

Systems and Signals

Identification:

<i>Department:</i>	Computer Science
<i>Course Title:</i>	Systems and Signals (EENG 302)
<i>Number of Credit Points:</i>	3
<i>Instructor:</i>	Rafiq Ahmadov, Ph.D., Associate Professor
<i>Office:</i>	room 407
<i>Phone:</i>	(999 12) 421-79-27
<i>E-mail:</i>	rahmadov @ khazar.org

Prerequisite: Circuits Theory (EENG 211)

Indicative Reading List

1. Global R.A., Roberts R.A. Signals and Linear Systems, 2003
2. Alexander C.K., Sadiki M.N. Electric Circuits, 2005
3. Ahmadov R.M. Systems and Signals, 2008 (Lectures Notes)

Subject Aims:

- To provide students with a basic knowledge of the systems and signals
- To extend the knowledge and skills for the design, analysis and operation of systems.
- To extend the knowledge and skills for the analysis and application of signals.

Indicative Syllabus

Systems's Elements, Analysis of Systems, Frequency-Response Characteristics, Resonance, Four-terminal Networks, Fourier Series and Transforms, Periodic Signals, Non-periodic Signals, Transformation of Signals through Systems, Modulation and Demodulation of Signals.

Learning Outcomes

After studying this course the student should be able to:

- undertake a detailed design and analyse of different types of systems
- understand the basic principles of modern systems
- design and analyse of the elements of the systems
- analyse the periodic and non-periodic signals
- analyse the transmission of signals through Systems.

Teaching and Learning Methods

- Lectures
- Seminars (Discussions)
- Practicals.

Assesment

- Quizzes 20
 - Participation and Activity 10
 - Mid-term Exam 30
 - Final Exam 40
- Total: 100**

Week	Topics	Hours		Readings
		Lect.	Pract.	
1	General Information. Classification of Systems	2		[1] Chap. 1
	Systems Elements	2		
2	Connections of Elements in the Systems	4	2	[1] Chap. 1
3	Analysis of Multi-Mesh Systems	2	2	[2] Chap. 10
4	Input-output Description.	2		[3] Chap. 5
	Complex Transfer Function	2	2	
5	Linearity, Time-invariance and Causality	2	2	[1] Chap. 2
6	Frequency-Response Characteristics and System Analysis	4	2	[2] Chap. 14
7	Resonance. Series and Parallel Resonance	2	2	[2] Chap. 14
8	Midterm Examination			
9	Coupled Circuits. Transformation	2		[2] Chap. 13
	Two-terminal Networks	2		
	Maximum Power Transformation	2		
10	Four-terminal Networks. Equivalent Circuits	2		[3] Chap. 8
	Determination of the Parameters of four-terminal Networks	2		[3] Chap. 8
11	Cascade Connection of Four-terminal Networks	2		[3] Chap. 10
	Block-diagram Method of Analysis of Systems	2	2	
12	Classification of Signals. Fourier Series and Transforms	2		[1] Chap. 5
	Periodic Signals. Harmonic Analysis of Periodic Signals	2		
13	Responses of Systems to Periodic Signals	2		[1] Chap. 5
	Non-periodic Signals. Random Signals and Noises	2	2	
14	Transmission of Signals through Linear Systems	2		[1] Chap. 6
	Transmission of Signals through Selective Systems. Filters	2		
15	Modulation and Demodulation of Signals	2		[3] Chap. 12
	Amplitude Modulation and Demodulation	2	2	
16	Frequency Modulation and Demodulation	2		[3] Chap. 13
	Phase Modulation and Demodulation	2		
	Final Examination			