

LABETTE COMMUNITY COLLEGE BRIEF SYLLABUS

SPECIAL NOTE:

This brief syllabus is not intended to be a legal contract. A full syllabus will be distributed to students at the first class session.

TEXT AND SUPPLEMENTARY MATERIALS USED IN THE COURSE (if any):

Please check with the LCC bookstore, <http://www.labette.edu/bookstore>, for the required texts for this class.

COURSE NUMBER: MATH 115

COURSE TITLE: COLLEGE ALGEBRA

SEMESTER CREDIT HOURS: 3

DEPARTMENT: Mathematics

DIVISION: General Education

PREREQUISITES: Placement Test Recommendation or C or better in MATH 100 Intermediate Algebra

REVISION DATE: 04/2016

COURSE DESCRIPTION:

This course continues from MATH 100 Intermediate Algebra to cover and extend the properties of functions and their inverses, properties and graphs of the exponential and logarithmic functions, graphing techniques for general higher order polynomials and rational functions, and various solution techniques for solving higher order linear systems of equations. Topics on sequences and series will be presented as time permits. Use of technology such as the graphing calculator and some computer packages will be incorporated into the course.

COURSE OUTCOMES AND COMPETENCIES:

The learning outcomes and competencies detailed in this course outline or syllabus meet or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Groups project for this course as approved by the Kansas Board of Regents. Kansas Regents Shared Number Course MAT 1010

Students who successfully complete this course will be able to:

1. Solve various types of equations and inequalities.

- Solve linear equations (including use of absolute value).

- Solve quadratic equations using factoring, roots, and the quadratic formula.
- Solve equations using radicals and rational exponents.
- Solve higher order polynomial equations.
- Solve equations using rational expressions.
- Solve equations using exponentials and logarithms.
- Solve inequalities involving linear, quadratic, absolute value, polynomial, and rational expressions.

2. Use course concepts, critical thinking, and reading skills to solve applied problems*.

- Produce a mathematical model, equation, etc. from a given written problem, set of data, or set of facts.
- Solve the resulting model and analyze the solution in the context of the original problem.
 - * Models to be discussed may include but are not limited to:
 - i. linear models (interpolation and regression)
 - ii. quadratic models (Pythagorean Theorem, Projectiles, Area)
 - iii. polynomial models (Compound Interest)
 - iv. exponential and logarithmic models (exponential growth, sound intensity)
 - v. systems of equations models (linear programming)

3. Use function concepts to solve problems and plot graphs.

- Define and evaluate functions using function ($y = f(x)$) notation.
- Classify expressions as relations or functions.
- Analyze a function's operations to classify its graphical form.
- Use symmetry concepts, intercepts, asymptotes, end behavior, and translations to sketch graphs of various functions (see Outcome 1, Competencies a – f).
- Apply function operations and properties to combine and form new functions.
 - These are:
 - i. domain and range
 - ii. addition, subtraction, multiplication, and division
 - iii. composition and inverse
- Use information about form and points to write equations of functions (see Outcome 1, Competencies a – f, Outcome 3, Competencies c and d)

4. Solve linear and non-linear systems of equations and inequalities.

- Solve 2 – variable systems (linear and non – linear) by graphing the system.
- Solve linear systems using substitution (2 by 2) and elimination (all sizes).
- Solve linear systems using matrix techniques including
 - i. Gaussian and Gauss-Jordan elimination.
 - ii. matrix inversion.
 - iii. Cramer's Rule.

5. Demonstrate a mastery of the terminology of algebra.

- Answer five to ten questions on each examination relative to the appropriate terminology for the material covered by that examination