**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 formodulation. Block diagram of an electronic communication system, channels and base-bandsignalsAnalog Modulation: Amplitude modulation, modulation index and frequency spectrum.Generation of AM (emitter modulation), amplitude demodulation (diode detector), Singlesideband (SSB) systems, advantages of SSB transmission, frequency modulation (FM) andphase modulation (PM), modulation index and frequency spectrum, equivalence between FMand PM. | 8 | 2-Aug to 28-Aug | Syllabus OverviewReference booksProblem solvingDerivations and Numericals |
| **Unit – II - Analog Pulse Modulation:** Sampling theorem, basic principles - PAM, PWM, PPM, modulation and detection techniquefor PAM only, Multiplexing (time division multiplexing and frequency division multiplexing) | 4 | 30-Aug to 11-Sept | Derivations andNumericalsClass test on unit endDiscussion ofImportant 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 shiftkeying (FSK), phase shift keying (PSK), and binary phase shift keying (BPSK) | 10 | 12-Sept to 16-Oct | Derivations andNumericalsDiscussion ofImportant questionsHome 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), uplinkand downlink, Ground and earth stationsMobile Telephony System: Concept of cell sectoring and cell splitting, SIM number, IMEInumber, 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 |