**ESSEX COUNTY COLLEGE**

**Center for Academic Foundations**

**AFM 083 *–* Introductory Algebra**

**Course Outline**

**Course Number & Name:**  AFM 083 Introductory Algebra

**Credit Hours:**  4 .5 **Contact Hours:**  4.5 **Lecture:** 3.0 **Lab:** 1.5 **Other:**  N/A

**Prerequisites**:  None

**Co-requisites:** AFM 083T **Concurrent Courses:** None

**Course Outline Revision Date:**  Fall 2010

Course Description: This beginning mathematics course is designed to take students from concrete arithmetic ideas to the more abstract algebraic forms of these ideas. Throughout the course, emphasis is placed on the development of arithmetic and algebraic skill and the application of these skills and concepts to the solution of practical problems. Topics covered include simplifying arithmetic and algebraic expressions, signed numbers, fractions, decimals, percents, estimations and geometric applications. One of the instructional components of AFM 083 is two mandatory sessions (one hour each) of tutoring per week and the required completion of ALEKS (computer software) assignments.

**Course Goals:** Upon successful completion of this course, students should be able to do the following:

1. demonstrate knowledge of the fundamental concepts and theories from arithmetic, algebra and geometry.

2.    utilize various problem-solving and critical-thinking techniques to set up and solve real-world applications; and

3.   communicate accurate mathematical terminology and notation in written and/or oral form in order to explain strategies to solve problems as well as to interpret found solutions.

**Measurable Course Performance Objectives (MPOs)**: Upon successful completion of this course, students should specifically be able to do the following:

1. Demonstrate knowledge of the fundamental concepts and theories from arithmetic, algebra and geometry:
2. *perform arithmetic operations on signed numbers;*
3. *perform arithmetic operations on fractions;*
4. *perform arithmetic operations on decimals;*
5. *perform arithmetic operations on percents;*
6. *determine the perimeter and area for simple geometric figures;*
7. *determine whether a ratio is a proportion;*
8. *convert from one unit of measure to another;*
9. *simplify basic algebraic operations;* and
10. *solve simple linear equations involving one operation*

**Measurable Course Performance Objectives (MPOs)** (continued):

1. Utilize various problem-solving and critical-thinking techniques to set up and solve real-

world applications:

2.1 *apply arithmetic to solve application problems encountered in daily life*

1. Communicate accurate mathematical terminology and notation in written and/or oral form in order to explain strategies to solve problems as well as to interpret found solutions:

3.1 *write and explain solutions to application problems related to the course material using appropriate mathematical terminology and notation*

**Methods of Instruction**: Instruction will consist of a combination of lectures, class discussions, group work, board work, individual study, and usage of computer software provided by the publisher (ALEKS).

**Outcomes Assessment:** Test, exam, and assigned ALEKS questions are blue printed to course objectives. Data is collected and analyzed to determine the level of student performance on these assessment instruments in regards to meeting course objectives. The results of this data analysis are used to guide necessary pedagogical and/or curricular revisions.

**Course Requirements:** All students are required to:

1. Maintain regular attendance.

2. Complete assigned homework, projects and a portfolio.

3. Complete ALEKS assignments. Note: Students cannot participate in the computer lab/ALEKS sessions without their textbook.

4. Take part in class discussions and participate by going to the board.

5. Take all tests and quizzes, when scheduled; these include a minimum of two class tests as well as a cumulative departmental midterm exam and a cumulative departmental final exam.

**Methods of Evaluation:** Final course grades will be computed as follows:

**% of**

**Grading Components final course grade**

* **Attendance 5%**

Attendance is required. Unexcused absences will negatively affect the student’s grade in that four unexcused absences and/or four late class arrivals will drop the student’s grade by one full letter.

* **Homework, quizzes, and/or projects (portfolio) 15%**

Each instructor assigns homework, quizzes, and/or projects to evaluate the extent to which the students have achieved course objectives. The portfolio includes homework, quizzes, projects, notes, definitions and/or tests.

* **2 Tests** (dates specified by the instructor)  **30%**

Tests will show evidence of the extent to which students meet course objectives, including but not limited to identifying and applying concepts, analyzing and solving problems, estimating and interpreting results, and stating appropriate conclusions using correct terminology.

* Midterm Exam 20%

The same objectives apply as with tests, but it is anticipated that students will provide evidence of synthesizing combination of concepts.

* **Final Exam** **30%**

The **comprehensive** final exam will examine the extent to which student have understood and synthesized all course content and achieve all course objectives.

Note: Students MUST score at least 70% on the AFM 083 Departmental Final Exam to obtain a grade of “C” or higher in the course.

**Academic Integrity:** Dishonesty disrupts the search for truth that is inherent in the learning process and so devalues the purpose and the mission of the College. Academic dishonesty includes, but is not limited to, the following:

* plagiarism – the failure to acknowledge another writer’s words or ideas or to give proper credit to sources of information;
* cheating – knowingly obtaining or giving unauthorized information on any test/exam or any other academic assignment;

**Academic Integrity** (continued):

* interference – any interruption of the academic process that prevents others from the proper engagement in learning or teaching; and
* fraud – any act or instance of willful deceit or trickery.

