

GUJARAT TECHNOLOGICAL UNIVERSITY

MASTER OF COMPUTER APPLICATIONS (MCA)

Semester: III

Subject: Structured & Object Oriented Analysis and Design Methodology (SOOADM)

Subject Code: 630001

(W.E.F June 2012)

Learning Objectives :

System Analysis and Design is a practical field that relies on a core set of concepts and principles. The objective of this course is to teach the students tried-and-tested techniques widely embraced by experienced analysts plus new and emerging tools and techniques that recent graduates are expected to apply on the job. The course is meant to give balanced exposure to both traditional and object oriented approaches to system analysis & design.

Prerequisites :

Fundamentals of Structured Programming and Fundamentals of Object Oriented Programming

Contents :

- 1. System Analysis Fundamentals [4 hrs.]**
Types of Systems, Role of the System Analyst, Systems Development Life Cycle, CASE Tools, Interviewing, Joint Application Development, Using Questionnaires
- 2. Analysis Modeling [10 hrs.]**
Data Flow Approach, Developing Data Flow Diagrams, Logical and Physical Data Flow Diagrams, Data Dictionary, Creating Data Dictionary, Using Data Dictionary, Process Specifications, Structured English, Decision Tables, Decision Trees
- 3. System Design [10 hrs.]**
Designing Effective Output, Output Design Objectives, Designing a Web Site, Form Design, Web Forms Design, Human-Computer Interaction, Types of Interfaces, Dialog Design, Designing Queries, Effective Coding, Effective Data Capture, Input Validation
- 4. Object Modeling Concepts [10 hrs.]**
Introduction, Modeling as a design technique, Class Modeling-Object and Classes, Association, Generalization, aggregation, Abstract class, Multiple inheritance, Metadata, Reification, Constraints, Derived data, Packages, State Modeling- State, Transitions and Conditions, State Diagrams, Nested state diagrams , Nested States, Signal Generalization, Concurrency
- 5. Basic Structural Modeling [4 hrs.]**
Classes, Relationships, Common Mechanisms, Diagrams, Class Diagrams
- 6. Behavioral Modeling [10 hrs.]**
Interactions, Use Cases, Use Case Diagrams, Interaction Diagrams, Activity Diagrams

Text Book(s) :

1. Systems Analysis and Design by Kendall & Kendall, PHI Publication, 8th Edition
2. Object-Oriented Modeling and Design with UML by Michael Blaha, James Rumbaugh, Pearson Education Publication, 2nd Edition, 2007 Reprint
3. The Unified Modeling Language - User Guide by Grady Booch, James Rumbaugh, Ivar Jacobson, Pearson Education Publication, 2009 Reprint

Reference Books :

1. Modern Systems Analysis and Design by Jeffrey A. Hoffer, Joey F. George, Joseph S. Valacich, Prabin K. Panigrahi, Pearson Education Publication, 4th Edition, 2008 Reprint
2. Object Oriented Analysis and Design Using UML by Mahesh P. Matha, PHI Publication
3. UML Distilled by Martin Fowler, Pearson Edition, 3rd Edition, 2007 Reprint
4. Object Oriented Systems Development Using the Modified Modeling Language by Ali Bahrami, Tata McGraw Hill Publication, 2008 Reprint
5. System Analysis and Design with UML Version 2.0 by Alan Dennis, Barbary Haley Wixom, David Tegarden, John Wiley India Publication, 2nd Edition, 2007 Reprint
6. Applying UML and Patterns by Craig Larman, Pearson Education, 2nd Edition 2002 Reprint
7. An Introduction to Object-Oriented Analysis – Objects and UML in Plain English by David William Brown, John Wiley & Sons Publication, 2nd Edition

Chapter-wise coverage from the textbooks :**(Excluding Consulting Opportunities, Hypercase, CPU Case and Exercises)**

Unit #	Chapters
Unit 1	Book # 1 : Chp. 1, 4
Unit 2	Book # 1 : Chp. 7 to 9
Unit 3	Book # 1 : Chp. 11 to 15, except 13
Unit 4	Book # 2 : Chp. 1 to 6
Unit 5	Book # 3 : Chp. 1 to 8
Unit 6	Book # 3 : Chp. 15 to 19

Guidelines for CEC : At least one Case Study analysis to be done by a group of students. The case study analysis should comprise of the following :

- Preliminary Investigation (Structured and Object-Oriented both)
- Feasibility Analysis (Structured and Object-Oriented both)
- System Analysis (DFD and UML both)
- System Design – Data Dictionary, Input Screen Layouts and Report Layouts
- Validation Specifications

Accomplishments of the student after completing the course :

After completion of the course the students would be well versed with

- The role of System Analyst
- Modern structured analysis approaches
- Key modeling concepts that apply to both the traditional structured approach and the newer object-oriented approach
- Unified Process and use of UML for Object-Oriented Analysis and Design
