

Northern Marianas College
CURRICULUM ACTION REQUEST

Effective Semester / Session: Summer 2015

Type of Action:

- New
- Modification
- Move to Inactive (Stop Out)
- Cancellation

Course Alpha and Number: MA 089

Course Title: Pre-Algebra

Reason for initiating, revising, or canceling:

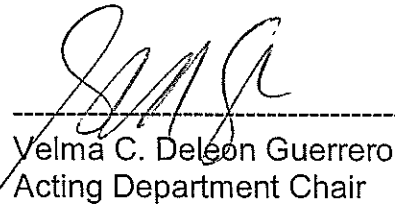
This course guide is being modified to reflect changes in the method of evaluation and updated textbook edition.



Alex Nikolaychuk
Proposer

3.27.15

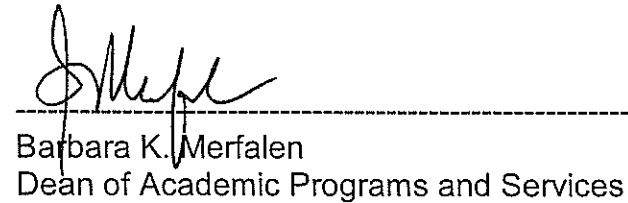
Date



Velma C. Deleon Guerrero
Acting Department Chair

3.13.2015

Date



Barbara K. Merfalen
Dean of Academic Programs and Services

3.27.15

Date

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Course: MA 089 Pre- Algebra

1. Department

Sciences, Mathematics, Health, and Athletics

2. Purpose

This course covers concepts of arithmetic and fundamental concepts of algebra. This course is designed to assist those students who need to upgrade their mathematical skills so that they can be placed in college-level mathematics courses.

The need for this course was further demonstrated by the results over last 10 years of data from NMC's mathematics placement tests showing that approximately 90% of all incoming students place at the Developmental Math level.

3. Description

A. Required/Recommended Textbook(s) and Related Materials

Required Textbook:

Aufmann, Richard N. and Joann S. Lockwood,
Prealgebra, An applied Approach, 6th ed. Belmont, CA: Brooks/Cole,
Cengage Learning, 2014.

''

Readability level: Grade 8.3

B. Contact Hours

1. **Lecture:** 3 hours per week / 45 hours per semester
2. **Lab:** None
3. **Other:** None

C. Credits

1. **Number:** 3
2. **Type:** NDU (Non-degree units)

D. Catalogue Course Description

Note: MA 087, MA 089, and MA 091 are preparatory courses in mathematics and do not carry college degree credit (i.e., NDU = non-degree units).

This pre-algebra course covers variables and expressions with variables; monomials, binomials, and polynomials; exponents; first-degree equations with one variable and with two variables; the metric system and the U.S. system of measurement; ratios, rates,

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proportions, and percents; and basic geometry. This course is designed to assist those students who need to upgrade their basic math skills so that they can be successful in subsequent mathematics courses. Prerequisite: BE 111 College Success, or concurrent enrollment in BE 111. English Placement Level: EN 093/094. Math Placement Level: MA 089. (Offered Fall, Spring, and Summer)

E. Degree or Certificate Requirements Met by Course

None. A passing grade in this course satisfies only the mathematics proficiency requirement for entry into MA 091 Beginning Algebra.

F. Course Activities and Design

Course activities include lecture, class discussions, group work, homework assignments, viewing audio-visual materials, calculator exploration, quizzes, tests, and a Final Exam.

4. Course Prerequisite(s); Concurrent Course Enrollment; Required English/Mathematics Placement Level(s)

Prerequisite: BE 111 College Success, or concurrent enrollment.

English Placement Level: EN 093/094

Math Placement Level: MA 089

5. Estimated Cost of Course; Instructional Resources Needed

Cost to the Student: Tuition for a 3-credit course, cost of textbook, cost of graphing calculator (optional), and the student activities fee.

Cost to the College: Instructor's salary.

Instructional resources needed for this course include chalk and chalkboard, and as available, the use of TV/VCR, ELMO projector.

6. Method of Evaluation

Successful completion of this course requires a score of 70% or higher that includes 40% value of the department signature final exam, and 60% of in-class performance. Only P (Pass) or NP (No Pass) or TF (Technical Failure) grades are given in this NDU course. (TF is assigned only for excessive absences, i.e., more than 7 class hours absent). NMC's grading and attendance policies and the Sciences, Mathematics, Health and Athletics Department's attendance policies will be followed.

7. Course Outline

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This is a topical outline and does not necessarily indicate the sequence in which the material will be presented.

