

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
M.Sc. (I.T.) [Five Year Integrated Course]
M.Sc. (Information Technology)
Semester VIII

Teaching and Evaluation Scheme

Paper Sr. No.	Paper Title	Teaching Schedule (Hours/Week)		University Exam Theory / Practical Duration		Internal Exam Theory / Practical Duration		Total Theory / Practical
		Lect	Prac	Hrs.	Marks	Hrs.	Marks	
801	WADT – I	4	-	3	70	2	30	100
802	WADT – II	4	-	3	70	2	30	100
803	EL – I (i) MIS (ii) DSS (iii) Parallel Processing & Architecture	4	-	3	70	2	30	100
804	EL – II (i) Information Security & Applications (ii) Embedded Systems. (iii) Distributed Computing.	4	-	3	70	2	30	100
805	Seminars.	-	2	-	35	-	15	50
806	Project	-	12	-	140	-	60	200
Total		30		455		195		650

WADT - Web Application Development Techniques

MIS – Management Information Systems

DSS – Decision Support Systems

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Paper No : 801

L: 4, T:0, P:0 Hrs

Paper Title : Web Application Development Techniques – I. (JSP)

1. Introduction

JSP Advantages, Comparing JSP with ASP

2. JSP Architecture

3. JSP Access Models

4. JSP Syntax Basics

Directives

Page Directive, Include Directive

Declarations, Expressions, Script lets, Comments

5. Object Scopes

6. JSP Implicit Objects

7. Synchronization Issues

8. Exception Handling

9. Session Management

10. Standard Actions

Using JavaBean Components

Forwarding Requests

Request Chaining Including Requests

Main Readings:

1. JavaServer Pages – Hans Bergsten – O’Reilly
2. JavaServer Pages – Larne Pekowsky – Addison-Wesley

Supplementary Readings:

1. Programming Java Server Pages & Servlests – Er V K Jain
2. Instant Java Server Pages – Paul Tremblett

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Paper No : 802

L: 4, T:0, P:0 Hrs

Paper Title : Web Application Development Techniques – II.
(Servlets, Java Beans)

PART – I (Java Servlets)

1. Introduction To Servlets.

Servlets Basics., Servlets API Basics.

2. Advanced Servlet Concepts.

Writing Thread-Safe Servlets., HTTP Redirects., Cookies., Request Forwarding, Database Access with JDBC. , Security, JavaServer, Packaging and Deployment, Servlets Troubleshooting.

PART – II (Enterprise JavaBeans)

1. Objectives

2. Overview

3. Enterprise JavaBeans Technology

The EJB Container

Enterprise Beans

Remote and Home Interfaces , Business Methods , Entity Beans , Session Beans , Life Cycle Methods , Back to the Remote and Home Interfaces

Enterprise Beans as Distributed Objects

4. Entity Type Enterprise Beans

Container-Managed Persistence

Bean Class , Home Interface , Remote Interface , Callback Methods

Bean-Managed Persistence

Session Type Enterprise Beans

Stateless Session Beans, Statefull Session Beans

5. Deploying Enterprise JavaBeans Technology Solutions

6. Enterprise JavaBeans Clients

Main Readings :

1. Developing Java Servlets – James Goodwill – Techmedia
2. Java Servlets – Karl Moss – TMH
3. Enterprise Java Beans – Richard Monson.

Supplimentary Readings :

1. Programming Java Server Pages & Servlets – V. K. Jain
2. Java Beans Developers Reference. – Dan Brookshier.

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Paper No : 803

L: 4, T:0, P:0 Hrs

Paper Title : Elective – I (Management Information Systems)

1. The meaning & role of MIS.

What is MIS?, What is systems approach ?, The systems view of Business.,
The importance of information., Relationship of information to IRM. ,
The manager & types of information., The effective MIS.

2. Development of effective MIS.

Systems prior to MIS., Past & current MIS., MIS development process.,
Management, Information & the systems approach., Basic IO like marketing,
financial etc., Decision making & MIS., Decision support system., Characteristics
of DSS., System classification.

3. Strategic & Project Planning

General business planning., Appropriate MIS response, General MIS planning.,
Detailed MIS planning.

4. Conceptual System design.

Define problems., See systems objectives., Establish system constraints.,
Determine information needs., Determine information sources., Develop
alternative conceptual design & select one., Document the system concepts.

5. Detailed System design.

Inform & involve the organization., Aim of detail design., Project management of
MIS detailed design., Identify dominating & tradeoff criteria., Define the
subsystems., Define the degree of automation., Inputs, outputs & processing.
System listing., Document the design.

6. Pitfalls if MIS development.

Fundamental weaknesses., Soft spot if planning., Design problem.,
Implementation problem.

