Vikram University, Ujjain

Board of studies in Computer science (Faculty of Engineering Science)

SYLLABUS of

Diploma in Modern Technologies in Computer Science

Exclusively for University Teaching Department (ICS, VUU)

Diploma in Modern Technologies in Computer Science

PROGRAMME of UTD (ICS, VUU)

(Effective from Academic Session 2020-21)

[Modified as according to the provision of "Ordinance ....."]

Programme Objectives:

- To create awareness of Modern Technologies of Computer Science in IT environment.
- To impart basic knowledge and skills to protect one's personal IT assets.
- To learn the techniques needed for providing protection and security to our personal data and information resources.

COURSE STRUCTURE

Diploma in Modern Technologies in Computer Science

Paper code	Title of Paper	Theory External Marks	Min. Pass marks	Internal Marks	Min. Pass marks	Total
DMT-101	Fundamental of Computer Science	75	27	25	09	100
DMT- 102	Modern Technologies in Computer Science	75	27	25	09	100
DMT-103	Internship/Industrial Training/Project Work	150	54	50	28	200
	Total	300		100		400

DMT-101 Fundamental of Computer Science

UNIT-1

Computer Fundamental: Characteristics of Computers, History of Computer, Evolution of Computers, Computer Generations, Types of Computer, Components of a Computer: Registers, Instruction Set, Bus Architecture, Computer Hardware: Input Devices, Output Devices, Storage Devices: Primary Storage capacity, Memory Types, Memory Measuring Units, Secondary Storage Device

UNIT-2

Software and Computer Applications: Software &Software Types, Computer Languages, Compiler, Interpreter, Editor, Computer Ethics, Computer applications, Introduction of Programming: Procedure Oriented Programming, Object oriented programming, Concepts used in OOP, Benefits of OOP, Main advantages and disadvantage of OOP, Applications of OOP, OOP vs. POP.

UNIT-3

Operating System Overview: Computer System Startup, Computer System Structure, Computer System Components, Operating System Classifications, Operating System Services, Major Functions of Operating system, Process Management, CPU Scheduling, Scheduling Criteria. Memory and File Management: Memory Management Requirements, Swapping, Memory Management Techniques, Virtual Memory, File Management, File Access Methods, Protection.

UNIT-4

Introduction to DBMS: File System, Traditional File Oriented Approach, DBMS- Advantages and Disadvantages, Role of DBMS, Three views of data, DBMS Architecture, Data Models, Data Independence, Major components of DBMS, Data Dictionary, Types of Users, DBMS applications, Keys in Databases, Database Languages.

UNIT-5

Introduction to Computer Networks: Computer Network Definition, Importance of Networking, Types of Networks, Network Topology, Advantages and Disadvantage of Computer Networks, Applications of computer networks, Reference Model, Internet, Introduction to Internet Technology, Electronic Mail, World Wide Web.

Reference Books:

1. Operating Systems Concepts, A. Silberschatz, P.GaIvin, G.Gagne, John Wiley & Sons
2. Object Oriented Programming in C++, Robert Lafore, Galgotia Publication.
3. Data base management systems vol. 1., Date C.J.
4. Fundamental of Computer Science & IT, Singh Umesh Kumar, Jain S., Maheshwari A., SSDN Publications New Delhi,
5. Data Communications and Networks, Godbole A, Tata McGraw-Hill Publications.

DMT-102- Modern Technologies in Computer Science

UNIT-1:

Introduction to Computer Security: The Challenges of Computer Security, The OSI Security Architecture. Security Attacks (Passive Attacks, Active Attacks). Security Services (Authentication, Access Control, Data Confidentiality, Data Integrity, Nonrepudiation, Availability Service).

UNIT-2:

Introduction to Artificial Intelligence: What is AI ? The Importance of AI. AI and related fields. Introduction to Natural Language Processing.,Application of AI.. Basic Problem solving methods: Production systems-state space search, control strategies, Breadth first search, Depth first search, Heuristic search.

UNIT-3:

Introduction to Machine Learning : Learning Problems - Perspectives and Issues - Concept Learning - Version Spaces and Candidate Eliminations - Inductive bias - Decision Tree learning - Representation Algorithm- Heuristic Space Search.

UNIT-4:

Introduction to IoT: Definition, Characteristics, Conceptual framework, Architectural view. Technology involved - Server-end technology, Hardware and Software components, Development tools & Open source framework, APIs & Device interfacing components, Platforms & Integration tools, Sources of IoT, Advantages and Disadvantages of IoT.

UNIT-5:

Introduction to Data Mining: Definitions, KDD v/s Data Mining, DBMS v/s Data Mining , DM techniques, Mining problems, Issues and Challenges in DM, DM Application areas.

Reference Books:

1. Charles P. Pleeger, “Security in Computing”, Pearson Education Asia, 5th Edition, 2001.
2. William Stallings, “Network Security Essentials: Applications and standards”, Person Education Asia, 2000
3. Dan W. Patterson: Introduction to Artificial Intelligence and Expert System, Prentice Hall.
4. Adrian McEwen, Hakim Cassimally, “Designing the Internet of Thing”, Wiley
5. Rajkamal, “Internet of Things: Architecture and Design Principles”, McGraw Hill Educ
6. Data Mining Techniques ; ArunK.Pujari ; University Press.