

## CAP437:SOFTWARE ENGINEERING PRACTICES

L:4 T:0 P:0 Credits:4

**Course Outcomes:** Through this course students should be able to

- CO1 :: understand the various phases of the software development life cycle
- CO2 :: identify appropriate process model depending on the user requirements
- CO3 :: apply software engineering practices to create complex software designs.
- CO4 :: analyze the need of software maintenance activities
- CO5 :: assess the software with different testing strategies

### Unit I

**Introduction to software engineering** : define software engineering, software process, software engineering practices

**Software process models** : classical software development lifecycle model, prototyping model, V model, software development life cycle (SDLC), incremental Model, introduction to agile method of software development

### Unit II

**Requirement engineering** : requirement gathering, requirement analysis, stakeholder analysis, software requirement specification document, characteristics of a good SRS, organization of functional requirements, fit-gap analysis, requirement engineering, requirement eliciting/gathering, negotiating requirement, validating requirement, functional and non-functional requirement

### Unit III

**Design** : design process, design concepts, coupling, cohesion, data flow diagram (DFD), flow chart, architectural design, component based design, object oriented design, class based components, use case diagram, class diagram, activity diagram

### Unit IV

**User interface design** : golden rules, interface design models, interface design process, interface design activities

**Standards** : good coding practices, coding standards, code reusability, documentation, documentation standards

### Unit V

**Software testing** : test planning, software testing introduction, test case design

**Testing strategies** : black box testing and its method, white box testing and its methods

**Automated testing with selenium** : introduction to Selenium IDE, creating test cases and suites using selenium IDE commands, using JavaScript with selenium (variables manipulation)

### Unit VI

**Software maintenance and metrics** : need for software maintenance, business process reengineering, reverse engineering, types of software maintenance

**Product metrics** : metrics and indicators, function based metrics, introduction to measures, introduction to COCOMO model

### Text Books:

1. SOFTWARE ENGINEERING A PRACTITIONERS APPROACH by R.S. PRESSMAN, MCGRAW HILL EDUCATION
2. FUNDAMENTALS OF SOFTWARE ENGINEERING by RAJIB MALL, PHI Learning

### References:

1. SOFTWARE ENGINEERING: PRINCIPLES AND PRACTICES by RAJESH NARANG, MCGRAW HILL EDUCATION
2. AN INTEGRATED APPROACH TO SOFTWARE ENGINEERING by PANKAJ JALOTE, NAROSA PUBLISHING HOUSE
3. SOFTWARE ENGINEERING A PRACTITIONERS APPROACH by R.S. PRESSMAN, MCGRAW HILL EDUCATION
4. FUNDAMENTALS OF SOFTWARE ENGINEERING by RAJIB MALL, PHI Learning