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| Course No | Course Name | L-T-P-Credits |
| **EE 222** | **Communication Engineering** | **3-0-0: 3** |
|  Prerequisite: nil; Co requisite: nil |
| **Course Objectives**:1. To understand the basic concepts of communication engineering2. To analyze and design communication system |
|  **SYLLABUS** |
| **Module** | **Contents** | **Hours** |
| I | **Transmission of Signals**Introduction to Various Terminologies: Transmitter, Receiver, Modulation, Carrier, Channel, Signal Transmission through a Linear System, Ideal versus Practical Filter, Signal Distortion Over a Communication Channel  | 08 |
| II | **Amplitude Modulation and Demodulation**Baseband vs Carrier Communications, DSB-C And DSB-SC Amplitude Modulation, Bandwidth Efficient AM: SSB, Vestigial Sideband (VSB) Transmission, Local Carrier Synchronization, Frequency Division Multiplexing, Phase Looked Loop and Some Applications.  | 10 |
| III | **Angle Modulation and Demodulation** Nonlinear Modulation, Bandwidth of Angle Modulated Waves, Generating FM Waves, Demodulation of FM Signals, Effects of Nonlinear Distortion and Interferences, Super-Heterodyne Analog AM/FM Receivers, FM Broadcasting System. | 10 |
| IV | **Noise** Various Types of Noises: Internal (Shot, Thermal, Agitation, Transit Time) Noise and External (Atmospheric, Extra-Terrestrial, Industrial) Noise, Available Power, White Noise and Filtered Noise, AWGN Properties, Noise Equivalent Bandwidth Concept, Signal to Noise Ratio.  | 08 |

**Essential Readings:**

1. B.P. Lathi, and Zhi Ding, “Modern Digital and Analog Communication Systems”, Oxford University Press, 4th Edition, 2011
2. J. G. Proakis and M. Salehi, “Fundamental of Communication Systems”, Pearson Education, 1st Edition, 2004.

**Supplementary Readings:**

1. Sanjay Sharma, “Communication Systems (Analog and Digital)”, S. K. Kataria & Sons, 6th Edition, 2012.
2. A. Bruce Carlson, “Communication Systems- An Introduction to Signal and Noise in Electrical Communication”, McGraw-Hill Education, 2nd Edition, 1986.
3. Leon W. Couch, “Digital and Analog Communication Systems”, Pearson Education, 8th Edition, 2012.
4. Herbut Taub and Donald L. Schilling, “Principal of Communication Systems”, Tata McGraw-Hill Education, 4th Edition, 2017.