

School of Computer Science & Information Technology, DAVV, Indore
CS-6315: Advance Software Engineering

M.Tech I Semester

Course Contents

Course Outcomes:

1. Implement reusability mechanisms for producing application systems.
2. Explore maintenance and reengineering approaches for legacy systems.
3. Understand the properties and methods of designing reliable and safe system.
4. Analyze and apply CASE in SDLC phases.
5. Study of advance concepts in various domains to produce an effective software system.

Unit-I

No. of Hrs: 8

Introducing to Software Reuse: What is Software Reuse?, Reuse types, Reuse Approaches, Reuse Technology, Reuse benefits & barriers, Reuse success & failure Factors, CBSE Process, Reuse Driven Software Engineering is a business.

Unit-II

No. of Hrs: 8

Architectural Concepts in Reuse: Application and component systems, Application families allow significant reuse, Developing Application Systems from Reusable Components: Reuse Variability, Facades for Component System Internals and Externals. Organizing a system in Layered Architecture.

Unit-III

No. of Hours: 8

Software change, Software Evolution, Software maintenance: Models and Metrics, Reengineering: Reengineering Process and Activities: Program Comprehension, Reverse Engineering, Restructuring, Forward Engineering, Re-documentation. Software Aging.

Unit-IV

No. of Hrs: 8

Software Dependability, Software Safety, Software Availability, Software Reliability: Metrics, Approaches and Models. Software Quality: Quality Factors, Verification & Validation (V&V), SQA. Computer-Aided Software Engineering (CASE): Scope and Technology, CASE support in SDLC, Second Generation CASE Tools, Architecture of a CASE Environment.

Unit-V

No. of Hrs: 8

Usability Engineering: HCI, Types of UI, Component-Based GUI Development, Usability Engineering Process and Methods. Aspect-Oriented Software Engineering. Cleanroom Software Engineering and Crowdsourcing. Artificial Intelligence & Machine Learning in SDLC.

Text Books:

1. *Software Reuse Architecture, Process and Organization for Business Success-* by **Ivar Jacobson**, Martin Griss, Patrick Johnson, First Edition, Pearson Education, 2000.

2. *Software Engineering: Concepts & Practices-* **Ugrasen Suman**, *Cengage Learning Publications, Second Ed. 2022.*
3. *Software Engineering-* **Ian Somerville**, Pearson Education Asia, 10th Edition, 2016.
4. *Software Engineering-A practitioner's approach-* **R. S. Pressman**, Tata McGraw-Hill International Editions, New York.