Faculty of Engineering & Technology

Communication Systems

Information :

Course Code :	COM 414	**Level :**	Undergraduate	**Course Hours :**	3.00- Hours

Department : Specialization of Electrical Power Engineering

Instructor Information :

Title	Name	Office hours
Lecturer	MOHAMED MOUSA SAYED EMAM AHMED	7
Assistant Lecturer	SHEROUK SOBHI ABDELSALAM FOUDA	

Area Of Study :

Develop the students' knowledge about fundamentals of analog & digital communication systems.
Prepare students to distinguish between analog & digital communication systems.
Develop studentsôknowledge about basics of optical fiber communication systems.

Description :

Communication Systems objective, block diagram, transmission media, and signal impairments. SNR, and channel bandwidth, Shannon's equation. Analog and digital messages. Amplitude modulation (conventional AM, SSB, DSB and VSB) and demodulation, Angle modulation and demodulation (PM and FM), Broadcast transmitters and receivers (AM and FM).Principles of digital data transmission: Digital communication system: Sampling Theorem, PCM, and DM techniques Regenerative repeaters. Optical fiber communication system (Main features, OPGW Cable System). Hybrid networks (Power and data networks).
2- Overall Aims of the Course:

Course outcomes :

a.Knowledge and Understanding: :	
1 -	a1. Illustrate communication systems and transmission media.
2 -	a2. Describe channel bandwidth and SNR.
3 -	a3. Recognize analog and digital modulation techniques
4 -	a4. Explain optical fiber communication system
5 -	a5. Illustrate data communication principles
b.Intellectual Skills: :	
1 -	b1. Evaluate the channel capacity and its relation with SNR.
2 -	b2. Apply the theory of the Amplitude and angle modulation to solve the analog transmission problems.
3 -	b3. Apply the digital transmission theories and techniques in the digital communication systems.
4 -	b4. Outline theories and techniques of optical fiber communication system.

c.Professional and Practical Skills: :	
1 -	c1. Use laboratory equipment to analyze experiment on the analog modulation techniques.
2 -	c2. Use laboratory equipment to analyze experiment on the techniques of digital communication system.
d.General and Transferable Skills: :	
1 -	d1. Collaborate effectively within team.
2 -	d2. Work in stressful environment and within constraints.
3 -	d3. Communicate effectively.
4 -	d4. Effectively manage tasks, time, and resources.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Review on signal analysis	5	3	2
Communication system: objective, history ,block diagram, transmission media, and signal impairments	10	6	4
Introduction to noise and channel capacity	5	3	2
Introduction to analog communication system. Amplitude modulation and demodulation	10	6	4
Angle modulation and demodulation	10	6	4
Introduction to digital communication systems and A/D conversion	5	3	2
Signal formatting	5	3	2
Digital modulation techniques	5	3	2
Introduction to Optical fiber systems	5	3	2
Data Communication fundamentals	5	3	2
computer communication and networking to power system elements	5	3	2

Teaching And Learning Methodologies :

Interactive Lecturing
Discussion
Problem Solving
Experiential Learning

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
ÅFinal exam	40.00		
o Assignments	10.00		
o In Class Quizzes	10.00		
o Mid-Term Exams	30.00		
o Performance	10.00		

Course Notes :
B. P. Lathi : "Modern analog and digital communication systems"