COURSE OUTLINE FALL 2008

Course Number	Course Title	Credits
MAT 037	Beginning Algebra	4

Hours: lecture/Lab/Other	Co- or Pre-requisite	Implementation sem/year
4 lecture	MAT033 with a B- or better Or an appropriate score on the Accuplacer test	Fall 2008

Catalog description (2006-2009 Catalog): Foundation mathematics course designed for students with experience in algebra but who need to strengthen their mastery of the fundamentals. Topics include exponents, polynomials, factoring, graphing first-degree equations, quadratic equations, rational expressions, and radical expressions. [Foundation course does not fulfill mathematics elective requirement.]

Is course New, Revised, or Modified? Modified, replaces MAT034

Required texts/other materials:

Textbook: Blitzer, Robert. Introductory Algebra. 5th Edition. Pearson Publishing, 2008. ISBN-10: 0-13-235679-1
Or
MyMathLab available in bookstore or at www.mymathlab.com. An access code is required from an instructor and will be provided first day of class.
Scientific calculator
Notebook

Revision date:
Spring 2008

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

Information resources:
The library has an extensive collection of books that students may use for reinforcement of the skills being taught in this course. Supplemental materials are available from the publisher which includes student's solution manual, a DVD series and MyMathLab. MyMathLab is an online learning resource which includes an interactive textbook with guided solutions and a series of video lectures.

Other learning resources:
Tutors available at both campuses.

Course Competencies/Goals:

As this is a foundation level mathematics course, the course should first and foremost prepare the students for future college level work in mathematics. The students should develop confidence in their abilities to perform mathematics successfully. They should gain experiences that connect their classroom learning with real-world applications of mathematics and be able to build techniques of reasoning for effective problem solving that they can translate to other settings.

The student will be able to:

I. Develop a strategy for solving linear equations and inequalities.
II. Generate graphs of linear equations with two unknowns to provide visual solutions for both single equations as well as systems of equations.
III. Synthesize the rules of exponents and polynomial operations to simplify algebraic expressions to a standard form.
IV. Distinguish polynomials in order to apply correct techniques of factoring.
V. Adapt the techniques of factoring polynomials to solve quadratic equations.
VI. Apply the arithmetic operations of addition, subtraction, multiplication and division to both rational expressions and radical expressions.

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 Equations and Inequalities

Learning Objectives

The student will be able to…

- Use the properties of equality to solve equations. (Course Competency I)
- Solve a literal equation for one of the unknowns. (Course Competency I, MCCC Core Skills B)
- Translating written English phrases into algebraic expressions. (Course Competency I, MCCC Core Skills B)
- Solve application problems involving equalities. (Course Competency I, MCCC Core Skills B and F)
- Solve linear inequalities and express the solution graphically and as an interval. (Course Competency I)
- Graph linear compound inequalities. (Course Competency I)
- Solve application problems involving inequalities. (Course Competency I, MCCC Core Skills B and F)

Unit II **Graphs of Linear Equations and Systems**

Learning Objectives

The student will be able to…

- Find ordered pairs that are solutions to linear equations and determine if they are correct. (Course Competency II)
- Understand slope as being a rate of change. (Course Competency II and MCCC Core Skills B)
- Graph linear equations of the form $y = mx + b$ and $Ax + By = C$ by using a table of values. (Course Competency II)
- Graph a line that passes through a given point and has a given slope. (Course Competency II)
- Determine whether two given lines are parallel or perpendicular. (Course Competency II)
- Determine the x and y intercept of linear equations. (Course Competency II and MCCC Core Skills B)
- Solve application problems involving linear equations. (Course Competency II and MCCC Core Skills F)
- Solve a system of two linear equations with two unknowns by graphing. (Course Competency II and MCCC Core Skills B)

Unit III **Exponents and Polynomials**

Learning Objectives

The student will be able to…

- Classify and evaluate polynomials. (Course Competency III and MCCC Core Skills B)
- Apply the mathematical operations of addition and subtraction to polynomials. (Course Competency III)
- Apply the rules of exponents to simplify expressions, multiply polynomials and divide polynomials. (Course Competency III and MCCC Core Skills B)
- Apply rules for integer exponents to scientific notation. (Course Competency III and MCCC Core Skills B)
- Solve application problems involving polynomials and scientific notation. (Course Competency III and MCCC Core Skills B, F)

Unit IV **Factoring and Quadratic Equations**

Learning Objectives

The student will be able to…

- Identify the greatest common factor and use it to factor a polynomial. (Course Competency IV and MCCC Core Skills B)
- Factor by grouping. (Course Competency IV)
- Factor quadratic expressions, $ax^2 + bx + c$ when $a = 1$ and when $a \neq 1$. (Course Competency IV and MCCC Core Skills B)
- Factor trinomials of higher order by removing a GCF first then factoring the remaining quadratic factor. (Course Competency IV and MCCC Core Skills B)
- Factoring special products such as difference of two squares and perfect square trinomials. (Course Competency IV)
- Solve quadratic equations by factoring. (Course Competency V and MCCC Core Skills B)

Unit V **Rational Expressions and Radicals**

Learning Objectives

The student will be able to…

- Simplify rational expressions. (Course Competency VI and MCCC Core Skills B)
- Perform arithmetic operations with rational expressions. (Course Competency VI)
- Solve rational equations. (Course Competency VI and MCCC Core Skills B)
- Simplify radicals with algebraic expressions. (Course Competency VI)
- Perform arithmetic operations with radicals. (Course Competency VI)
- Solve application problems involving rational expressions or radicals. (Course Competency VI and MCCC Core Skills B)

As this is a mathematics course, by nature all the learning objectives support the General Education Goal 2. However, this is a foundations level course and as such it is not expected that the students would use this course as a general education course.

Evaluation of student learning:

Grade will be based on the following percentages:
Four unit tests 60%
Group Projects 10%
Homework and Quizzes 10%
Final 20%

Multiple choice questions on the departmental unit tests will reflect each of the unit objectives listed above and administered in the testing center. No extra credit should be given on these tests. Partial credit should not be given for work. As an alternative to this policy, instructors may write their own free answer tests, but these tests need to be reviewed by the course coordinator before administration to ensure that both the learning objectives are being met and that the tests are clearly written to be fair for the students.

The textbook chosen for this course has group projects at the end of each chapter. During the review period for the unit, the students should complete a group project which will reinforce the material in the unit as well as connect it with a real world application. A minimum of two projects should be collected for a grade.

For the homework and quizzes portion of the grade instructors are free to do any or all of the following suggestions. Homework could be checked for completion or collected and graded. Quizzes should be given on a weekly basis when there are no tests assigned for completion. Most students need to practice the skills presented in class in order to perform well on a test. Attendance in class is important but is not enough and weekly graded opportunities should be used to ensure that the students are practicing on a regular basis. Two other possibilities for a grade in this area would be to check notebooks to ensure that the students are taking notes during class or assigning minute papers to check for understanding of the day's material.

The final is comprehensive and passing the final is required to pass the class.

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.