OCS551 SOFTWARE ENGINEERING

DETAILED SYLLABUS

OBJECTIVES:

- To understand the phases in a software development project
- To learn project management concepts
- To understand the concepts of requirements analysis and modeling.
- To understand software design methodologies
- To learn various testing methodologies
- To be familiar with issues related to software maintenance

UNIT I SOFTWARE PROCESS

Introduction to Software Engineering, scope – software crisis – principles of software engineering - Software process – Life cycle models – Traditional and Agile Models - Team organization.

UNIT II PLANNING AND ESTIMATION

Planning and the software process – cost estimation: LOC, FP Based Estimation, COCOMO I & II Models – Duration estimation and tracking – Gantt chart - Software Project Management – plan – risk analysis and management.

UNIT III REQUIREMENTS ANALYSIS AND SPECIFICATION

Software Requirements: Functional and Non-Functional, Software Requirements specification– Structured system Analysis – modeling: UML based tools, DFD - Requirement Engineering Process.

UNIT IV SOFTWARE DESIGN AND IMPLEMENTATION

Design process – Design principles and guidelines – design techniques – coupling and cohesion - metrics – tools. Implementation: choice of programming language, programming practices – coding standards – code walkthroughs and inspections.

UNIT V TESTING AND MAINTENANCE

Software testing fundamentals- Testing techniques: white box, black box, glass box testing - unit testing – integration testing –system testing – acceptance testing – debugging. Post-delivery maintenance: Types – objectives - metrics - Reverse Engineering.

OUTCOMES:

At the end of this course, the students will be able to

- Understand different software life cycle models.
- Perform software requirements analysis
- Apply systematic methodologies for software design and deployment.
- Understand various testing approaches and maintenance related issues.
- Plan project schedule, and estimate project cost and effort required.

TEXT BOOKS:

1. Roger S. Pressman, “Software Engineering – A Practitioner‟ s Approach”, Seventh Edition, Mc Graw-Hill International Edition, 2010.

2. Ian Sommerville, “Software Engineering”, 9th Edition, Pearson Education Asia, 2011.

REFERENCES:

1. Rajib Mall, “Fundamentals of Software Engineering”, Third Edition, PHI Learning

2. PrivateLimited, 2009.

3. Pankaj Jalote, “Software Engineering, A Precise Approach”, Wiley India, 2010.

4. Kelkar S.A., “Software Engineering”, Prentice Hall of India Pvt Ltd, 2007.

5. Stephen R.Schach, “Software Engineering”, Tata McGraw-Hill Publishing Company

6. Limited,2007.

7. http://nptel.ac.in/.