HOSTOS COMMUNITY COLLEGE
DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

MAT 19	**Algebra Supplement for Introduction to Probability and Statistics**
CREDIT HOURS:	**0.0**
EQUATED HOURS:	**1.5**
CLASS HOURS:	**1.5**
PREREQUISITE:	**Placement, MAT 10, or MA 10**
COREQUISITE:	**MAT 119**
REQUIRED TEXTS:	**Workbook for Algebra**
DESCRIPTION:	**This course develops basic skills in algebra, as well as students' algebraic and critical thinking skills as related to statistics. During the semester, students develop understanding of algebraic relationships and strategies for problem solving. Topics to be discussed include: operations with real numbers; algebraic expressions; solving literal equations; solving and graphing linear equations; proportion and percent word problems; and the most basic level of understanding of inequalities, exponents, and radicals.** ***Note: This course does not count as completion of an elementary algebra course.***
EXAMINATIONS:	**A minimum of two partial tests will be required for completion of this course. Partial tests will consist of additional algebraic problems included on the tests given in MAT 119.**
GRADES:	**S, P, R, WU**

STUDENT LEARNING OUTCOMES:

Students will be able to:

- Perform operations on and simplify numerical and algebraic expressions
    - Substitution and evaluation
    - Basic exponential notation
- Solve linear and literal equations
    - Translate word problems into algebraic equations and solve them
    - Solve literal equations for a given variable
- Perform basic operations on and simplify radicals and roots
- Perform basic operations involving inequalities
- Write and graph linear equations in the Cartesian coordinate plane using various techniques and properties of linear equations

MATH 019: DAY-BY-DAY COURSE OUTLINE:

I. THE REAL NUMBER SYSTEM AND INTRODUCTION TO ALGEBRA

Day 1:

Introduction: sets of integers, rational, irrational and real numbers
The real number line
Absolute value
Comparing, ordering (<, =, >), and trichotomy (*e.g.*, $-1 < 0 < 5$)
Order of operations involving real numbers

Day 2:

The concept of variable and constant; defining like and unlike terms
Definition of algebraic expressions and like terms:
- Term:
  - Numerical coefficient (including implied 1 and -1)
  - Literal part
  - Monomial, binomial, polynomial
  - Like and unlike terms

The substitution principle for evaluating formulas and algebraic expressions

Day 3:

Basic exponent rules, including negative exponents for scientific notation
Finding roots and simplifying radicals

II. LINEAR EQUATIONS IN ONE VARIABLE, TOGETHER WITH APPLICATIONS

Day 4:

Definition and solution of a linear equation in one variable
Solving linear equations using:
- Addition/Subtraction and Multiplication/Division Principles of Equality

Language translation problems (e.g., "three less than twice a number is what?")

Day 5:

Solving word problems (application problems) using linear equations:

a. Solving literal equations for a given variable, including statistics formulas
b. Translating from English to algebra, (e.g., "15 is 12 less than 2 times a number" "30 subtracted from 7 times a number is 4")

Day 6:

PARTIAL TEST I (non-departmental): General review, which should include at least the following: order of operations, substitution, signed numbers, translation problems, solving linear equations, and basic radicals and exponents.

III. CARTESIAN GEOMETRY

Day 7:

The Cartesian coordinate system;
Ordered pairs of real numbers and finding points in a plane, given a table
Definition and solution of a linear equation in two variables ($ax + by = c$)
Graphing a linear equation:

a. By finding two points
b. By the x- and y-intercepts method

Day 8:

Concept of the slope of a straight line:

Slope formula
Finding the slope of a line on a graph given its equation
Finding the slope of a line using $y = mx + b$
Given possible graphs of a line, use slope and y-intercept to select correct graph

Day 9:

Finding equations of lines:

Using the slope-intercept formula ($y = mx + b$)
Using the point-slope formula
Given two points on the line

Day 10:

PARTIAL TEST II (non-departmental): Cartesian geometry, including finding equations of lines and finding the correct graph given equation

IV. WORD PROBLEMS

Day 11:

Solving and graphing linear inequalities

Day 12:

More algebra word problems, including area problems, and linear inequality problems

Please be advised that while the instructor may change the order and the pacing, the instructor is still responsible for covering in time all topics represented before the need of such knowledge in the corequisite statistics course. A.J.S. Last edited: 9/7/17