The Bombay Salesian Society's

Don Bosco Institute of Technology

Department of Electronics and Telecommunication Engineering

TE Syllabus- Internal Assessment – II

Even Semester-: AY 2024-25

Date: 1/4/2025

Day-Date	Course Code	Course Name	Syllabus
11 April 2025	ECC601	Electromagnetics and Antenna	**Module 3: Basic of Antennas** 3.2 Antenna Parameters: Isotropic antenna, Radiation pattern, radiation intensity, Beamwidth, directivity, Gain, beam efficiency, bandwidth, polarization, Input impedance, Antenna efficiency, Radiation resistance, Loss resistance, aperture concept, FRII's transmission formula 3.3 Wire Elements: Infinitesimal dipole, Wire dipole, Monopole antennas: radiation field derivations and related parameters, Introduction to loop antenna **Module 4: Antenna Arrays** 4.1 Linear arrays of two isotropic point sources, linear arrays of N elements, Principle of pattern multiplication **Module 5: Types of Antennas** 5.1 Yagi antenna 5.3 Patch Antenna: Microstrip antenna, Feeding Techniques, Introduction to design of Microstrip antenna (Rectangular and circular patch)
11 April 2025	HAIMLC601	Game Theory using AI ML	**Module 3: Introduction to AI & Problem Solving,** Definitions Foundation and History of AI, Evolution of AI - Applications of AI, Classification of AI systems with respect to environment. Artificial Intelligence vs Machine learning,Heuristic Search Techniques: Generate-and-Test; Hill Climbing: Properties of A* algorithm, Best first Search; Problem Reduction.Beyond Classical Search: Local search algorithms and optimization problem, local search in continuous spaces, searching with nondeterministic action and partial observation, online search agent and unknown environments **Module 4: Knowledge and Reasoning:** Building a Knowledge Base: Propositional logic, first order Logic, situation calculus. Theorem Proving in First Order Logic, Planning, partial order planning. Uncertain Knowledge and Reasoning, Probabilities, Bayesian Networks. Probabilistic reasoning over time: time and uncertainty, hidden Markova models, Kalman filter, dynamic bayesian network, keeping track of many objects. **Module 5:Knowledge and Reasoning:** Building a Knowledge Base: Propositional logic, first order Logic, situation calculus. Theorem Proving in First Order Logic, Planning, partial order planning. Uncertain Knowledge and Reasoning, Probabilities, 4.2 Bayesian Networks. Probabilistic reasoning over time: time and uncertainty, hidden Markova models, Kalman filter, dynamic bayesian network, keeping track of many objects.
11 April 2025	HCSC601	Digital Forensic	**Module 4: Incident Response Management, Live Data Collection and Forensic Duplication** 4.1 Incidence Response Methodology: Goals of Incident Response, Finding and Hiring IR Talent. 4.2 IR Process: Initial Response, Investigation, Remediation, Tracking of Significant Investigative Information. **Module 5: Forensic Tools and Report Writing** 5.1 Forensic Image Acquisition in Linux : Acquire an Image with dd Tools, Acquire an Image with Forensic Formats, Preserve Digital Evidence with Cryptography, Image Acquisition over a Network, Acquire Removable Media 5.2 Forensic Investigation Report Writing: Reporting Standards, Report Style and Formatting, Report Content and Organization. **Module 6 : Network Forensics and Mobile Forensics** 6.1 Network Forensics: Sources of Network- Based Evidence, Principles of Internetworking, Internet Protocol Suite, Evidence Acquisition, Analyzing Network Traffic: Packet Flow and Statistical Flow, Network Intrusion Detection and Analysis, Investigation of Routers, Investigation of Firewalls 6.2 Mobile Forensics: Mobile Phone Challenges, Mobile phone evidence extraction process, Android OS Architecture, Android File Systems basics, Types of Investigation, Procedure for Handling an Android Device, Imaging Android USB Mass Storage Devices.

