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs or activities of the university, or be subjected to discrimination by the university, as provided by the Americans with Disabilities Act of 1990 (ADA), the Americans with Disabilities Act Amendments of 2008 (ADAAA) and subsequent legislation.

Student Disability Services is located in the Office of Student Affairs, and is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability. It is the student's responsibility to initiate such a request by contacting an employee of the Office of Student Affairs, in the Houston Harte University Center, Room 112, or contacting the department via email at ADA@angelo.edu. For more information about the application process and requirements, visit the [Student Disability Services website](#).^v The employee charged with the responsibility of reviewing and authorizing accommodation requests is:

Dr. Dallas Swafford

Director of Student Disability Services

Office of Student Affairs

325-942-2047

dallas.swafford@angelo.edu

Houston Harte University Center, Room 112

Incomplete Grade Policy

It is policy that incomplete grades be reserved for student illness or personal misfortune. Please contact faculty if you have serious illness or a personal misfortune that would keep you from completing course work.

Documentation may be required. See ASU Operating Policy 10.11 [Grading Procedures](#)^{vi} for more information.

Student Absence for Observance of Religious Holy Days

A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. See ASU Operating Policy 10.19 [Student Absence for Observance of Religious Holy Day](#)^{vii} for more information.

Title IX at Angelo State University

Angelo State University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from sex discrimination of any kind. In accordance with Title VII, Title IX, the Violence Against Women Act (VAWA), the Campus Sexual Violence Elimination Act (SaVE), and other federal and state laws, the University prohibits discrimination based on sex, which includes pregnancy, and other types of Sexual Misconduct. Sexual Misconduct is a broad term encompassing all forms of gender-based harassment or discrimination and unwelcome behavior of a sexual nature. The term includes sexual harassment, nonconsensual sexual contact, nonconsensual sexual intercourse, sexual assault, sexual exploitation, stalking, public indecency, interpersonal violence (domestic violence or dating violence), sexual violence, and any other misconduct based on sex.

You are encouraged to report any incidents involving sexual misconduct to the Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator, Michelle Miller, J.D. You may submit reports in the following manner:

Online: [Incident Reporting Form](#)^{viii}

Face to Face: Mayer Administration Building, Room 210

Phone: 325-942-2022

Email: michelle.miller@angelo.edu

Note, as a faculty member at Angelo State, I am a mandatory reporter and must report incidents involving sexual misconduct to the Title IX Coordinator. Should you wish to speak to someone in confidence about an issue, you may contact the University Counseling Center (325-942-2371), the 24-Hour Crisis Helpline (325-486-6345), or the University Health Clinic (325-942-2171).

For more information about resources related to sexual misconduct, Title IX, or Angelo State's policy please visit the [Title IX website](#).^{ix}

Information About COVID-19

Please refer to ASU's [COVID-19 \(Coronavirus\) Updates](#)^x web page for current information about campus guidelines and safety standards as they relate to the COVID-19 pandemic.

Modifications to the Syllabus

This syllabus, including grade evaluation and course schedule, is subject to modification on potentially short notice based on developing circumstances.

Student Learning Outcomes

Students will demonstrate factual knowledge of the mathematical notation and terminology used in this course. Students will demonstrate the ability to read, interpret, and use the vocabulary and symbolism of differential equations and linear algebra.

Students will be able to describe the fundamental principles arising from the concepts in this course. Students will demonstrate familiarity with the concepts that follow from the fundamental concepts; for example, existence of solutions to differential equations, properties of matrices and vectors, properties of vector spaces and subspaces.

Students will be able to apply the course material to solve problems. Students will use the facts, formulas, and techniques to solve first and second order differential equations and systems of differential equations, and to

manipulate matrices and vectors.

Students will develop specific skills, competencies, and reasoning abilities to support further study or work in this or related fields. Students will acquire a level of proficiency in the fundamental concepts and applications necessary for further study in engineering.

Course Schedule

Important Dates

January 18: First day of class

March 14 – March 18: Spring Break

April 28: Last day to drop this course

May 9 – May 12: Final Exam Window

Approximate Test Dates

Test 1: February 17

Covers Sections: 1.1, 1.2, 1.3, 1.4, 1.6, 1.7, 2.1, 2.2

Test 2: March 31

Covers Sections: 2.3, 2.4, 2.5, 2.6, A.1, A.2, A.3, A.6

Test 3: April 28

Covers Sections: 3.1, 3.3, 3.4, 3.7, 3.8, 3.9

Final Exam: May 12 3:30p-5:30p

Covers all of the above AND Sections 4.1, 4.2

i <https://blackboard.angelo.edu/>

ii <https://www.angelo.edu/current-students/student-handbook/>

iii <https://www.angelo.edu/academics/catalog/>

iv <https://www.angelo.edu/live/files/27603-student-handbook-2020-21#page=97>

v <https://www.angelo.edu/current-students/disability-services/>

vi <https://angelo.policystat.com/policy/10659448/latest/>

vii <https://angelo.policystat.com/policy/10659368/latest/>

viii <https://www.angelo.edu/incident-form>

ix <https://www.angelo.edu/title-ix>

x <https://www.angelo.edu/covid-19/>