

MIDDLESEX COUNTY COLLEGE
EDISON, NEW JERSEY
MATHEMATICS DEPARTMENT

Date: Spring 2010

Course Title: Algebra I

Course No. MAT 013

Class Hours: 4

Laboratory Hours: 0

Credit Hours: 0

Department Head Approval: _____
Maria DeLucia, Ph.D.

Dean Approval: _____
Reginald Luke, Ph.D.

Prerequisite

Grade of "C" or better in MAT 010, or passing score on placement examination.

Textbook of Course

Author: Miller, O'Neill, Hyde
Title: Introductory Algebra, 2nd Edition
Publisher: McGraw-Hill

Catalog Course Description

Covers topics in elementary algebra: integral, rational and irrational numbers, techniques of graphing and solving linear equations, polynomials and their operations, special products and factoring, rational expressions and equations, radical expressions, quadratic equations and methods of solutions. Applications of linear and quadratic equations are included as well.

Objectives of Course

This is the first of a two-course sequence in algebra designed to introduce and develop the elementary concepts embodied in the topics listed above. Students will be trained in critical thinking, oral and written skills as they pertain to algebra and mathematics in general.

Grade Requirement

A "C" is the minimum acceptance grade for completion of the remedial/development level or movement to a credit course. You can advise your students that the next math course they register after successfully finish MAT 013 is MAT 014 (Algebra II) or MAT 107 (Mathematics I) or MAT 101 (Freshman Math I) depending on their major.

Grade Policy

ALEKS Pie	15%
ALEKS quizzes and in-class quizzes	15%
4 Tests	40%
Final Exam	30%

Grades should be assigned as follows:

92% - 100%	A	77% - 78%	C+
89% - 91%	A-	70% - 76%	C
87% - 88%	B+	60% - 69%	D
82% - 86%	B	below 60%	F
79% - 81%	B-		

Tests

There are **four** tests. Each instructor is responsible to produce his or her own tests.

Quizzes

ALEKS (on-line) quizzes will be set up for you and it is suggested that in-class quizzes are given frequently also for a total of 15% of student's grade.

It is suggested that quizzes be given throughout the course, especially the first three weeks into the semester for early assessment. If a student finds the pace of the course difficult at the beginning of the semester you should suggest switching to **Mat 013A** (Algebra I Part A). The switch can be done only within the first **four** weeks of the semester.

Homework

Homework should be assigned each class meeting and periodically checked. Whether textbook assignments are graded or not, students should be made aware that doing homework is of the utmost importance in order to solidify learned skills and to provide a strong foundation upon which they can learn new material. As part of homework, students should work on completing their ALEKS pie and should be expected to put at least 3-4 hours per work on ALEKS.

Attendance

There is no official attendance policy. However, students should be made aware of how important attendance is for their success. Some instructors build in extra quizzes to encourage good attendance. Whatever you choose, some students will have attendance problems and the issue needs to be addressed.

Final Exam

The two-hour final exam will be administered during the last class session. It is a departmental exam and a requirement of the course. **A minimum grade of 60% on the Final Exam is required to pass the class with a grade of C or better.**

Calculator

It is suggested that students may use a scientific calculator **after Quiz 1** on operations with integers.

Additional Material packaged with the student textbook

1. *MathZone*, is a powerful Web-based tutorial for homework, quizzing, testing and multimedia instruction. *MathZone* offers: (a) Practice exercises, (b) Video, (c) e-Professor, and (d) NetTutor
2. *ALEKS*, is a Web-based, artificially intelligent assessment and learning system. *ALEKS* uses adaptive questioning to quickly and accurately determine exactly what a student knows and doesn't know in a course. More information on *ALEKS* will be given to you over the orientation during the week before the semester starts

Extra Help

Students should be informed where they can get help if they have difficulty with the subject matter. Some suggestions are:

1. If you are a full-time instructor, students should be encouraged to come for help during your office hours.
2. Faculty volunteer and peer tutoring is available in the Johnson Learning Center.
3. Professional tutors are available in the Developmental Mathematics Lab/Tutoring Center in MH 142. In addition to tutoring, students have access to computers on which they will be able to review and practice the skills they have learned in class. They will be able to work on software programs that are aligned with their textbooks. If you would like your class to meet in the lab for an orientation session, contact a lab staff member at x3807.
4. Students should be encouraged to work in study groups. This will be fostered if you allow students to work in groups, at times, during your class sessions especially on review days before a test.

End of Semester Procedure

Review packets for the final exam are available in Center II and on-line. You will be asked to submit an end of year summary.

