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 202

COURSE TITLE: DIFFERENTIAL EQUATIONS

SEMESTER CREDIT HOUR: 3

DEPARTMENT: Mathematics

DIVISION: General Education

PREREQUISITE: MATH 201 Calculus III

COURSE DESCRIPTION:
This course will include solution techniques for the standard ordinary differential equations of the first and second order (with some generalization to higher order equations). Power series solution techniques for linear equations with constant coefficients will be presented. Solution of differential equations using the Laplace Transform will be presented. Applications to geometry and the physical sciences will be presented and covered. This course is required of any student seeking a degree in physics, mathematics, engineering, chemistry, and other related fields at a four-year institution.

COURSE OUTCOMES AND COMPETENCIES:
Students who successfully complete this course will be able to:

1. Evaluate and solve 1st order differential equations and initial value problems using classical techniques.

- The student will solve 1st order equations using Separation of Variables.
- The student will transform a linear equation to an appropriate form and then solve the1st order equation using Integrating Factors.
- The student will evaluate the equation to determine if the equation is an exact differential and then solve the equation using Partial Integration.
- The student will solve a linear, 1st order, constant coefficient equation using the characteristic polynomial.

2. Evaluate and solve 2nd order and higher order equations and initial value problems using classical techniques.

- The student will analyze a 2nd order equation to determine if its order may be reduced, then solve the equation by Reduction of Order.
- The student will solve non-homogeneous equations using the method of Undetermined Coefficients.
- The student will solve non-homogeneous equations using Variation of Parameters.
- The student will expand the use of the characteristic polynomial to 2nd order and higher order, linear, constant coefficient differential equations.

3. Evaluate and apply differential equations in applications from the physical sciences.

- The student will read and work examples of such applications.
- The student will present worked application problems in class.

4. Evaluate and apply alternative techniques to solve different types of differential equations.

- The student will apply the Laplace Transform to solve differential equations.
- The student will apply Power Series techniques to solve differential equations.
- The student will solve homogeneous linear systems of equations using eigenvalues and eigenvectors.
- The student will apply numerical solution techniques (Such as Euler's Method, Cauchy – Euler, and Runge Kutta) to solve differential equations on the computer.