The Bombay Salesian's Societys

Don Bosco Institute of Technology

(An Autonomous Institute Affiliated to University of Mumbai)

Department of Electronics and Telecommunication Engineering

Syllabus for Mid Semester Examination (Date: 08 to 12 September 2025, Time : 10 am to 11.30 am, Maximum Marks: 30, Duration : 90 Minutes)

SE – SEM III

Course Code	Course Name	Faculty Incharge	Syllabus
25ET3PCC01	Mathematics for Signal Processing	Dr. Revathy Sundarajan	**Module 1: Fundamentals of Signals and Systems** 1.1: Elementary signals: Step, Ramp, Pulse, Impulse, Sinusoids & Exponential 1.2: Classification of signals: Continuous-time & Discrete-time, Deterministic & Random, Periodic & Aperiodic, Symmetric & Anti-symmetric, Energy & Power 1.3: Signal Operations: Time shifting, Scaling, Folding. 1.4: Classification of systems: Linear/Nonlinear, Time-invariant/Time-variant, Causal/Non-causal, Stable/ Unstable. **Module 3: Fourier Series and Fourier Transforms** 3.1: Trigonometric and Exponential Fourier Series for periodic signals 3.2:Continuous Time Fourier Transform (CTFT): definition, properties. Fourier transform of standard functions. 3.3: Discrete Time Fourier Transform (DTFT): definition, properties. Fourier Transform of standard functionsFourier series; Fourier Transforms (CTFT, DTFT)
25ET3PCC02	Linear Integrated Circuits	Dr. Madhavi S. Pedanekar	**Module 1:Introduction to Operational Amplifier** Unit 1.1 Block diagram of Op-Amp, Ideal and Practical Parameters, Voltage Transfer characteristics, Concept and types of feedback, Open loop and Closed loop configurations of Op-Amp. Unit 1.2 Inverting Amplifier, Non-inverting Amplifier, Voltage follower, Inverting and Non-Inverting Adders, Scaling and Averaging circuit, Subtractor, I-V and V-I Converter. **Module 2:Linear and Non-Linear Applications of Operational Amplifier** Unit 2.1 Integrator & Differentiator (Ideal & Practical), Active Filters: LPF, HPF, BPF, BRF, First order active low pass, high pass Filter. Unit 2.3 Comparators: Inverting and Non-inverting Comparator, Zero Crossing Detector, Schmitt Triggers: Inverting and Non-inverting Schmitt trigger. **Module 3: Timer IC 555: Operation, Modes, and Applications** Unit 3.1 IC 555 Timer: Features, Functional Block Diagram, modes of operation- Astable, Monostable and Bi-stable. Unit 3.2 Design of Astable and Monostable multivibrator using IC555.

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25ET3PCC03	Digital System Design using Verilog	Ms. Hemalata Mote	**Module1:Introduction to Verilog HDL** **1.1** India semiconductor industry and GOI policies, Review of Digital circuits and systems. Introduction to HDL, Comparison between Verilog and VHDL, need and advantages of Verilog HDL, Verilog design flow, EDA tools. **1.2 Hierarchical Modeling Concepts:** Design methodologies (top-down vs. bottom-up), FPGA Architecture Fundamentals, Different FPGAs available in the market and their applications. **Module 2: Verilog Constructs & Modeling Styles** **2.1 Verilog Language Constructs:** Design Hierarchy, Components of a Verilog modules, Verilog simulation and synthesis concepts. Writing and simulating test benches, Lexical conventions, Data types, Port, Port declaration, variables & Assignments, identifiers, operators, language constructs. **2.2 Structural (Gate-level) modeling:** Gate types, Gate Delays, module instantiation. **2.3 Dataflow modeling:** Continuous Assignment, Implicit Continuous Assignment, Delays. **2.4 Behavioral modeling:** Structured procedures: initial and always, Procedural assignments: Blocking assignments, Nonblocking Assignments. **Module 3: Combinational Logic Design using Verilog** **3.1** Modeling of Half & Full Adder, Half & Full Subtractor, Ripple Carry Adder, Multiplexed adder-subtractor using various modeling styles. **3.2** Multiplexers
25ET3PCC04	Analog and Digital Communication	Ms. Namita Agarwal	**Module 1: Introduction to Electronic Communication System and Noise** **Unit 1.1 - Fundamentals of Communication Systems:** Elements of Electronic Communication System, Types of Communication-Analog and Digital, Transmission Modes, Block diagrams of Analog and Digital Communication Systems. **Unit 1.2- Noise in Communication Systems:** Definition and classification of noise (internal and external). Noise Parameters-Signal-to-noise ratio, Noise factor, Noise Figure, Noise Temperature. Friis Formula for noise in cascaded systems. **Module 2:Analog Modulation and Demodulation** **Unit 2.1 - Amplitude Modulation and Demodu**lation:Need for Modulation, Amplitude Modulation – Definition and waveforms, Mathematical Representation of AM,modulation index. Types of AM, Frequency Spectrum and Bandwidth, Power Relations in AM Systems, Power-Saving Calculations in DSBSC and SSB.AM Demodulation–Need for Demodulation,Envelope Detector - Principle and Working. **Unit 2.2- Frequency Modulation and Demodulation:**Definition and waveform of FM, Modulation Index,frequency deviation, deviation ratio,Bandwidth Requirement, Narrowband and Wideband FM, Pre-emphasis and De-emphasis, FM Generation- Direct Method -Varactor Diode modulator, Indirect Method- Armstrong method, FM Detection-Foster-Seeley Discriminator- Principle and Working. **Unit 2.3-Radio Receivers:** Characteristics of Radio Receivers, Superheterodyne Receivers-Principle, Block Diagram, and Working Principles for AM and FM Receivers.Automatic Gain Control-Need, Types of AGC, Operation, and Significance.

Dr. Madhavi S. Pednekar
Head of Department

P R Dumane

Ms. Pratibha Dumane
Dean Academics