Applicable to Branch: CSE

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Unit – I Soft Computing
Introduction of soft computing, soft computing vs. hard computing, various types of soft computing techniques, applications of soft computing.

Artificial Intelligence: Introduction, Various types of production systems, characteristics of production systems, breadth first search, depth first search techniques, other Search Techniques like hill Climbing, Best first Search, A* algorithm, AO* Algorithms and various types of control strategies. Knowledge representation issues, Prepositional and predicate logic, monotonic and non monotonic reasoning, forward Reasoning, backward reasoning, Weak & Strong Slot & filler structures, NLP.

Unit – II Neural Network
Structure and Function of a single neuron: Biological neuron, artificial neuron, definition of ANN, Taxonomy of neural net, Difference between ANN and human brain, characteristics and applications of ANN, single layer network, Perceptron training algorithm, Linear separability, Widrow & Hebb's learning rule/Delta rule, ADALINE, MADALINE, AI v/s ANN. Introduction of MLP, different activation functions, Error back propagation algorithm, derivation of BBPA, momentum, limitation, characteristics and application of EBPA.

Unit – III Counter propagation network

Unit – IV Fuzzy Logic

Unit – V Genetic algorithm
Fundamentals, basic concepts, working principle, encoding, fitness function, reproduction, Genetic modeling: Inheritance operator, cross over, inversion & deletion, mutation operator, Bitwise operator, Generational Cycle, Convergence of GA, Applications & advances in GA, Differences & similarities between GA & other traditional methods.
References:
• Rich E and Knight K, Artificial Intelligence, TMH, New Delhi.
• Bose, Neural Network fundamental with Graph, Algo.& Appl, TMH
• Kosko: Neural Network & Fuzzy System, PHI Publication
• Hagen, Neural Network Design, Cengage Learning
UNIT-1

UNIT- 2
Information Architecture: Role, Collaboration and Communication, Organizing Information, Organizational Challenges, Organizing Web sites parameters and Intranets

UNIT- 3
Technologies for Web Applications I:
HTML and DHTML: Introduction, Structure of documents, Elements, Linking, Anchor Attributes, Image Maps, Meta Information, Image Preliminaries, Layouts, Backgrounds, Colors and Text, Fonts, Tables, Frames and layers, Audio and Video Support with HTML Database integration, CSS, Positioning with Style sheets, Forms Control, Form Elements. Introduction to CGI, PERL, JAVA SCRIPT, JSP, PHP, ASP & AJAX. Cookies: Creating and Reading

UNIT-4
Technologies for Web Applications II:

UNIT- 5
**Recommended Books:**
10 Ivan Bay Ross, “HTML,DHTML,Java script,Perl CGI”, BPB
Unit-I Introduction
Introduction to bioinformatics, objectives of bioinformatics, Basic chemistry of nucleic acids, structure of DNA & RNA, Genes, structure of bacterial chromosome, cloning methodology, Data maintenance and Integrity Tasks.

Unit-II Bioinformatics Databases & Image Processing
Types of databases, Nucleotide sequence databases, Protein sequence databases, Protein structure databases, Normalization, Data cleaning and transformation, Protein folding, protein function, protein purification and characterization, Introduction to Java clients, CORBA, Using MYSQL, Feature Extraction.

Unit-III Sequence Alignment and database searching
Introduction to sequence analysis, Models for sequence analysis, Methods of optimal alignment, Tools for sequence alignment, Dynamics Programming, Heuristic Methods, Multiple sequence Alignment.

Unit-IV Gene Finding and Expression
Cracking the Genome, Biological decoder ring, finding genes through mathematics & learning, Genes prediction tools, Gene Mapping, Application of Mapping, Modes of Gene Expression data, Mining the Gene Expression Data

Unit-V Proteomics & Problem solving in Bioinformatics
Proteome analysis, tools for proteome analysis, Genetic networks, Network properties and analysis, complete pathway simulation: E-cell, Genomic analysis for DNA & Protein sequences, Strategies and options for similarity search, flowcharts for protein structure prediction.

List of References
1. Gopal & Jones, BIOINFORMATICS with fundamentals of Genomics & Proteomics, TMH Pub
2. Rastogi, Bioinformatics –Concepts, skills & Applications, CBS Pub
3. Bergeron, Bioinformatics computing, PHI
4. Claverie, Bioinformatics, Wiley pub
5. Baxevanis, Bioinformatics, Wiley Pub
6. Stekel, Micrarray BioInformatics, Cambridge
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<td>CSE</td>
<td>Digital Image Processing</td>
<td>CS -1183 (B)</td>
<td>Theory, Practical</td>
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#### Unit-I Digital Image fundamentals
A simple image model, Sampling and Quantization. Relationship between pixels. Imaging geometry. Image acquisition systems, Different types of digital images.

