

Prepared by the Department of Mathematics

Date of Departmental Approval: February 21, 2007

Date approved by Curriculum and Programs: February 12, 2008

Effective: Fall 2008

1. **Course Number:** MAT020  
**Course Title:** Prealgebra
2. **Description:** A mastery-based introductory course in algebra designed to help prepare students for the study of elementary algebra. Topics include: a review of whole numbers, fractions, decimals, percents, exponents, followed by signed numbers, an introduction to algebra, ratio, proportion and measurement, geometry. An emphasis is placed on "word problems" solutions. Letter grade or pass-fail.
3. **Student Learning Outcomes (instructional objectives: intellectual skills):**  
Upon successful completion of the course, students are able to do the following:
  - perform addition, subtraction, multiplication and division with whole numbers, integers, fractions, mixed numbers, and decimals.
  - evaluate applied whole number, integer, fraction, decimal and percent word problems.
  - evaluate ratio, rates and proportions.
  - evaluate percent notation.
  - convert between whole numbers, integers, fractions, decimals, and percents.
  - perform order of operations.
  - apply rounding and estimation.
  - evaluate exponents.
  - solve simple equations.
  - evaluate square roots.
  - convert between and within English/American and metric.
  - evaluate geometric areas and perimeters.
  - evaluate scientific notation.
  - define math vocabulary.
  - apply study skills.
  - solve application problems.
4. **Credits:** 3 non-degree credits
5. **Satisfies General Education Requirement:** No
6. **Prerequisite:** MAT010 or satisfactory basic skills assessment score
7. **Semester(s) Offered:** Fall, Spring, Summer
8. **Suggested General Guidelines for Evaluation:** Regular unit tests given on a "mastery basis". The mastery approach has as its goal the student's mastery of course material at the 80% level. Limited retesting is available to achieve this. The mastery approach provides for personalized interventions and advising to help students achieve the mastery level. Minimums of 80% on each unit test and 70% minimum on the final exams are required to pass. Grading yields a Pass/Fail or letter grade of B- or higher. Students who remain active in the course through to its conclusion, but fail to achieve the required level of proficiency, may at the instructor's discretion, be eligible for the "R" grade.
9. **General Topical Outline (Optional):** Please see the attached course outline.

**MAT020 Prealgebra**  
**Course Content Outline**

REVIEW MATERIAL

- I. Whole Numbers
  - A. Addition, subtraction, multiplication and division of whole numbers.
  - B. Whole-number exponents and rounding whole numbers.
  - C. Order of operations.
  - D. Applied problems.
- II. Decimals
  - A. Decimal notation.
  - B. Ordering and rounding decimals.
  - C. Addition, subtraction, multiplication and division of decimals.
  - D. Conversion of notations.
  - E. Problem applications.
- III. Fractions
  - A. Understanding fractions.
  - B. Reducing fractions.
  - C. Improper fractions and mixed numbers.
  - D. Multiplication and division of fractions.
  - E. Least common denominator and building up fractions.
  - F. Addition and subtraction of fractions.
  - G. Applied problems involving fractions.
- IV. Ratio and Proportion
  - A. Ratios and rates.
  - B. Concept of proportions.
  - C. Solving proportions.
  - C. Applications of proportions.
- V. Percent
  - A. Understanding percent.
  - B. Conversions between percents, decimals and fractions.
  - C. Solving percent problems - translating to equations.
  - D. Solving percent problems - using proportions.
  - E. Solving applied percent problems.

NEW COURSE MATERIAL

- I. Signed Numbers
  - A. Addition, subtraction, multiplication and division of signed numbers.
  - B. Order of operations with signed numbers.
- II. Introduction to Algebra
  - A. Variables and like terms.
  - B. Distributive properties.
  - C. Solving equations.
  - D. Translating English to algebra.
  - E. Problem solving.
- III. Measurement
  - A. American units.
  - B. Metric measurements: length.
  - C. Metric measurements: volume and weight.
  - D. Conversion of units.
  - E. Scientific notation.
  - F. Applied problems.
- IV. Geometry
  - A. Rectangles, squares, parallelograms and trapezoids.
  - B. Angles and triangles.
  - C. Circles.
  - D. Volume of rectangular solids.
  - E. Similar geometric figures.
  - F. Applications of geometry.