EG360
Introductory Calculus
[Onsite]

Course Description:

This course is an introduction to differential and integral calculus. This course will include, but is not limited to, the following concepts: limits, derivatives, antiderivatives and antidifferentiation, and both indefinite and definite integrals.

Prerequisite(s) and/or Corequisite(s):

Prerequisite: GE192 College Mathematics II or equivalent

Credit hours: 4

Contact hours: 40 (40 Theory Hours)

STUDENT SYLLABUS

Instructor: _____

Office hours: _____

Class hours: _____

Major Instructional Areas

Unit 1

Chapter 2: The Derivative

Motion
The limit
The slope of a tangent line to a curve
The derivative
Differentiation of polynomials
Derivatives of products and quotients
The derivative of a power (chain rule)
Implicit differentiation

Unit 2

Chapter 3: Applications of the derivative

Curve sketching and the use of derivatives
Maximums, minimums, points of inflexion
Asymptotes
Maximum and minimum problems
Related rates
Differentials and linear approximations

Unit 3

Chapter 4: Derivatives of transcendental functions

The trigonometric functions
Derivatives of the sine and cosine functions
Derivatives of other trigonometric functions
Inverse trigonometric functions
Derivatives of inverse trigonometric functions
Exponential and logarithmic functions
Derivative of logarithmic functions
Derivative of exponential functions
L'hospital's rule

Unit 4

Chapter 5: The integral

The indefinite integral
The constant of integration
Area under a curve

The definite integral (Fundamental theorem of calculus)

Unit 5

Chapter 6: Applications of integration

Area between curves
Volumes of revolution: disk method
Volumes of revolution: shell method
Center of mass
Moment of inertia
Work, fluid pressure and average value

Course Objectives

Upon successful completion of this course, the student should be able to:

1. Differentiate algebraic and transcendental functions using the basic derivative rules.
2. Integrate algebraic and transcendental functions using the basic integration rules.
3. Solve application problems involving derivatives.
4. Solve application problems involving integrals

Teaching Strategies

Curriculum is designed to promote a variety of teaching strategies that support the outcomes described in the course objectives and that foster higher cognitive skills. Delivery makes use of various media and delivery tools in the classrooms.

Student Textbook and Materials

Text: Ewen, Dale, et.al. Introductory Calculus, 5th ed., Prentice-Hall, 2005.

Web References

- http://library.itt-tech.edu: Log on to the virtual library to access online books, journals, and other reference resources selected to support ITT Tech curricula
- go to www.prenhall.com/ewen for self-grading practice quizzes

Course Outline

Unit	Topic (Lecture Period)	Chapters	Lab and Other Coverage
1	Derivatives	2	additional instructor-assigned exercises
2	Applications of derivatives	3	additional instructor-assigned exercises
3	Derivatives of transcendental functions	4	additional instructor-assigned exercises
4	The integral	5	additional instructor-assigned exercises
5	Applications of integration	6	additional instructor-assigned exercises
6	Review and Final Examination	.	The final examination will be based on the content covered in chapters 2-6

Evaluation Criteria and Grade Weights

- Homework 25%
- Exam 1 15%
- Exam 2 15%
- Class exercises 25%
- Final exam 20%

Final grades will be calculated from the percentages earned in class as follows:

A	90 - 100%	4.0
B+	85 - 89%	3.5
B	80 - 84%	3.0
C+	75 - 79%	2.5

C	70 - 74%	2.0
D+	65 - 69%	1.5
D	60 - 64%	1.0
F	<60%	0.0