Violations of academic integrity will be dealt with by imposing appropriate sanctions. Sanctions for acts of academic dishonesty could include the resubmission of an assignment, failure of the test/exam, failure in the course, probation, suspension from the College, and even expulsion from the College.

**Student Code of Conduct:** All students are expected to conduct themselves as responsible and considerate adults who respect the rights of others. Disruptive behavior will not be tolerated. All students are also expected to attend and be on time for all class meetings. No cell phones or similar electronic devices are permitted in class. Please refer to the Essex County College student handbook, *Lifeline*, for more specific information about the College’s Code of Conduct and attendance requirements.

**Course Content Outline:** based on the text **Academic Foundations Math, AFM 083, Essex County College,** by Baratto Bergman, Stefan Baratto and Don Hutchinson; 2010 ; ISBN-13 #: 978-0-07-745447-0

**WeekChapter/Section**

1 Pretest

Chapter 1: Operations on Whole Numbers

1.1 The Decimal Place-Value System

1.2 Addition

1.3 Subtraction

1.4 Rounding, Estimation and Order

1.5 Multiplication

2 1.6 Division

1.7 Exponential Notation and the Order of Operations

**Project 1 due**

**Quiz 1** on Chapter 1

Chapter 2: Integers and Introduction to Algebra

2.1 Introduction to Integers

2.2 Addition of Integers

3 2.3 Subtraction of Integers

2.4 Multiplication of Integers

2.5 Division of Integers

2.6 Introduction to Algebra: Variables and Expressions

2.7 Evaluating Algebraic Expressions

2.8 Simplifying Algebraic Expressions

**Project 2 due**

**Quiz 2** on Chapter 2

Review for Test 1 on Chapters 1 & 2

**Test 1**

4 Chapter 3: Multiplying and Dividing Fractions

3.1 Prime Numbers and Divisibility

3.2 Factoring Whole Numbers

3.3 Fraction Basics

3.4 Simplifying Fractions

3.5 Multiplying Fractions

3.6 Dividing Fractions

5 **Project 3 due**

**Quiz 3** on Chapter 3

Chapter 4: Adding and Subtracting Fractions

4.1 Adding and Subtracting Fractions with Like Denominators

4.2 Common Multiples

4.3 Adding and Subtracting Fractions with Unlike Denominators

**WeekChapter/Section**

5 4.4 Adding and Subtracting Mixed Numbers

(continued) 4.5 Order of Operations with Fractions

4.6 Estimation Applications

**Project 4 due**

**Quiz 4** on Chapter 4

6 Review for Midterm Exam

**Departmental Midterm Exam**

Chapter 5: Decimals

5.1 Place Value and Rounding

5.2 Converting Between Fractions and Decimals

5.3 Adding and Subtracting Decimals

5.4 Multiplying Decimals

5.5 Dividing Decimals

7 **Project 5 due**

**Quiz 5** on Chapter 5

Chapter 6: Ratios and Proportions

6.1 Ratios

6.2 Rates and Unit Pricing

6.3 Proportions

6.4 Solving Proportions

8 **Project 6 due**

**Quiz 6** on Chapter 6

Chapter 7: Percents

7.1 Writing Percents as Fractions and Decimals

7.2 Writing Decimals and Fractions as Percents

7.3 The Three Types of Percent Problems

7.4 Applications of Percent Problems

9 **Project 7 due**

**Quiz 7** on Chapter 7

Chapter 8: Measurement

8.1 The Units of the English System

8.2 Metric Units of Length

10 **Project 8 due**

**Quiz 8** on Chapter 8

Review for Test 2 on Chapters 5, 6, 7, 8 & 9

**WeekChapter/Section**

11 **Test 2**

Chapter 10: An Introduction to Algebra

10.1 From Arithmetic to Algebra

10.2 Evaluating Algebraic Expressions

10.3 Simplifying Algebraic Expressions

**Project 9 due**

**Quiz 9** on Chapter 10

12 10.4 Using the Addition Property to Solve an Equation

10.5 Using the Multiplication Property to Solve an Equation

10.6 Combining the Properties to Solve Equations

**Project 10 due**

**Quiz 10** on Chapter 10

Chapter 9: Polynomials

9.1 Properties of Exponents

9.2 Introduction to Polynomials

13 **Project 11 due**

**Quiz 11** on Chapter 9

Final Exam Review

14 **ALEKS due**

Final Exam Review (continued)

15 **Departmental Final Exam**

**AFM 083 – Suggested Homework Problems**

Text: **Academic Foundations Math, AFM 083, Essex County College,** by Baratto Bergman,Stefan Baratto and Don Hutchinson; 2010 ; ISBN-13 #: 978-0-07-745447-0

|  |  |  |
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