COLLEGE OF THE MARSHALL ISLANDS
COURSE OUTLINE

CIP No. 33.0101
MATH 086
Alpha Number

Introductory Algebra
Course Title

Course Description
This course establishes a foundation in algebraic concepts and problem solving. Topics include signed numbers, exponents, order of operations, variables, algebraic expressions, proportions, introductory planar geometry, simplifying, linear equations, graphing lines in the plane, formulas, polynomial operations, and factoring. Upon completion, students should be able to apply the above concepts in problem solving using Polya's four steps.

Course prepared by: Math Curriculum Committee March/2010

<table>
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<tr>
<th>Activity</th>
<th>Hours per Week</th>
<th>Number of Weeks</th>
<th>Total Hours</th>
<th>Credits</th>
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<td>Laboratory</td>
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<td>Clinical</td>
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<td>Seminar</td>
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<td><strong>Total Credit Hours</strong></td>
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Purpose of Course:
Degree Requirement
Degree Elective
Certification
Developmental  X
Other

Prerequisite(s) MATH 066 or Placement Test

Signature, Curriculum and Assessment Committee Chairperson

Signature, Dean of Academic Affairs

Signature, Vice President for Academic and Student Affairs

Last date reviewed or revised: March/2010
II. Course Objectives

A. General Learning Outcomes

Students who complete this course will:
1. Manipulate and conceptualize real numbers (DEV 1)
2. Manipulate algebraic expressions (DEV 1)
3. Conceptualize and create equalities (DEV 1)
4. Use relationships (DEV 1)
5. Visualize solutions (DEV 1)
6. Introduce and practice word problem applications with emphasis on understanding the problem through key words, making a plan to solve, executing the plan, and analyzing the solution. (DEV 1)
7. Introduce the geometry of lines, angles, and planar figures including triangles

B. Student Learning Outcomes

Upon completion of this course, the student will be able to:
1. Manipulate and conceptualize real numbers
   a. Add, subtract, multiply, divide, and apply exponents and roots to real numbers
   b. Use the properties of addition, multiplication, and exponentiation to simplify real number expressions
   c. Apply order of operations to simplify real number expressions, including absolute values
   d. Use technology to apply order of operations
   e. Plot real numbers on the number line
   f. Plot pairs of real numbers in the coordinate plane
2. Manipulate and simplify algebraic expressions
   a. Add, subtract, multiply, and apply exponents to algebraic expressions
   b. Add, subtract, multiply, divide and factor polynomial expressions
3. Recognize equivalent expressions and use substitution
   a. Use substitution to evaluate algebraic formulas
   b. Recognize and substitute equivalent expressions to simplify special polynomials
4. Use relationships
   a. Use proportion and percents to solve problems
   b. Solve linear equations and inequalities
   c. Given two solution pairs, find the slope and the linear equation
   d. Given the slope of its graph and a solution pair, find the linear equation
5. Visualize solutions
   a. Plot solution pairs in the coordinate plane
   b. For linear equations in two variables, graph the solution set
   c. Interpret the slope of a line as a ratio
   d. Estimate the equation of a line by analyzing the graph of its solution set
6. Introduce and practice word problem applications with emphasis on understanding the problem through key words, making a plan to solve, executing the plan, and analyzing the solution.
   a. Translate English expressions into algebraic expressions using key words
   b. Translate algebraic expressions into English expressions using key words
   c. Represent the unknown and given information that relates to the unknown
d. Where appropriate, use unit analysis to help devise a plan

7. Introduce the geometry of lines, angles, and planar figures including triangles

III. Course Content

This course introduces beginning algebraic techniques for solving, graphing and evaluating equal

1. Signed Numbers
2. Order of Operations
3. Variables and Algebraic Expressions
4. Linear Equations
5. Introductory planar geometry
6. Graphing in the plane
7. Formulas
8. Polynomial Operations
9. Factoring
10. Problem solving with charts, figures, and linear equations

IV. Methods of Instruction

1. Cooperative groups
2. Modeling and supervised class practice
3. Computer laboratory
4. Projects

V. Equipment and Materials

1. Chalkboard
2. Overhead projector
3. Calculators or computer lab

VI. Suggested Methods of Evaluation

1. Classwork, class participation, homework
2. Quizzes, tests
3. Pre-test and post-test
4. Project completion

Passing grades will receive a C, C+, B, B+ or A. Non passing grades will receive a NP