Suggested Day-To-Day Course Outline
MAT 013

<u>Day</u>	<u>Sections</u>	<u>Topics</u>	<u>ALEKS PIE & QUIZ</u>
1	Introduction, ALEKS, 1.3	1.3 Addition of real Numbers Obj. 1-Addition of Real Numbers and the Number Line Obj. 2-Addition of Real Numbers Obj. 3-Translations Obj. 4-Applications Involving Addition of Real Numbers	Work on Arithmetic Readiness
2	1.4, 1.5	1.4 Subtraction of Real Numbers Obj. 1-Subtraction of Real Numbers Obj. 2-Translations Obj. 3-Applications Involving Subtraction Obj. 4-Applying the Order of Operations 1.5 Multiplication and Division of Real Numbers Obj. 1-Multiplication of Real Numbers Obj. 2-Exponential Expressions Obj. 3-Division of Real Numbers Obj. 4-Applying the Order of Operations	Work on Real numbers and variables Practice on Quiz Chapter 1
3	1.6, 2.1	1.6 Properties of Real Numbers and Simplifying Expressions Obj. 1-Commutative properties of real Numbers Obj. 2-Associative properties of Real Numbers Obj. 3-Identity and Inverse Properties of Real Numbers Obj. 4-Distributive property of Multiplication over Addition Obj. 5-Simplifying Algebraic Expressions 2.1 Addition, Subtraction, Multiplication, and Division properties of Equality Obj.1-Definition of a linear equation in One Variable Obj.2-Addition and Subtraction Properties of Equality Obj.3-Multiplication and Division Properties of Equality Obj.4-Translations	
4	QUIZ on Ch. 1 without calculator 2.2, 2.3	2.2 Solving Linear Equations Obj.1-Solving Linear Equations Involving Multiple Steps Obj.2-Procedure for Solving a linear equation in One Variable Obj. 3-Conditional Equations, Identities, and Contradictions 2.3 Linear Equations: Clearing Fractions and Decimals Obj.1-Solving Linear equations with Fractions	Due Mastery Quiz on Chapter 1
5	2.4, 2.6. R.4	2.4 Applications of Linear Equations: Introduction to Problem Solving Obj. 1-Problem-Solving Strategies Obj. 2-Translations Involving Linear Equations Obj. 3-Consecutive Integer problems Obj. 4-Applications of Linear Equations 2.6 Formulas and Applications of Geometry	Work on Linear Equations and Inequalities Practice on Quiz Chapter 2

		Obj. 1-Formulas and Literal Equations Obj. 2-Geometry Applications R.4 Introduction to Geometry Obj. 1-Perimeter Obj. 2-Area Obj. 4-Angles Obj. 5-Triangles	
6	Catch-up and Review		
7	TEST #1 (Ch. 2) with calculator		Due Mastery Quiz Chapter 2
8	3.1, 3.2	3.1 Rectangular Coordinate System Obj. 2-Plotting in a Rectangular Coordinate System Obj. 3-Applications of Plotting and Identifying Points 3.2 Linear Equations in Two Variables Obj. 1-Definition of a Linear equation in Two Variables Obj. 2-Graphing Linear equations in Two Variables by Plotting Points Obj. 3- x-and y- Intercepts Obj. 4-Horizontal and Vertical Lines	Work on Functions, lines, systems of equations
9	3.3, 3.4	3.3 Slopes of a Line and Rates of Change Obj. 1-Introduction to Slope Obj. 2-Slope formula Obj. 3-Parallel and Perpendicular Lines Obj. 4-Applications of Slope: Rate of Change 3.4 Slope-Intercept Form of a Line Obj. 1-Slope-Intercept Form of a Line Obj. 2-Graphing a Line from Its Slope and y- Intercept Obj. 3-Determine Whether two Lines Are Parallel, Perpendicular, Or Neither Obj. 4-Writing an Equation of a line Using Slope-intercept Form	
10	3.5, 4.1	3.5 Point-Slope Formula Obj. 1- Writing an equation of a Line using the Point-Slope Formula Obj. 2-Writing an Equation of a Line Given two Points Obj. 3-Writing an Equation of a Line Parallel or Perpendicular to Another Line Obj. 4-Different forms of Linear Equations: A Summary 4.1 Solving Systems of equations by the Graphing method Obj. 1-determine Solutions to a System of Linear Equations Obj. 2-Dependent and Inconsistent Systems of Linear Equations Obj. 3-Solving Systems of Linear Equations by Graphing	
11	4.2, 4.3	4.2 Solving Systems of Equations by the Substitution method	Practice on Quiz Chapters 3 & 4

