



## ECTS COURSE INFORMATION FORM

<b>Faculty</b>	<b>Faculty of Engineering</b>	
<b>Program</b>	<b>B.Sc. in Civil Engineering</b>	<b>Elective</b>
	<b>B.Sc. in Computer Engineering</b>	<b>Required</b>
	<b>B.Sc. in Electrical-Electronics Engineering</b>	<b>Required</b>
	<b>B.Sc. in Industrial Engineering</b>	<b>Elective</b>
	<b>B.Sc. in Mechanical Engineering</b>	<b>Elective</b>

<b>Course Code</b>	EE 204			
<b>Course Title in English</b>	Signals and Systems			
<b>Course Title in Turkish</b>	İşaretler ve Sistemler			
<b>Language of Instruction</b>	English			
<b>Type of Course</b>	Flipped Classroom			
<b>Level of Course</b>	Undergraduate			
<b>Course Category (by % of Content)</b>	Basic Science	Basic Engineering	Engineering Design	General Education
	30	70	0	-
<b>Semester Offered</b>	Spring			
<b>Contact Hours per Week</b>	Lecture: 4 hours	Recitation: -	Lab: -	Other: -
<b>Estimated Student Workload</b>	153 hours			
<b>Number of Credits</b>	6 ECTS			
<b>Grading Mode</b>	Standard Letter Grade			
<b>Pre-requisites</b>	MATH 115			
<b>Expected Prior Knowledge</b>	Prior knowledge in differential and integral calculus and complex numbers is expected.			
<b>Co-requisites</b>	None			
<b>Registration Restrictions</b>	Only Undergraduate Students			
<b>Overall Educational Objective</b>	To learn how to analyze continuous-time and discrete-time signals and systems.			
<b>Course Description</b>	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.			
<b>Course Description in Turkish</b>	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.			
<b>Course Learning Outcomes and Competences</b>	Upon successful completion of the course, the learner is expected to: <ol style="list-style-type: none"><li>1. comprehend continuous-time and discrete-time signals and systems, and their properties;</li><li>2. analyze continuous-time and discrete-time signals and systems in time-domain;</li><li>3. analyze continuous-time and discrete-time signals and systems in frequency domain;</li><li>4. apply Laplace Transform and z-Transform to determine system behavior.</li></ol>			

Relationship of the Course with the Student Outcomes	Level	Learning Outcome(s)	Assessed by
<b>Student Outcomes</b>	N=None S=Supportive H=High		Exam, Project, HW, Experiment, Presentation, etc.
(1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	H	1,2,3,4	Exams, Assignments
(2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors			
(3) an ability to communicate effectively with a range of audiences			
(4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts			
(5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives			
(6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions			
(7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies			
<b>Prepared by and Date</b>	Asst. Prof. Dr. Ebru Arisoy-Saraçlar / January 2020		
<b>Semester</b>	Spring 2019-2020		
<b>Name of Instructor</b>	Asst. Prof. Dr. Ebru Arisoy-Saraçlar / Asst. Prof. Dr. Serap Kırılmaz		
<b>Course Contents</b>	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 / The Discrete-Time Fourier Transform	
	8.	The Discrete-Time Fourier Transform	
	9.	Time and Frequency Characterization of Signals and Systems	
	10.	Sampling	
	11.	Sampling	
	12.	The Laplace Transform	
	13.	The Laplace Transform / The z-Transform	
	14.	The z-Transform	
	15.	Final Exam/Project/Presentation Period	
	16.	Final Exam/Project/Presentation Period	
<b>Required/Recommended Readings</b>	Signals and Systems, 2 <sup>nd</sup> edition, Oppenheim, Willsky and Nawab.		
<b>Teaching Methods</b>	Lectures/contact hours using "flipped classroom" as an active learning technique		
<b>Homework and Projects</b>	Homework questions will be assigned to the students and there will be quizzes containing questions from the homework assignments. There will also be pop quizzes related to lecture content.		
<b>Laboratory Work</b>	-		

<b>Computer Use</b>	-															
<b>Other Activities</b>	-															
<b>Assessment Methods</b>	<table border="1"> <thead> <tr> <th>Types of assessment</th> <th>Number</th> <th>Ratio (%)</th> </tr> </thead> <tbody> <tr> <td>Midterm Exams</td> <td>2</td> <td>60</td> </tr> <tr> <td>Quizzes &amp; Assignments</td> <td>5</td> <td>10</td> </tr> <tr> <td>Final Exam</td> <td>1</td> <td>30</td> </tr> <tr> <td>Total</td> <td></td> <td>100</td> </tr> </tbody> </table> <p><b>Late Policy: Late assignments will NOT be accepted.</b></p>	Types of assessment	Number	Ratio (%)	Midterm Exams	2	60	Quizzes & Assignments	5	10	Final Exam	1	30	Total		100
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<b>Course Administration</b>	<p><b>Instructor's office and phone number:</b> 5<sup>th</sup> Floor, (0212) 3953677  <b>office hours:</b> TBA; <b>email address:</b> saraclare@mef.edu.tr</p> <p><b>Rules for attendance:</b> -  <b>Missing a quiz:</b> No make-up will be given.  <b>Missing a midterm:</b> Provided that proper documents of excuse are presented, a make-up exam will be given for each missed midterm.  <b>Missing a final:</b> Faculty regulations.  <b>A reminder of proper classroom behavior, code of student conduct:</b> YÖK Regulations  <b>Statement on plagiarism:</b> YÖK Regulations  <a href="http://3fcampus.mef.edu.tr/uploads/cms/webadmin.mef.edu.tr/4833_2.pdf">http://3fcampus.mef.edu.tr/uploads/cms/webadmin.mef.edu.tr/4833_2.pdf</a></p>															

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 Cl	14	2	4		84	A*(B+C+D)
	Quizzes /Assignme	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					<b>6</b>	