



Course Number Course Name	Math 3316 Applied Ordinary Differential Equations
Credit Value (Breakdown of theory and lab credits)	3 Theory
Catalog Course Description	The course will cover solutions of first order differential equations (separable equations, exact equations and integrating factors), second order differential equations (homogeneous equations and characteristic equations, method of undetermined coefficients, variation of parameters), Laplace transforms, series solutions, numerical methods, and applications to physics, mechanical and electrical systems and population dynamics. Prerequisite: MATH 1520. (3, 3T+0L)
Student Learning Outcomes/Objectives /Competencies of the Course	<p>Student Learning Outcomes: At the end of this course the student will be able to:</p> <ol style="list-style-type: none"> 1. Solve first-order differential equations <ol style="list-style-type: none"> a. Separable b. Exact c. Linear 2. Use first-order differential equations to solve applications related to <ol style="list-style-type: none"> a. Orthogonal trajectories b. Falling bodies c. Radioactive decay d. Biological systems 3. Solve second-order differential equations <ol style="list-style-type: none"> a. Characteristic equations b. Method of undetermined coefficients c. Variations of parameters d. Initial-value problems 4. Use second-order differential equations to solve applications related to <ol style="list-style-type: none"> a. Mass-spring systems b. Electrical circuits 5. Solve differential equations using series solutions 6. Solve differential equations using Laplace transforms 7. Solve differential equations using numerical solutions
College-Wide Student Learning Outcomes	<p>Math 3316 learning objectives align with the following NNMCC College Wide Goal:</p> <p><i>Critical thought: Students are required to analyze and synthesize information and draw reasoned conclusions.</i></p>