

Kadi Sarva Vishwavidyalaya
Master of Computer Application (MCA)
Year – I (Semester – II) (W.E.F. 2014-2015)
Subject Name: System Analysis & Design and Software Engineering
(SAD&SE) – MCA 205

Sub Total Credit	Teaching scheme		Examination scheme				
	(per week)		MID	CEC	External		Total Marks
	Th	Pr	Th	Th	Th.	Pr.	
3	3	-	25	25	50	-	100

Course Objectives:

- To know about different System Development Methodologies.
- Basic concepts of system designing, analyzing and software engineering

Learning Objectives:

On completion of this course, students will be able to:

- Independent Analysis, Design & Implementation of System.
- Define & analyze business situations.
- Different design tools like DFD, E-R Diagram, UML Diagrams etc.
- System engineering concepts, software quality and testing aspects

Prerequisites:

- **Basic understanding of**
 - Real world Systems and Computerized System
 - Business System.

Unit-I: Introduction to Information system

- Information Systems
- IS Characteristics & Components
- Types of Business Information Systems
- Organizational Hierarchy
- Case Study of IT Department
- Requirement for development of Software
- Classification of Software and its examples
- System Development Methods
- Techniques and Tools
- SDLC phases
- Role and responsibilities of System Analyst

Unit-II: System Development Life Cycle

- Strategic Planning
- Reason for System Project
- Factors affecting System Project
- Preliminary Investigation
- Requirements Modeling
- Software Requirements Specification.

- Data and Process Modeling
 - Structured Flowchart
 - Entity Relationship Diagram
 - Data Flow Diagram
 - Data Dictionary.
- Case Studies (Healthcare).

Unit-III: Object Oriented Modeling.

- Object oriented terms and concepts.
- Object Modeling using Unified Modeling Language (UML):
 - Use Case Diagram
 - Activity Diagram
 - Class Diagram
 - Sequence Diagram
 - State Transition Diagram.
 - Case Studies (Healthcare).
- User Interface Design (Input and Output Design)
- Case Studies (Healthcare).

Unit-IV: Software engineering

- Introduction to Software Engineering.
- Software engineering a layered technology
- Process Models.
 - Waterfall Model
 - Spiral Model
 - Rapid Application Development
- Software design & engineering
 - Cohesion
 - Coupling
 - Structured chart
- Case Studies (Healthcare).

Unit-V: Software Quality assurance and Testing

- Quality
- Quality Control
- Quality Assurance
- Software Testing
 - Fundamentals of software testing
 - Testing objectives & principles
 - Test case design
 - White-box testing
 - Black –box testing
- Software testing strategies
 - Unit testing
 - Integration testing
 - Validation Testing
 - System Test
- Debugging
- Case Studies (Healthcare).

Text Books:

1. System Analysis & Design by Shelly Cashman Rosenblatt(Thomaon)
2. Software Engineering a practitioner's Approach , Roger S. Pressman , fifth edition , MGH

Reference Books:

1. System Analysis & Design by Elias M. Awad
2. Workbook on System Analysis & Design by V.K Garg.
3. System Analysis & Design by Kendall & Kendall
4. Analysis & Design of Information Systems by James .A. Senn

Chapter wise Coverage from Text book(s):

Book #	Unit#	Contents
1	Unit I	Ch. 1.1, 1.3,1.4,1.5,1.6,1.9 to 1.25, 3.10 to 3.23
	Unit II	Ch. 2.1 to 2.19,
	Unit III	Ch. 4, Ch. 5.1 to 5.10, Ch. 5.14 to 5.25, Ch. 7
2	Unit IV	Ch1 1.2, Ch 2 2.1,2.3,2.4,2.5,2.6,2.7.2, ch 13(13.3,13.4,13.5)
	Unit V	Ch 8 (8.1), ch 17.1,17.2,17.3,17.618.3,18.4,18.5,18.6

Note: Case Studies:

- **Health Care : New Century Health Clinic from text book 1**
- **In addition to the case studies cited in the book faculties are empower to visit industry and understand**