COURSE STRUCTURE

COURSE NAME	**CALCULUS I**
CODE	**MTH 1125**
CLASS MEETING TIME	**Wednesday**
LOCATION	**HUST**
WORTH	**4 credits**
PREREQUISITE	**MTH 1112**
INSTRUCTOR	**Dr. Vu The Khoi** **Ph.D. in Mathematics**

COURSE DESCRIPTION

An introduction to the basic ideas and techniques of differential and integral calculus, especially as they relate to problems involving maximum and minimum values of functions and marginal analysis.

COURSE OBJECTIVES

This course is designed for students whose primary interests are in business, technological and computer sciences. Upon successful completion of this course, students should be able to:

1. Understand the main properties of functions and relations.
2. Understand the basic results of limits of functions.
3. Prove propositions concerning continuity and differentiability.
4. Use Calculus in application questions to locate maxima and minima.
5. Use differentiation to solve real-life problems.
6. Understand methods for differentiation and integration.
7. Apply approximation principles to find area of a region.
8. Apply definite integrals to solve application problems in business.

COURSE FORMAT

Lecture: 4 hrs per week

STUDENT EVALUATION

Attendance: 10% (if you miss more than one class you will not receive this 10%)

Midterm exam: 30%, Assignment/Quizzes: 20%, Final exam ~~40~~%

EXAMINATION FORMAT

Midterm: 2 hours, Final: 2.5 hours.

GRADING SCALE

A (90% - 100%)
B (80% - 89%)
C (70% - 79%)
D (60% - 69%)
Fail (0%-59%)

BASIC TEXT

James Stewart, "**Calculus, Early Transcendentals**", 7th edition, Cengage Learning 2010.

REFERENCES

Calculus for Business, Economics, Life Sciences and Social Sciences Prentice Hall; 10 edition, by Raymond A. Barnett, Michael R. Ziegler, Karl E. Byleen

CLASS SYLLABUS

The course will cover the following topics from the text book:

Week(s)	Topics
1-3	**Functions and models** Preparing the way for calculus by discussing the basic ideas concerning functions, their graphs, and ways of transforming and combining them. We stress that a function can be represented in different ways: by an equation, in a table, by a graph, or in words. We look at the main types of functions that occur in calculus and describe the process of using these functions as mathematical models of real-world phenomena. We also discuss the use of graphing calculators and graphing software for computers.
4-6	**Limits and derivatives** Formal definition, Right-hand and left-hand limits, Theorems on limits of functions, Infinite limits, Sandwich theorem, Limit involving trigonometric functions.
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7-9	**Differentiation rules** Definition, Differentiability, Rules for derivative, Implicit differentiation, Derivatives of trigonometric functions, Tangent and normal line. Velocity, speed and other rate of change. Applications to business and economics
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10	**Midterm Exam 1**
11-13	**Applications of derivatives** Critical points, Absolute and local maximum/minimum, First derivative test, second derivative test, Asymptotes, Related rates of change, Mean-value theorem, L 'Hopital's rule. Initial Value Problems.
14-16	**Integration** Indefinite integrals, definite integrals, The first and second fundamental theorem of integral calculus, Leibniz's rule, Methods of integration, techniques of integration: substitution and integration by parts, applications (problems in real-life problem)
17-18	**Applications of definite integrals** Finding surface area and volume of revolutionary subjects. Find length of plane curves
19	**Review Session**
20	**Final Examination.**

CLASS REGULATION: The students are expected to attend all scheduled classes. *Mobile phone* is not allowed to use in class

ABSENCES: The following is the official policy of Troy University as written in the Undergraduate *Bulletin*.

"In registering for classes at the University, undergraduate students accept responsibility for attending scheduled class meetings, completing assignments on time, and contributing to class discussions and the exploration of ideas.

"A student will be excused if he/she has been absent from a class by reason of circumstances beyond his/her control or if the student has been required to attend an activity sponsored by the University. Faculty members who sponsor activities that require class absences must send a list of student names to each faculty member concerned at least three days before the scheduled absence.

"Faculty members may levy academic penalties upon unexcused absences; however, such penalties for unexcused absences will be a part of each course syllabus and will be distributed to each class at the beginning of each term, a copy filed in the departmental office."

For all sections, each student is to be in class and prepared for class each scheduled class day. A student whose absence is not warranted by an official excuse or by a doctor's written statement will receive a grade of zero for work due in class and for all work done in class on the day of the absence.

Your attendance and participation in class are essential for a complete learning experience. The type of learning that takes place between you, your instructor, and your classmates cannot be acquired on an individual basis. This class meets only one day per week, and much information must be covered to help you maximize your potential for success at TROY and in life after the University. **THEREFORE, IF YOU MISS MORE THAN TWO CLASSES--EXCUSED OR UNEXCUSED—YOU WILL RECEIVE A FAILING GRADE FOR THE COURSE.**

INCOMPLETE WORK: A student who has not prepared the entire class assignment for a given day will receive a grade of zero for class work on that day.

LATE WORK: Only those students who have been excused from class may hand in work late, and they must hand in all assigned work within on week from the last day of the excused absence.

ACADEMIC DISHONESTY:

Academic dishonesty is not accepted in this course. Cheating on a map quiz will result in a deduction of 10 points from your overall assessment. Cheating on an exam or handing in plagiarized materials will result in an automatic failing grade for the course.

AMERICANS WITH DISABILITIES ACT: Any student whose disabilities fall within ADA must inform the instructor at the beginning of the term of any special needs or equipment necessary to accomplish the requirements for this course.

THIS SYLLABUS IS TENTATIVE AND SUBJECT TO CHANGE. The instructor may make changes if deemed necessary. Changes will be announced in class.