

**COURSE INFORMATION FORM**

Faculty	Faculty of Engineering		
Program	B.Sc. in Civil Engineering	Elective	
	B.Sc. in Computer Engineering	Required	
	B.Sc. in Electrical-Electronics Engineering	Required	
	B.Sc. in Industrial Engineering	Elective	
	B.Sc. in Mechanical Engineering	Elective	
Semester	Spring 2017-2018		

Course Code	EE 204			
Course Title in English	Signals and Systems			
Course Title in Turkish	İşaretler ve Sistemler			
Language of Instruction	English			
Type of Course	Flipped Classroom			
Level of Course	Undergraduate			
Course Category (by % of Content)	Basic Science	Basic Engineering	Engineering Design	General Education
	30	70	0	-
Semester Offered	Spring			
Contact Hours per Week	Lecture: 4 hours	Recitation: -	Lab: -	Other: -
Estimated Student Workload	152.5 hours per semester.			
Number of Credits	6 ECTS			
Grading Mode	Standard Letter Grade			
Pre-requisites	None			
Expected Prior Knowledge	Prior knowledge in differential and integral calculus and complex numbers is expected.			
Co-requisites	None			
Registration Restrictions	Only Undergraduate Students			
Overall Educational Objective	To learn how to analyze continuous-time and discrete-time signals and systems.			
Course Description	This course provides a comprehensive understanding of continuous-time and discrete-time signals and systems. The following topics are covered: fundamental concepts: linearity, stability; time and frequency analysis of continuous-time and discrete-time signals; Fourier Series, Fourier Transform, Laplace Transform, Discrete Fourier Transform, z-Transform; Sampling.			
Course Description in Turkish	Bu ders sürekli-zamanlı ve ayrık-zamanlı işaretlerin ve sistemlerin tam olarak anlaşılmasını sağlamaktadır. Aşağıdaki konular kapsanacaktır: temel kavramlar: doğrusallık, kararlılık; Sürekli-zamanlı ve ayrık-zamanlı işaretlerin zaman ve frekans analizleri; Fourier Serileri, Fourier Dönüşümü, Laplace Dönüşümü, Ayrık Fourier Dönüşümü, z-Dönüşümü; Örnekleme.			
Course Learning Outcomes and Competences	Upon successful completion of the course, the learner is expected to be able to: <ol style="list-style-type: none">(a, e) comprehend continuous-time and discrete-time signals and systems, and their properties;(a, e) analyze continuous-time and discrete-time signals and systems in time-domain;(a, e) analyze continuous-time and discrete-time signals and systems in frequency domain;(a, e) apply Laplace Transform and z-Transform to determine system behavior.			

Relationship of the Course with the Student Outcomes	Level	Learning Outcome(s)	Assessed by
Program Outcomes	N=None S=Supportive H=High		Exam, Project, HW, Experiment, Presentation, etc.
(a) an ability to apply knowledge of mathematics, science, and engineering	H	1,2,3,4	Exams, Assignments
(b) an ability to design and conduct experiments, as well as to analyze and interpret data			
(b)-1. an ability to design/develop an experiment by identifying required assumptions, constraints, data collection methods and models	N		
(b)-2. Implement experimental procedures to conduct an experiment and use engineering judgment to draw conclusions	N		
(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	N		
(d) an ability to function on multidisciplinary teams			
(d)-1. Function effectively on a intradisciplinary team	N		
(d)-2. Function effectively on a multidisciplinary team	N		
(e) an ability to identify, formulate, and solve engineering problems	H	1,2,3,4	Exams, Assignments
(f) an understanding of professional and ethical responsibility	N		
(g) an ability to communicate effectively			
(g)-1. Communicate effectively with well-organized written documents	N		
(g)-2. Communicate effectively verbally with a range of audiences	N		
(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	N		
(i) a recognition of the need for, and an ability to engage in life-long	N		
(j) a knowledge of contemporary issues	N		
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice	N		
Prepared by and Date	Asst. Prof. Dr. Ebru Arısoy-Saraçlar / June 2017		
Name of Instructor	Asst. Prof. Dr. Ebru Arısoy-Saraçlar		
Course Contents	Week	Topic	
	1.	Introduction to Signals and Systems	
	2.	Linear Time-Invariant Systems	
	3.	Linear Time-Invariant Systems	
	4.	Fourier Series Representation of Periodic Signals	
	5.	Fourier Series Representation of Periodic Signals	
	6.	The Continuous-Time Fourier Transform	
	7.	The Continuous-Time Fourier Transform	
	8.	The Discrete-Time Fourier Transform	
	9.	The Discrete-Time Fourier Transform	
	10.	Time and Frequency Characterization of Signals and Systems	
	11.	Sampling	

