**CURRICULUM PLAN 2024-25**

Odd Semester: I, III, V

**Dr. V. Bhasker Raj**

Department of Physics

**B.Sc.(H) Physics – III Year, V Sem, DSE Paper**

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| Content | Allocation of Lectures | Month-wise Schedule followed | Tutorial/assignment/  presentation etc |
| **Communication Systems** | | |  |
| **Unit – I - Electronic communication and Analog modulation:** Electronic communication: Introduction to communication – means and modes. Need for  modulation. Block diagram of an electronic communication system, channels and base-band  signals  Analog Modulation: Amplitude modulation, modulation index and frequency spectrum.  Generation of AM (emitter modulation), amplitude demodulation (diode detector), Single  sideband (SSB) systems, advantages of SSB transmission, frequency modulation (FM) and  phase modulation (PM), modulation index and frequency spectrum, equivalence between FM  and PM. | 8 | 2-Aug to 28-Aug | Syllabus Overview  Reference books  Problem solving  Derivations and Numericals |
| **Unit – II - Analog Pulse Modulation:** Sampling theorem, basic principles - PAM, PWM, PPM, modulation and detection technique  for PAM only, Multiplexing (time division multiplexing and frequency division multiplexing) | 4 | 30-Aug to 11-Sept | Derivations and  Numericals  Class test on unit end  Discussion of  Important questions |
| **Unit – III - Digital Pulse Modulation:** Need for digital transmission, pulse code modulation, digital carrier modulation techniques,  sampling, quantization and encoding, concept of amplitude shift keying (ASK), frequency shift  keying (FSK), phase shift keying (PSK), and binary phase shift keying (BPSK) | 10 | 12-Sept to 16-Oct | Derivations and  Numericals  Discussion of  Important questions  Home Register Checking |
| **Unit – IV - Satellite Communication and Mobile Telephony system:** Satellite communication: Need for satellite communication, geosynchronous satellite orbits,  geostationary satellite advantages of geostationary satellites. Transponders (C - Band), uplink  and downlink, Ground and earth stations  Mobile Telephony System: Concept of cell sectoring and cell splitting, SIM number, IMEI  number, architecture (block diagram) of mobile communication network, idea of GSM,  CDMA, TDMA and FDMA technologies, simplified block diagram of mobile phone handset. | 8 | 18-Oct to 27-November | Derivations, Numericals and Revision |