COURSE OUTLINE

Course Number | Course Title | Credits |
---------------|--------------|---------|
MAT042         | Foundation Math II | 3       |

Hours: lecture/Lab/Other | Co- or Pre-requisite | Implementation sem/year |
0/6 | MAT041 or MAT033 | Spring 2011 |

Catalog description: Developmental mathematics course designed for students needing an introduction to algebra. Topics include inequalities, linear models and graphing, exponents, and polynomials. Students work through the material in mastery-based modules in a lab setting. Those who complete this course may register for MAT125, MAT115, or MAT120. [Does not fulfill mathematics elective requirements.]

Is course New, Revised, or Modified? Revised Fall 2014 (Software)

Required texts/other materials: ALEKS Software

Revision date: Course coordinator:
Spring 2019 Jamie Fleischner 609.570.3807 fleischj@mc.cc.edu

Information resources: The Mercer County Community College Library has a wide assortment of reference books that students may use. Students may access tutoring resources from the Carnegie Learning System. Tutors are available during lab periods and at the West Windsor and James Kerney Learning Center.

As this is a foundations level mathematics course, the objective of the course is to prepare students to take a college-level mathematics course. Crucial to success in a mathematics course is the ability to think “algebraically”; that is, to be able to demonstrate an ability to move beyond following prescribed algorithms into abstract reasoning.

A minimum grade of "C" is required for movement from one developmental course to another and for the completion of developmental requirements to qualify for credit-bearing mathematics courses.

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 E. Computer Literacy.** Students will use computers to access, analyze or present information, solve problems, and communicate with others.

In the list below, **GE** refers to General Education Knowledge Goals and **Core** refers to MCCC Core Skills.

**Course Competencies/Goals:**

Students will be able to demonstrate through tests and assignments the ability to:

1. solve and graph linear inequalities, including compound inequalities. (GE2, Core B,E)
2. apply techniques of solving linear equations to solve literal equations. (GE2, Core B,E)
3. demonstrate understanding of a rate of change. (GE2, Core B,E)
4. solve applications problems involving linear equations and inequalities. (GE2, Core B,E)
5. generate graphs of linear equations. (GE2, Core B,E)
6. apply the properties of exponents to simplify expressions. (GE2, Core B,E)
7. synthesize the rules of exponents and polynomial operations to simplify algebraic expressions. (GE2, Core B,E)
8. factor a second degree polynomial and some special higher degree polynomials. (GE2, Core B,E)

In the following outline of the units of study, **CG** matches each objective with its course goal and the associated general education and MCCC core skills.

**Units of study in detail:**

**Unit I  Equations, Inequalities and Literal Equations**

The student will be able to:

- solve linear inequalities and express the solution graphically and as an interval. (CG1)
- solve two-step linear equations by combining like terms involving integers and decimals. (CG1)
- apply the operations of addition, subtraction, multiplication, and division to solve two-step linear equations. (CG1)
- apply the properties of real numbers to calculate a solution to a linear equation with a variable in the denominator. (CG1)
- recognize and apply the distributive property to solve linear equations. (CG1,2,3,4)
- determine and apply the properties needed to solve linear equations with variables on both sides of the equation (CG1)
- apply appropriate methods to solve application problems involving inequalities. (CG1)
- apply the operations of addition, subtraction, multiplication, and division to solve literal equations. (CG2)
- apply appropriate methods to solve application problems involving inequalities. (CG1,4)

**Unit II  Linear Models**

The student will be able to:
- recognize the relationships among a table of values, a given expression, and a graph. (CG 3,4)
- demonstrate an understanding of slope as a rate of change. (CG 3,4)
- graph linear equations of the form \( y = mx + b \) and \( Ax + By = C \) given appropriate information. (CG 3,4,5)
- graph a line with a given slope that passes through a given point. (CG 3,5)
- calculate and identify on a graph the intercepts of a given line. (CG 3,5)

**Unit III  Exponents**

The student will be able to:
- apply the product rule to simplify expressions involving exponents. (CG 6)
- apply the quotient rule to simplify expressions involving exponents. (CG 6)
- apply the power to a power rule to simplify expressions involving exponents. (CG 6)
- apply the rules of exponents to simplify expressions involving negative exponents. (CG 6)

**Unit IV  Polynomials**

The student will be able to:
- classify and evaluate polynomials. (CG 7)
- perform addition and subtraction of polynomials and simplify the answers. (CG 7)
- apply the rules of exponents and order of operations to simplify expressions, multiply polynomials, and divide polynomials. (CG 7)

**Unit V  Factoring**

The student will be able to:
- Identify the greatest common factor and use it to factor a polynomial. (CG 8)
- Factor by grouping. (CG 8)
- Factor quadratic expressions \( ax^2 + bx + c \) when \( a = 1 \) and when \( a \neq 1 \). (CG 8)
- Factor trinomials of higher order by removing a GCF first then factoring the remaining quadratic factor. (CG 8)
- Factoring special products such as difference of two squares and perfect square trinomials. (CG 8)

**Evaluation of student learning:**
Achievement of the course objectives will be evaluated through the following methods:

- Assessments covering all course objectives throughout the course (CG 1-8).
- A comprehensive final examination to demonstrate a student’s ability to retain and apply course objectives (CG 1-8).

A suggested grading scheme follows.
- Passing the final with a 70% or higher will earn the student a C.
- Rubric is provided to students for additional points towards higher grades in the course. Hours logged into the software and attendance count heavily towards higher grades than a C.

Other course policies:
- Students must pass the comprehensive final to pass the class.
- Students who cannot complete the course in one semester can re-register and continue where s/he left off. There is no need to repeat modules already completed unless the curriculum has not been retained.
- Students who complete MAT042 in less than a semester may begin work on MAT043 during the same semester, if it is needed.
- Students who complete MAT043 during this semester may take a challenge test and place out of MAT043. If all work is not completed, they need to register for an appropriate course the following semester.
- Upon successful completion, students may register for MAT125, MAT 115, or MAT 120. Students who require MAT135 or MAT140 will need to take a one-credit, 5-week course covering the additional skills needed for that course.

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. The student will be reported to the Academic Integrity Committee. The student has right to a hearing and also to appeal any decisions. These rights are outlined in the student handbook.