# West Texas A&M
## U N I V E R S I T Y ™

# MATH 2413
# Calculus I

**Credit:** 4
**Contact Hours:** 60
**Class Days:** Monday to Friday,  June 29th , 2020 to July 31st, 2020
**Instructor:**  TBA
**Email:**  TBA
**Office Hours:** By appointment

## Course Description

Calculus I is the study of the algebraic and trigonometric functions introducing the concepts of limits, continuity, differentiation and definite and indefinite integrals of these functions. The course includes applications of the derivative and differentials of algebraic and trigonometric functions.

## Course Objectives

Upon successful completion of the course, the students will be able to:
1. Find limits of functions;
2. Find the derivatives of various functions such as polynomials and rational functions, trigonometric functions, exponential and logarithmic functions;
3. Apply the derivative rules such as the chain rule to find derivatives of sums, products, quotients, and compositions of functions;
4. Solve extreme problems by calculating and analyzing (1st and/or 2nd) derivatives;
5. Find anti-derivatives of a function and the definite integral of a function, and relate them with derivatives through the Fundamental Theorem of Calculus;
6. Interpret the definite integral of a positive function as a certain area.

## Program Learning Outcomes

Program outcomes related to this course:
1. display competence with basic mathematical skills by applying elementary methods to the analysis of functions of one real variable.
2. communicate mathematics effectively to peers and professionals.
3. apply  mathematical techniques to modeling of natural phenomena with statistical and numerical methods.

## Course Materials (Text, calculator, etc.)

*Thomas' Calculus,* 12th  Edition, by George B. Thomas Jr., Addison-Wesley, ISBN-10 0321587995, ISBN-13 9780321587992

**Grading Scale**

| Letter Grade | Grade Percentage |
|---|---|
| A | 90% - 100% |
| B | 80% - 89% |
| C | 70% - 79% |
| D | 60% - 69% |
| F | 59% - 0% |

**Course Grading Policies**

Your final grade of this course will be a weighted average on the scale listed above. The Weighted Average will be calculated as follows:

| | |
|---|---|
| 3 chapter examinations | 60% |
| Homework | 20% |
| A comprehensive final examination | 20% |
| **Total** | **100%** |

**Course Assignment, Examination, and or Project Policies**

*Homework*

Please expect homework every day. Although homework "only" counts for 20% of the coursework, ***all*** exam questions will be similar to some of the homework problems. Homework must be done neatly and in order, with detailed work shown in order to receive full credit. To provide you with feedback on your work, homework will be collected on every Monday and five selected problems will be graded at up to 20 points each. The grading scale is: 20 points if correct, 10 points if wrong, and 0 points if not attempted or for just an answer with no work shown. Thus, if you turn in your assignment complete, the lowest grade you can make on that assignment is a 50. **Absolutely no late homework will be accepted.**

*Exams*

There are 3 chapter exams in this course as well as a comprehensive final. The chapter exams approximately correspond to each chapter 2 through 5 of the textbook. I will notify you the exam date at least 1 week prior, although the tentative exam dates are posted below in the calendar. There are absolutely no makeup exams, but if you know you will be out of town on a test date, you may make arrangements to take it early.

**Tentative Course Schedule**

This is a tentative course schedule, the instructor reserves the right to make changes on it to make it better for the student`s development. Notice will be given should any changes take place.

