



**Kadi Sarva Vishwavidyalaya**  
**Faculty of Engineering & Technology**  
 Electronics and communication Engineering  
 (Academic Year 2019-20)

<b>Subject Code: EC504-N</b>	<b>Subject Title: ELECTRONIC COMMUNICATION</b>
<b>Pre-requisite</b>	

**Course Objective:**

The educational objectives of this course are

- To present a problem oriented introductory knowledge of ELECTRONIC COMMUNICATION.
- To address the underlying concepts and methods behind ELECTRONIC COMMUNICATION.

**Teaching Scheme (Credits and Hours)**

Teaching scheme				Total Credit	Evaluation Scheme					Total Marks
L	T	P	Total		Theory		IE Marks	CIA Marks	Pract. Marks	
Hrs	Hrs	Hrs	Hrs		Hrs	Marks				
03	00	02	05	04	03	70	30	20	30	150

**Outline Of the Course:**

Sr. No	Title of the Unit	Hours
1.	Introduction to Communication Systems	06
2.	Noise	08
3.	Amplitude Modulation and Demodulation	14
4.	Angle Modulation and Demodulation	12
5.	Communication Receivers	08
		<b>48</b>

**Total hours (Theory): 48**

**Total hours (Lab): 16\*2=32**

**Total hours: 80**



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**Detailed Syllabus:**

Unit No.	Topics	Lecture Hours	Weight age(%)
1.	<p><b>Introduction to Communication Systems:</b></p> <p>Communication system, Analog and digital Messages, Classification of Electronic Communication systems, Need of modulation, Modulation and detection, Historical review of telecommunication, Communication Application. Radio wave propagation : Modes of propagation, Ground Wave Propagation, Space wave propagation</p>	<b>06</b>	<b>10</b>
2.	<p><b>Noise:</b></p> <p>Noise (Thermal noise, Shot noise, Partition noise, Low frequency or flicker noise, Burst noise, Avalanche noise, Bipolar transistor noise, Field-effect transistor noise, Signal – to – noise ratio, Noise factor, Amplifier input noise in terms of F, Noise factor of amplifiers in cascade, Noise temperature.</p>	<b>08</b>	<b>15</b>
3.	<p><b>Amplitude Modulation and Demodulation:</b></p> <p>Concept of Amplitude modulation, Mathematical Equation of AM, Amplitude modulation Index, Average power for sinusoidal AM, Effective voltage or current for sinusoidal AM, Non-sinusoidal modulation, Double-Sideband amplitude modulation (DSBFC and DSBSC), single sideband suppressed carrier modulations(SSBSC), AM generation: FET balanced modulator and IC balanced modulator circuits, Diode ring modulator, SSB generation: balanced modulator-filter method, phasing method and the third method, AM detection: peak (envelope detector), synchronous detectors, square law detectors.</p>	<b>14</b>	<b>30</b>
4.	<p><b>Angle Modulation and Demodulation:</b></p> <p>Concept of Frequency modulation and Phase Modulation, Mathematical Equation of FM, sinusoidal FM, Frequency spectrum, Non-sinusoidal Modulation: Deviation Ratio, Phase Modulation, Equivalence between PM and FM, FM transmitters, Armstrong method of FM generation, Fm stereo broadcast, FM detection: Basic slope detector, Foster-Seeley discriminator, ratio detector, PLL detector, Amplitude Limiters, Pre-emphasis and De-emphasis.</p>	<b>12</b>	<b>25</b>
5.	<p><b>Communication Receivers:</b> Superhetrodyne receivers, Tuning range, Tracking, Sensitivity and gain, Image rejection, Spurious responses, Adjacent channel selectivity, AGC, Double conversion.</p>	<b>08</b>	<b>20</b>
<b>Total</b>		<b>48</b>	<b>100</b>



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**Instructional Method and Pedagogy:**

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed.
- Lectures will be conducted with the aid of multi-media projector, black board, OHP etc.
- Attendance is compulsory in lecture and laboratory which carries 10 marks in overall evaluation.
- One internal exam will be conducted as a part of internal theory evaluation.
- Assignments based on the course content will be given to the students for each unit and will be evaluated at regular interval evaluation.
- Surprise tests/Quizzes/Seminar/tutorial will be conducted having a share of five marks in the overall internal evaluation.
- The course includes a laboratory, where students have an opportunity to build an appreciation for the concepts being taught in lectures.
- Experiments shall be performed in the laboratory related to course contents.

**Learning Outcome:**

The educational objectives of this course are

- To present a problem oriented introductory knowledge of ELECTRONIC COMMUNICATION.
- To address the underlying concepts and methods behind ELECTRONIC COMMUNICATION on successful completion of the course. The student can identify different areas of ELECTRONIC COMMUNICATION circuits.
- Can find the applications of all the areas in day to day life.
- Can identify the operations, working, construction, material etc. aspects of AM-FM modulation-demodulation, Superhetrodyne principal etc.

**TEXT BOOKS & REFERENCE BOOKS:**

1. Electronic Communications by Dennis Roddy & John Coolen IV Edition PHI.
2. Digital and analog communication system by B.P.Lathi .Zhi Ding (international 4th Edition), OXFORD university press.
3. Electronic Communications by Kennedy McGraw Hill Publication.
4. Electronic Communications Systems by Wayne Tomasi. Pearson education India



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**List of Experiments** (Not limited to following. Subject teacher may modify the same):

<b>Sr. No.</b>	<b>Experiment Title</b>
1.	To generate amplitude modulation (AM) waveform and to measure modulation index of AM wave using waveform method and trapezoidal method.
2.	To Perform Frequency Modulation (FM).
3.	To extract information signal from the AM wave using diode detector.
4.	To extract information signal from the FM wave using FM detector.
5.	To study frequency response of pre-emphasis and de-emphasis circuits.
6.	To generate SSB signal using balance modulator and single sideband filter.
7.	To demodulate SSB signal.
8.	To understand block diagram of super-heterodyne AM and FM receiver.
9.	To understand working of AGC circuit.
10.	To plot the graph of amplitude modulation using scilab.
11.	To plot the graph of frequency modulation using scilab.
12.	To plot the graph of AM-SSB wave using scilab.