Course Description Form	
Course Code and Name	MATH201 DIFFERENTIAL EQUATIONS
Course Semester	3
Catalog Content	Classification of Differential Equations, Separable Equations, Types of homogeneous differential equations, Exact differential equations and integral multiplier, Linear equations, Bernoulli and Riccati differential equations, Engineering and Physical Applications, High-order linear equations and the theory, Solutions of the homogeneous equations with constant coefficients, Solution techniques for non-homogeneous linear equations: method of undetermined coefficients, Variation of parameters, Linear differential equations with variable coefficients: Cauchy-Euler equation, Serial Method, Introducing the Laplace transform and the Laplace transforms of certain functions, Inverse Laplace transform and convolution, Solutions of linear differential equations with constant coefficients using Laplace transformation, Linear systems of linear differential equations with the Laplace transform solutions
Textbook	A First Course in Differential Equations: The Classic Fifth Edition (Classic Edition) 5th Edition by Dennis G. Zill, 2000.
Supplementary Textbooks	Ordinary Differential Equations (Dover Books on Mathematics) Revised ed. Edition by Morris Tenenbaum, 1985. Elementary Differential Equations 10th Edition by William E. Boyce, Richard C. DiPrima, 2012.
Credit	5
Prerequisites of the Course (*Attendance Requirements*)	There is no prerequisite or co-requisite for this course.
Type of the Course	Compulsory
Instruction Language	English
Course Objectives	Teaching special type of equations and their solutions, engineering and physical applications, methods of solution for non-homogeneous equations, sequential solution method to solve differential equations, Laplace transforms and Laplace transforms of some functions
Course Learning Outcomes	Grasping the basic concepts of differential equations Learning special type of equations and their solutions Understanding engineering and physical applications Learning the methods of solution for non-homogeneous equations Learning sequential solution method to solve differential equations Gaining basic understanding of Laplace transforms and Laplace transforms of some functions
Instruction Methods	The mode of delivery of this course is face to face

Weekly Schedule	1. Week Classification of Differential Equations, Separable Equations 2. Week Types of homogeneous differential equations 3. Week Exact differential equations and integral multiplier 4. Week Linear equations, Bernoulli and Riccati differential equations 5. Week Engineering and Physical Applications 6. Week High-order linear equations and the theory 7. Week Solutions of the homogeneous equations with constant coefficients 8. Week Solution techniques for non-homogeneous linear equations: method of undetermined coefficients 9. Week Variation of parameters 10. Week Linear differential equations with variable coefficients: Cauchy-Euler equation, Serial Method 11. Week Introducing the Laplace transform and the Laplace transforms of certain functions 12. Week Inverse Laplace transform and convolution 13. Week Solutions of linear differential equations with constant coefficients using Laplace transformation 14. Week Linear systems of linear differential equations with the Laplace transform solutions
Teaching and Learning Methods *(These are examples. Please fill which activities you use in the course)*	Weekly theoretical course hours: 4 Reading Activities Preparation of Midterm and Midterm Exam Final Exam and Preparation for Final Exam

Assessment Criteria		Numbers	Total Weighting (%)	
	Midterm Exams	1	40	
	Assignment	4	20	
	Application			
	Projects			
	Practice			
	Quiz			
	Percent of In-term Studies (%)		60	
	Percentage of Final Exam to Total Score (%)		40	
	Attendance			

	Activity	Total Number of Weeks	Duration (weekly hour)	Total Period Work Load
Workload	Weekly Theoretical Course Hours	14	4	56
	Weekly Tutorial Hours			
	Reading Tasks	14	3	42
	Studies			
	Material Design and Implementation			
	Report Preparing			
	Preparing a Presentation			
	Presentations			
	Midterm Exam and Preparation for Midterm Exam	1	13	13
	Final Exam and Preparation for Final Exam	1	14	14
	Other (should be emphasized)			0
	Total Workload			125
	Total Workload / 25			5
	Course Credit (ECTS)			5

	No	Program Outcomes	1	2	3	4	5
Contribution Level Between Course Learning Outcomes and Program Outcomes	1	Sufficient knowledge on mathematics, science and computer engineering; ability to apply theoretical and practical knowledge in these areas to model and solve engineering problems					X
	2	Ability to identify, define, formulate and solve complex engineering problems; ability to choose and apply appropriate analysis and modelling methods for these purposes					X
	3	Ability to design a complex system, process, device, software, algorithm, or product under realistic constraints and circumstances to meet certain requirements; ability to apply modern design techniques for this purpose					X
	4	Ability to choose, develop and use modern techniques and tools necessary for engineering applications; ability to effectively use computing technologies					X
	5	Ability to design and implement systems or experiments to solve engineering problems, collect and interpret data to evaluate and analyze the results of solutions					X
	6	Ability to work effectively in intradisciplinary and interdisciplinary teams or individually					X
	7	Ability to efficiently prepare, evaluate and interpret reports					
	8	Ability to make presentations and conduct effective verbal and written communication in Turkish and English					
	9	Awareness of the necessity of lifelong learning; ability to access information, follow scientific and technological developments; ability to perpetually renew oneself					
	10	Awareness of professional and ethical responsibility, ability to act in accordance with ethical principles					

	11	Ability to apply knowledge on project management, risk management and change management					
	12	Awareness of entrepreneurship and innovation, ability to design and build sustainable systems					
	13	Ability to devise local and global solutions to contemporary issues considering the effects of engineering applications on health, environment and security					
	14	Awareness of the legal consequences of engineering solutions					
	15	Ability to apply knowledge on software development process and documentation rules					
	16	Knowledge on standards used in engineering applications					
	17	Awareness of occupational health and security, information security and privacy					
The Course's Lecturer(s) and Contact Information	Computer Engineering Department Chair bmbb@gazi.edu.tr						