Sinclair Community College
444 E. Third St.
Dayton, OH 45402

Master Syllabus

MAT 2310 - Elementary Differential Equations

Division: Science, Mathematics and Engineering

Department: Mathematics

Credit Hour Total: 4.0 **Lecture Hrs:** 4.0

Prerequisite(s): MAT 2280

Other Prerequisite(s): AND Other with a grade of C or better or satisfactory score on math placement test

Date Revised: March 2015

Course Description:

Solutions and applications of ordinary differential equations including separable, exact, homogeneous and non-homogeneous linear equations and others. Numerical approximation methods as well as substitutions, the total differential, separation of variables, integrating factors, undetermined coefficients, variation of parameters, Laplace Transforms and power series methods are covered.

General Education Outcomes:

- Critical Thinking/Problem Solving

Course Outcomes:

Convolution and Laplace Transform
Evaluate the convolution of two functions and the Laplace Transform and Inverse Laplace Transform of functions.

Assessment Method: Locally developed exams
Performance Criteria: Score of 70% or better

Approximating Solutions to Differential Equations
Approximate solutions to differential equations and initial value problems using direction fields, Euler methods and the Runge-Kutta method.

Assessment Method: Locally developed exams
Performance Criteria: Score of 70% or better

Solve Differential Equations
Solve ordinary first order differential equations.

Assessment Method: Locally developed exams
Performance Criteria: Score of 70% or better

Applications of Differential Equations
Model real world applications of electrical circuits,population growth and Newton's Law of Cooling using differential equations.

Assessment Method: Locally developed exams
Performance Criteria: Score of 70% or better

Outline:

Solutions and applications of ordinary differential equations including separable, exact, homogeneous and nonhomogeneous linear equations and others. Numerical approximation methods as well as substitutions, the total differential, separation of variables, integrating factors, undetermined coefficients, variation of parameters, Laplace Transforms and power series methods are covered.