

Capital Community College

Course Outline

Precalculus

SECTION I

SUBJECT AREA & COURSE NUMBER: MAT* G186

COURSE TITLE: Precalculus

COURSE CATALOG DESCRIPTION: Algebra, trigonometry, and analytic geometry are studied. Topical considerations include inequalities, composite functions, polynomial and rational functions, logarithmic and exponential functions, trigonometric functions, applications of trigonometry to right and oblique triangles, and complex numbers. This course will include use of a graphing calculator.

LECTURE HOURS PER WEEK: 4

CREDIT HOURS: 4

PREREQUISITE(S): MAT* G137 or qualifying score on placement test

SECTION II

A. SCOPE:

The objective of Precalculus is to enable the student to acquire a working understanding of functions. This involves: interrelating the three function representations (table, graph, formula), viewing functions as both processes and entities, recognizing function types and their characteristics, predicting the behavior of a function from the value of its parameters, using functions to represent and solve problems, using functions to analyze data, establishing connections between functions and the real world, and developing the level of mathematical understanding required for subsequent study of Calculus.

B. REQUIRED WORK: Determined by the instructor as described in the course syllabus

C. ATTENDANCE AND PARTICIPATION: Students are expected to attend each class, arrive on time, take exams at the scheduled times, and participate in the in-class learning process. (Specific instructor policies are included on the course syllabus.)

D. METHODS OF INSTRUCTION: The methods of instruction are determined by each instructor and may include but are not limited to lecture, lecture/discussion, small group collaborative learning, experiment/exploration, distance learning, student presentations, use of technologies such as audio-visual materials, computer, language laboratory, and calculator.

7/17/04

E. OBJECTIVE, OUTCOMES, ASSESSMENT

The following objectives and outcomes represent the department's core requirements for student achievement.

LEARNING OBJECTIVES	LEARNING OUTCOMES	ASSESSMENT METHODS
To demonstrate an understanding of:	Student will:	As measured by:
The function concept	a) Evaluate functions from graphs, formulas, and tables b) Determine whether a relation is a function c) Find domain and range d) Graph a function	Written in- class quizzes, tests, and examinations; presentations to the class; out-of-class projects, written reports; portfolios; homework assignments
Basic Analytic Geometry	a) Find ordered pairs that satisfy an equation b) Graph equations by plotting ordered pairs c) Apply distance and midpoint formulas d) Solve problems that relate to lines and their equations	
Properties of graphs of functions	a) Find from a graph: intervals on which function is increasing/decreasing, slope is increasing/decreasing, local max/min, inflection points, and intercepts b) Interrelate a function and its translation, reflections, and vertical expansions/contractions	
The algebra of functions	a) To create and work with the sum, difference, product, quotient, and composite of 2 functions. b) Find the inverse of a function	
The Elementary Functions (Linear, Quad., Poly., Rat., Exp., Log., Trig.)	a) Use the properties of each class of function to interrelate their graphical and algebraic representations b) Formulate & apply function models of pertinent problem situations c) RE polynomials: Apply Rem. T., Factor T., Rat. Roots T., and Syn. Div	
Solving right and oblique triangles.	Formulate and solve problems that involve right and oblique triangles	
Identities	Prove trigonometric identities	
Complex numbers	a) Express complex numbers in rectangular and polar form b) Graph complex numbers c) Add, subtract, multiply, and divide complex numbers	
A Mathematical Model	a) Represent a "real world" situation by a function b) Explore the situation by applying precalculus to the mathematical model c) Support this activity with appropriate technology d) Describe findings in a written report	

Note 1: The foregoing table of learning outcomes should not be considered exhaustive; other learning outcomes may also support the objectives. The list is not intended to limit the learning outcomes that can be used to support the objectives.

Note 2: The order in which the learning outcomes are addressed and the relative emphasis given to each will vary from instructor to instructor.

Note 3: There is no expectation that an instructor will employ all the assessment methods or any particular subset of them. Also, the particular list of assessment methods is not exhaustive. Other methods that measure the learning outcomes may be used.

Note 4: It is important to recognize that courses are not delivered in a social vacuum. Any bona fide assessment of a course must take account of out-of-class life demands on students that adversely impact academic success.

F. TEXTS AND MATERIALS: A text selected by the Mathematics Section of the Science and Mathematics Department with content and presentation that support the Learning Objectives and Outcomes given in Part E above.

G. INFORMATION TECHNOLOGY: Graphing calculator