**SOFTWARE ENGINEERING**

**(Effective from the academic year 2018 -2019) SEMESTER – III**

**Course Code 18CS35**

**CIE Marks** 40 **SEE Marks** 60 **Total Number of Contact Hours** 40

**CREDITS –3**

**Module 1**

**Contact Hours**

**Introduction**: Software Crisis, Need for Software Engineering. Professional Software Development, Software Engineering Ethics. Case Studies.

**Software Processes**: Models: Waterfall Model **(Sec 2.1.1)**, Incremental Model **(Sec 2.1.2)**

and Spiral Model **(Sec 2.1.3)**. Process activities.

**Requirements Engineering**: Requirements Engineering Processes **(Chap 4)**. Requirements Elicitation and Analysis **(Sec 4.5).** Functional and non-functional requirements **(Sec 4.1)**. The software Requirements Document **(Sec 4.2)**. Requirements Specification **(Sec 4.3)**. Requirements validation **(Sec 4.6)**. Requirements Management **(Sec 4.7)**.

**RBT: L1, L2, L3**

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**Module 2**

What is Object orientation? What is OO development? OO Themes; Evidence for usefulness of OO development; OO modelling history. Modelling as Design technique: Modelling; abstraction; The Three models. **Introduction, Modelling Concepts and Class Modelling:** What is Object orientation? What is OO development? OO Themes; Evidence for usefulness of OO development; OO modelling history. Modelling as Design technique: Modelling; abstraction; The Three models. Class Modelling: Object and Class Concept; Link and associations concepts; Generalization and Inheritance; A sample class model; Navigation of class models;

**Textbook 2: Ch 1,2,3. RBT: L1, L2 L3**

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**Module 3**

**System Models**: Context models **(Sec 5.1)**. Interaction models **(Sec 5.2)**. Structural models

**(Sec 5.3)**. Behavioral models **(Sec 5.4)**. Model-driven engineering **(Sec 5.5)**.

**Design and Implementation**: Introduction to RUP **(Sec 2.4)**, Design Principles **(Chap 7)**. Object-oriented design using the UML **(Sec 7.1)**. Design patterns **(Sec 7.2)**. Implementation issues **(Sec 7.3)**. Open source development **(Sec 7.4)**.

**RBT: L1, L2, L3**

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**Module 4**

**Software Testing**: Development testing **(Sec 8.1)**, Test-driven development **(Sec 8.2)**, Release testing **(Sec 8.3)**, User testing **(Sec 8.4)**. Test Automation **(Page no 212)**.

**Software Evolution**: Evolution processes **(Sec 9.1)**. Program evolution dynamics **(Sec 9.2)**. Software maintenance **(Sec 9.3)**. Legacy system management **(Sec 9.4)**.

**RBT: L1, L2, L3**

**Module 5**

**Project Planning**: Software pricing **(Sec 23.1)**. Plan-driven development **(Sec 23.2)**. Project scheduling **(Sec 23.3)**: Estimation techniques **(Sec 23.5)**. **Quality management**: Software quality **(Sec 24.1)**. Reviews and inspections **(Sec 24.3)**. Software measurement and metrics **(Sec 24.4)**. Software standards **(Sec 24.2)**

**RBT: L1, L2, L3**

**Course Outcomes:** The student will be able to :

* Design a software system, component, or process to meet desired needs within realistic constraints.
* Assess professional and ethical responsibility
* Function on multi-disciplinary teams
* Use the techniques, skills, and modern engineering tools necessary for engineering practice
* Analyze, design, implement, verify, validate, implement, apply, and maintain software systems or parts of software systems

**Question Paper Pattern:**

* The question paper will have ten questions.
* Each full Question consisting of 20 marks
* There will be 2 full questions (with a maximum of four sub questions) from each module.
* Each full question will have sub questions covering all the topics under a module.
* The students will have to answer 5 full questions, selecting one full question from each module.

**Textbooks:**

1. Ian Sommerville: Software Engineering, 9th Edition, Pearson Education, 2012. (Listed topics only from Chapters 1,2,3,4, 5, 7, 8, 9, 23, and 24)
2. Michael Blaha, James Rumbaugh: Object Oriented Modelling and Design with UML,2nd Edition, Pearson Education,2005.

**Reference Books:**

1. Roger S. Pressman: Software Engineering-A Practitioners approach, 7th Edition, Tata McGraw Hill.
2. Pankaj Jalote: An Integrated Approach to Software Engineering, Wiley India