| Date | Chapter/Topic | Assignment Due Dates |
|---|---|---|
| June 29 | Course Introductions, Review of Functions | |
| June 30 | Limits at a number, One sided Limits | |
| July 1 | Limits at infinity | Section 2.2, 2.3, and 2.4 |

| | | Combined HW |
|---|---|---|
| July 2 | Continuity | Section 2.6 HW |
| July 3 | Definition of the Derivative | Section 2.5 HW |
| July 6 | Exam 1 (Sections 2.2, 2.3, 2.4, 2.5, and 2.6) | |
| July 7 | Rules of Differentiation | Section 3.1, and 3.2 Combined HW |
| July 8 | Tangents and Normal Lines | Section 3.3 HW |
| July 9 | The Chain and General Power Rule | Section 3.4 HW |
| July 10 | Velocity and Acceleration | *Section 3.6 HW* |
| July 13 | Trigonometric Derivatives | HW not in text, provided by the instructor |
| July 14 | Implicit Differentiation | Section 3.5 HW |
| July 15 | Related Rates | Section 3.7 HW |
| July 16 | Exam 2 (Sections 3.1-3.7) | |
| July 17 | First Derivative as an aid in graphing | Section 3.8 HW |
| July 20 | Second Derivative as an aid in graphing | Section 4.1, 4.2 and 4.3 Combined HW |
| July 21 | Graphing using algebra and calculus | Section 4.4 HW |
| July 22 | Optimization | HW not in text, provided by the instructor |
| July 23 | Anti-derivatives, Indefinite Integrals, and The General Power Rule | Section 4.5 HW |
| July 24 | Exam 3 (Sections 3.8, 4.1, 4.3, 4.4, and 4.5) | |
| July 27 | The Definite Integral | Section 4.7 HW |
| July 28 | The Fundamental Theorem of Calculus | Section 5.3 HW |
| July 29 | Finding Area Between Curves | Section 5.4 HW |
| July 30 | Mixed Integration Problems | Section 5.5 and 5.6 Combined HW |
| July 31 | Final Exam (Sections 2.2, 2.3, 2.4, 2.5, 2.6, 3.1-3.8, 4.1-.45, 4.7, 5.3-5.6) | |

## Policies and Responsibilities

*Your Role as a Student in this Course –*

Just to be clear about my expectations of you.  I expect to:

1. Come to class every day.  Calculus is five days a week because we really like you!
2. Come to class prepared to work!  Take advantage of the time we have together.
3. Please treat all participants, both myself and your classmates, with respect.
4. Complete or at least attempt to complete your homework each day.
5. If you get home and find you cannot work the problems, come to my office, e-mail me, ask the teaching assistant, call a friend from class.  This course builds.  If you do not understand a concept the next day will only be worse!

6.  You should spend at least twice the amount of time you are in class each week doing homework.
7.  Absolutely no late homework will be accepted.
8.  Put your cell phone in your backpack and leave it there. You have paid for this course, get the most out of the experience by giving it your full attention for one hour a day. Plus, it is a distraction for other people.

**Academic Integrity**

All work must be completed individually unless otherwise stated.  Commission of any of the following acts shall constitute scholastic dishonesty: acquiring or providing information for any assigned work or examination from any unauthorized source; informing any person or persons of the contents of any examination prior to the time the exam is given in any subsequent sections of the course or as a makeup; plagiarism; submission of a paper or project that is substantially the same for two courses unless expressly authorized by the instructor to do so.  For more information, see the Code of Student Life.

**Acceptable Student Behavior**

Classroom behavior should not interfere with the instructor's ability to conduct the class or the ability of other students to learn from the instructional program (Code of Student Life). Unacceptable or disruptive behavior will not be tolerated. Students engaging in unacceptable behavior may be instructed to leave the classroom. Inappropriate behavior may result in disciplinary action or referral to the University's Behavioral Intervention Team. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc.

**Attendance Policy**

For the purposes of learning assessment and strategic planning, all students enrolled in Core Curriculum or developmental courses at West Texas A&M University must swipe their Buff Gold cards through the card reader installed in the classroom/lab for each class/lab meeting. Any students with more than three unexcused absences will automatically fail the course.

**Copyright**

All original content in this document, all web-based course materials (be they text, audio, and/or video), and/or classroom presentations are subject to copyright provisions. No distribution without the express written consent of the author. Students are prohibited from selling (or being paid for taking) notes during this course to or by any person or commercial firm without the express written permission of the professor.