Math 2413
Calculus I

Instructor: Dr. Susan Abernathy-Taylor

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Office Hours: MF 11am-12pm, TR 9:15am-11:45am. See Blackboard for links to online office hours.

Course Information

Course Description

This is a face-to-face Calculus I course. Calculus is all about functions and rates of changes. We'll start with limits and continuity before progressing to derivatives, which tell us about rates of change of functions. Towards the end of the course, we'll talk about integrals and the interesting relationship between integrals and derivatives.

Keep in mind that this class will move at a fast pace, and you will need to dedicate a significant amount of time to it each week.

Prerequisite and Co-requisite Courses

Math 1316 and 2312; or a suitable score on a placement exam.

Course Delivery

This is a face-to-face course with online components that students are expected to access via Blackboard.[1]

Required Texts and Materials

Calculus Volume I from OpenStax. This book is available for free, either online or as a pdf. You are not required to purchase a print copy, but they are available in the bookstore if you would like to have one.

Hardcover:
ISBN-10: 1-938168-02-X
ISBN-13: 978-1-938168-02-4
Paperback:
ISBN-13: 978-1-50669-806-9
Digital:
ISBN-10: 1-947172-13-1
ISBN-13: 978-1-947172-13-5

Technology Requirements

To successfully complete this course, students need to have access to Blackboard. Office hours may be conducted online, which will require a phone or device that can use Blackboard Collaborate.

Communication

You may email me at any time. In general, I try to respond to messages within one business day.

Written communication via email: All private communication will be done exclusively through your ASU email address. Check frequently for announcements and policy changes. In your emails to faculty, include the course name and section number in your subject line.

Virtual communication: Office hours and/or advising may be done with the assistance of the telephone, Collaborate, etc.

Grading and Assessment

Tests

We will have seven tests during the semester, every two weeks on Fridays, starting on January 28. Tests will be administered in-person during class and will be conducted online through MyOpenMath. On test days, we will meet in a computer lab, MCS 111A.

Each test will cover two learning standards. You will be allowed to retake tests over each standard to improve your grade, subject to the following conditions:

- You must have a 100% homework grade over the material in question before you retake a standard.
- You are allowed to retake a standard once per class week (Monday-Friday).
- You may retake a standard up to 4 weeks after the original test date.

- You must notify me by email at least 48 hours in advance if you wish to take a standard.
- If you cannot complete a retake during office hours, then you must propose at least three other potential times that you can complete the retake.

Homework

Homework will be done online through a free online homework system (MyOpenMath). You will access the homework through Blackboard. Due dates will be announced in class and posted in Blackboard. Homework will count toward bonus on each test – **you may only use bonus on your first attempt for each test. Subsequent retakes will not have the bonus added to their scores.**

Overall Grade

Your grade will be the average of seven tests, given roughly every two weeks on Fridays.

This course uses the following grading scale:

A = 89.5-100 points
B = 79.5-89.49 points
C = 69.5-79.49 points
D = 59.5-69.49 points
F = 0-59.49 points (Grades are not rounded up)

General Policies Related to This Course

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

- Angelo State University Student Handbook[2]
- Angelo State University Catalog[3]

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[4] (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.[5] 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[6] for more information.

Plagiarism

Plagiarism is a serious topic covered in ASU's Academic Integrity Statement[7] in the Student Handbook. Plagiarism is the action or practice of taking someone else's work, idea, etc., and passing it off as one's own. Plagiarism is literary theft.

In your discussions and/or your papers, it is unacceptable to copy word-for-word without quotation marks and the source of the quotation. It is expected that you will summarize or paraphrase ideas giving appropriate credit to the source both in the body of your paper and the reference list.

Papers are subject to be evaluated for originality. Resources to help you understand this policy better are available at the ASU Writing Center.[8]

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[9] 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[10]
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.[11]

Information About COVID-19

Please refer to ASU's COVID-19 (Coronavirus) Updates[12] 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.

