**Lesson Plan (Session 2024-25 (Odd Semester))**

**(August 5, 2024 to November 22, 2024)**

**Name:** Dr. Sapna Nagpal

**Department:** Computer Science

**Subject:** COMPUTER Networks Coutrse Code: 24CSC201DS02

**Class :** M.Sc I Sem (Computer Science) NEP 2020

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| **Month** | **Topics to be covered** | **Assignment/Test** |
| **August** | Introduction to Computer Network: Types of Networks, Network Topologies, OSI and TCP/IP ReferenceModels;Data Communications Concepts: Digital Vs. Analog communication; Parallel and Serial Communication;Synchronous, Asynchronous and Isochronous Communication; Communication modes: simplex, half duplex,full duplex; Multiplexing;Transmission media: Wired-Twisted pair, Coaxial cable, Optical Fibre, Wireless transmission: Terrestrial,Microwave, Satellite, and Infrared.Communication Switching Techniques: Circuit Switching, Message Switching, Packet Switching.Practical:1. Write a program to simulate Bus topology2. Write a program to simulate Star topology.3. Write a program to simulate Ring topology.4. Write a program to simulate Mesh topology. 5. Write a program to demonstrate the difference between digital and analog signals using simple sinewaves and square waves.6. Install and Configure Wired and Wireless NIC. | Test/Assignment - 1 |
| **September** | Data Link Layer Fundamentals: Framing, Basics of Error Detection, Forward Error Correction, CyclicRedundancy Check codes for Error Detection, Flow Control. Media Access Protocols: ALOHA, Carrier SenseMultiple Access (CSMA), CSMA with Collision Detection (CSMA/CD), Token Ring, Token Bus.High-Speed LAN: Standard Ethernet, Fast Ethernet, Gigabit Ethernet, 10G; Wireless LANs: IEEE 802.11,Bluetooth.Practical:7. Connect the computers in Local Area Network.8. Program to demonstrate simplex: half-duplex communication using text-based examples.9. Program to demonstrate simplex: full-duplex10. Install and configure Network Devices: Routers.11. Configure Host IP, Subnet Mask and Default12. Program to simulate a basic circuit switching network where a connection is established beforecommunication. | Test/Assignment – 2 |
| **October** | Network Layer: IP Addressing and Routing, Network Layer Protocols: IPv4 (Header Format and Services),ARP, ICMP (Error Reporting and Query message); IPv6 (Header Format and Addressing).Transport Layer: Process-to-Process Delivery: UDP, TCP; Application Layer: Domain Name System (DNS);SMTP; HTTP; WWW.Practical:13. Program to simulate packet switching with packet fragmentation and reassembly.14. Program to input and validate IPv415. Program to input and validate IPv6 addresses | Revision Test Oral |
| **November** | Network Security: Security Requirements and attacks; Cryptography: Symmetric Key (DES, AES), Public KeyCryptography (RSA); Firewall. | Revision |

 **Signature:**

**Lesson Plan (Session 2024-25 (Odd Semester))**

**(August 5, 2024 to November 22, 2024)**

**Name:** Dr. Sapna Nagpal

**Department:** Computer Science

**Subject: Artificial Intelligence PAPER CODE-17MCS23DB3**

**Class :** M.Sc III Sem (Computer Science)

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| **Month** | **Topics** | **Assignment/Test** |
| **August** | Problem solving: State space search: Production systems, Search space control, Depth first search, unknown search, Hill climbing best first search, branch and bound. Best First Search, Problem Reduction, Constraints, Satisfaction, Means End Analysis.  |  |
| **September** | Knowledge Representation: Predicate logic: Skolemzing queries, Unification, Modus pones, Resolution, dependency directed back tracking. Rule Based Systems: Forward reasoning Conflict resolution, Backward reasoning. Use of non back track.  | Test/Assignment - 1 |
| **October** | Perception: Sensing, Speech recognition, Vision, Action, Neural networks: Introduction, Comparison of artificial neural networks with biological neural networks, Learning in neural networks, Perceptions, Back propagation networks, application of neural networks. Fuzzy logic: Definition, Difference between Boolean and Fuzzy logic, fuzzy subset, fuzzy membership function, fuzzy expert system, Inference process for fuzzy expert system, fuzzy controller | Test/Assignment - 2 |
| **November** | Expert system development life cycle: Problem selection, Prototype construction, Formalization, Implementation, Evaluation, Knowledge acquisition: Knowledge engineer, Cognitive behavior, Acquisition techniques. Knowledge representation: Level of representation, Knowledge representation schemes, Formal logic, Inference Engine, Semantic net, Frame, Scripts. | Revision Test Oral |

**Signature:**