11/4/2025

Ms.Hemalata Mote/ Mr.kishore B
IA- Exam Coordinator

01/04/2025

Ms. Madhavi Pednekar
HOD EXTC

P. R. Dumane

Ms. Pratibha Dumane
Dean Academics

Dr. Sudhakar Mande
Principal

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Day-Date	Course Code	Course Name	Syllabus
11 April 2025	HDSC601	Statistical Learning for Data Science	**Module 4 :** Hypothesis Tests Developing Null and Alternative Hypotheses, Type I and Type II Errors, Population Mean: Known Population Mean: Unknown Inference About Means and Proportions with Two Populations-inferences About Population Variances, Inferences About a Population Variance, Inferences About Two Population Variances **Module 5:** Simple Linear Regression: Simple Linear Regression Model, Regression Model and Regression Equation, Estimated Regression Equation, Least Squares Method, Coefficient of Determination, Correlation Coefficient, Model Assumptions, testing for Significance, Using the Estimated Regression Equation for Estimation and Prediction Residual Analysis: Validating Model Assumptions, **Module 6 :** 6.1 Time Series Analysis and Forecasting Time Series Patterns, Forecast Accuracy, Moving Averages and Exponential Smoothing, Trend Projection, Seasonality and Trend and Time Series Decomposition 6.2 Nonparametric Methods Sign Test, Wilcoxon Signed-Rank Test, Mann-Whitney-Wilcoxon Test, Kruskal- Wallis Test, Rank Correlation
15 April 2025	ECC602	Computer Communication Networks	**Module 4 Network Layer** 4.1Introduction to telephone networks and circuit switching principles. 4.2 Introduction to data networks and packet switching principles. 4.3 Network layer services and functions. 4.4 Internet Protocol: Principles of Internetworking, requirements, IPv4 packet, IPv4 addressing (classful and classless (CIDR)) 4.5 Routing in Packet Switching Networks: Characteristics, Routing strategies 4.6 Routing algorithms: Link state Routing, Distance vector Routing and Path vector routing, Routing protocols: RIP, OSPF, BGP and EIGRP. 4.7 Subnetting, supernetting, VLSM, and NAT 4.8 Introduction to ICMP, ARP, RARP 4.9 IPv6 (IPv6 Datagram format, comparison with IPv4, and transition from IPv4 to IPv6). 4.10 Quality of service **Module 5 Transport Layer** 5.1 Connectionless and Connection–oriented services at transport layer, 5.2 Transmission Control Protocol (TCP): TCP Services, TCP Segment, TCP three way handshake 5.3 User datagram Protocol (UDP), UDP Services, UDP Datagram 5.4 TCP and UDP checksum calculation 5.5 Flow control, error control and congestion control
	ECCDLO6016	Radar Engineering(DLO)	**Module 3: Radar Transmitters and Receviers** 4.1 Radar RF power sources: Klystron 4.2 Travelling wave tube 4.3 Magnetron 4.4 Radar Receiver: Superheterodyne Receiver **Module 4: Radar Transmitters and Receviers** 4.1 Radar RF power sources: Klystron 4.2 Travelling wave tube 4.3 Magnetron 4.4 Radar Receiver: Superheterodyne Receiver
	ECCDLO6014	Database Management System(DLO)	**Module 4: Relational Algebra and Calculus:** Relational algebra: Introduction, Selection and projection, set operations, renaming, Joins, Division, syntax,Operators, grouping and ungrouping **Module 5: Constraints and SQL:** What is constraints, types of constrains, Integrity constraints, SQL data definition, aggregate function, Null Values, nested sub queries, Joins **Module 6: Transaction Management:** ACID properties, serializability and concurrency control, Lock based concurrency control (2PL, Deadlocks), Time stamping methods, optimistic methods,database recovery management. Database Security.

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16/04/25	ECC603	Image Processing and Machine Vision	**Module 3: IMAGE MORPHOLOGY AND RESTORATION** 3.1 Morphology: Erosion and Dilation, Opening and Closing, The Hit-or-Miss Transformation, Boundary extraction , Hole filling, Thinning and thickening 3.2 Restoration : A Model of the Image Degradation/Restoration Process, Noise models, Removal periodic noise, Principle of Inverse filtering **Module 4: IMAGE SEGMENTATION** 4.1 Point, Line, and Edge Detection: Detection of Isolated Points, Line detection, edge models, Canny's edge detection algorithm , Edge linking : Local processing and boundary detection using regional processing (polygonal fitting) 4.2 Thresholding : Foundation, Role of illumination and reflectance, Basicglobal Thresholding 4.3 Region Based segmentation: Region Growing, Region Splitting and merging **Module 5: INTRODUCTION TO MACHINE VISION AND DESCRIPTORS** chain code, Co-occurance matrix.
17/04/25	ECC604	Artificial Neural Network and Fuzzy Logic	**Module 1: Introduction to Neural Networks and their Basic Concepts:** 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. **Module 2: Supervised Learning Neural Networks:** Perceptron - Single Layer Perceptron, Multilayer Perceptron and their Architecture, Error Functions: Mean Square Error and Sum Squared Error. Gradient Descent, Generalized delta rule, Error back propagation, Stopping Criterions for Training.

1/4/2025 1/4/25

Ms.Hemalata Mote/ Mr.kishore B
IA- Exam Coordinator

01/05/2025

Ms. Madhavi Pednekar
HOD EXTC

P R Dumane

Ms. Pratibha Dumane
Dean Academics

Dr. Sudhakar Mande
Principal