MATH 2413 — Calculus I
Frank Phillips College

General Course Information
Credit Hours: 4
General Education Core Curriculum Course

Prerequisite
Completion of MATH 1316 with a grade of C or better or co-requisite of MATH 1316.

Course Description
Limits and continuity; the Fundamental Theorem of Calculus; definition of the derivative of a function and techniques of differentiation; applications of the derivative to maximizing or minimizing a function; the chain rule, mean value theorem, and rate of change problems; curve sketching; definite and indefinite integration of algebraic, trigonometric, and transcendental functions, with an application to calculation of areas.

THECB Approval Number 27.0101.59.19

Statement of Purpose
Through the Texas Core Curriculum, students will gain a foundation of knowledge of human cultures and the physical and natural world, develop principles of personal and social responsibility for living in a diverse world, and advance intellectual and practical skills that are essential for all learning.

Core Objectives Required for Mathematics Courses
Courses in this category focus on quantitative literacy in logic, patterns, and relationships.

Courses involve the understanding of key mathematical concepts and the application of appropriate quantitative tools to everyday experience.

- **Critical Thinking Skills –** to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
- **Communication Skills –** to include effective development, interpretation and expression of ideas through written, oral and visual communication
- **Empirical and Quantitative Skills –** to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions

Required Core Objective	Activity Related to Core Objective
Communication – to include effective development, interpretation, and expression of ideas through written, oral, and visual communication	Students will complete a one-two page writing assignment effectively explaining why the derivative can be used to find the slope of a tangent line.
Communication – to include effective development, interpretation, and expression of ideas through written, oral, and visual communication	Students will complete a quiz/assignment that involves written and visual communication. Students will exhibit knowledge of the relationships between variables arising in real-world context, translate between real-world situations and sketch graphs of relationships between variables, and interpret the functions in terms of the contexts in which they arise.
Communication – to include effective development, interpretation, and expression of ideas through written, oral, and visual communication	Students will complete a quiz/assignment that involves written and visual communication by clearing showing the reasoning behind the solutions to 2-3 problems.
Critical Thinking Skills – to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information	Students will complete an application project utilizing creative thinking, inquiry, analysis, and evaluation skills.
Critical Thinking Skills – to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information	Students will utilize creative thinking, innovation, inquiry, analysis, and evaluation on solving mathematical problems. Students will determine the antiderivatives by various methods.
Critical Thinking Skills – to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information	Students will analyze real-world situations, formulate models, and draw conclusions.
Empirical and Quantitative Skills-to include the ability to reason and solve quantitative problems from a wide array of authentic contexts and everyday life situations and understand and create sophisticated arguments supported by quantitative evidence.	Students will complete an application project. Students will represent relevant information in mathematical forms and use quantitative analysis to draw conclusions and make note of any appropriate assumptions.
Empirical and Quantitative Skills-to include the ability to reason and solve quantitative problems from a wide array of authentic contexts and everyday life situations and understand and create sophisticated arguments supported by quantitative evidence.	Students will complete an assignment/quiz of problems requiring mathematical reasoning.
Empirical and Quantitative Skills-to include the ability to reason and solve quantitative problems from a wide array of authentic contexts and everyday life situations and understand and create sophisticated arguments supported by quantitative evidence.	Students will analyze real-world situations, formulate models, and draw conclusions.

Learning Outcomes
Upon successful completion of this course, students will:

1. Develop solutions for tangent and area problems using the concepts of limits, derivatives, and integrals.
2. Draw graphs of algebraic and transcendental functions considering limits, continuity, and differentiability at a point.
3. Determine whether a function is continuous and/or differentiable at a point using limits.
4. Use differentiation rules to differentiate algebraic and transcendental functions.
5. Identify appropriate calculus concepts and techniques to provide mathematical models of real-world situations and determine solutions to applied problems.
6. Evaluate definite integrals using the Fundamental Theorem of Calculus.
7. Articulate the relationship between derivatives and integrals using the Fundamental Theorem of Calculus.

Methods of Evaluation

Category	Percentage
Face-to-face Classes	
Exams	70%
Lab	25%
Attendance	5%
Total	100%
Category	Percentage
Dual-Credit Classes	
Exams	75%
Lab	25%
Total	100%

Academic Honesty and Integrity
Students attending Frank Phillips College are expected to maintain high standards of personal and scholarly conduct. Academic dishonesty including, but not limited to, cheating, collusion (working with anyone else to produce work for which you take credit without the professor's permission), utilizing resources such as books and notes for a test without the professor's permission, and plagiarism is considered a serious offense and may result in disciplinary actions including:
- A grade of 0 for the test or assignment
- A semester grade of F for the course
- Administrative withdrawal from the course
- Academic suspension
- Notation of the student's transcript of "Academic Dishonesty."

