SUFFOLK COUNTY COMMUNITY COLLEGE
COLLEGE-WIDE COURSE SYLLABUS
MAT125

I. COURSE TITLE:

Fundamentals of Precalculus II

II. CATALOG DESCRIPTION:

Concept of function used throughout course. Topics include trigonometric functions and inverses, identities and equations, laws of sines and cosines, DeMoivre's Theorem and complex numbers, polar and parametric equations, systems of linear equations and inequalities, partial fractions and the conics. Notes: (1) Credit given for MAT125 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 MAT124 or equivalent. Offered on: A-E-G / 4 cr. hrs.

III. COURSE GOALS:

A. Extend the study of functions that began in MAT124
B. Develop methods of geometry and analytic geometry needed in calculus and physics courses.
C. Extend the study of trigonometry that began in MAT124.
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. Understand the trigonometric functions, their graphs, and their inverses;
2. Verify trigonometric identities;
3. Solve trigonometric equations and the general triangle, and find the area of a triangle;
4. Write and do basic computations with complex numbers in both rectangular and trigonometric form including the use of DeMoivre's Theorem and the nth root theorem;
5. Analyze, compare and graph polar functions, conic sections and parametric equations;
6. Solve problems involving both linear and nonlinear systems of equations and inequalities;
7. Express and analyze both arithmetic and geometric sequences and series (optional);
8. Use the principle of mathematical induction to prove identities involving summations, including the binomial theorem (optional);
9. 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. Review Topics Pythagorean Theorem, angle measurement, and right triangle trigonometry	5 weeks
B. Trigonometric Functions 1. domain, range and graphs of the primitive and reciprocal functions 2. amplitude, period, frequency, and phase shift 3. Pythagorean theorem, sum and difference formulas 4. double angle and half angle formulas 5. applications 6. domain, range and graphs of inverse trigonometric functions 7. solving trigonometric equations	
C. Applications of Trigonometry 1. laws of sines and cosines 2. solving the general triangle 3. the area of a triangle 4. vectors 5. complex numbers – rectangular and trigonometric form 6. DeMoivre's Theorem and the n^{th} root theorem	4-5 weeks
D. Polar and Parametric Equations 1. polar coordinate system 2. graphs of polar functions 3. parametric equations and their graphs	
E. Conic Sections 1. standard and general forms of circle, parabola, ellipse, hyperbola 2. foci, directrix, focal length, eccentricity 3. graphs	3 weeks
F. Systems of Equations and Inequalities 1. solution by graphing 2. Gaussian elimination and augmented matrices 3. partial fractions 4. systems of non-linear equations 5. inequalities	2 weeks

G. Some Special Topics (optional) 1. mathematical induction 2. binomial theorem 3. arithmetic and geometric sequences and series	

VI. Evaluation of Student Performance:

To be determined by the instructor

VII. Programs that require this course:

Engineering and Technology: Construction Technology-Architectural Technology/AAS
Engineering and Technology: Electrical Engineering Technology/AAS
Liberal Arts and Sciences: Adolescence Education/Mathematics Emphasis/AA

VIII. Courses that require this course as a prerequisite:

COT233 (corequisite), COT246, COT266(corequisite), MAT141

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).