COURSE DESCRIPTION FORM	
Course Code and Name	MATH201 DIFFERENTIAL EQUATIONS
Course Semester	3
Catalogue Data of the Course (*Course 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
Course Textbooks	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 (*ECTS*)	5
Prerequisites for the Course (*Attendance Requirements*)	There is no prerequisite or co-requisite for this course.
Course Type	Compulsory
Language of Instruction	English
Course Objectives	To teach 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	1. Explains the basic concepts of differential equations 2. Explains special type of equations and their solutions 3. Defines engineering and physical applications 4. Solves non-homogeneous equations 5. Applies sequential solutions to solve differential equations 6. Applies Laplace transforms and Laplace transforms of some functions
Instruction Method *(Face-to-face, Distance education etc.)*	The mode of delivery of this course is face to face
Weekly Schedule of the Course	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 Activities *(The time spent for the activities listed here will determine the amount of credit required)*	Weekly theoretical course hours: 4 Reading activities Midterm and revision for midterm Final exam and revision for final exam

Assessment Criteria

	Number(s)	Weight (%)
Midterm exam	1	40
Assignment	1	20
Application		
Project		
Practice		
Quiz		
Final exam	1	40
Total	3	100

Workload of the Course

Activity	Number of Weeks	Duration (Weekly Hour)	End of Semester Total Workload
Weekly theoretical course hours	14	4	56
Weekly practical course hours			
Reading activities	14	3	42
Internet search and library work			
Designing and implementing materials			
Making a report			
Preparing and making presentations			
Midterm and revision for midterm	1	13	13
Final exam and revision for final exam	1	14	14
Total workload			125
Total workload/ 25			5
Course Credit (ECTS)			5

Contribution Level between Course Outcomes and Program Outcomes

No	Program Outcomes	1	2	3	4	5
1	Knowledge of mathematics, science, basic engineering, computing, and computer engineering; ability to use this knowledge in solving complex engineering problems.					X
2	Ability to define, formulate and analyze complex engineering problems using basic science, mathematics and engineering knowledge and considering the UN Sustainable Development Goals relevant to the problems addressed.					X
3	Ability to design creative solutions to complex engineering problems; ability to design complex systems, processes, devices, software, algorithms or products to meet current and future requirements, considering realistic constraints and conditions.				X	
4	Ability to select, use and develop appropriate techniques, resources and modern engineering and informatics tools, including estimation and modeling, for the analysis and solution of complex engineering problems while being aware of their limitations.					X
5	Ability to use research methods to examine complex engineering problems or research topics in computer engineering, including					

	reviewing the literature, designing experiments, conducting experiments, collecting data, analyzing and interpreting results.						
6	Knowledge of the effects of engineering practices and the standards used in these practices on society, health and safety, economy, sustainability and environment within the scope of the UN Sustainable Development Goals; awareness of the consequences of engineering solutions in the fields of information security and law.						
7	Acting in accordance with engineering professional principles and knowledge on ethical responsibility; awareness of acting impartially, without discrimination on any issue, and being inclusive of diversity.						
8	Ability to work effectively individually and as a team member or leader in intradisciplinary and multidisciplinary teams (face-to-face, remote, or hybrid).						
9	Ability to conduct effective verbal and written communication on technical issues in Turkish or English, prepare reports, make effective presentations and prepare software documentation, considering the various differences of the target audience (such as education, language, profession).				X		
10	Knowledge of business practices such as project, risk and change management and economic feasibility analysis; awareness of entrepreneurship and innovation.						
11	Lifelong learning skill that includes the ability to learn independently and continuously, to adapt to new and developing scientific practices and technologies, and to think inquisitively about technological changes.						

Lecturer(s) and Contact Information	Computer Engineering Department Chair bmbb@gazi.edu.tr