

**VASAVI COLLEGE OF ENGINEERING (Autonomous)**  
IBRAHIMBAGH, HYDERABAD – 500 031

**Department of Computer Science & Engineering**  
INTRODUCTION TO SOFTWARE ENGINEERING (OPEN ELECTIVE-II)

SYLLABUS FOR B.E. IV-SEMESTER  
(COMMON FOR CIVIL, ECE, EEE & MECH)

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code : <b>U190E420CS</b>
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

<b>COURSE OBJECTIVES</b>	<b>COURSE OUTCOMES</b> <i>On completion of the course, students will be able to</i>
1 understand the concepts involved in the lifecycle of software development 2 learn the best practices to be employed for the design, and testing of a software project.	1 Explain the software development lifecycle models for software system development. 2 Learn the requirement process steps in software process model. 3 Analyze the structural design models in object oriented system. 4 Analyze the behavioral design models used in object oriented system. 5 Identify verification and validation methods in a software engineering project at various phases of SDLC .

**UNIT-I:****Introduction to Software Engineering:**

**A generic view of Process:** Software Engineering, Process Framework, CMMI, Process Patterns, Process Assessment.

**Process Models:** Waterfall Model, Incremental Process Models, Evolutionary Process Models, Specialized Process Models, The Unified Process.

**An Agile view of Process:** What is an Agile Process, Agile Process Models- SCRUM, XP.

**UNIT-II: Requirements Engineering:** A bridge to Design and Construction, Requirements Engineering Tasks, Initiating Requirements Engineering Process, Eliciting Requirements, Negotiating Requirements, Validating Requirements.

**UNIT-III:**

**Object oriented Modeling & design using UML:** Introduction to UML.

**Structural Modeling:** Classes and Advanced Classes, Relationships ,Common Mechanisms, Class Diagrams, Interfaces, Types and Roles.

**UNIT-IV:**

**Behavioural Modelling:** Interactions, Interaction diagrams, Use Cases, Use Case Diagrams, Activity diagrams, State Machines, State chart Diagrams.

**Architectural Modelling:** Artifacts, Artifact diagrams, Deployment diagrams.

**UNIT-V:**

**Testing Strategies:** A Strategic approach to software testing ,Strategic issues, Test strategies for Conventional software, O-O Software, Validation testing, System testing, the art of debugging.

**Testing Tactics:** Software testing fundamentals, Black box and White box testing, Basis path testing, Control Structure, O-O testing methods, Testing for specialized environments, architectures and Applications testing patterns.

**Learning Resources:**

- Roger S. Pressman, Software Engineering: A Practitioner's Approach, 6th Edition (2005), Tata McGrawHill.
- Grady Booch, James Rumbagu, Ivor Jacobson, The Unified Modeling Language-User guide, (Covering UML 2.0) ,2nd Edition Pearson Education, India 2007.
- Pankaj Jalote, An Integrated Approach to Software Engineering, 3rd Edition (2005), Narosa Publishing House.
- <http://nptel.ac.in/courses/106101061/>
- <http://istqbexamcertification.com/what-is-a-software-testing/>
- <http://agile.csc.ncsu.edu/SEMaterials/UMLOverview.pdf>

The break-up of CIE: Internal Tests + Assignments + Quizzes

1	No. of Internal Tests	:	<input type="text" value="2"/>	Max. Marks for each Internal Tests	:	<input type="text" value="30"/>
2	No. of Assignments	:	<input type="text" value="3"/>	Max. Marks for each Assignment	:	<input type="text" value="5"/>
3	No. of Quizzes	:	<input type="text" value="3"/>	Max. Marks for each Quiz Test	:	<input type="text" value="5"/>

Duration of Internal Tests : 1 Hour 30 Minutes