		<p>Obj. 1-Solving Systems of Linear Equations by the Substitution Method Obj. 2-Solutions to Systems of Linear Equations: A Summary Obj. 3-Applications of the Substitution method 4.3 Solving Systems of Equations by the Addition Method Obj. 1-Solving a System of Linear equations by the Addition method Obj. 2-Summary of Methods for using Linear Equations in two Variables</p>	
12	4.4 and Review	<p>4.4 Applications of Linear Equations in Two Variables Obj. 1-Applications Involving Cost</p>	
13	TEST # 2 (Ch. 3 & 4)		Due Mastery Quiz on Chapters 3 & 4
14	5.1, 5.2	<p>5.1 Exponents: Multiplying and Dividing Common bases Obj. 1-Review of exponential Notation Obj. 2-Evaluating Expressions with exponents Obj. 3-Multiplying and Dividing Common Bases Obj. 4-Simplifying Expressions with Exponents 5.2 More properties of Exponents Obj. 1-Power Rule for Exponents Obj. 2-The Properties $(ab)^m$ and $(\frac{a}{b})^m$</p>	Work on Integer exponents and polynomials
15	5.3, 5.4	<p>5.3 Definitions of b^0 and b^{-n} Obj. 1-Definition of b^0 Obj. 2-Definition of b^{-n} Obj. 3-Properties of Integer Exponents: A Summary 5.4 Scientific Notation Obj. 1-Writing numbers in Scientific Notation Obj. 2-Writing Numbers in Standard Form Obj. 3-Multiplying and Dividing Numbers in Scientific Notation</p>	
16	5.5, 5.6	<p>5.5 Addition and Subtraction of Polynomials Obj. 1-Introduction to Polynomials Obj. 2-Addition of polynomials Obj. 3-Subtraction of polynomials Obj. 4-Polynomials and applications to Geometry 5.6 Multiplication of Polynomials and Special products Obj. 1-Multiplication of Polynomials Obj. 2-Special case Products: Difference of Squares and perfect square Trinomials Obj. 3-Applications to Geometry</p>	Practice on Quiz Chapter 5
17	5.7, Review	<p>5.7 Division of Polynomials Obj. 1-Division by a Monomial Obj. 2-Long Division (if time permits)</p>	

18	TEST # 3 (Ch. 5)		Due Mastery Quiz on Chapter 5
19	6.1, 6.2, 6.3	6.1 Greatest Common Factor and Factoring by Grouping Obj. 1-Identifying the Greatest Common Factor Obj. 2-Factoring out the Greatest Common factor Obj. 3-Factoring out a Negative factor Obj. 4-Factoring out a Binomial factor Obj. 5-Factoring by Grouping 6.2 Factoring Trinomials of the Form $x^2 + bx + c$ Obj. 1-Factoring Trinomials with a leading Coefficient of 1 6.3 Factoring Trinomials: trial-and-Error method Obj. 1- Factoring Trinomials by the Trial-and-Error method	Work on Complex numbers and quadratic equations,
20	6.4,6.5	6.4 Factoring trinomials: AC-Method Obj. 1-Factoring Trinomials by the AC-Method 6.5 Difference of Squares and Perfect Square Trinomials Obj. 1-Factoring a Difference of Squares Obj. 2-Factoring Perfect Square Trinomials	Practice on Quiz Chapter 6
21	6.7, 6.8	6.7 Solving Equations Using the Zero product Rule Obj. 1-Definition of a Quadratic Equation Obj. 2-Zero Product Rule Obj. 3-Solving Equations by Factoring 6.8 Applications of Quadratic Equations Obj. 1-Applications of Quadratic Equations	Due Mastery Quiz on Chapter 6
22	7.1, 7.2	7.1 Introduction to Rational Expressions Obj. 1-Definition of a Rational Expression Obj. 2-Evaluating rational Expressions Obj. 3-Domain of a rational Expression Obj. 4-Simplifying Rational Expressions to Lowest Terms Obj. 5-Simplifying a Ratio of -1 7.2 Multiplication and Division of rational Expressions Obj. 1-Multiplication of rational Expressions Obj. 2-Division of Rational Expressions	Work on Rational expressions and proportions Practice on Quiz Chapter 7
23	7.3, 7.4	7.3 Least Common Denominator Obj. 1-Least Common Denominator Obj. 2-Writing Rational Expressions with the Least Common Denominator 7.4 Addition and Subtraction of Rational Expressions Obj. 1-Addition and Subtraction of Rational Expressions with the Same Denominators Obj. 2-Addition and Subtraction of rational Expressions with Different Denominators Obj. 3-Using Rational Expressions in Translations	Due Mastery Quiz on Chapter 7
24	8.1, 8.2, 8.3	8.1 Introduction to Roots and radicals Obj. 1-Definition of a Square Root	Work on Radicals and rational

		8.2 Simplifying Radicals Obj. 1-Multiplication property of Radicals(Focus on square roots) Obj. 2-Simplifying Radicals Using the Multiplication Property of radicals 8.3 Addition and Subtraction of Radicals Obj. 1-Definition of Like Radicals Obj. 2-Addition and Subtraction of Radicals	exponents Practice on Quiz Chapter 8
25	Catch-up and Review		Due Mastery Quiz on Chapter 8
26	TEST # 4 (Ch. 6,7 & 8)		
27	Final Review		
28	FINAL		