HOSTOS COMMUNITY COLLEGE
DEPARTMENT OF MATHEMATICS

MAT 15   **INTENSIVE INTEGRATED ARITHMETIC/ALGEBRA**

CREDIT HOURS: **0**

EQUATED HOURS: **6.0**

CLASS HOURS: **6.0**

PREREQUISITE: **Placement score of 25 or above on the COMPASS M1**

REQUIRED TEXTS: **Integrated Arithmetic and Basic Algebra**
                      Jordan, B., & Palow W., 5th Edition Pearson NJ

`

DESCRIPTION: **This course is designed for students who have a high fail
                      on the Compass exam, to prepare them for college level
                      mathematics and in one semester to pass the final exams
                      for pre-algebra and algebra. The aim of this course is to
                      integrate basic skills in arithmetic and algebra while
                      developing students' understanding of algebraic
                      relationships and strategies of problem solving. Topics
                      from arithmetic include: real numbers, number line and
                      the concepts of ratio, proportion, percent, and
                      measurement system, Topics from algebra include: signed
                      numbers, algebraic and exponential expressions; linear
                      equations; applications or word problems; polynomials,
                      factoring and related concepts; linear equations and their
                      graphs and systems; roots and radicals.**

EXAMINATIONS: **A minimum of four partial tests and two comprehensive
                      departmental final examination.**

GRADES: **A, A^{-}, B^{+}, B, B^{-}, R, I, F or P**

MAT 015

STUDENT LEARNING OUTCOMES
Students will be able to:
- Set up a number line and Cartesian coordinate system; be able to plot real numbers and pairs of numbers.
- Compare order and estimate values of real numbers
- Convert between representations of real numbers including: decimals, fractions, percents and scientific notation.
- Solve basic problems involving: ratio, rate, proportion, percent ,average problems and linear equations
- Perform operations on numerical and algebraic terms
- Use operations and their inverse processes leading to variables
- Solve linear equations and inequalities in one variable.
- Translate between verbal-written expressions to mathematical statements in numerical or algebraic form.
- Solve word problems involving arithmetic and algebra.
- Factor integers and polynomials, solve quadratic equations, simplify fractions and rational expressions.
- Perform operations on radicals and roots.
- Write and graph linear equations on the Cartesian coordinate plane using various techniques and properties of linear equations
- Solve systems of equations in two variables

COURSE OUTLINE

I.   Review of Arithmetic and Introduction to Variable Ch. Review

Class	Arithmetic	Algebra
1	Whole numbers, place value, Rounding whole numbers.	
2	Fundamental operations on whole numbers	
3	Integers, Opposites, Absolute Values	
4	Reading, Writing, and Rounding Decimal	Concept of Variable

II.   Addition and Subtraction of Real Numbers & Polynomials Ch. 1

Class	Arithmetic	Algebra
5	Integers	
6.	Addition and Subtraction with Decimals	
7.		Algebraic expressions and Polynomials
8.		Polynomials: Addition and Subtraction
9.	Ch.10	Addition and Subtraction with like radicals

III.   Multiplication & Division of Real Numbers and Polynomials- Chapter 2

	Arithmetic	Algebra
10.	with Integers	
11.	with Decimals	
12		Exponents: Rules of Exponents
13		Negative Exponents
14.		Multiplication of Polynomial and Special Product
15.		Division of Polynomials
16.	Ch. 10	Roots and Radicals: Finding Roots
18.	Ch. 10	Multiplication and Division of radicals
19.	Ch. 10	Rationalizing the Denominator
20.	Order of operations	Ch.2
21.	Ch. 3	Simplifying Algebraic Expression, Evaluation of Polynomials and Combine Like Terms

IV.   Factorization of Integers and Polynomials-Ch 5

	Arithmetic	Algebra
22.	Divisibility by 2,by 3,5,9 Multiples, and Factors of numbers.	
23.		Factoring: Greatest Common Factor and Factoring by Grouping
24.		Factoring trinomials $x^2 + bx + c = 0$
25.		Factoring polynomials $ax^2 + bx + c = 0$
26.		Factoring: Difference of two Squares

V. Fractions and Rational Expressions –Ch. 7

Class	Arithmetic	Algebra
27	Least Common Multiples	
28.	Equivalent Fractions, Comparing Fractions	Algebraic equivalent fractions.
29.	Addition and subtraction with Fractions	Factoring: Difference of two Squares
30.		Addition and Subtraction of rational expressions

V. Multiplication and Division of Fractions and Rational Expression Ch. 6

	Arithmetic	Algebra
31.	Multiplication and Division with Fractions	
32		Multiplication and Division with Rational Expressions
33.		Simplifying Rational Expressions

VI. Application Problems- Chapter 8

	Arithmetic	Algebra
34.	Changing Fractions to Decimals and Vice versa	
35.	Percents, Changing Percent to Decimals or Fraction, Changing Fraction or Decimals to Percent	
36.	Problems with Fractions	
37.	Problems with Ratios and Proportions	
38		Solving Equations with Integers,decimals
39	Solving Percent Problems	
40.		Equations with Fractions and Proportions
41-	Review of applications	
41	Basic Geometry. Perimeter and Area	Ch. 3
42	Applications to Geometry. Area of a Circle, Circumference	Ch.3
43		Solving Quadratic Equation using Factorization Ch. 11

VII. Graphing Linear Equations

Class	Arithmetic	Algebra
44	Review of Real Number Line Plotting Points	Cartesian Coordinate System Plotting Points
45	Ratio tables	Graphing ratio tables
46		Linear Equation with two variables and its Graph.
47	Distance Formula & Midpoint Formula	
48		Slope of a Line
49		Graph Linear Equations using Intercepts
50		Slope of a line. Finding the equation of the line
51		Equation of the Line, point slope form: y=mx+b
52		Equation of Line slope point form.
53		Solving Systems of Linear Equations: Graphically, Substitution Method, and Addition Method
54		Applications of linear equations with two variables

VIII. Roots & Radicals Ch. 10

Class	Arithmetic	Algebra
55	Roots of real numbers	Roots of algebraic terms
56	Simplifying radicals with integers	Simplifying Radicals with algebraic terms
57	radical equations :x^n=b	Solving radical Equations
58-60	Review for Final Exams	