- 1.0 Expressions with Variables
 - 1.1 Properties of Real Numbers
 - 1.2 Simplifying and Evaluating Expressions Containing Variables
 - 1.3 Addition and Subtraction of Polynomials
 - 1.4 Multiplication of Monomials
 - 1.5 Powers of Monomials (Exponential Expressions)
 - 1.6 Multiplication of Polynomials
 - 1.6.1 Multiplication of a Polynomial by a Monomial
 - 1.6.2 Multiplication of two Binomials, and the FOIL Method
 - 1.7 Division of Monomials
 - 1.8 Scientific Notation
 - 1.9 Verbal Expressions and Expressions Containing Variables
- 2.0 First-Degree Equations
 - 2.1 First-Degree Equations with One Variable
 - 2.2 First-Degree Equations with One Variable and Parentheses
 - 2.3 Translating Sentences into Equations, and Solving the Equations
 - 2.4 The Rectangular Coordinate System
 - 2.5 Graphs of Linear Equations in Two Variables (Straight Lines)
- 3.0 Measurement and Proportion
 - 3.1 The Metric System of Measurement
 - 3.2 Ratios and Rates
 - 3.3 The U.S. System of Measurement
 - 3.4 Converting between the U.S. System of Measurement and the Metric System
 - 3.5 Proportions
- 4.0 Percent
 - 4.1 Converting Percents to Fractions, and Percents to Decimals
 - 4.2 Converting Fractions to Percents, and Decimals to Percents
 - 4.3 Solving the Basic Percent Equation
 - 4.4 Solving Percent Problems using Proportions
 - 4.5 Percent Increase and Percent Decrease
 - 4.6 Price Markups and Discounts (Price Markdowns)
 - 4.7 Simple Interest, and the Simple Interest Formula

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- 5.0 Geometry
 - 5.1 Definitions of Basic Geometric Concepts
 - 5.1.1 Basic Geometric Concepts involving Lines: Point, Line, and Line Segment
 - 5.1.2 Basic Geometric Concepts involving Angles: Ray, Angle, Vertex, Right Angle, Acute Angle, Obtuse Angle
 - 5.2 Plane Geometric Figures
 - 5.2.1 Perimeter and Circumference
 - 5.2.2 Area
 - 5.3 Triangles
 - 5.3.1 The Pythagorean Theorem
 - 5.3.2 Similar Triangles

8. Instructional Goals

This course will introduce students to:

- 1.0 Properties of real numbers;
- 2.0 Simplifying and evaluating expressions containing variables;
- 3.0 Performing mathematical operations on monomials, binomials, and polynomials;
- 4.0 Scientific Notation;
- 5.0 First-Degree Equations;
- 6.0 The rectangular coordinate system;
- 7.0 Graphing linear equations in two variables;
- 8.0 The metric system of measurement;
- 9.0 The U.S. system of measurement;
- 10.0 Ratios, rates, and proportions;
- 11.0 Percents, fractions, and decimals;
- 12.0 Equations and word problems involving percents;
- 13.0 Definitions of basic geometric concepts involving lines and angles;
- 14.0 The perimeter, circumference, and area of plane geometric figures;
- 15.0 The Pythagorean theorem; and
- 16.0 Similar triangles.

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9. Student Learning Outcomes

Upon successful completion of this course, students will be able to:

- 1.0 Use the laws of addition and multiplication with real numbers;
- 2.0 Simplify and evaluate expressions containing variables;
- 3.0 Perform mathematical operations on monomials, binomials, and polynomials;
- 4.0 Write and read numbers in scientific notation;
- 5.0 Solve first-degree equations in one variable;
- 6.0 Locate and identify points (ordered pairs) on the rectangular coordinate system;
- 7.0 Find ordered-pair solutions to linear equations in two variables, and graph linear equations in two variables;
- 8.0 Convert between units in the metric system;
- 9.0 Convert units between the U.S. system of measurement and the metric system;
- 10.0 Solve proportion problems;
- 11.0 Convert percents to fractions, and percents to decimals;
- 12.0 Convert fractions to percents, and decimals to percents;
- 13.0 Solve equations and written word problems involving percents;
- 14.0 Define basic geometric concepts involving lines and angles;
- 15.0 Find the perimeter, circumference, and area of plane geometric figures;
- 16.0 Use the Pythagorean theorem to find the unknown side of a right triangle; and
- 17.0 Identify similar triangles, explain why they are similar, and solve problems involving similar triangles.

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10. Assessment Measures

Assessment of student learning may include, but not be limited to, the following:

- 1.0 Homework and Assignments;
- 2.0 Tests, Quizzes, and Final Exam; and
- 3.0 Students must also attend class regularly and participate in classroom discussions.