SIGNAL CODING

1	Course Title:	SIGNAL CODING	
2	Course Code:	EEM6106	
3	Type of Course:	Optional	
4	Level of Course:	Third Cycle	
5	Year of Study:	1	
6	Semester:	2	
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:		
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Doç. Dr. Mustafa DEMİRTAŞ	
15	Course Lecturers:		
16	Contact information of the Course Coordinator:	mustafademirtas@uludag.edu.tr	
17	Website:		
18	Objective of the Course:	The aim of this course is to provide students with the basic principles of signal representation and coding and to develop an in-depth understanding of this field. The course aims to provide knowledge on quantization optimization by focusing on scalar and vector quantization issues. It also provides students with a broad perspective on topics such as lossless compression and entropy, Huffman-Shannon type encoders, dictionary techniques, and predictive coding. While the course progresses with topics such as optimal prediction filter design and signal space representation, it also covers advanced topics such as orthogonal and biorthogonal systems, base signals and projections, subband distribution. It provides students with a comprehensive look at transformations, filter relations and important mathematical tools used in the representation of the sign, allowing them to develop expertise in this field.	
19	Contribution of the Course to Professional Development:	Communication Engineering Competence. Data Compression and Coding Skills. Signal Processing Applications	
20	Learning Outcomes:		
		1	To develop competence in the effective quantization of signals by gaining the knowledge necessary to understand and optimize quantization processes.
		2	By learning lossless compression methods of signals and the concept of entropy, they will have basic skills in data compression.
		3	To learn prediction-based coding methods and apply these techniques to ensure efficiency in data compression and coding processes.
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21	Course Content:

Course Content:

Week	Theoretical	Practice
1	Fundamentals of Signal Notation and Codes	
2	Scalar and Vector Quantization	
3	Quantization Optimization	
4	Lossless Compression and Entropy	
5	Huffman-Shannon Type Encoders	
6	Dictionary Techniques	
7	Predictive Coding	
8	Optimum Prediction Filter Design	
9	Signal Space Representation	
10	Orthogonal and Bioorthogonal Systems	
11	Base Marks and Projections	
12	Subband Distribution	
13	Conversion techniques	
14	Filter Associations	

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	5.00	70.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Midterm Exam	1	40.00	
Field Studies	0	0.00	0.00
Quiz	0	0.00	
Midterm exams	1	28.00	28.00
Home work-project	0	0.00	
Others	0	0.00	0.00
Final Exam	1	60.00	
Final Exams	1	40.00	40.00
Total	2	100.00	
Total Work Load			180.00
Contribution of Term (Year) Learning Activities to Success Grade		40.00	
Total work load/ 30 hr			6.00
ECTS Credit of the Course			6.00

Total	100.00
Measurement and Evaluation Techniques Used in the Course	Measurement and evaluation are carried out according to the principles of Bursa Uludağ University Postgraduate 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	4	4	0	3	0	5	0	0	0	0	0	0	0	0	0	0

ÖK2	0	4	0	4	4	3	0	0	0	0	0	0	0	0	0	0
ÖK3	0	3	0	4	0	5	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**