SUFFOLK COUNTY COMMUNITY COLLEGE
COLLEGE-WIDE COURSE SYLLABUS
MAT107 (formerly MA17)

I. COURSE TITLE:

Computer Mathematics Concepts

II. CATALOG DESCRIPTION:

For students pursuing a Computer Technology degree program. Stresses problem-solving and computer mathematics concepts. Taught with a computer lab component. Topics include number systems, computer arithmetic, sets, logic, functions, vectors, matrices, sequence, selection and repetition, and problem solving. Prerequisite: MAT007 or equivalent. *MAT107 and CST112 are corequisites for students in the Information Technology curriculum.* Note: *Credit given for MAT107 or MAT101, but not both.*

A-E-G / 4 cr. hrs.

III. COURSE GOALS:

A. Introduce students to mathematical notation and mathematical thinking.
B. Introduce elementary logic.
C. Introduce mathematical ideas that lie in the foundation of computer technology.

IV. COURSE OBJECTIVES:

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

A. perform the basic operations of set theory including intersection, union, and complement;
B. understand binary number system, conversion to decimal and hexadecimal systems;
C. distinguish between integer/real number representation in computer;
D. translate verbal statements into symbolic forms of conjunction, disjunction, and negation;
E. perform matrix manipulations, including addition and subtraction;
F. convert word problem specifications into algorithms that can be used to develop computer solutions.

V. Topics Outline with Timeline

Topics	Approximate Time (Including Examinations)
A. Numbers and Operations 1. fundamental concepts 2. numbers and exponents 3. order of operations 4. evaluation of expressions 5. MOD operator 6. relative error (optional)	2 weeks
B. Binary and Hexadecimal Number System 1. binary number system 2. hexadecimal number system 3. negative binary numbers 4. applications (memory dump in hex, two's complement, ASCII representation, unicode)	4 weeks
C. Logic 1. conjunction 2. disjunction 3. negation 4. DeMorgan's Law 5. conditional and biconditional	3 weeks
D. Relations and Functions 1. function definition 2. mathematical functions 3. built-in functions	2 weeks
E. Subscripts, Vectors, and Matrices 1. vectors or one-dimensional arrays 2. summation (sigma) and product (pi) 3. matrices or two-dimensional arrays	3 weeks
F. Sets 1. properties of sets 2. operations on sets 3. Venn diagrams	1 week
G. Problem Solving Using All Concepts Learned Throughout the Semester, Specifically Dealing with Decisions and Looping (Sequence, Selection, and Repetition)	
Optional Topics:	
I. Computer Measurements	
J. Loop Computations	
K. Recursion	

VI. Evaluation of Student Performance:
To be determined by the instructor

VII. Programs that require this course:
Information Technology/AAS
Information Technology/Certificate

VIII. Courses that require this course as a prerequisite:
None

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).