

No	Course Information (2019-2020)	
1	Unit name:	Communication Principles I
2	Code:	EcE 21002
3	Classification:	Engineering subject
4	Credit value:	2.5 (2-0-1)
5	Semester/ Year Offered:	1/2
6	Pre-requisite:	EcE 11011 &12011 Fundamental of Electronic Circuit I&II
7	Mode of delivery:	Lecture, Demonstration for practical
8	Assessment system and breakdown of marks:	Lab report , Tutorial, Exam
	Practical, Tutorial	30% (20%+10%)
	Mid-term Examination	70%
9	Academic staff teaching unit:	Department of Electronic Engineering
10	<p>Course outcome of unit:</p> <p>In this course students will be able</p> <ul style="list-style-type: none"> • To describe fundamental and some processes of Electronic communication and circuit configurations, operations, advantages and disadvantages of filters, modulation and demodulation. • To determine the parameters of amplifiers, tuned circuits, filters, modulations, demodulations. • To demonstrate the signals and responses of the circuits using MATLAB, Function Generator and Oscilloscope. 	
11	<p>Synopsis of unit:</p> <p>The course introduces students to the study of electronic communication components and systems. Course covers methods used to transmit analog and digital signals such as AM, FM, and digital transmitter modulation and demodulation techniques, transmission lines, antennas and signal propagation. The course is designed to familiarize the student with transmitters, receivers, modems, sampling, coding, multiplexing, and other signal-processing techniques used in commercial broadcasting and data transmission systems. Electronic communication systems are a comprehensive course in AM, FM and single-sideband communication systems and an introduction to digital transmission.</p>	
	Topic:	
	Chapter	Title
	1.	Introduction to Electronic Communication
		1.1 The Significance of Human Communication
		1.2 Communication Systems
		1.3 Types of Electronic Communication

	<p>1.4 Modulation and Multiplexing 1.5 The Electromagnetic Spectrum 1.6 Bandwidth 1.7 A Survey of Communication Applications 1.8 Jobs and Careers in the Communication Industry</p> <p>2. Electronic Fundamentals for Communications 2.1 Gain, Attenuation, and Decibels 2.2 Tuned Circuits 2.3 Filters 2.4 Fourier Theory</p> <p>3. Amplitude Modulation Fundamentals 3.1 AM Concepts 3.2 Modulation Index and Percentage of Modulation 3.3 Sidebands and the Frequency Domain 3.4 AM Power 3.5 Single-Sideband Modulation 3.6 Classification of Radio Emissions</p> <p>4. Amplitude Modulator and Demodulator Circuits 4.1 Basic Principles of Amplitude Modulation 4.2 Amplitude Modulators 4.3 Amplitude Demodulators 4.4 Balanced Modulators 4.5 SSB Circuits</p> <p>5. Fundamentals of Frequency Modulation 5.1 Basic Principles of Frequency Modulation 5.2 Principles of Phase Modulation 5.3 Modulation Index and Sidebands 5.4 Noise-Suppression Effects of FM 5.5 Frequency Modulation versus Amplitude Modulation</p>
14	<p>Main references: Principles of Electronic Communication Systems, 3th Edition, Louis E. Frenzel Jr, Special Indian Edition 2008, ISBN-13: 978-0-07-066755-6, ISBN-0-07-066755-1</p>
15	<p>Additional references: http://www.mhhe.com/frenzel/ecs3e and 2: https://www2.tesc.edu/current/Elc-201</p>

Information on Lab Practical

Lab	Activity
1	<p>Experiment 1: Analog and Digital Signals Generation</p> <p>Objectives:</p> <ul style="list-style-type: none"> • To be familiar with function generator and oscilloscope • To distinguish Analog and Digital signals • To apply function generator and oscilloscope for generating the signals <p>Experiment required:</p> <ul style="list-style-type: none"> • function generator and oscilloscope
2	<p>Experiment 2: RC Low Pass Filter Circuit</p> <p>Objectives:</p> <ul style="list-style-type: none"> • To be familiar with function generator and oscilloscope • To determine the cutoff frequency for RC low pass filter • To construct simple RC circuit • To determine the effect of varying frequency to the output voltage of low pass filter <p>Experiment required:</p> <ul style="list-style-type: none"> • Resistor, Capacitor, Project board, Function Generator and Oscilloscope
3	<p>Experiment 3: RC High Pass Filter Circuit</p> <p>Objectives:</p> <ul style="list-style-type: none"> • To determine the cutoff frequency for RC high pass filter • To construct simple RC circuit • To determine the effect of varying frequency to the output voltage of high pass filter <p>Experiment required:</p>

	<ul style="list-style-type: none"> Resistor, Capacitor, Project board, Function Generator and Oscilloscope
4	<p>Experiment 4: Generate Amplitude Modulation Signal using MATLAB</p> <p>Objectives:</p> <ul style="list-style-type: none"> To be familiar with MATLAB software To generate input signal and carrier signal for Modulation process using MATLAB codes To generate AM signal using AM formula in MATLAB software <p>Experiment required:</p> <ul style="list-style-type: none"> MATLAB software, Computer
5	<p>Experiment 5: Generate Amplitude Shift Keying Signal</p> <p>Objectives:</p> <ul style="list-style-type: none"> To be familiar with MATLAB software To generate input digital pulse signal and carrier signal for digital Modulation process using MATLAB codes To generate amplitude shift keying signal using formula in MATLAB software <p>Experiment required:</p> <ul style="list-style-type: none"> MATLAB Software, Computer

Approved By

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