SIGNALS AND SYSTEMS I

1	Course Title:	SIGNALS AND SYSTEMS I	
2	Course Code:	EEM2401	
3	Type of Course:	Compulsory	
4	Level of Course:	First Cycle	
5	Year of Study:	2	
6	Semester:	3	
7	ECTS Credits Allocated:	4.00	
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 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:	To be able to follow innovations and apply them in the field by using the competence of collecting information, researching and analyzing them.	
20	Learning Outcomes:		
		1	Ability to apply theoretical and applied knowledge in modeling and solving engineering problems in the field of signals and systems.
		2	Ability to detect, define, formulate and solve complex engineering problems encountered in the field of signals and systems by choosing appropriate analysis and modeling methods.
		3	Ability to develop, select and use modern techniques and tools for signals and systems applications by making effective use of information technologies.
		4	
		5	
		6	
		7	
		8	
		9	
		10	
21	Course Content:		
	Course Content:		

Week	Theoretical	Practice
1	Presentation and organization of the course. Mathematical review: Complex numbers.	
2	Mathematical review (continued): Polar representation of complex numbers and the triangle inequality. De Moivre's Theorem and roots. The complex exponential, Euler's formula.	
3	Continuous Time Signals and Systems a. continuous time signals b. continuous time complex exponential and sinusoidal signals c. delta and step functions	
4	Continuous Time Signals and Systems d. continuous time systems e. basic system features	
5	Linear and Time-Invariant (LTI) Systems a. LTI continuous time systems, convolution integral b. Features of LTI systems	
6	Linear and Time-Invariant (LTI) Systems c.systems explained by differential equations d. singular functions	
7	Fourier Series Representation of Continuous Time Periodic Signals a. Fourier series representation of continuous time periodic signals b. Properties of continuous time Fourier	
8	c. Fourier series and LTI systems d. filtering	
9	a. Derivation of continuous time Fourier transform	
10	transform c. convolution and multiplication properties d. systems defined by a linear constant	
11	Time and Frequency Definitions of Continuous Time Signals and Systems the frequency response of LTI continuous time systems frequency selective continuous time filters	
12	Time and Frequency Definitons of Continuous Time Signals and Systems c. first and second order continuous time systems	
13	Laplace Transform a. Definition of Laplace transform, region of convergence, inverse Laplace transform b. Properties of the Laplace transform c. Analysis of LTI systems with Laplace transform	
14	Laplace Transform d. Representation of systems with block diagram to. Unilateral Laplace transform	

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	4.00	56.00
Homeworks	6	3.00	18.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	2.00	2.00
Others	0	0.00	0.00
Final Exams	1	2.00	2.00
Total Work Load			120.00
Total work load/ 30 hr			4.00
ECTS Credit of the Course			4.00

22	Textbooks, References and/or Other Materials:	Signals and Systems, Alan V. Oppenheim, Alan S. Willsky, with S. Hamid Nawab, 2nd edition, (Prentice Hall, 1997).
23	Assesment	

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	1	40.00
Quiz	0	0.00
Home work-project	0	0.00
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		Measurement and evaluation is carried out according to the priciples of Bursa Uludag University Associate and Undergraduate Education Regulation.

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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	0	0	0	5	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**