

SUFFOLK COUNTY COMMUNITY COLLEGE
COLLEGE-WIDE COURSE SYLLABUS
MAT124

I. COURSE TITLE:

Fundamentals of Precalculus I

II. CATALOG DESCRIPTION:

Concept of function introduced early and used throughout course. Topics include zeros and graphs of polynomial functions, graphs and asymptotes of rational functions, exponential and logarithmic functions, introduction to trigonometry, angle measurement, right triangle trigonometry, properties and graphs of trigonometric functions.

Notes: (1) Credit given for MAT124 or MAT126, but not both. Successful completion of both MAT124 and MAT125 is equivalent to MAT126 completion. (2) Fulfills SUNY-GE Mathematics. Prerequisite: C or better in MAT111 or higher or successful completion of three years of college preparatory mathematics. Offered on: A-E-G / 4 cr. hrs.

III. COURSE GOALS:

- A. Introduce the concept of a function.
- B. Show students the relationship between algebra and geometry in the study of functions.
- C. Expose students to a wide variety of elementary functions.
- D. This course satisfies the SUNY general education requirement for mathematics.

IV. COURSE OBJECTIVES:

Upon successful completion of this course, students will be able to:

1. Demonstrate an understanding of a mathematical function including such ideas as the range and domain of functions, symmetric functions, composite functions, and inverses of functions;
2. Sketch graphs of quadratic functions and understand the zeros of such functions;
3. Comprehend the significance of the fundamental theorem of algebra and be able to solve polynomial equations completely by finding the roots;
4. Sketch the graph of polynomial functions;
5. Sketch the graph of rational functions;
6. Sketch the graph of exponential and logarithmic functions;

7. Solve exponential and logarithmic equations, including compound interest; understand and graph the trigonometric functions and solve applications using right triangle relationships.

*Calculator Note: Use a graphing calculator to perform computations and to graph a variety of functions. TI-83, TI-83 Plus, TI-84, TI-84 Plus calculators permitted only. No Computer Algebra System (CAS) enabled calculators such as TI-89 or TI-Nspire permitted.

V. Topics Outline with Timeline

Topics	Approximate Time (Including Examinations)
A. <u>Review of Algebra</u> 1. linear and quadratic equations and graphs 2. simplification of expressions involving exponents and radicals	2 weeks
B. <u>Functions</u> 1. domain, range, intercepts 2. arithmetic operations and composition 3. graphs 4. inverses 5. special functions: absolute value, split domain, greatest integer, etc. 6. even and odd functions, symmetry, translations	2-3 weeks
C. <u>Polynomials and Rational Functions</u> 1. synthetic division, Remainder Theorem 2. Factor Theorem, Rational Zero Theorem, and Fundamental Theorem of Algebra 3. graphing polynomial functions 4. asymptotes and graphs of rational functions 5. applications	3-4 weeks
D. <u>Exponential and Logarithmic Functions</u> 1. exponential functions and their graphs 2. logarithmic functions and their graphs 3. inverse relationship, properties 4. use of logarithmic functions to solve exponential equations 5. applications including compound interest, growth and decay	3-4 weeks

<p>E. <u>Introduction to Right Triangle Trigonometry and Trigonometric Functions</u></p> <ol style="list-style-type: none"> 1. definition of trigonometric functions by right triangle relationships 2. Pythagorean Theorem 3. radian measure and trigonometric functions of any angle 4. standard reference angles 5. graphs of trigonometric functions 6. applications 	3 weeks
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VI. Evaluation of Student Performance:

To be determined by the instructor

VII. Programs that require this course:

Business Administration/AS (recommended)

Engineering and Technology: Construction Technology-Architectural Technology/AAS (required)

Engineering and Technology: Engineering Technology/AAS (required)

Information Technology/AAS (recommended)

Liberal Arts and Sciences: Adolescence Education/Mathematics Emphasis/AA (required)

VIII. Courses that require this course as a prerequisite:

CHE133, COT110 (corequisite), COY222, COT266, MAT125, MAT131, PHY101-102, ELT222(corequisite), ELT224 (corequisite)

IX. Supporting Information:

Mathematics tutoring services, as well as video and computer aids, are provided for all students through the Math Learning Center (Ammerman Campus, Riverhead 235), the Center for Academic Excellence (Grant Campus, Health, Sports and Education Center 129), and the Academic Skills Center (Eastern Campus, Orient 213).