


NEAR EAST UNIVERSITY - COMMON COURSES COORDINATION UNIT							
		Department of Mathematics Course Information Sheet & Course Outline					
Course Code MTH 201	Course Name DIFFERENTIAL EQUATION			Credit 4	ECTS 6		
Pre-requisite: MTH102							
Language: English			Course Type: Compulsory		Year: 2019/2020		Semester: Spring
Weekly Hours	Class Hours	Laboratory	Practicum	Learning Sessions			
				PS	C	R	T
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Learning Outcomes			At the end of the course the student should be able to				
			<ol style="list-style-type: none"> 1. Give the definition of Differential equations and its engineering applications. 2. Understand the classification of differential equations. 3. Solve Differential equations by various methods. 4. Learn the concept of Laplace transform and its applications in solving differential equations 				
Course Description		Ordinary and partial differential equations. Explicit solutions, Implicit Solution. First-order differential equations, separable, homogenous differential equations, exact differential equations. Ordinary linear differential equations. Bernoulli differential equations. Cauchy-differential equations. High-order ordinary differential equations. Introduction to Laplace transforms.					
Course Objectives		<ol style="list-style-type: none"> 1. To introduce the concept of first, second and higher order differential equations, and the methods of solving these equations 2. To emphasize the importance of Differential equations and its application in Engineering. 3. To understand the concept of Laplace transform and its applications in solving differential equations and other engineering applications. 					
		1	Shepley L. Ross, Introduction to Ordinary Differential Equations; 4th edition, John Wiley & Sons. Inc. Canada, 1989.				
		2	Dennis G. Zill, A First Course in Differential Equations with Modelling Applications; 10th edition, Brooks/Cole, 2013.				
Ders İçeriği / Course Content		<ol style="list-style-type: none"> 1. Definition and Classification of Differential Equations; Their Origin and Application 2. Solution of Differential Equations 3. Initial-value Problems, Boundry-value Problems, and Existence of Solutions 4. Exact Differential Equations and Integrating Factors 5. Separable Equations and Equations Reducible to this Form 6. Linear Equations and Bernoulli Equations, Special Integrating Factors 7. Problems in Mechanics, Mixing Problems, Cooling Problems, Application to Electrical Circuits Systems 8. Problems in Mechanics, Mixing Problems, Cooling Problems, Application to Electrical Circuits Systems 9. Basic Theory of Linear Differential Equations 10. Method of Undetermined Coefficients 11. Variation of Parameters Method 12. Definition, Existence, and Basic Properties of the Laplace Transform 13. The Inverse Transform and the Convolution Laplace Transform Solution of Linear Differential Equations 					