7. Supply Chain Management.

Main Readings :

1. Murdick, Ross, and Clagget : Information Systems for modern management. – PHI

Supplementary Readings :

1. Bennet : Building Decision Support System – Addison Wesley
2. Senn: Analysis & Design of Information Systems – PHI
3. Lucas: Analysis Design and Implementation of Information Systems – TMH
4. David: Applied Decision Support – PHI
5. Kanter J.: Management Information Systems –PHI
6. Prasad L M: Principles of Management - PHI
7. Kuntz: Principles of Management – TMH

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Paper No : 803

L: 4, T:0, P:0 Hrs

Paper Title : Elective – I (Decision Support System)

- 1. The Problem Solving Process.**
- 2. The Analytic Modeling Process.**
- 3. Descriptive Assessment -- Criteria and Weights.**
- 4. Descriptive Assessment -- Alternatives and Ranking.**
- 5. Values and Normative Choice.**
- 6. Choices Under Uncertainty.**
- 7. Uncertainty and Normative Choice.**
- 8. Sequential Decision Making.**
- 9. Multi-Actor Decision Making.**
- 10. Constraint-Based Policy Optimization. Solutions to Problems.**

References:

Efrem G. Mallach : Decision Support and Data Warehouse Systems –TMH

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Paper No : 803

L: 4, T:0, P:0 Hrs

Paper Title : Elective – I (Parallel Processing & Architecture)

1. Introduction to Parallel Processing

Generation of Parallel Computers

Architecture

Classification Schemes

Parallel Processing Applications, Memory Sub Systems and output management

Pipelining and Vector Processing, Inter Connection networks and Processors

2. Multi Processor Architecture and Programming

Parallel Programming languages environment.

3. Dataflow Computers

Static Dataflow

Dynamic Dataflow Architectures Advance topics

Main Readings :

1. Kai Hwang, F.Briggs, Computer Architecture and Parallel Processing TMH
2. M.Flynn, Computer Architecture, Narosa Publishing

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Paper No : 804

L: 4, T:0, P:0 Hrs

Paper Title : Elective – II (Information Security And Applications)

1. Introduction :

Security Attacks on Data/Software, Hardware, Network

2. Classical Encryption Techniques

Caesar cipher ,Mono alphabetic cipher, Poly alphabetic cipher, Transposition techniques – Private key cryptography and Data Encryption Standard using biometrics- Public key cryptography and diffie- Hellman key exchange – Hashing and Digital Signatures – Authentication Protocols

3. Network Security

Firewall Design Principles, IP Security Policy.

4. Introduction to E-Commerce-Electronic Voting/Polling systems

Standards and Applications .

Main Readings :

1. William Stallings : Cryptography and Network Security - Principles and Practice, Prantice Hall.
2. Bruce Schneier : Applied Cryptography , John Wiley.

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Paper No : 804
Paper Title : Elective – II (Embedded Systems)

L: 4, T:0, P:0 Hrs

1. Introduction.

Embedded systems Introduction: Processor Technologies, Implementation Technologies, and general design technologies.
General purpose processors and the 8051, development environment.
System on a chip trends, Hardware and Software requirements.

2. Microcontrollers.

Different types of microcontrollers, Embedded Microcontrollers, Processor architecture, Memory types, Microcontroller features.

3. Hardware Design.

Single chip design, Multiple chip designs, Processor core, Memory devices, SRAM, DRAM, flash Memory and SDRAM controller, types of PROM, memory management.

4. On chip Design,

Busses, access arbitration, timing and protocols, In circuit programming, Internal Peripherals, EMC considerations, Microprocessor clocks, designing custom processors (combinational logic design, sequential logic design, custom processor design.)

5. Interrupts & Timers.

Various types of Interrupts, Interrupts priority, ISR, DMA, timers and counters, Watchdog timer.

6. Serial Communication.

UART, SPI and I2C, Parallel I/O interface and signal handshaking.

7. Real world Interfacing.

Transducers and Sensors, touch Panel, A/D – D/A converters, Keyboards, LCD, VGA Interfaces.

8. Real time Operating systems.

Multitasking Memory management, Resource Management, RTOS & Interrupts, Applicability of RTOS.

9. Embedded system Design & Application.

PWM motor control, Aircraft control, Remote operation control with an Infrared TV remote control, Light Sensors & Robot.

10. Embedded Software.

Design goals for Embedded Softwares, choosing language for programming, Data representations, tools available.

Main Readings :

1. The 8051 Microcontroller & Embedded Systems, Muhammad Ali Mazidi, Pearson Education.
2. Programming & Customizing the 8051 Microcontroller. Myke Predko, TMH Edition 1999.
3. Embedded Microprocessor Systems : Real World Design. Stuart R. Ball, 3rd Edition, Newnes Publications.
4. Fundamentals of Embedded software where C and Assembly meet. Daniel Levis, Pearson Education.

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Paper No : 804

L: 4, T:0, P:0 Hrs

Paper Title : Elective – II (Distributed Computing)

1. Distributed Computing:

Distribution of Data and Control: Clock Synchronization, distributed termination problem, load distribution, distributed elections, agreement problem, Deadlock in distributed systems, Introduction to Fault-tolerant computing.

2. Advanced Distributed Computing

High level language support for distributed computing: message passing primitives, atomic action, RPC mechanisms, Implementation of these features, Case study of some distributed languages as well as distributed programming architectures like LINDA and CORBA.COM etc.

Main Readings :

1. G F Colouris and J Dollimore: Distributed Systems : Concepts & Design Addison Wesley, 1988.
2. S Mullender (ED): Distributed Systems, Addison Wesley, 1988.

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Paper No : 805
Paper Title : Seminar

The students are required to seminar work for during the semester base upon the Theoretical subjects.

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Paper No : 806
Paper Title : Project

The students are required to carry out project work for part time during the semester base upon the Theoretical subjects.