	Course name: EE322 Introduction to Telecommunications		**Department:** Electrical and Electronics Engineering		Semester
					6
	Methods of Education				Credit (ECTS)
	Lecture	Study Time	Exam (incl. Preparation)	Total	5
	39	56	55	150	

Language	English
Compulsory/Elective	Elective
Prerequisites	EE207 and EE208
Course Contents	Introduction to communication systems. Review of random processes. Analog amplitude, frequency and phase modulation techniques. Sampling theorem and Quantization. Pulse code modulation and delta modulation. Base-band and pass-band digital communications. Signal constellations. Error probability analysis of digital modulation techniques under additive white Gaussian noise.
Course Objective	1. To present the fundamental concepts of analysis and design of analog and digital communication systems 2. to define main blocks involved in analog and digital communications 3. to characterize and analyze analog and digital modulation schemes 4. to present the performance analysis of an analog communication system 5. to present the bit (symbol) error rate performance of a digital communication system
Learning Outcomes and Competences	**Students who pass the course will be able to:** - Understand the basic concepts and constraints in analog communications, - Analyze different types of analog (AM, DSB, SSB, VSB, FM) modulations in time and frequency domains, - Understand the analog to digital conversion and the digital to analog conversion processes, - Understand the basic ideas involved in the design of modulator/demodulator/detector structures, Understand the fundamental concepts necessary to investigate error performance of digital modulation schemes over additive white Gaussian noise channels.
Textbook and /or References	“Fundamentals of Communication Systems”, 2nd Edition, John G. Proakis and Masoud Salehi.

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	35
	Quizzes	X	20
	Homework		
	Projects		
	Term Paper		
	Laboratory work		
	Other		
	Final Exam	X	45

Instructors	Assoc. Prof. Serdar Özyurt

Weekly Schedule

Week	Subject
1	Introduction to communication systems
2	Review of random processes
3	Analog modulation: AM, DSB, SSB, FM
4	Analog modulation: AM, DSB, SSB, FM
5	Analog modulation: AM, DSB, SSB, FM
6	Performance of analog modulation: Bandwidth efficiency and SNR
7	Performance of analog modulation: Bandwidth efficiency and SNR
8	Analog to digital conversion and digital to analog conversion processes, Sampling and Quantization
9	**Mid-term exam**
10	Pulse code modulation, Delta modulation, Time and Frequency division multiplexing

11	Introduction to digital modulation
12	Introduction to digital modulation
13	Base-band and pass-band digital modulation techniques
14	Error probability analysis of digital modulation over additive white Gaussian noise channels
15	Review (if time permits)