SOFTWARE ENGINEERING

Subject   Code

:

06IS51   ☐ ☐

IA   Marks

:

25

No. of Lecture Hrs./ Week

:

04

Exam Hours

:

03

Total No. of Lecture Hrs.

:

52

Exam Marks

:

100

PART - A

UNIT - 1

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.

6 Hours

UNIT - 2

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.

7 Hours

UNIT - 3

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.

6 Hours

UNIT - 4

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.

7 Hours

PART - B

UNIT - 5

SOFTWARE DESIGN: Architectural Design: Architectural design decisions; System organization; Modular decomposition styles; Control styles. Object-Oriented design: Objects and Object Classes; An Object-Oriented design process; Design evolution.

7 Hours

UNIT - 6

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

6 Hours

UNIT - 7

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.

7 Hours

UNIT - 8

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.

6 Hours

TEXT BOOKS:

1.   **Software Engineering** – Ian Somerville, 8th Edition, Pearson Education, 2007.

REFERENCE BOOKS:

1.   **Software Engineering: A Practitioners Approach -** Roger S. Pressman, 7th Edition, McGraw-Hill, 2007.

2.   **Software Engineering Theory and Practice -** Shari Lawrence Pfleeger, Joanne M. Atlee, 3rd Edition, Pearson Education, 2006.

3.   **Software Engineering Principles and Practice -** Waman S Jawadekar, Tata McGraw Hill, 2004.