

COURSE OUTLINE

Graphing Calculator for College Algebra/Calculus

Course Description

MA 126. Graphing Calculator for College Algebra/Calculus. 1 hour credit.
Pre-requisite: MA 120 or MA 125; Corresponding ACT or ASSET placement scores for College Algebra. This course will enable the student to develop skills necessary to use the functions of the graphing calculator. The student will use the graphing calculator to solve mathematical problems. The course will primarily focus on the TI-graphing calculator.

Course Relevance

The concepts learned in this course will improve the student's technological and math skills, leading to success in subsequent courses. The student's ability to solve problems requiring a graphing calculator will improve as will his/her comfort level in using technology to apply to algebra, trigonometry, statistics and calculus problems. Discipline, perseverance and the ability to follow directions are necessary for success, so these skills will also improve. Mathematical and technological literacy will be increased, leading to informed choices when making decisions in problem solving situations both in the classroom and in other life situations.

Required Materials

Graphing Calculator (TI-82 or above required)
Calculator owner manual/guidebook.

Learning Outcomes

The intention is for the student to be able to

1. Perform basic operations and use different menus on a graphing calculator
2. Graph and interpret functions
3. Perform operations on matrices
4. Solve systems of equations using matrices
5. Perform operations on trigonometric functions

Primary Learning PACT Skills that will be DEVELOPED and/or documented in this course

Through the student's involvement in this course, he/she will develop his/her ability in the following primary PACT skill areas:

1. Problem Solving
 - Through the identification and use of calculator components, the student will demonstrate the ability to create and view graphs and solve equations.

Secondary skills (developed but not documented):

Time Management
Reading
Listening

Major Summative Assessment Task(s)

These learning outcomes and the primary Learning PACT skills will be demonstrated by:

1. Completing a summative assignment where the student performs various calculations and creates graphs to solve mathematical problems

Course Content

- I. Themes – Key recurring concepts that run throughout this course:
 - A. Solving equations
 - B. Graphing
 - C. Following directions
 - D. Analyzing functions
- II. Issues – Key areas of conflict that must be understood in order to achieve the intended outcome:
 - A. When a calculator should be used as opposed to pen-pencil or a computer
- III. Concepts – Key concepts that must be understood to address the issues:
 - A. Understanding basic algebra rules and techniques
 - B. Understanding Cartesian Coordinate System
 - C. Dealing with error statements
 - D. Interpretation of mathematical statements
- IV. Skills/Competencies – Actions that are essential to achieve the course outcomes:
 - A. Key Identification
 - B. Use of appropriate menus
 - C. Graph display options and actions
 - D. Alleviation of errors

Learning Units

- I. Operations
 - A. addition
 - B. subtraction
 - C. multiplication
 - D. division
 - E. parentheses
 - F. fractions
 - G. radicals
 - H. exponents
- II. Graphs and interpretation of functions
 - A. intercepts
 - B. maximum and minimum
 - C. plotting data points
 - D. linear equations

E. quadratic equations

III. Operations on matrices

IV. Systems of equations using matrices

V. Operations on trigonometric functions

VI. Basic calculus operations

A. Numerical differentiation

B. Numerical integration

Learning Activities

Independent and group learning activities will be assigned to assist the student to achieve the intended learning outcomes. Activities identified in the syllabus, such as class discussion, lecture, reading, group work or projects will also contribute to learning

Grade Determination

Grade determination will be based on assessment tasks and other activities such as exams, assignment that the instructor identifies in the syllabus.