#### Unit-II Image transformations
Introduction to Fourier transforms, Discrete Fourier transforms, Fast Fourier transform, Walsh transformation, Hadmord transformation, Discrete Cosine Transformation.

#### Unit-III Image enhancement
Filters in spatial and frequency domains, Histogram based processing. Image subtraction, Averaging, Image smoothing, Nedion filtering, Low pass filtering, Image sharpening by High pass filtering.

#### Unit-IV Image encoding and segmentation
Encoding: Mapping, Quantizer, Coder. Error free compression, Lossy Compression schemes. JPEG Compression standard. Detection of discontinuation by point detection, Line detection, edge detection, Edge linking and boundary detection, Local analysis, Global processing via Hough transforms and graph theoretic techniques.

#### Unit-V Mathematical morphology
Binary, Dilation, crosses, Opening and closing, Simple methods of representation, Signatures, Boundary segments, Skeleton of a region, Polynomial approximation.

### References:
4. Jayaraman, Digital Image Processing, TMH.
5. Pratt, Digital Image Processing, Wiley India.
Unit I Introduction of Wireless Networks

Unit II Network Planning

Unit III Multiple Division Techniques

Unit IV Introduction to Wireless LAN
Evolution of WLAN, Wireless Home Networking, Technologies for Home Area Network (HAN), Overview of IEEE 802.11, Reference Architecture, PHY and MAC Layer, Wireless ATM, HIPERLAN.

UNIT V Standards
IEEE 802.15 WPAN, HomeRF, Bluetooth, Interference between Bluetooth and 802.11, Adhoc Networks, Introduction to 2.5 G and 3 G Networks.

References
1. Kaveh Pahlavan, Prashant Krishnamurthy “principles of Wireless Networks”, PHI.
4. Dr. KAMIL0 FEHER “Wireless Digital Communications”, PHI
5. Jochen Schiller “Mobile Communications”, PEARSON
UNIT I Introduction to Cyber Crime

UNIT II Cybercrime on Mobile and Wireless Device

UNIT III Tools and Methods in Cybercrime

UNIT IV Cyber Crime and Criminal justice

UNIT V Introduction to Cyber Forensics

References:
1. Principles of Cyber crime, Jonathan Clough Cambridge University Press
4. Cyber Security by Nina Godbole, Sunit Belapure Pub: Willey-India
5. Cyber Laws and IT Protection, Harish Chander, Pub:PHI.
Unit-I Introduction
Introduction to robotics ,Robot Usage , Robot subsystems, Robot Classification , Technology of Robots , Basic Principles in robotics

Unit-II Spatial Descriptions , Transformation and Sensors

Unit-III Kinematics

Unit-IV Control
Control Techniques, Second order Linear systems, Feedback Control, Performance of feedback control systems, Joint controller, Non linear Trajectory Control, State space Representation and control, Stability, Cartesian and force controls

Unit-V Motion Planning and Computer for Robots
Joint space Planning, Cartesian space planning,Position and orientation Trajectories, Point to Point Planning, Continuous path Generation, Computational speed, Hardware requirements, Control considerations, Robot Programming, Hardware architecture. A case study for Autonomous Mobile Robot.

List of References
2. Craig, Introduction to Robotics, Mechanics and control, Pearson Pub
5. Fu, Robotics, TMH Pub
Unit – I Adhoc Wireless Networks
Introduction, Cellular vs Adhoc wireless Networks, Applications of Adhoc wireless Networks, Issues in Adhoc wireless N/WS. Heterogeneity in Mobile devices, Wireless Sensor N/WS, traffic Profiles, Types of Adhoc Mobile Communications, Types of Mobile Host movements, Challenges facing Ad hoc mobile N/WS.

Unit –II Adhoc Wireless Media Access Protocols

Unit – III Routing Protocols
Overview of Adhoc Routing Protocols :- Table Driver Approaches :- DSDV, WRP, CSGR, Source Initiated On demand Approaches : AODV, DSR, TORA, SSR, LAR, PAR, ZRP, RDMAR.

Unit – IV Performance

Unit – V High Speed Networks
High Speed Networks Frame relays, Packet Switching Vs frame relay N/WS. Asynchronous transfer node, ATM protocol architecture, ATM Logical Connection, ATM Cells, AAL, High Speed LANS, FAST Ethernet, fiber channel wireless LANS.

References :
1) Muthukumaran, Intorduction to high Performance Network, TMH
5) Computer System& Network, Bluldell, Cengage Learning