

EE375-2: Communications

Course code and name	EE375-2: Communications
Credits units	2 Credit units
Contact hours	4 Contact hours: 1 lecture, 1 tutorial and 2 practical
Instructor name	Dr. Ghazi Ben Hmida
Textbook	Lathi, B., Modern Digital & Analog Communication Systems, 3rd Ed., 1998.
Other supplemental materials	Louis E. Frenzel Jr. Principles of Electronic Communication Systems, Fourth Edition, 2014.
Specific course information	
a. Course description	This course introduces and teaches students about the basic principles underlying the operation and design of a communication system. It starts by an introduction to basic communications systems, information sources, channel types and problems. Major part of this course focuses on analog communications, such as Amplitude Modulation (AM-DSBSC-SSB-QAM) and Angle Modulation (FM, PM). Time and Frequency Division Multiplexing are involved. An introduction to digital communications systems, sampling theorem, quantization and encoding are also covered followed by pulse modulation techniques or line coding such as PCM and PAM and digital modulation techniques such as ASK, FSK.
b. Prerequisite	EE374-2
c. Required / Elective	Required
Course Learning Outcomes	
<u>CLO of the Lecture Activities:</u>	
CLO1: Compute the gain, attenuation for basic elements of a communication system.	
CLO2: Analyze the operation of amplitude modulation systems in both the time and frequency domains including plotting the magnitude spectra and computing the power and bandwidth requirements.	
CLO3: Identify the operation of angle modulation systems in both the time and frequency domains including plotting the magnitude spectra and computing the power and bandwidth requirements.	
CLO4: Appraise the operation of Pulse Modulation Techniques, including Pulse-Code Modulation (PCM) steps (sampling, quantization and encoding), the Nyquist rate, Nyquist interval, bandwidth, power, signal to quantization noise ratio, and bit rate.	
CLO5: Explain the principles of various digital modulation systems and their properties, including bandwidth, channel capacity, transmission over bandlimited channels, demodulation methods, and error performance in the presence of noise.	
<u>CLO of the Laboratory Activities:</u>	
CLO1: Verify theory and to improve knowledge learned in class.	
CLO2: Formulate and solve problems related to theory.	
CLO3: Design and safety conducts an experimental procedure.	

CLO4: Independently perform accurate quantitative measurements, interpret experimental results, perform calculations on these results and draw a reasonable, accurate conclusion.
 CLO5: Communicate critical analysis of scientific information through written reports.
 CLO6: Be integrated inside a group of work and respect the team working.

Brief list of topics to be covered

- Analog and digital communication systems.
- Amplitude Modulation and Angle Modulation
- Familiarity with digital communications systems, sampling theorem, quantization and encoding.
- Design basic communication systems.

Mapping Course Learning Outcomes to Student Outcomes

	Lecture Activities						
	SO1	SO2	SO3	SO4	SO5	SO6	SO7
CLO1	<input type="checkbox"/>						
CLO2	<input type="checkbox"/>						
CLO3	<input type="checkbox"/>						
CLO4	<input type="checkbox"/>						<input type="checkbox"/>
CLO5	<input type="checkbox"/>						<input type="checkbox"/>
	Laboratory Activities						
	SO1	SO2	SO3	SO4	SO5	SO6	SO7
CLO1						<input type="checkbox"/>	<input type="checkbox"/>
CLO2	<input type="checkbox"/>						
CLO3						<input type="checkbox"/>	
CLO4						<input type="checkbox"/>	
CLO5			<input type="checkbox"/>				
CLO6				<input type="checkbox"/>	<input type="checkbox"/>		