SUNY OLD WESTBURY

DEPARTMENT OF MATHEMATICS AND COMPUTER & INFORMATION SCIENCE

COLLEGE ALGEBRA MA1020

Departmental Syllabus

TEXTBOOK: **College Algebra,** 9th Edition, by Michael Sullivan, Published by Pearson 2011, ISBN-13: 9780321716811.

Prerequisite: A grade of **C** or higher in MA1010 Powertrack Math or Placement level of College Algebra-MA1020 or higher.

COURSE DESCRIPTION: Topics include factoring polynomials, rational and algebraic expressions, exponents and radicals, linear and quadratic equations, complex numbers, inequalities, functions and their graphs, systems of equations.

COURSE OBJECTIVES: The main goal of this course is that students completing this course will have an understanding of both analytic and graphical approaches to solutions of problems that can be expressed algebraically. Students will demonstrate the ability to:

- Interpret and draw inferences from mathematical models such as graphs tables and schematics.
- Represent mathematical information symbolically, visually, numerically and verbally.
- Employ quantitative methods to solve problems.
- Estimate and check mathematical results for reasonableness.
- Recognize the limits of mathematical and statistical methods.

COURSE EVALUATION & GRADING: Course grade will be based on midterm exams, quizzes, homework, and Final Exam. The Final exam is **cumulative** and it counts at least **30**% of the course grade. The grading scale is as follows:

A = [94, 100]	**B** $^{+}$ = [87, 89]	**C** $^{+}$ = [77, 79]	**D** $^{+}$ = [67, 69]	**F** = [0, 59]
A $^{-}$ = [90, 93]	**B** = [84, 86]	**C** = [74, 76]	**D** = [64, 66]	
	B $^{-}$ = [80, 83]	**C** $^{-}$ = [70, 73]	**D** $^{-}$ = [60, 63]	

ACCOMMODATIONS FOR STUDENTS WITH SPECIAL NEEDS: If you have or suspect you may have a physical, psychological, medical or learning disability that may impact your course work, please contact Stacey DeFelice, Director, The Office of Services for Students with Disabilities (OSSD), NAB, 2065, Phone: 516-628-5666, Fax (516) 876-3005, TTD: (516) 876-3083. E-mail: defelices@oldwestbury.edu. The office will help you determine if you qualify for accommodations and assist you with the process of accessing them. All support services are free and all contacts with the OSSD are strictly confidential.

TOPICS TO BE COVERED

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R. Review

R.1 Real Numbers

R.2 Algebra Essentials

R.3 Geometry Essentials

R.4 Polynomials

R.5 Factoring Polynomials

R.6 Synthetic Division

R.7 Rational Expressions

R.8 nth Roots; Rational Exponents

1. Equations and Inequalities

1.1 Linear Equations

1.2 Quadratic Equations

1.3 Complex Numbers; Quadratic Equations in the Complex Number System

1.4 Radical Equations; Equations Quadratic in Form; Factorable Equations

1.5 Solving Inequalities

1.6 Equations and Inequalities Involving Absolute Value

1.7 Problem Solving: Interest, Mixture, Uniform Motion, and Constant Rate Job Applications

2. Graphs

2.1 The Distance and Midpoint Formulas

2.2 Graphs of Equations in Two Variables; Intercepts; Symmetry

2.3 Lines

2.4 Circles

2.5 Variation

3. Functions and Their Graphs

3.1 Functions

3.2 The Graph of a Function

3.3 Properties of Functions

3.4 Library of Functions; Piecewise-defined Functions

3.5 Graphing Techniques: Transformations

4. Linear and Quadratic Functions

4.1 Linear Functions and Their Properties

4.2 Building Linear Functions from Data

4.3 Quadratic Functions and Their Properties

4.4 Quadratic Models; Building Quadratic Functions from Data

4.5 Inequalities Involving Quadratic Functions

5. Polynomial and Rational Functions

5.1 Polynomial Functions and Models

5.2 Properties of Rational Functions

5.3 The Graph of a Rational Function

5.4 Polynomial and Rational Inequalities

5.5 The Real Zeros of a Polynomial Function

5.6 Complex Zeros: Fundamental Theorem of Algebra

8. Systems of Equations and Inequalities

8.1 Systems of Linear Equations: Substitution and Elimination

8.2 Systems of Linear Equations: Matrices

8.3 Systems of Linear Equations: Determinants

8.4 Matrix Algebra