

Course Name : Signals Theories							
Course Code	Course Type	Regular Semester	Lecture (hours/week)	Seminar (hours/week)	Lab. (hours/week)	Credits	ECTS
CMP 311	C	Fall	2.00	0.00	2.00	3.00	6.00
Lecturer		Shpendi Vila, Msc					
Assistant		Elton Kaziu, Msc					
Course language		Albanian					
Course level		Bachelor					
Description		General knowledge. The main properties of signals. Fourie analysis of signals. Properties of Furie transform. Modulated signals. Knowledge of systems. Laplace transform and Z transform. Properties of systems. Analog and digital filters. Digital signals. Noises Random signals.					
Objectives							
Core Concepts		1. Continuous signals and systems in time domain. 2. Discrete signals and systems in time domain. 3. Analog and digital communications. 4. Digital processing of signals.					
Course Outline							
Week	Topic						
1	Signals and systems. Their classification. Exercises and problems						
2	Continuous and linear time invariant systems. Exercises and problems						
3	Discrete and linear time invariant systems. Exercises and problems						
4	Application of Laplace transform to continuous systems. Exercises and problems						
5	Fourie analysis in continuous time systems. Exercises and problems						
6	Classification of filters and construction of analog filters. Exercises and problems						
7	Application of Z transform in discrete systems. Exercises and problems						
8	Midterm exam						
9	Furie analysis in discrete time systems. Exercises and problems						
10	Implementation and construction of digital filters. Exercises and problems						
11	Amplitude modulation of signals. Exercises and problems						
12	Frequency and phase modulation of signals. Exercises and problems						
13	Digital transmissions of analog signals and noises in analog communications. Exercises and problems						
14	Random signals. Power spectral density and random signals in linear time invariant (LTI) systems. Exercises and problems						
15	State space analysis of systems. Exercises and problems						
16	Final Exam						

Prerequisites	The student must attend the course at a minimum rate of 75%.
Literature	• H.Muçostepa, Teoria e sinjaleve; 2009, shblu, STASH:2204-84 • Leksionet e dhëna nga lektori
References	• Alan.V. Oppenheim; Alan.S. Willsky; "Signal and Systems" 2-nd Edition; 1997, Prentice Hall, ISBN:7-302-03058-8. • Sanjit.K .Mitra, "Digital Signal Processing" Laboratory using Matlab, 2000, McGraw-Hill, ISBN: 0-07-116592-4
Course Outcome	
1	Familiarity with the fundamental concepts of defined and undefined continuous and discrete-time signals and systems.
2	Familiarity with the Laplace transform and its application in continuous-time linear time-invariant systems.
3	Familiarity with the Fourier transform in continuous and discrete-time systems. Familiarity with the implementation and construction of analog filters.
4	Familiarity with the Z-transform in discrete-time systems. Familiarity with the implementation and construction of digital filters.
5	Familiarity with signal modulation (amplitude, frequency, phase). Familiarity with digital transmission of analog signals.
6	Familiarity with random signals and the power spectral density. Basic knowledge of system analysis in space and state.

Course Evaluation			
In-term Studies	Quantity	Percentage	
Midterms	1	30	
Quizzes	0	0	
Projects	0	0	
Term Projects	0	0	
Laboratory	0	0	
Class Participation	1	10	
Total in-term evaluation percent			40
Final exam percent			60
Total			100
ECTS Workload (Based on Student Workload)			
Activities	Quantity	Duration (hours)	Total (hours)
Course duration (Including the exam week: 16x Total hours of the course)	16	4	64
Study hours outside the classroom (Preparation, Practice, etc.)	14	0	0
Duties	0	0	0
Midterms	1	1	1
Final Exam	1	1	1
Other	14	6	84
Total Work Load			150
Total Work Load / 25 (hours)			6.00
ECTS			6.00