

MATH 3120	Engineering Mathematics	3 Credit Hours
Prerequisites:	MATH 2100	
Goal	To equip the students with a working knowledge of differential equations and the standard techniques of solving them	
Objectives		Outcomes
<p>The course should enable the student to:</p> <ol style="list-style-type: none"> 1. Perceive the basic concepts and definitions of differential equations 2. Develop the skill of representing a real physical situation by means of differential equations through modeling approach 3. Recognize the various types of differential equations 4. Apprehend the standard techniques for solving differential equations 5. Differentiate between stable and unstable solutions 		<p>The students should be able to:</p> <ol style="list-style-type: none"> 1. Realize the importance of ordinary differential equations and their practical applications 2. Formulate a differential equation to model relationships between variables in a physical phenomena 3. Grasp the theory of standard types of linear and non-linear differential equations 4. Investigate the stability of solutions of differential equations 5. Sketch solutions of differential equations in the phase plane 6. Apply techniques for solving various differential equations including separation of variables, integrating factors and lap lace transforms 7. Use the governing differential equation of a system to predict the behavior of the system under various boundary conditions. 8. Distinguish between the general solutions, particular solutions, complementary solutions, exact solution and approximation solutions and their proper interpretations. 9. Recognize the governing differential equations frequently arise in engineering situations. 10. Deal with partial differential equations and their applications in the engineering context.