COURSE INFORMATION

Course Code	BMUH 532	Course Name	Signal Processing					
Type of Course	**Level of Course**	**Semester**	**Language**	**Theory**	**Application (Practice)**	**Laboratory**	**Local Credits**	**ECTS**
Elective	Graduate	Fall & Spring	English	3	0	0	3	6

Department	: Electrical and Computer Engineering
Prerequisites/Requirements for Admission	:
Mode of delivery	: Face to Face
Course coordinator	: Dr. Mehmet Ali Olpak
Course lecturer(s)	:
Course assistant(s)	:
Course description/aim	: The students are expected to understand the concepts of signal and system, and to learn the available methods for analyzing linear time invariant (LTI) systems such as differential/difference equations, Fourier and Laplace transforms.
Course contents	: Introduction to signals and systems, time-domain analysis of continuous-time LTI systems, time domain analysis of discrete-time LTI systems, continuous and discrete Fourier series and Fourier transforms, Laplace transform, Z-transform
Recommended optional program components	: None
Compulsory Attendance	: Yes

Course Learning Outcomes

	Learning outcome	**Teaching Methods/Techniques**	**Assessment method(s)**
	Students will be able to		
1	Understand the concepts of signal and system	Lecture, Lecture with Discussion	Midterm and Final Exams
2	Learn how to perform frequency analysis of continuous and discrete-time LTI systems	Lecture, Lecture with Discussion	Midterm and Final Exams
3	Discuss various applications of LTI systems in engineering	Lecture, Lecture with Discussion	Midterm and Final Exams

Weekly Detailed Course Content

Week	**Content**	**Recommended Resource(s)**	**Time (Hours)**
1	Definitions of signal and system concepts, continuous and discrete time signals and systems	Textbook/ Lecture Notes	3
2	Time domain analysis of continuous time LTI systems	Textbook/ Lecture Notes	3
3	Time domain analysis of discrete time LTI systems	Textbook/ Lecture Notes	3
4	Periodic signals and Fourier series	Textbook/ Lecture Notes	3
5	Continuous-time Fourier transform and applications	Textbook/ Lecture Notes	3
6	Discrete-time Fourier transform and applications	Textbook/ Lecture Notes	3
7	Sampling	Textbook/ Lecture Notes	3

8	**Midterm**		3
9	Laplace transform	Textbook/ Lecture Notes	3
10	Z-transform	Textbook/ Lecture Notes	3
11	Filtering	Textbook/ Lecture Notes	3
12	Special topics	Textbook/ Lecture Notes	3
13	Special topics	Textbook/ Lecture Notes	3
14	Special topics	Textbook/ Lecture Notes	3
15	Final exam		3
16			

Sources

Course notes/textbooks	: A. V. Oppenheim, A. S. Willsky, S. H. Nawab, Sinyaller ve Sistemler, İkinci Basım, Prentice Hall, 1996.
Readings	:
Supplemental readings	:
References	:

Evaluation System

Work Placement	**Number**	**Percentage of Grade**
Attendance		
Quizzes		
Homework	2	30
Presentation		
Laboratory/Practice		
Report(s)		
Graduate Thesis/Project		
Seminar		
Projects		
Midterm exam(s)	1	30
Others		
Final exam	1	40
	Total	100
	Percentage of semester work	60
	Percentage of final exam	40
	Total	100

COURSE INFORMATION

Workload Calculation

Activity	Number	Time (hours)	Total work load (hours)
Course hours	14	3	42
Individual study for course	14	8	112
Midterm exam(s)	1	3	3
Final exam	1	3	3
Individual study for homeworks	2	5	10
Individual study for final exam	1	20	20
		Total	190
		ECTS Credit(Total/30)	6

Contribution of Learning Outcomes to Program Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
LO1											
LO2											
LO3											

Contribution Level : 1 Very low, 2 Low, 3 Medium, 4 High, 5 Very High