	12.	The Laplace Transform
	13.	The Laplace Transform / The z-Transform
	14.	The z-Transform
	15.	Final Examination Period.
	16.	Final Examination Period.
Required/Recommended Readings	Oppenheim, Willsky and Nawab, Signals and Systems, 2 nd edition.	
Teaching Methods	Lectures/contact hours using "flipped classroom" as an active learning technique	
Homework and Projects	Homework questions will be assigned to the students and there will be quizzes containing questions from the homework assignments. There will be also pop quizzes related to lecture content.	
Laboratory Work	-	
Computer Use	-	
Other Activities	-	
Assessment Methods	Types of assessment:	
		Number Ratio (%)
	Midterm Exams	2 50
	Quizzes & Assignments	5 20
	Final Exam	1 30
	Total	100
	Late Policy: For assignments, 10% daily penalty, down to 50%.	
Course Administration	Instructor's office and phone number: 5 th Floor, (0212) 3953677 office hours: TBA email address: saraclare@mef.edu.tr Rules for attendance: - Missing a quiz: No make-up will be given. Missing a midterm: Provided that proper documents of excuse are presented, a make-up exam will be given for each missed midterm. Missing a final: Faculty regulations. A reminder of proper classroom behavior, code of student conduct: YÖK Regulations Statement on plagiarism: YÖK Regulations http://3fcampus.mef.edu.tr/uploads/cms/webadmin.mef.edu.tr/4833_2.pdf	

ECTS Student Workload Estimation	Activity	No/Weeks	Hours			Calculation	Explanation
		No/Weeks per Semester (A)	Preparing for the Activity (B)	Spent in the Activity Itself (C)	Completing the Activity Requirements (D)		
	Lecture/Flipped Classroom	14	2	4		84	A*(B+C+D)
	Quizzes /Assignments	5	4	0.5		22.5	A*(B+C+D)
	Midterm(s)	2	10	2		24	A*(B+C+D)
	Final Examination	1	20	2		22	A*(B+C+D)
	Total Workload					152.5	
	Total Workload/25					6.1	
	ECTS					6	

PROGRAM CRITERIA FOR ELECTRICAL AND ELECTRONICS ENGINEERING

1. Breadth in electrical-electronics engineering practice, analysis and design with 16 required course, and depth in one or more fields with 16 electives.
2. Knowledge of mathematics, including differential and integral calculus, basic sciences, computer science, and engineering sciences that is necessary for analysis and design of complex electrical and electronic devices, software, and systems containing hardware and software components.
3. Knowledge of probability and statistics, including application to Electrical and Electronics engineering; knowledge of advanced mathematics, including differential equations, linear algebra, complex variables, and discrete mathematics.

PROGRAM CRITERIA FOR COMPUTER ENGINEERING

1. Breadth in computer engineering practice, analysis and design with 17 required course, and depth in one or more fields with 11 electives.
2. Knowledge of mathematics, including differential and integral calculus, basic sciences, computer science, and engineering sciences that is necessary for analysis and design of complex electrical and electronic devices, software, and systems containing hardware and software components.
3. Knowledge of probability and statistics, including application to computer engineering; knowledge of advanced mathematics, including differential equations, linear algebra, complex variables, and discrete mathematics.

Note: For program-specific courses ABET Program Criteria of the related engineering program will be put here as before.