LAGUARDIA COMMUNITY COLLEGE
CITY UNIVERSITY OF NEW YORK
DEPARTMENT OF MATHEMATICS, ENGINEERING AND COMPUTER SCIENCE

MAT 112 Syllabus: College Algebra

Catalog Description: 3 hrs Lectures, 3 Credits
Prerequisite: MAT 096 or Placement

This course will start with a review of basic algebra skills such as factoring, solving linear equations and inequalities and proceed to a study of polynomial, exponential, and logarithmic functions. These functions will be used in applications involving simple mathematical modeling where students will engage in inquiry activities aimed at improving critical-thinking skills. A scientific calculator is required.

Instructional Objectives

During this course, the instructor expects to:

1. Reinforce student's basic algebraic skills: solving equations, inequalities and systems of linear equations.
2. Introduce students to the concept of a function and its application in modeling.
3. Develop students' problem-solving and critical thinking skills through inquiry learning and the use of technological tools.
4. Introduce students to the concepts and properties of quadratic, exponential, and logarithmic functions.
5. Introduce students to quadratic modeling techniques.
6. Present exponential modeling concepts and techniques.

Performance Objectives:

At the conclusion of this course, students will be able to:

1. Perform operations on polynomials, rational expressions and radicals, and solve systems of linear equations graphically and algebraically.
2. Understand the concept of a function and its role in mathematical modeling of real-life problems.
3. Interpret and solve elementary word problems using technological tools.
4. Solve problems involving quadratic, exponential and logarithmic functions.
5. Solve problems using quadratic modeling.
6. Solve problems using exponential modeling

Textbook: *College Algebra* by Man M. Sharma*:* EDUCO International, Inc
Fifth Edition, 2008

Grading: Three (3) Tests ---------- 45%
Three (3) Inquiry Learning Projects ---------- 15%
Quizzes & Homework (online) ---------- 10%
Final(Departmental) ---------- 30%

Online access is required for quizzes, homework and tutorial. The access code is provided with the purchase of a new textbook along with instruction about online registration. Student may choose to purchase the online access code along with an e-book instead of a hard copy textbook. Purchase of online access only and additional information can be found at the Educo website, www.educosoft.com

Academic Integrity: This class will be conducted in compliance with LaGuardia Community College's academic integrity policy.

Sanctions for Academic Integrity Violations: Sanctions or penalties for violations of academic integrity are imposed by the faculty member teaching the course upon discovery of a violation. All cases of academic dishonesty are filed with the College Adjudicator, who maintains a record of academic integrity violations.

The occurrence of a second or third offense of academic dishonesty may involve the imposition of a disciplinary sanction in addition to the academic sanction imposed by the instructor. Sanctions for violations of academic integrity include, but are not limited to, the following:

-failure of an exam - a grade of F on an essay or research paper - failure of a course project -failure of the course - suspension from the College - dismissal from the College

IN Grade: The Incomplete grade may be awarded to students who have not completed all of the required course work but for whom there is a reasonable expectation of satisfactory completion. A student who is otherwise in good standing in a course – defined as complying with the college attendance policy and maintaining a passing average – but who has not completed at most two major assignments or examinations by the end of the course may request an Incomplete grade. To be eligible, a student must provide before the instructor submits grades for the course a documented reason, satisfactory to the instructor, for not having completed the assignments on time. (See catalog for more details).

Attendance Policy: The maximum number of unexcused absences allowed is 15% of the total class meetings (about 5 hours). Unexcused absences beyond this maximum will result in a grade of WU or F.

Department Contact Information:

Office: E-218
Tel#: (718) – 482-5710
Tutoring: Mathematics Learning Center: MB 44
Mathematics Computer Labs: MB 43, MB 45 and MB 47

Lesson	Topics	Section	Page	Suggested Exercises-odd numbers
1	Solving Absolute Value Equations and Inequalities	3.3 3.5	Page 163 - 166 Page 179 - 180	Page 167: 1 - 11 Page 184: 81 - 95
2	Graphing Linear Equations (function)	2.4	Page 97 - 101	Page 112: 1 - 7
3	Equation of a Line; slope; parallel and perpendicular lines	4.1	Page 221-226	Page 227 – 228: 1 -29
4,5	Functions and Relations; Domain	2.2	Page 76 - 82	Page 83: 1 - 19
6	Difference Quotient and Rate of Change	2.2	Page 76 - 82	Departmental Worksheet
7	Applications of Linear Functions			Departmental Worksheet
8	*Discussion of Inquiry Learning Project 1*			Project
9	Systems of Linear Equations in two variables: Graphical Method	7.1 A	Page 383 - 387	Page 391 – 392: 1 - 15
10	Systems of Linear Equations in two variables: Algebraic Method	7.1 A	Page 383 - 387	Page 391 – 392: 1 - 15
11	Systems of Linear Equations in two variables: Applications(compound interest)	7.1 C	Page 389 - 391	Page 392: 17 - 23
12	Review for Test 1			Instructor's Material
13	***Test 1***			Instructor's Test
14	Basic Operations (+, -, x, ÷) on Polynomials and Special Products; Long Division	1.3	Page 17 - 21	Page 27 – 28: 1 - 41
15	Factoring Polynomials	1.3	Page 21 - 27	Page 28: 45 - 97
16	Solving Quadratic Equations by Factoring	3.1 B	Page 145 -148	Page 157: 19 - 27
17	Solution by Completing the Square (optional)			Departmental Worksheet
18	Solution by Using the Quadratic Formula	3.1 B		Page 157: 29 - 37
19	Graph of the Quadratic Function	4.3	Page 247-253	Page 253 – 255: 1 - 49
20	Modeling with Quadratic Functions	4.3	Page 247-253	Page 255: 63 - 69
21	*Discussion of Inquiry Learning Project 2*			Project
22	Rational Expressions (brief review): Domain of a Rational Function	1.4	Page 29 - 37	Page 37 – 39: 1 - 55
23	Equations Containing Rational Expressions	3.2	Page 159 - 162	Page 162: 1 - 11
24	Review for Test 2			Instructor's Material
25	***Test 2***			Instructor's Test
26	Rational Exponents ; Equations with Radicals	3.4	Page 167 - 171	Page 171: 1 - 11
27	Inverse Functions	5.1	Page 281 - 287	Page 288: 1 - 45

28	Exponential Functions and Their Graphs	5.2	Page 289 - 295	Page 295: 1 - 31
29	Finding Equations/formulas of Exponential Functions			Departmental Worksheet
30	The Meaning of Logarithm; Properties of Logarithms	5.3 5.4	Page 297 - 302 Page 305 -312	Page 303: 1 - 47 Page 312 – 313: 1 - 85
31	Solving Exponential Equations; Logarithmic Equations	5.5	Page 314 - 321	Page 321 – 322: 1 - 53
32	Review for Test 3			Instructor's Material
33	***Test 3***			Instructor's Test
34	Modeling with Exponential Functions: Compound Interest; Growth and Decay (exclude half-life)	5.6	Page 323 - 329	Page 331: 17 - 25
35	*Discussion of Inquiry Learning Project 3*			Project
36	Review for Final Exam			Departmental Review
	Cumulative Departmental Final			Given during Finals Week

Developed on September 20 2012 for PATHWAYS
Revised on September 4, 2013