CAPITAL COMMUNITY COLLEGE
COURSE OUTLINE
Prealgebra: *Number Sense, Geometry*

SECTION I

SUBJECT AREA & COURSE NUMBER: MAT* G075
COURSE TITLE: *Prealgebra*: *Number Sense, Geometry*
COURSE CATALOG DESCRIPTION: *Prealgebra: Number Sense, Geometry* serves as a bridge from arithmetic to algebra. This transition to algebra introduces the concept of variable, algebraic expressions, equations, elementary geometry, and graphing. In support of this transition, the properties of real numbers with emphasis on whole numbers, signed numbers, and rational numbers are also introduced. Estimation, appropriate use of technology, and basic application problems are included.
LECTURE HOURS PER WEEK: 3 **CREDIT HOURS:** 0
PREREQUISITES: Qualifying score on Placement Test

SECTION II

A. SCOPE:
The overarching objective of *Prealgebra*: *Number Sense, Geometry* is to provide the student with an opportunity to acquire the level of understanding of arithmetic patterns and the variable concept that is required for further study of algebra. *Prealgebra*: *Number Sense, Geometry* is a bridge from arithmetic to algebra, from the concrete to the abstract. Thus, the student will have the opportunity to develop a working understanding of real number properties with emphasis on whole numbers, integers, and rational numbers as well as graphing. At the same time, the expression of arithmetic patterns, exercises, and problems will typically be couched in language involving variables. A key objective is to enable the student to express and work with mathematical ideas using variables.

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.

5-3-04

E. OBJECTIVES, 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:
1) Number sense	a) Identify place value ***C** b) Convert between standard form and expanded form representations of numbers c) Add, subtract, multiply and divide whole numbers, integers, rational numbers and decimals ***C** d) Apply order-of-operation conventions e) Convert from one number representation (fraction, decimal, percent) to another f) Arrange real numbers in order g) Calculate b^n where b is a whole number, integer, fraction, or decimal and n is an integer with $n \geq -1$ h) Estimate answers by rounding components ***C**	Written in-class quizzes, tests, and examinations: presentations to the class; out-of-class projects; written reports; portfolios; class participation; homework assignments
2) The variable concept	a) Convert between English statements with "unknowns" and their mathematical equivalents b) Evaluate mathematical expressions c) Apply mathematical rules to specific cases	
3) The real number properties and how to apply them	a) Identify field properties b) Identify the zero-factor property c) Apply the field properties	
4) First degree equations in one variable	a) Simplify each side of an equation b) Apply the addition, subtraction, multiplication, and division properties of equality to reduce an equation to the form x = k c) Check answer	
5) Basic applications	a) Formulate basic word problems, including those that involve ratios, proportions, and rates, as algebraic equations b) Find solutions and check results c) Use learning technologies as appropriate	
6) Basic geometry concepts	a) Measure length of a line segment b) Apply algebra to find the perimeter and area of a rectangle, square, triangle, and circle c) Apply algebra to find the perimeter and area of a parallelogram and trapezoid d) Apply algebra to find angle measure e) Apply algebra to find length using similar triangles f) Express and apply basic relationships among angles using degree measure	
7) Simple graphs	a) Read and interpret a variety of simple graphs b) Properly locate numbers on the Real number line c) Graph sets of ordered pairs d) Find the ordered pairs associated with a set of points	
8) Simple notation	Recognize and use: a) x^{-1} as the reciprocal of x b) $-x$ as the opposite of x c) $\lvert x \rvert$ as the absolute value of x d) An expression enclosed by parentheses as "the quantity represented by the expression "	

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 achieve 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 set of them. Also, the list of applicable 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 Objectives and Outcomes given in Part E above.

G. INFORMATION TECHNOLOGY: A basic calculator (add, subtract, multiply, divide, square root) is required.