

New Course  
X Course Revision

Date: 03/25/08

Department: MATH Number: 112  
Course Title: Elementary Algebra 2 Units: 3  
Total Semester Hours: Lecture: 48 Lab: 0 Homework: 96 By Arrangement: 16

Length of Course

- Semester-long  
 Short course (Number of weeks \_\_\_\_)  
 Open entry/Open exit

Grading

- Letter  
 Pass/ No Pass  
 Grade Option (letter or Credit/No Credit)

1. Prerequisite (Attach Enrollment Limitation Validation Form.)

*Prerequisite: satisfactory completion of Math 111.*

2. Corequisite (Attach Enrollment Limitation Validation Form.)

none

3. Recommended Preparation (Attach Enrollment Validation Form.)

Recommended Preparation: concurrent enrollment in READ 830.

4. Catalog Description (Include prerequisites/corequisites/recommended preparation.)

**MATH 112 Elementary Algebra II (SECOND HALF) (3)** *Three lecture hours plus one hour by arrangement per week. Prerequisite: MATH 111 with a grade of C or higher OR other measures as appropriate. Recommended Preparation: concurrent enrollment in READ 830. Second half of a study of elementary algebra including introduction to: exponents, polynomial operations, factoring, rational expressions and equations, roots, radicals, and radical equations, and quadratic equations.*

5. Class Schedule Description (Include prerequisites/corequisites/recommended preparation.)

**MATH 112 ELEMENTARY ALGEBRA II**

Covers second half of MATH 110. Second half of a study of elementary algebra including introduction to: exponents, polynomial operations, factoring, rational expressions and equations, roots, radicals and radical equations, and quadratic equations.

Plus one hour by arrangement per week. Extra supplies may be required. **Prerequisite:** MATH 111 with a grade of C or higher OR other measures as appropriate.. **Recommended Preparation:** concurrent enrollment in READ 830.

6. Student Learning Outcomes (Identify 1-6 expected learner outcomes using active verbs.)

Along with course objectives listed below, students should be able to at a course appropriate level:

- SLO1. Solve Problems by application of arithmetic and algebraic principles.
- SLO2. Sketch graphs that illustrate applications of algebraic and geometric skills.
- SLO3. Write and interpret problems in written language, in symbolic form and in graphical form.
- SLO4. Select and apply appropriate formulas.
- SLO5. Organize work in a logical, clearly stated order, correctly using mathematical symbols and language.
- SLO6. Use calculators effectively and appropriately.
- SLO7. State solutions to application problems in the context of the problem and recognize inappropriate and/or impossible answers.
- SLO8. Follow and demonstrate understanding of mathematical exposition [text readings, handouts, and lecture.]
- SLO9. Recognize the usefulness of elementary mathematics

**7. Course objectives:**

Upon completion of this course the student should be able to:

- A. Identify and apply basic algebraic concepts including slope, absolute value, scientific notation, equivalent equations, laws of exponents, intercepts, horizontal lines, and vertical lines.
- B. Solve systems of linear equations in 2 unknowns using graphing, elimination, and substitution.
- C. Solve equations and inequalities in one variable.
- D. Solve quadratic equations by factoring and the quadratic formula.
- E. Solve elementary radical equations.
- F. Graph linear equations.
- G. Solve problems by application of linear functions.
- H. Apply the properties of and perform operations with radicals.
- I. Apply the properties of and perform operations with integer exponents.

**8. Course Content** (Brief but complete topical outline of the course that includes major subject areas [1-2 pages]. Should reflect all course objectives listed above. In addition, you may attach a sample course syllabus with a timeline.)

- 1. Review of Math 111
  - a. Signed number operations and order of operations
  - b. Linear Equations and Inequalities
  - c. Linear Equations and Inequalities in Two Variables
  - d. Systems of Linear Equations
- 2. Exponents and Polynomials
  - a. Multiplication and Division with exponents
  - b. Operations with monomials
  - c. Operations with polynomials
  - d. Special polynomials
- 3. Factoring
  - a. Greatest Common Facotr
  - b. Factoring out common factors
  - c. Factoring Trinomials
  - d. Difference of Squares
- 4. Rational Expressions
  - a. Reducing to lowest terms
  - b. Operations with Rational expressions
  - c. Equations with Rational expressions
  - d. Applications
- 5. Roots and Radicals
  - a. Simplification of Radical expressions
  - b. Operations with Radical expressions

- c. Equations with Radical expressions
- 6. Quadratic Equations
  - a. Quadratic Formula
  - b. Completing the Square (optional)
  - c. Applications
  - d. Graphing Parabolas
- 9. **Representative Instructional Methods** (Describe instructor-initiated teaching strategies that will assist students in meeting course objectives. Include examples of out-of-class assignments, required reading and writing assignments, and methods for teaching critical thinking skills.)
  - a. Out-of-class assignments: students will need to complete assigned problems and projects.
  - b. Reading assignments: Instructor will assign text readings for discussion of a topic in class.
  - c. Writing assignments:
    - 1. Students will submit written homework assignments.
    - 2. Students may be assigned papers including mathematical modeling.
  - d. Critical thinking:
    - 1. Lecture/discussion to understand problem solving process.
    - 2. Students will practice critical thinking in small group problem solving.
    - 3. Students will evaluate proposed solutions in light of constraints of the problem.
  - e. Resources available on CD and the internet may be used to augment the text.
- 10. **Representative Methods of Evaluation** (Describe measurement of student progress toward course objectives. Courses with required writing component and/or problem-solving emphasis must reflect critical thinking component. If skills class, then applied skills.)
  - a. Written individual assignments and/or journal- to demonstrate individual student progress toward objectives.
  - b. Small group presentations- to demonstrate student participation in problem-solving process
  - c. Written exams/quizzes - to reflect student knowledge of vocabulary, concepts, and application of concepts to problem solving as presented in lectures and discussion, small group sessions, and text readings.
  - d. Final Examination - to reflect student knowledge of vocabulary, concepts, and applications of concepts to problem-solving as presented in lectures and discussions, small group sessions, and text readings.
  - e. Participation - to reflect student involvement in class discussions, small group sessions and presentations, etc.
- 11. **Representative Text Materials** (With few exceptions, texts need to be current. Include publication dates.)  
 Texts similar to but not limited to:  
 Bittinger and Ellenbogen, *Elementary Algebra, Concepts and Applications*, 6<sup>th</sup> ed, 2004  
 McKeague, *Elementary Algebra*, 7<sup>th</sup> ed., 2004

Prepared by: \_\_\_\_\_  
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Submission Date: \_\_\_\_\_