- ***Faculty members have the right to assign a failing grade to a student who is guilty of academic dishonesty at any point during a semester. Faculty members may prohibit a student from dropping a course when academic dishonesty is discovered. However, if a student has dropped the course in accordance with the rules and dates applied to dropping a course and prior to the discovery of academic dishonesty, the grade of W will stand. Students currently enrolled in a course and students who have completed a course (A, B, C, D, CT, and I) may have a grade changed to an F if academic dishonesty is discovered. The faculty member must notify the student of the change to the final grade within one week of facilitating the change. The student will have the opportunity to appeal the final grade change according to the college policy stated in the catalog.

Class Attendance
Regular attendance is necessary for satisfactory achievement. Therefore, it is the responsibility of the student to attend class in accordance with requirements of the course as established by the instructor.

Students will be excused from class without penalty when either representing the college in an approved activity or having an approved reason for not attending. Reasons for absences must be approved by the instructor of the course. These exceptions do not relieve the student of the responsibility of making up the missed work as designated by the instructor concerned.

Students who enroll in one or more college-preparatory course(s) because of TSI deficiency will be administratively withdrawn from all classes if the course in which they are excessively absent is their only preparatory course. For a student enrolled in more than one preparatory course, the student may be dropped from only the course affected by absences.

Any student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day, provided that proper notification of the absence is given to the instructor of the course missed. The student should notify the instructor within the first fifteen (15) days of the semester that he or she intends to be absent on the specified holy day.

Cell Phones and Other Electronic Devices Procedure:
Cell phones and electronic devices in the classroom create a distraction for both students and faculty. Cell phones are also considered suspicious during test taking. Therefore, Frank Phillips College outlines the procedure for handling cell phone usage in a classroom as follows:

1. First Offense: the student will be warned verbally by the instructor to turn off the cell phone or electronic device or by appropriate administrative personnel at distance sites. The instructor will make a notation of the infraction.
2. Second Offense: the student will be asked to leave the class period for the day and will receive zeroes for any work done in class on that day; a student receiving instruction through remote connection at an off-campus site will be required to attend the class face to face in Borger from this class date forward.

3. Third Offense: the student will be administratively withdrawn from the class in which the infraction occurred and will receive no refund for the class.

Students should leave the college's main number with an appropriate contact in case of an emergency.

       Borger: (806) 457-4200, ext. 0 or 886-5047 after hours

       Dalhart: (806) 244-7669

       Perryton: (806) 648-1450

Grievance Policy

If you have a dispute concerning your grade or policies in this class, it is your responsibility to FIRST contact the instructor, either by e-mail or in person, to discuss the matter. Should things remain unresolved after this initial contact, please follow the procedures described in the Academic Policies section of the Frank Phillips College Catalog. In the vast majority of cases, the matter can be resolved at the instructor/student level, and learning to communicate your concerns in a civilized manner is part of the college experience.

Important Information

Frank Phillips College is a Microsoft Office Campus. You must submit your electronic assignments in Microsoft Office programs only. If you do not have Microsoft Office, you may use one of the computer lab sites on campus for your class work.

Scans/Or Core Competencies That Will Be Addressed in the Class

Resources:
Allocates Time
Allocates Money
Allocates Material & Facility Resources

Information:
Acquires & Evaluates Information
Organizes & Maintains Information
Uses Computers to Process Information

Interpersonal:
Participates as a Member of a Team
Teaches Others
Serves Clients/Customers
Exercises Leadership
Negotiates to Arrive at a Decision
Works with Cultural Diversity

Thinking Skills:
Creative Thinking
Decision Making
Problem Solving
Seeing Things in the Mind's Eye
Knowing How to Learn
Reasoning

Technology:
Selects Technology
Applies Technology
Maintains & Troubleshoots Technology

Systems:
Understands Systems
Monitors & Corrects Performance
Improves & Designs Systems

Basic Skills:
Reading

Personal Qualities:
Responsibility

Writing	Self-Esteem
Arithmetic	Sociability
Mathematics	Self-Management
Listening& Speaking	Integrity/Honesty