

BHAGWANT UNIVERSITY

Sikar Road, Ajmer

Rajasthan



Syllabus

Institute of Computer Sciences

M. Phil I Semester

Information Technology

Course Category

MItE : M.Phil in Information Technology

CCC: Compulsory Core Course

ECC: Elective Core Course

Contact Hours:

L: Lecture

T: Tutorial

P: Practical or Other

Marks Distribution :

IA: Internal Assessment (Test/Classroom Participation/Quiz/Presentation/Assignment etc.)

EoSE: End of Semester Examination

M. Phil (Information Technology)

(Course Structure)

Subject code	Subject Name	Teaching hours			Marks		
		L	T	P	External	Internal	Total
01MItE101	Research Methodologies	3	0	0	70	30	100
01MItE102	Software Technologies	3	0	0	70	30	100
01MItE103	ADVANCED NETWORKING AND SECURITY	3	0	0	70	30	100

01Mite104	Information Technology Concepts & MIS	3	0	0	100		100
Total		12	0	0	280	120	400

RESEARCH METHODOLOGIES

Paper Code: 01Mite101

UNIT-1: Research Overview

Meaning of Research – Objectives of Research – Motivation in Research – Types of Research – Research Approaches – Significance of Research – research Methods versus Methodology – Research and Scientific Method – Importance of Knowing How Research is done – Research Process – Criteria of good Research – Necessity of Defining the Problem – Technique involved in Defining the Problem – Meaning of Research Design – Need for Research Design – Features of a Good Design – Important Concepts Relating to Research Design – Different Research Design – Data

UNIT-2: Data Analysis

Mathematical and statistical analysis using software tools like MAT Lab, SPSS or free wares tools.

UNIT-3: Report Writing

Report writing and analyzed data representation - Significance of Report Writing– Different Steps in writing Report – Layout of the Research Report – Types of Reports – Oral Presentation – Mechanics of Writing a research Report – Precautions for Writing Research Reports.

UNIT-4: Quality Research Strategies

Building expertise in the areas of interest, generating the base content in the selected area, literature survey for research work- already done, being done by others and arriving at directions of research.

UNIT-5: Formulation Of Research

Formulation of research title , development of criteria based research proposal , Presentation for the research proposal and review of the proposal base on the feedbacks by evaluation experts.Planning for the research work with outcomes/achievable and time targets.Research monitoring publication of research outcomes in referred journals. Documentation of research work to generate thesis with norms and standards.

Paper II

SOFTWARE TECHNOLOGIES

Paper Code: 01MIt102

UNIT-1. Software Management Concept

- Software process
- Software project Metrics
- Software project Planning
- Risk Management

UNIT-2. Software Quality Assurance

- Quality Concepts
- Quality Movement

- Software Review
- Software Quality Assurance
- Formal Technical Reviews

UNIT-3. Software Testing

- Software Testing Fundamentals
- Test Case Design
- Basic path Testing
- Control Structure Testing
- A Strategic approach to software

UNIT-4. Enterprise Application Integration

- Concepts and challenges of integrating different application
- Different heterogeneous platform
- EAI architecture, EAI approaches data level
- Application / process level, method level

UNIT-5. Messaging concepts and services

- Messaging concepts and various types of messaging services
- Middleware and adapter services, Transaction middle aware
- EAI process methodology

Paper III

ADVANCED NETWORKING AND SECURITY

Paper Code: 01Ite103

UNIT-1 Network Tools and Techniques

- Protocol layering, system design, multiple access, switching, scheduling, naming, addressing, routing, error control; flow control
- Traffic management – data link layer protocols
- Internet: concept, history, network layer, transport protocol UDP, TCP, Ipv4, Ipv6

UNIT-2 Local Area Networks, Socket and Interprocess communication

- Topologies, access techniques, LAN, 802.11G wireless LANs.
- Application layer: DNS, Email, WWW, multimedia.
- TCP sockets, UDP sockets name and address conversion, IPv4 / Ipv6 interoperability - Socket programming.
- Posix IPC, system V IPC, Pipes, FIFO, Posix message queue,
- System V semaphore, RPC in Sun systems. Unix programming using IPE.

UNIT-3 Classical Encryption, Block Cipher and the Data Encryption Standard

- Classical Encryption Techniques: Symmetric Cipher Model, Substitution Techniques, Transportation Techniques, Rotor Machines, Steganography.

- Simplified DES, Block Cipher Principles, the Data Encryption Standard
- Block Cipher Design Principles and Modes of Operation
- Advanced Encryption Standard: Evaluation Criteria, the AES Cipher

UNIT-4 Contemporary Symmetric Ciphers and Confidentiality using Symmetric Encryption

- Triple DES, Blowfish, RC5,
- Characteristics of Advanced Symmetric Block Ciphers RC4 Stream Cipher.
- Placement of Encryption function, Traffic Confidentiality, Key Distribution, Random Number generation.

UNIT-5 Introduction to Number Theory and Key Management

- Prime Numbers, Fermat's and Euler's Theorems, Testing for Primality,
- The Chinese Remainder Theorem, Discrete Logarithms.
- Key Management, Diffie-Hellman Key Exchange, Elliptic Curve Arithmetic, Elliptic Curve Cryptography.
- Authentication applications – Electronic Mail Security, IP Security– Web Security – System Security : Intruders – Malicious Software – Firewalls

Paper – IV
INFORMATION TECHNOLOGY CONCEPTS & MIS

Unit: I

Introduction to computers: definition, characteristics, evolution, generation, classification. Number system (binary, octal, decimal, hexadecimal). Input and output devices, computer memory, CPU, types of software – Application and system software, Operating system and types.

Unit: II

Telecommunication concepts- data transmission and OSI layers, communication channels, types of communications network, local area network (Ethernet, token bus, token ring), wide area network, TCP/IP fundamentals, internet, intranet, extranet, The world wide web, artificial intelligence, expert systems.

Unit: III

MS-Office, word, excel, power point, access. Database Management System objectives of DBMS, advantages and disadvantages of DBMS, hierarchical model, network model, relational model, ER model, Normalization process, object oriented database, distributed database, client server systems.

Unit: IV

MIS-definition, nature and scope, MIS characteristics, functions, structure of MIS, role of MIS, MIS as a control system, process of management, applications of MIS, Implementation and evaluation of MIS, Enterprise resource planning (ERP) and its benefits, ERP market.

Unit: V

Information and System concepts-Introduction, classification of information, methods of data and information collection, value of information. System-definition, types of system, system decomposition, integration of subsystems, elements of a system, Human as an information processing system, Information system as an enabler

