



The Bombay Salesian Society's  
**Don Bosco Institute of Technology, Mumbai**  
 (An Autonomous Institute Affiliated to University of Mumbai)  
**Department of Electronics and Telecommunication Engineering**

**Syllabus for Internal Assessment 1 (IA-1) for EVEN Semester of AY 2025-26**

Date: 13 March to 20 March 2026,  
 Time : 12:30 p.m. to 1.30 p.m.      Maximum Marks: 20      Duration : 1 Hr.

TE – SEMESTER VI			
Course Code	Course Name	Faculty In-charge	Syllabus Content
ECC601	Electromagnetics and Antenna	Prof. Freda Carvalho	<p><b>Module 1 : Introduction to Static fields</b>            1.1 Charge, Coulomb's law, Charge configurations, Electric field intensity, Electric flux density, Gauss's law and applications, Current density, and Continuity equation,            1.2 Scalar Electric Potential, Potential gradient, Laplace's and Poisson's equations            1.3 Biot Savart Law, Ampere Circuit law, Gauss's law for magnetic field, Vector magnetic potential</p> <p><b>Module 2: Electromagnetic Field and Maxwell's Equations</b>            2.1 Faraday's Law, Displacement current density, Maxwell's equation for time varying field, Boundary conditions.            2.2 EM wave propagation through lossy, perfect dielectric and conducting medium.            2.3 Power in EM Wave: Poynting theorem and Poynting vector</p>
ECC602	Computer Communication Networks	Prof. Namita Agarwal	<p><b>Module 1 : Introduction to Network Architectures, Protocol Layers, and Service models</b>            1.1 Applications of computer networks. Network types: LAN, MAN, and WAN, Network topologies.            1.2 Protocols and standards, need of layered protocol architecture, OSI reference model.            1.3 TCP/IP architecture: protocol suite, comparison of OSI and TCP/IP            1.4 Layer wise network hardware devices (NIC, Repeaters, Hubs, Bridges, Switches, Routers, Gateway and their comparison)            1.5 Addressing: physical / logical /port addressing/socket addressing.</p> <p><b>Module 2 :Physical Layer</b>            2.1 Guided transmission media: comparison among coaxial, optical fiber and twisted pair cables.            2.2 Unguided transmission media            2.3 Transmission impairments            2.4 Broadband standards: Cable modem, DSL, and HFC</p> <p><b>Module 3 :Data Link Layer</b>            3.1 Data link services: Framing, Flow control, Error control            3.2 ARQ methods: transmission efficiency, Piggybacking            3.3 High Level Data Link Control (HDLC): HDLC configurations, Frame formats, HDLC bit stuffing and de-stuffing, Typical frame exchanges.            3.4 Medium Access Control Protocols: ALOHA, Slotted ALOHA, CSMA, CSMA/CD</p>

ECC603	Image Processing and Machine Vision	Prof. Sonal Patil	<p><b>Module 1: Digital Image Fundamentals and Point Processing</b>  1.1: Steps in Digital Image Processing, concept of spatial and intensity resolution, Relationships between pixels  1.2: Point Processing : Image Negative, Log Transform, Power Law transform, Bit plane slicing, Contrast stretching , Histogram equalization and Histogram Specification</p> <p><b>Module 2: Image Enhancement</b>  2.1: Spatial Domain filtering : Smoothing Spatial Filters-Linear Filters-Averaging filter, Order-Statistic Filters- Median filter, Application of Median filtering for Noise removal Sharpening Spatial Filters- The Laplacian, Unsharp Masking and Highboost Filtering, Using First-Order Derivatives —The Gradient- Sobel, Prewitt and Roberts  2.2: Frequency Domain Filtering: Introduction to 2-D DFT and its application in frequency domain filtering, Wavelet transform, Haar transform  2.3: Frequency Domain Filtering: Fourier Spectrum and Phase angle ,Steps for Filtering in the Frequency Domain, Correspondence Between Filtering in the Spatial and Frequency Domains, Frequency domain Image Smoothing and sharpening filter - Ideal, Butterworth, Gaussian</p> <p><b>Module 3: Image Morphology and Restoration</b>  3.1: Morphology: Erosion and Dilation, Opening and Closing, The Hit-or-Miss  3.2: Restoration : A Model of the Image Degradation/Restoration Process, Noise models, Removal periodic noise, Principle of Inverse filtering  Transformation, Boundary extraction , Hole filling, Thinning and thickening</p>
ECC604	Artificial Neural Network and Fuzzy Logic	Prof. Pratibha Dumane	<p><b>Module 1: Introduction to Neural Networks and their Basic Concepts</b>  Biological neuron and Artificial neuron, McCulloch-Pitts Model, Activation, Function, various types of Activation Functions and types of Neural Network Architectures, Prerequisites for Training of Neural Networks. Linearly Separable and Linearly Non-Separable Systems with examples, Concepts of Supervised Learning, Unsupervised Learning, and Reinforcement Learning. Brief survey of applications of Neural Networks.</p> <p><b>Module 6: Introduction to Fuzzy Inference System:</b>  Introduction to Fuzzy Logic, Fuzzy Rules, Fuzzy Properties - Operations, Membership Functions, Fuzzification - Membership Value Assignments using Intuition Method, Defuzzification Methods -- Mean of Maxima and Centroid (Centre of Area) Methods, Fuzzy Inference System with reference to Mamdani Model, Applications of Fuzzy Logic to Washing Machine.</p>
ECCDLO6014	Database Management System	Dr. Madhavi S. Pednekar	<p><b>Module 1: Introduction to Databases</b>  <b>Module 2: Data Models</b> - The importance and introduction of various data models (hierarchical, Network, Relational, Entity relationship and object model).  <b>Module 3: Database Design, ER-Diagram</b> : 3.1 ER-Model and its Constraints, ER-Diagrams, ERD Issues, weak entity sets 3.2 - Codd's rules, Relational Schemas, Introduction to UML Relational database model: Logical view of data, keys, integrity rules, Relational Database design: features of good relational database design, atomic domain.  <b>Module 4: Relational Algebra and Calculus:</b> 4.1 Relational algebra: Introduction, Selection and Projection, Set operations, Renaming, Syntax, Division.</p>
HAIMLC601	H&M: Game Theory using AI ML	Prof. Uday Nayak	<p>1.1 Introduction, The theory of rational choice, Games with Perfect Information, Nash Equilibrium, The Prisoner's Dilemma, Stag Hunt, Matching Pennies, BOS, Cooperative and Competitive Games, Strict and Non Strict NE, Best response functions for NE.  1.2 Cournot's model of oligopoly, Bertrand's model of oligopoly, Electoral competition, The War of Attrition, Auctions, Mixed Strategy Equilibrium, Strategic games in which players may randomize, Dominated actions, Extensive Games with Perfect Information  2.1 Bayesian Games, Introduction, Motivational examples, General definitions, two examples concerning information, Strictly Competitive, Games and Maxminimization, Rationalizability</p>

HDSC601	H&M: Cyber Security	Prof. Aruna K.	<b>Module 1: Introduction to Cybercrime and Computer-crime</b> - 1.1 Definition and classification of cybercrimes, 1.2 Definition and classification of computer crimes, 1.3 Prevention of Cybercrime <b>Module 2: Introduction to Digital Forensics and Digital Evidences</b> - 2.1 Introduction to Digital Forensics, 2.2 Introduction to Digital Evidences, 2.3 Digital Investigation Process Models. Module 3
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14/02/2026

Dr. Madhavi S. Pednekar

Head of Department (EXTC)