

Course Learning Outcomes	General Education Learning Outcomes	Flexible Core-Scientific World
Be able to identify the type of differential equation and choose the appropriate methods to solve the problem	Be able to use the existing knowledge to choose a proper method to accomplish the problem.	Evaluate evidence and arguments critically or analytically
Be able to solve first order linear and nonlinear equations by implementing knowledge from Calculus	Be able to transfer the knowledge of calculus to solve differential equation problems	Produce well-reasoned written arguments using evidence to support conclusions
Be able to model real world problems using first order differential equations and understand the model prediction	Be able to see the connection to experience	Gather, interpret, and assess information from a variety of sources and points of view. Understand the scientific principles underlying matters of policy or public concern in which science plays a role
Be able to solve second order linear differential equations with various methods	Be able to use the existing knowledge to choose a proper method to accomplish the problem. Complete the mathematical analysis and draw proper conclusion. Understand the limitation of each method.	Produce well-reasoned written arguments using evidence to support conclusions.
Be able to model mechanical or electrical problems using second order differential equations and understand the model prediction	Be able to see the connection to other disciplines	Identify and apply fundamental concepts and methods of mathematics to explore the engineering problems Produce well-reasoned written arguments using evidence to support conclusions.
Be able to solve differential equations using power series	Be able to show integrated communication through completing the mathematical reasoning of the problem	Produce well-reasoned written arguments using evidence to support conclusions
Understand Laplace Transform and be able to solve initial value problems using Laplace Transform	Be able to understand the limitations and implications of the method	
Be able to use numerical method to approximate solution when appropriate	Be able to understand the limitations and implications of the method	Demonstrate how tools of science and mathematics can be used to analyze problems and develop solutions

