COURSE OUTLINE

Course Number	Course Title	Credits
MAT041	Foundation Math I	3

Hours: lecture/Lab/Other	Co- or Pre-requisite	Implementation sem/year
0/6	None	Spring 2011

Catalog description (2006-2009 Catalog): Developmental mathematics course designed for those students that need a review of basic arithmetic, including an introduction to algebra. Topics include whole numbers, fractions, decimals, percents and integer operations. Students will work through the material in mastery-based modules in a lab setting. [Does not fulfill mathematics elective requirement]

Is course New, Revised, or Modified? Modified

Required texts/other materials:

Carnegie Learning Software

Revision date:
Fall 2010

Course coordinator:
Betty Peterson, petersob@mccc.edu, 609-570-3421

Information resources:
There are many resources available for this course. The library has a wide assortment of books available on these topics.

Other learning resources:
Tutoring available on both campuses.

Course Competencies/Goals:

As this is a foundations level mathematics course, the objective of the course is to begin to prepare students to take a college level mathematics course. Crucial to success in a mathematics course is an ability to think "algebraically", that is to be able to demonstrate an ability to move beyond arithmetic algorithms into abstract reasoning.

The student will be able to:

I. Recognize equivalent forms of rational numbers and write rational numbers in an equivalent form.

II. Use proportional reasoning to solve application problems.

III. Apply order of operations, recognizing various methods to indicate multiplication in algebra.

IV. Understand the relative size of both integers and rational numbers, and be able to make comparisons.

V. Identify basic arithmetic properties and perform the operations of addition, subtraction, multiplication, division, exponents and rounding.

VI. Recognize and interpret information given in graphs and tables.

Course-specific General Education Knowledge Goals and Core Skills.

General Education Knowledge Goals

Goal 2. Mathematics. Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.

MCCC Core Skills

Goal B. Critical Thinking and Problem-solving. Students will use critical thinking and problem solving skills in analyzing information.
Goal F. Collaboration and Cooperation. Students will develop the interpersonal skills required for effective performance in group situations.

Units of study in detail.

Unit I Whole Numbers

Learning Objectives

The student will be able to…

- Use order of operations. (Course Competency III; Gen Ed Goal 2; Core Skill B)
- Find the least common multiple of two or more numbers.
- Find the greatest common factor of two or more numbers.
- Find the prime factorization of a number.
- Use exponents to write the prime factorization.

Unit II Rational Numbers: Fractions

Learning Objectives

The student will be able to…

- Write equivalent fractions with both larger and smaller denominators. (Course Competency I; Gen Ed Goal 2)
- Write fractions that represent a given situation. (Course Competency IV; Gen Ed Goal 2)
- Express a number as a product of prime factors. (Course Competency VI; Gen Ed Goal 2)
- Perform the mathematical operations of addition and subtraction of fractions and mixed numbers with both common and different denominators both by hand and with a calculator. (Course Competency VI; Gen Ed Goal 2)
- Perform the mathematical operations of multiplication and division on fractions and mixed numbers. (Course Competency VI; Gen Ed Goal 2)
- Use the order of operations to evaluate expressions involving fractions. (Course Competency III; Gen Ed Goal 2)
- Solve application problems that contain fractions. (Course Competency VI; Gen Ed Goal 2)
- Apply the properties of equality to solve equations containing fractions. (Course Competency VI; Gen Ed Goal 2)

Unit III **Rational Numbers: Decimals, Proportions and Percents**

Learning Objectives

The student will be able to…

- Identify place values of numbers written in decimal form and round to a given place. (Course Competency VI; Gen Ed Goal 2)
- Convert between decimal and fraction or mixed number and recognize that they are equivalent numbers. (Course Competency I; Gen Ed Goal 2)
- Compare decimal numbers and fractions to determine relative size. (Course Competency IV; Gen Ed Goal 2)
- Perform the mathematical operations of addition, subtraction, multiplication and division on decimal numbers and solve application problems containing decimals. (Course Competency VI; Gen Ed Goal 2)
- Use the order of operations to evaluate expressions involving fractions and decimals. (Course Competency III; Gen Ed Goal 2)
- Use the properties of equality to solve equations containing decimals. (Course Competency VI; Gen Ed Goal 2)
- Write ratios and rates as a fraction. (Course Competency IV; Gen Ed Goal 2)
- Find unit rates and use them to determine the best buy based on cost per unit. (Course Competency IV; Gen Ed Goal 2)
- Use proportions to solve for an unknown if given a known relationship. (Course Competency II; Gen Ed Goal 2; Core Skill B)
- Use proportions to solve application problems. (Course Competency II; Gen Ed Goal 2; Core Skill B)
- Understand percents as a rational number and be able to convert between decimals, fractions and percents. (Course Competency I; Gen Ed Goal 2)
- Solve percent problems either using the proportion or equation. (Course Competency II; Gen Ed Goal 2; Core Skill B)
- Solve application problems including percentage increases and percentage decreases. (Course Competency II; Gen Ed Goal 2; Core Skill B)

Unit IV **Integers and Irrational Numbers**

Learning Objectives

The student will be able to…

- Identify integers, whole numbers, fractions and decimals and be able to express whole numbers using words and digits. (Course Competency IV)
- Represent quantities in real-world situations using integers. (Course Competency IV)
- Compare integers using inequality symbols. (Course Competency IV; Gen Ed Goal 2)
- Calculate the absolute value of integers. (Course Competency IV; Gen Ed Goal 2)
- Perform the mathematical operations of addition, subtraction, multiplication and division on integers, both by hand and by using a calculator and be able to solve application problems. (Course Competency VI; Gen Ed Goal 2)
- Round and estimate answers.
- Apply exponents to integers. (Course Competency VI; Gen Ed Goal 2; Core Skill B)
- Use order of operations with expressions that involve integers. (Course Competency III; Gen Ed Goal 2; Core Skill B)
- Find and estimate square roots of numbers.
- Classify numbers in the real number system.
- Represent numbers using scientific notation and perform multiplication and division of numbers expressed in scientific notation.

Evaluation of student learning:

Grade will be based on the following percentages:
Tests 70%
Class work 15%
Notebooks 10%
Attendance 5%

Multiple choice questions on the departmental unit tests will reflect each of the unit objectives listed above and be administered in the lab. Students will take a pretest on each module. Students scoring above an 80% on the pretest will be moved to the next module for the course, or to the first module for the next course. Any student scoring below this will be required to work through the material on the software. They will be required to keep a notebook with both notes and work. Once they have completed the work for the module they will be required to take a post test on the material. If they do not demonstrate mastery, they will be required to complete additional time in the module before moving to a new module. All students must demonstrate mastery of the curriculum.

The test component will be the average of their highest four modules for the semester. To take a post test, students must present their notebooks to their instructor. The notebooks will be checked for both class work and notes from the current module.

Academic Integrity Statement:

Mercer County Community College is committed to academic integrity – the honest, fair and continuing pursuit of knowledge, free from fraud or deception.

Students should never:

- Knowingly represent the work of others as their own
- Knowingly represent previously completed academic work as current
- Fabricate data to support academic work
- Use or obtain unauthorized assistance in the execution of any academic work
- Give fraudulent assistance to other students
- Unethically use technological means to gain academic advantages

Violators of the above actions will be penalized. For a single violation the faculty member will determine the course of action. This may include assigning a lower grade on the assignment, lowering the course grade, failing the student, or another penalty that is appropriate to the violation. The student will be reported to the Academic Integrity Committee, who may impose other penalties for a second (or later) violation. The student has right to a hearing and also to appeal any decisions. These rights are outlined in the student handbook.