Course Outcome Guide (COG)

Course:	Math 266: Differential Equations	Credits:	3	Updated:	February 20, 2020
Course Description:	*Prerequisite: "C" or higher in MATH 265, concurrent enrollment in MATH 265, or Instructor approval.* Solutions of elementary differential equations by elementary techniques, Laplace transforms, systems of equations, matrix methods, numerical techniques, and applications.				

Concepts and Issues	Process Skills	Assessment Tasks	Intended Outcomes		
			Course	Program	Institutional
• Mathematical Models & Direction Fields • Classification of Differential Equations • First Order Differential Equations • Separable, Linear, Exact, & Autonomous Equations • Higher-Order Differential Equations • Reduction of Order • Homogeneous Equations • Nonhomogeneous Equations • The Wronskian • Undetermined Coefficients • Variation of Parameters • Cauchy-Euler Equations • Fundamental Solution Set • Roots of the Characteristic Equations • Mechanical Vibrations • Definition of Laplace Transform • Discontinuous Forcing Functions • Systems of Linear Equations • Eigenvalues and Eigenvectors	• Classify differential equations • Model a differential equation with a direction field • Distinguish between methods of solving a differential equation • Solve first order differential equations • Solve homogeneous equations • Solve non-homogeneous equations • Apply to mechanical, electrical, and forced vibrations • Define Laplace Transform • Solve Step Functions • Apply to discontinuous forcing functions • Review matrices • Solve linear algebraic equations with Eigenvalues and Eigenvectors	• Complete textbook readings, questions, and problems demonstrating mastery of both concepts and process skills. • Complete examinations demonstrating mastery of both concepts and process skills.	1. Analyze applications and write differential equations to model the behavior. 2. Distinguish between types of differential equations. 3. Solve differential equations and communicate the results.	2. Students will use reasoning skills to analyze and solve problems.	2. Students will use reasoning skills to analyze and solve problems.