

Northern Marianas College
CURRICULUM ACTION REQUEST

Effective Semester / Session: Spring 2012

Type of Action:

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

Course Alpha and Number: MA 132

Course Title: Intermediate Algebra

Reason for initiating, revising, or canceling:

Periodic updates.

Mr. Eric Johnson

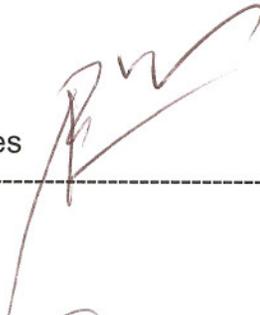


2-8-12

Proposer

Date

Dr. Alfredo De Torres



8feb12

Department Chair

Date

for

Barbara Merfalen



Dean of Academic Programs and Services

Date

Northern Marianas College

Course Guide

Course: MA 132 Intermediate Algebra

1. Department

Sciences, Mathematics, Health and Athletics

2. Purpose

The purpose of this course is to enable students to (1) develop proficiency in elementary algebra and algebraic functions, and (2) discover applications of algebra by constructing models to solve real-world problems. The need for this course is demonstrated in that it meets the minimum core course requirement in mathematics for all NMC degree programs.

3. Description

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

Required:

Larson, Ron, et. al. *Intermediate Algebra: Graphs and Functions*. 3rd ed. Boston, MA: Houghton Mifflin Company, 2003.

Readability level: Grade 10.6

Required calculator: TI-83 or higher graphing calculator.

B. Contact Hours

1. **Lecture:** 4 hours per week / 60 per semester

2. **Lab:** None

3. **Other:**

C. Credits

1. **Number:** 4

2. **Type:** Regular degree units

D. Catalogue Course Description

This course is designed to enable students to develop proficiency in algebra and to show student how algebra may be used as a model for solving real-life problems. Topics covered include the concepts of elementary algebra, equations, graphs, and algebraic functions. A graphic approach to problem solving is emphasized throughout. Students are required to do assignments using a TI-82/83/89 graphic calculator. Prerequisites: A passing grade in MA 091, or a qualifying placement test score, or the instructor's permission. English Placement Level: EN 093/094. Math Placement Level: MA 111/132. (Offered Fall, Spring, and Summer)

Northern Marianas College

Course Guide

Course: MA 132 Intermediate Algebra

E. Degree or Certificate Requirements Met by Course

MA 132 or another higher-level mathematics course is a core course requirement for all degrees at NMC.

F. Course Activities and Design

Course activities include lecture, discussions, homework assignments, tests, quizzes, and a comprehensive final exam.

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

Prerequisites: A passing grade in MA 091, or a qualifying placement test score, or the instructor's permission.

English Placement Level: EN 093/094

Math Placement Level: MA 111/132

5. Estimated Cost of Course; Instructional Resources Needed

Cost to the Student: Tuition for a 4-credit course; cost of textbook; cost of a TI-82/83/89 graphics calculator; and instructional materials fee.

Cost to the College: Instructor's salary.

Instructional resources needed for this course include: A classroom equipped with chalk and chalkboard, or whiteboard, with erasers. An electronic projection device and television or other viewing device for calculator demonstrations. A TI-82/83/89 graphics calculator with a manual and instructor's edition textbook with supplemental materials.

6. Method of Evaluation

Student grades will be based on the regular letter grade system as described below:

A: Excellent – grade points: 4.0;

B: Above average – grade points: 3.0;

C: Average – grade points: 2.0;

D: Below average – grade points: 1.0;

F: Failure – grade points: 0.0.

NMC's grading and attendance policies will be followed.

Northern Marianas College

Course Guide

Course: MA 132 Intermediate Algebra

7. Course Outline

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

- 1.0 Concepts of Elementary Algebra
 - 1.1 Algebraic expressions
 - 1.2 Operations with polynomials
 - 1.3 Factoring polynomials
 - 1.4 Factoring trinomials
 - 1.5 Solving linear equations
 - 1.6 Solving equations by factoring

- 2.0 Introduction to Equations and Graphs
 - 2.1 Describing data graphically
 - 2.2 Graphs of equations
 - 2.3 Slope
 - 2.4 Relations, functions, and function notation
 - 2.5 Graphs of functions
 - 2.6 Transformations of functions

- 3.0 Linear Function, Equations, and Inequalities
 - 3.1 Writing equations of lines
 - 3.2 Applications of linear equations
 - 3.3 Business and scientific problems
 - 3.4 Linear inequalities in one variable
 - 3.5 Absolute value equations and inequalities

- 4.0 Systems of Linear Equations and Inequalities
 - 4.1 Systems of linear equations in two variables
 - 4.2 Systems of linear equations in three variables
 - 4.3 Matrices and linear systems
 - 4.4 Linear inequalities in two variables

- 5.0 Radicals and Complex Numbers
 - 5.1 Integer exponents and scientific notation
 - 5.2 Rational expressions and radicals
 - 5.3 Simplifying and combining radicals
 - 5.4 Multiplying and dividing radicals
 - 5.5 Solving radical equations
 - 5.6 Complex numbers

Northern Marianas College

Course Guide

Course: MA 132 Intermediate Algebra

6.0 Quadratic Functions, Equations, and Inequalities

- 6.1 The factoring and square root methods
- 6.2 Completing the square
- 6.3 The quadratic formula
- 6.4 Applications of quadratic equations
- 6.5 Graphs of quadratic functions
- 6.6 Quadratic inequalities in one variable

7.0 Rational Expressions and Rational Functions

- 7.1 Simplifying rational expressions
- 7.2 Multiplying and dividing rational expressions
- 7.3 Adding and subtracting rational expressions
- 7.4 Dividing rational expressions
- 7.5 Solving rational expressions
- 7.6 Graphing rational expressions
- 7.7 Rational inequalities in one variable

8. Instructional Goals

This course will introduce students to:

- 1.0 Concepts of elementary algebra;
- 2.0 Introduction to graphs and functions;
- 3.0 Linear functions, equations, and inequalities;
- 4.0 Systems of linear functions and inequalities;
- 5.0 Radicals and complex numbers;
- 6.0 Quadratic functions, equations, and inequalities; and
- 7.0 Rational expressions and rational functions.

9. Student Learning Outcomes

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

- 1.0 Demonstrate the use of the rules of exponents, factoring polynomials, and solving equations;
- 2.0 Find distance and midpoints as well as graphing functions using slope, intercepts, and transformations of graphs;

Northern Marianas College

Course Guide

Course: MA 132 Intermediate Algebra

- 3.0 Find the equation of lines, linear inequalities and absolute value inequalities as well as the application of these in word problems;
- 4.0 Graph and solve linear equations and inequalities and systems of linear equations in size 2×2 and 3×3 ;
- 5.0 Apply scientific notation and the use of rational exponents in simplifying, multiplying, and solving radical and complex numbers and equations;
- 6.0 Use of factoring, square root method, completing the square, and quadratic formula to solve applications as well as graph quadratic functions and inequalities in one variable; and
- 7.0 Demonstrate the ability to simplify, multiply, add, subtract, solve and graph rational functions and rational inequalities in one variable.

10. Assessment Measures

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

Regular quizzes, chapter testing, homework, and a final comprehensive examination to evaluate the student's knowledge and abilities in cognitive reasoning and the interpretation, identification, comprehension, calculation and application of the concepts of intermediate algebra.