

SYLLABUS

Panjab University, Chandigarh

Paper Code : MS – 61

Paper Title : Software Engineering

Maximum Marks : 100 (External : 80 + Internal : 20)

Time : 3 Hrs

Number of Lectures : 90 (45 Minutes duration)

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Objectives : This course enables students to understand Software Configuration Managements Tools and Techniques. After the completion of this paper, student will be able to

- Use principles, concepts, methods, and techniques of the software engineering approach to produce quality software.
- Apply software engineering principles and practices in the planning and development of an actual software product.

Note :

- (i) The Question Paper will consist of Four Units.
- (ii) Examiner will set total of NINE questions comprising TWO questions from each Unit and ONE compulsory question of short answer type covering whole syllabi.
- (iii) The students are required to attempt ONE question from each Unit and the Compulsory question.
- (iv) All questions carry equal marks unless specified.

UNIT – I

- 1. Introduction to Software Engineering :** Definition, Software Engineering goals, Characteristics of well-engineered software, Software Process Models: Waterfall Model, Prototyping Model, Spiral Model, RAD, Agile Modelling.
- 2. Software Requirement Specification (SRS) :** Software Requirements, Definition of SRS, Characteristics of SRS, Components of SRS, Designing of SRS.
- 3. System Analysis :** Principles of Structures Analysis, DEDs, E-R Diagrams, Data Dictionary.

UNIT - II

- 4. Software Design :** Design Objectives, Design Principles, Concepts, Design Process, Design Methodologies: Structured Design, Modular Design, Object Oriented Design, User Interface Design and its elements and its Characteristics.
- 5. Software Project Planning & Scheduling :** Objectives, Decomposition techniques, Planning and Scheduling Tools : GANTT Chart, PERT Chart, Critical Path Method and Work Breakdown Structure; Cost estimation, Cost estimation Models: Single Variable Model, COCOMO Model; Software Risks, Risk Assessment.

UNIT - III

- 6. Software Metrics :** Role of Metrics and Measurement, Types of Software Metrics: Product Metrics, Software Size Metrics: LOC and Function Points, Process Metrics, People Metrics.
- 7. System Maintenance and Reliability :** Maintenance and its types; Factors Affecting Software Reliability, Software Reliability vs Hardware Reliability, Software Reliability Metrics.

UNIT - IV

- 8. Software Testing Techniques :** Introduction to Software Testing Process, Objectives of Software Testing. BBT & its Techniques: Boundary Value Analysis, Equivalence Class Testing and Cause-Effect Graph, White-Box Testing and its Techniques: Domain and Boundary Testing, Logic Based Testing, Data Flow Testing and Basic Path Testing.
- 9. Software Testing Strategies :** Characteristics, Integration Testing, Functional Testing, Object Oriented Testing, Alpha and Beta Testing.