

## SIGNALS AND SYSTEMS II

1	Course Title:	SIGNALS AND SYSTEMS II	
2	Course Code:	EEM2404	
3	Type of Course:	Compulsory	
4	Level of Course:	First Cycle	
5	Year of Study:	2	
6	Semester:	4	
7	ECTS Credits Allocated:	6.00	
8	Theoretical (hour/week):	3.00	
9	Practice (hour/week):	0.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:	None	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Prof. Dr. ERDOĞAN DİLAVEROĞLU	
15	Course Lecturers:	Prof. Dr. Erdoğan Dilaveroğlu Yrd. Doç. Dr. Ersen Yılmaz	
16	Contact information of the Course Coordinator:	Prof. Dr. Erdoğan Dilaveroğlu E-mail: dilaver@uludag.edu.tr Tel: (224) 294 2012 Elektrik-Elektronik Müh. Böl., 3. Kat, 324.	
17	Website:		
18	Objective of the Course:	Giving to the students the fundamentals of the signals and systems area of electrical engineering. Also, preparing the students to some higher level courses in such areas of signal processing, circuits, communication and control.	
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	Compute the Fourier transform (and its inverse) of discrete time signals from definitions and using the properties of the Fourier transform.
		2	Understand the relation and trade-offs between time domain and frequency domain characteristics in system design and analysis.
		3	Understand the application of Fourier analysis to sampling.
		4	Process continuous time signals by first sampling and then processing the sampled signal in discrete time.
		5	Compute the Laplace transform (and its inverse) of continuous time signals from definitions and using the properties of the Laplace transform.
		6	Compute the z transform (and its inverse) of discrete time signals from definitions and using the properties of the z transform.
		7	Find a state space representation of a system from a block diagram and vice versa.
		8	Develop basic problem solving skills and become familiar with formulating a mathematical problem from a general problem statement.
		9	Use basic mathematics including calculus, complex variables and algebra for the analysis and design of linear time invariant systems used in engineering.

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21	Course Content:			
	Course Content:			
Week	Theoretical	Practice		
1	Presentation and organization of the course. A brief summary of the Signals and Systems I course.			
2	Derivation and properties of the discrete time Fourier transform.			
3	Convolution and multiplication properties of the discrete time Fourier transform.			
4	Time and frequency characterization of signals and systems.			
5	Review and discussion of solutions to homework problems.			
6	The Sampling Theorem, reconstruction, aliasing.			
7	Discrete time processing of continuous time signals.			
8	Review and discussion of solutions to homework problems.			
9	Definition of the Laplace transform, the region of convergence, the inverse Laplace transform.			
10	Properties of the Laplace transform. analysis			
Activites		Number	Duration (hour)	Total Work Load (hour)
12	Definition of the z transform, the region of convergence, the inverse z transform	14	3.00	42.00
Practicals/Labs		0	0.00	0.00
Self study and preparation of the z transform.		14	5.00	70.00
Homeworks		14	3.00	42.00
Projects		0	0.00	0.00
Field Studies		0	0.00	0.00
Midterm exams		1	1.50	1.50
22 Assessment				
Others		0	0.00	0.00
Final Exams		R	1	1.50
Total Work Load				157.00
Total work load/ 30 hr		0	0.00	5.23
ECTS Credit of the Course				6.00
Final Exam		1	60.00	
Total		2	100.00	
Contribution of Term (Year) Learning Activities to Success Grade		40.00		
Contribution of Final Exam to Success Grade		60.00		
Total		100.00		
Measurement and Evaluation Techniques Used in the Course				
24	ECTS / WORK LOAD TABLE			

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK6	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK7	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK8	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK9	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LO: Learning Objectives    PQ: Program Qualifications																
Contribution Level:	1 very low			2 low			3 Medium			4 High			5 Very High			