

## V SEMESTER

### SOFTWARE ENGINEERING

Subject Code: 10IS51  
Hours/Week : 04  
Total Hours : 52

L.A. Marks : 25  
Exam Hours: 03  
Exam Marks: 100

#### PART - A

##### UNIT - 1

6 Hours

**Overview:** Introduction: FAQ's about software engineering, Professional and ethical responsibility.

**Socio-Technical systems:** Emergent system properties; Systems engineering; Organizations, people and computer systems; Legacy systems.

##### UNIT - 2

6 Hours

**Critical Systems, Software Processes:** Critical Systems: A simple safety-critical system; System dependability; Availability and reliability.

**Software Processes:** Models, Process iteration, Process activities; The Rational Unified Process; Computer Aided Software Engineering.

##### UNIT - 3

7 Hours

**Requirements:** Software Requirements: Functional and Non-functional requirements; User requirements; System requirements; Interface specification; The software requirements document.

**Requirements Engineering Processes:** Feasibility studies; Requirements elicitation and analysis; Requirements validation; Requirements management.

##### UNIT - 4

7 Hours

**System models, Project Management:** System Models: Context models; Behavioral models; Data models; Object models; Structured methods.

**Project Management:** Management activities; Project planning; Project scheduling; Risk management

#### PART - B

##### UNIT - 5

7 Hours

**Software Design:** Architectural Design: Architectural design decisions; System organization; Modular decomposition styles; Control styles.



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Object-Oriented design: Objects and Object Classes; An Object-Oriented design process; Design evolution.

**UNIT – 6**

**6 Hours**

**Development:** Rapid Software Development: Agile methods; Extreme programming; Rapid application development.  
**Software Evolution:** Program evolution dynamics; Software maintenance; Evolution processes; Legacy system evolution.

**UNIT – 7**

**7 Hours**

**Verification and Validation:** Verification and Validation: Planning; Software inspections; Automated static analysis; Verification and formal methods.  
**Software testing:** System testing; Component testing; Test case design; Test automation.

**UNIT – 8**

**6 Hours**

**Management:** Managing People: Selecting staff; Motivating people; Managing people; The People Capability Maturity Model.  
**Software Cost Estimation:** Productivity; Estimation techniques; Algorithmic cost modeling, Project duration and staffing.

**Text Books:**

1. Ian Sommerville: Software Engineering, 8<sup>th</sup> Edition, Pearson Education, 2007.  
(Chapters: 1, 2, 3, 4, 5, 6, 7, 8, 11, 14, 17, 21, 22, 23, 25, 26)

**Reference Books:**

1. Roger.S.Pressman: Software Engineering-A Practitioners approach, 7<sup>th</sup> Edition, Tata McGraw Hill, 2007.
2. Pankaj Jalote: An Integrated Approach to Software Engineering, Wiley India, 2009.

**SYSTEM SOFTWARE**

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**PART – A**

**UNIT – 1**

**6 Hours**

**Machine Architecture:** Introduction, System Software and Machine Architecture, Simplified Instructional Computer (SIC) - SIC Machine Architecture, SIC/XE Machine Architecture, SIC Programming Examples.

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