Course Schedule

The following is a tentative schedule, and accurate at the time of this writing.
Subject matter by week:

1. Chapter 1
2. 2.1-2.3, Test 1
3. 2.4, 3.1, 3.2
4. 3.3, 3.4, Test 2
5. 3.5, 3.6
6. 3.6-3.8, Test 3
7. 3.9, 4.1
8. 4.3, 4.4 Test 4
9. 4.5, 4.6
10. 4.7, 4.8, Test 5
11. 4.9, 4.10
12. 5.1, 5.2, Test 6
13. 5.3, 5.4
14. 5.5, Test 7
15. Review
16. Final Exam

Student Learning Outcomes

1. **Students will demonstrate factual knowledge including the mathematical notation and terminology used in this course.** Students will read, interpret, and use the vocabulary, symbolism, and basic definitions used in Calculus I as they pertain to functions, limits, derivatives, and integrals.

2. **Students will describe the fundamental principles including the laws and theorems arising from the concepts covered in this course.** Students will identify and apply the laws and formulas that result directly from the definitions; for example, domain and range of a function, operations on functions, the limit laws, the differentiation formulas, and the Fundamental Theorem of Calculus.

3. **Students will apply course material along with techniques and procedures covered in this course to solve problems.** Students will use the facts, formulas, and techniques learned in this course to sketch graphs of functions, to study position-velocity-acceleration problems, to solve related rate and optimization ("max-min") problems, and to determine the area under the curve of a function.

4. **Students will develop specific skills, competencies, and thought processes sufficient to support further study or work in this field or related fields.** Students will acquire a level of proficiency in the fundamental concepts and applications necessary for further study in academic areas requiring Calculus I as a prerequisite, or for work in occupational fields requiring a background in Calculus I. These fields might include computer science, engineering, the physical and natural sciences as well as mathematics.

Course Content

Textbook: Calculus Volume 1 from OpenStax. This is a free textbook available online at https://openstax.org/details/books/calculus-volume-1. You can also purchase a print version, if you prefer, via the campus bookstore.

The following topics are covered.

1. **Functions and Graphs:** Review of Functions, Basic Classes of Functions, Trigonometric Functions, Inverse Functions, Exponential and Logarithmic Functions

2. **Limits:** A Preview of Calculus, The Limit of a Function, The Limit Laws, Continuity, The Precise Definition of a Limit

3. **Derivatives:** Defining the Derivative, The Derivative as a Function, Differentiation Rules, Derivatives as Rates of Changes, Derivatives of Trigonometric Functions, The Chain Rule, Derivatives of Inverse Functions, Implicit Differentiation, Derivatives of Exponential and Logarithmic Functions

4. **Applications of Derivatives**: Related Rates, Linear Approximations and Differentials, Maxima and Minima, The Mean Value Theorem, Derivatives and the Shape of a Graph, Limits at Infinity and Asymptotes, Applied Optimization Problems, L'Hopital's Rule, Newton's Method, Antiderivatives

5. **Integration**: Approximating Areas, The Definite Integral, The Fundamental Theorem of Calculus, Integration Formulas and the Net Change Theorem, Substitution

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[1] https://blackboard.angelo.edu/
[2] https://www.angelo.edu/current-students/student-handbook/
[3] https://www.angelo.edu/academics/catalog/
[4] https://www.angelo.edu/live/files/27603-student-handbook-2020-21#page=97
[5] https://www.angelo.edu/current-students/disability-services/
[6] https://angelo.policystat.com/policy/10659448/latest/
[7] https://www.angelo.edu/live/files/27603-student-handbook-2020-21#page=97
[8] https://www.angelo.edu/current-students/writing-center/academic_honesty.php
[9] https://angelo.policystat.com/policy/10659368/latest/
[10] https://www.angelo.edu/incident-form
[11] https://www.angelo.edu/title-ix
[12] https://www.angelo.edu/covid-19/