I.	Course ID (department & number): MAT 123
II.	Course Name: Mathematics for Liberal Arts
III.	Number of Credits Awarded for Course: 3
IV.	Prerequisite or Co-requisite courses or academic standing (if applicable): Pre-requisite(s): Exit Basic Algebra Co-requisite(s): None
V.	Indicate if New or Modified Course: New
VI.	Semester and Year Course will First be Offered: Spring 2017
VII.	Name and Telephone Number and/or e-mail address of department chair or other appropriate contact person: Heather DeVries, Academic Representative to NJ Transfer hdevries@hccc.edu 201-360-4660 John Marlin P.h.D., Dean of Instruction jmarlin@hccc.edu 201-360-4287 Ahmed Rakki, Instructor / Coordinator, Mathematics STEM arakki@hccc.edu 201-360-4269
VIII.	Detailed Course Description: Liberal Arts Mathematics teaches students in appropriate non-STEM programs to apply mathematics to real-world problem solving. The course exposes students to forms of mathematics useful in decision making, planning, and understanding their experiences, emphasizing how mathematics can model human behavior and natural activity. Topics include critical thinking skills, sets, Venn diagrams and their applications, logic, tree diagrams, graphs and sets, mathematical system, graphs, functions, linear and quadratic functions, probability, and statistics.
IX	Outline of Course Objectives *Upon successful course completion, students will be able to:* 1. Determine an appropriate mathematical method of problem solving 2. Apply mathematical logic to improve and evaluate ideas, theories and thoughts. 3. Critically analyze and comprehend logical statements.

	4. Communicate accurate mathematical terminology and notation to explain strategies to solve problems and interpret solutions. 5. Apply various reasoning, problem-solving, and critical thinking techniques to solve quantitative problems and make decisions. 6. Analyze statistical patterns to make accurate predictions and estimates. 7. Use technology effectively to improve mathematical understanding, to solve problems and present solutions.
X.	Texts, Journals and Other Materials used in Course A survey of Mathematics With Applications, Angel, Abbott, Runde, 10th Edition, 2017 ISBN: 13:978-0-13-411210-7.
XI.	Grade Determinants Three in-class exams: 60% Projects: 20% Final exam: 20%
XII.	Number of Papers & Examinations Communicate and understand logical arguments verbally and in writing. Write statements using a mathematical vocabulary and language properly
XIII.	Schedule of Topics to be Covered See Figure XIII

Figure XIII.

Session	Topic	Content
1	**Critical Thinking Skills** **(**SLO 1**)**	Inductive and Deductive reasoning
		Estimation
		Problem Solving
2-3	**Sets** (SLO 1,2)	Set Concepts
		Subsets
		Subsets
		Venn diagrams and Sets operations
		Venn diagrams with Three Sets and
		Verification of Equality of Sets.

		Applications of Sets.
		Infinite Sets
		Exam #1
4-5	**Logic** (SLO 1, 2, 3)	Statements and Logical connectives
		Truth Tables for Negation, Conjunction, and Disjunction
		Truth Tables for the Conditional and Biconditional
		Equivalent Statements
		Symbolic Arguments
		Euler Diagrams and Syllogistic Arguments
		Switching Circuits
		Exam #2
6	**Number theory** (SLO 1, 2, 4, 5)	Number Theory
		The integers
		The rational Numbers
		The Irrational Numbers
		Real numbers and their properties
		Rules of Exponential and Scientific Notation
		Arithmetic and Geometric Sequences
		Fibonacci Sequence
7-8	**Algebra, Graphs, and Functions**	Order of Operations and Solving Equations
		Formulas

	(SLO 1, 2, 4, 5,7)	Applications of Algebra
		Variation
		Linear Inequities
		Graphing Linear Equations
		Solving System of linear equations
		Solving Quadratic equations by Using Factoring and by Using the quadratic Formula
		Functions and their graphs
		Exam #2
9	**Mathematical Systems** (SLO 1, 2, 4, 5)	Groups
		Finite Mathematical Systems
		Modular Arithmetic
		Matrices
10-12	**Probability** (SLO 1, 2, 4, 5, 6)	Empirical AND Theoretical Probabilities
		Odds
		Expected Value(Expectation)
		Expected Value(Expectation)
		Tree Diagrams
		OR and AND Problems
	Probability (SLO 1, 2, 4, 5, 6)	Conditional probability
		Combinations
		Solving probability problems by Using Combinations

		Binomial Probability Formula
		Exam #3
13-15	**Statistics** (SLO 1, 2, 4, 5, 6)	Sampling Techniques and Misuses of statistics
		Frequency Distributions and Statistical Graphs
		Measures of Central Tendency
		Measures of dispersion
		The Normal curve
		Linear Correlation and Regression
		Final Exam