Lahore University of Management Sciences

EE380: Communication Systems (Section 1, 2)

Spring 2016

Course Catalog Description
This course provides an overview of information communication systems. Topics include analog and digital modulation in baseband and pass-band. We also provide coverage of sampling and quantization techniques. In this course, system design is given primary importance by using examples from practical systems. This is supported by allied labs and simulations.

Course Details	
Credit Hours	3 (Theory) + 1 (Lab)
Core	Core
Elective	May meet elective requirements for some students with background in Signals and Systems
Open for Student Category	All
Closed for Student Category	None

Course Prerequisite(s)/Co-Requisite(s)
Pre-requisites: Signals and Systems (EE310), Basic knowledge of probability theory Co-requisites: None

Course Basics				
Credit Hours	3 (Theory) + 1 (Lab)			
Lecture(s)	Nbr of Lec(s) Per Week	2	Duration	75 mins each
Recitation/Lab (per week)	Nbr of Lec(s) Per Week	0/1	Duration	0 minutes/150 minutes
Tutorial (per week)	Nbr of Lec(s) Per Week		Duration	

Instructor	Naveed Ul Hassan (Section 1), Zartash Afzal Uzmi (Section 2)
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Telephone	8331 (Naveed), 8202 (Zartash)
Secretary/TA	TBA
TA Office Hours	TBA
Course URL (if any)	The course material will be available on LMS

Grading Breakup and Policy
Separate grading for both sections but the exams may be same Assignment(s)/Home Work: 10% Quiz(s): 10% Midterm Examination(s): 35% Final Examination:45%
Lab: (***A separate Letter grade will be assessed for Theory and Lab***) Lab Performance/Conduction sheets: 55 % Viva/Quiz/Assignment: 30% Mini-Project/Lab Homework: 15%

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Course Learning Outcomes	
EE380-	The students should be able to:
CLO1:	analyze signals and systems for continuous wave and digital modulation and demodulation techniques
CLO2:	compare and analyze the performance of various analog communication systems in the presence of noise
CLO3:	design AM and FM transmitters and receivers

Relation to EE Program Outcomes

EE-380 CLOs	Related PLOs	Levels of Learning	Teaching Methods	CLO Attainment checked in
CLO1	PLO 2	-	Instruction, Assignments	Midterm, Final
CLO2	PLO 2	-	Instruction, Assignments	Midterm, Final
CLO3	PLO 3	-	Instruction, Assignments	Midterm, Final

Course Overview

Week No.	Topics	Book Chapters/ Recommended Reading	Related CLOs & Additional Remarks
1	**Introduction to Communication Systems**	**Ch.1**	CLO 1
1-3	**Signals, Spectra and Filtering**	**Ch.2-3**	CLO 1
3-4	**Linear CW Modulation**	**Ch. 4**	CLO 1, CLO 3
5-6	**Angle CW Modulation**	**Ch. 5**	CLO 1, CLO 3
6-7	**Sampling and Pulse Modulation**	**Ch. 6**	CLO 1
Mid-term			
8	**Receivers for CW Modulations**	**Ch. 7**	CLO 1, CLO 3
8-9	**Probability and Random Processes**	**Ch. 8-9**	CLO 2
10-11	**Analog Communication in Noise**	**Ch. 10**	CLO 2
11-13	**Baseband digital Transmission**	**Ch. 11**	CLO 1
13-14	**Bandpass digital transmission**	**Ch. 14**	CLO 1

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Examination Detail	
Midterm Exam	Yes/No: Yes Combine Separate: TBA Duration: 3 hours Preferred Date: TBA Exam Specifications: TBA
Final Exam	Yes/No: Yes Combine Separate: TBA Duration:3 hours Exam Specifications: TBA

Textbook(s)/Supplementary Readings

Text Book: Communications Systems by A. Bruce Carlson and Paul B. Crilly (5th Edition)

Reference Books:
Modern Digital and Analog Communication Systems by B. P. Lathi
Communication Systems by Simon Haykin and Michael Mohr
Fundamentals of Communication Systems by John G. Proakis and Masoud Salehi