

School of Computer Science & Information Technology, DAVV, Indore

CS-4407: Information System Design

M.Tech I Semester

Course Contents

Course Outcomes:

1. Explain the concepts, importance and elements of designing an information system.
2. Comparative study of various process models used in information system design.
3. Demonstrate project planning and management activities in order to manage and estimate software projects.
4. Discuss structured and object oriented analysis & design methodologies.
5. Practice object-oriented modeling using UML for the design of real life problems.

Unit-I

No. of Hrs: 8

Introduction to Information System, Challenges in ISD, Elements of ISD, Roles and responsibilities in IS Design, Case Study of Information System Design; Software processes, Information system design models, A comparative study of Information System design models (Traditional, CBD, Agile and RUP process).

Unit-II

No. of Hrs: 8

Project Management and Planning: Project management essentials, Project success and failures, Project Life Cycle, Project team structure and organization. Project planning: Metrics and Measurements, Project Estimation: Effort Estimation Techniques, Staffing and Personnel Planning. Project Scheduling. Software Configuration Management, and Risk Management.

Unit-III

No. of Hrs: 8

Requirements engineering: Requirements Elicitation, Requirements analysis: Structured Vs. Object-oriented analysis, Prototyping analysis; Requirements specification, Requirements validation; Requirements management and its tools. Software Design: Design fundamentals, Design process, Modular design, and Component level design. Structured Vs. Object-oriented design, Refactoring.

Unit-IV

No. of Hrs: 8

Object-oriented analysis and design, UML modeling, Use case diagrams: Use Case scenario and Use Case relationships, Class and Object diagrams, Sequence diagrams, Collaboration diagrams, State-Chart diagrams, Activity diagrams, Component diagrams, Deployment diagrams, Generalizations Domain Model refinements, Architecture, Packaging model elements. Case Study of large scale systems

Unit-V

No. of Hrs: 8

Implementation: Traditional vs. TDD, Testing of information systems, Testing strategies, Levels of testing. Debugging, Automation Testing. Software testing tools.

Text Books:

1. *Introduction to Information System*, **O'Brain**, Printice Hall, 1997.

2. *Software Engineering: Concepts & Practices-* **Ugrasen Suman**, Cengage Learning Publications, Second Ed. 2022.
3. *Object Oriented Analysis and Design Using UML-* **Ugrasen Suman et al**, Cengage Learning, First Edition, 2018.
4. *Object Oriented Modeling and Design Using UML-***James Rumbaugh**, Pearson Education.

Reference Books:

1. *Software Engineering-A practitioner's approach-* **R. S. Pressman**, Tata McGraw-Hill International Editions, New York.
2. *Object Oriented Analysis and Design with Applications-***Grady Booch**, Addison Wesley.
3. *Object-Oriented Software Engineering: A Use Case Driven Approach-* **Ivar Jacobson et al**, Pearson Education.