

BSc (IT)

Software Engineering

(LTP::4:2:0)

6 Credits

UNIT I: SOFTWARE PROCESS:

Introduction –S/W Engineering Paradigm – life cycle models (water fall, incremental, spiral, prototyping, object oriented) - system engineering – computer based system – verification – validation – life cycle process – development process –system engineering hierarchy.

UNIT II: SOFTWARE REQUIREMENTS:

Role of Management in Software Development, Role of Metrics and Measurement, Problem Analysis, Requirement Specification, Validation, Metrics, Monitoring and Control. software prototyping – prototyping in the software process – rapid prototyping techniques – user interface prototyping -S/W document. Analysis and modelling – data, functional and behavioural models – structured analysis and data dictionary.

UNIT III: DESIGN CONCEPTS AND CODING:

System Design, Problem Partitioning, Abstraction, Top-down and bottom-up design, Structured Approach, Functional v/s Object-Oriented Approach, Design specification & verification, metrics.

Coding: Top-down & Bottom-up, Structured Programming, Information Hiding, Programming Style, Internal Documentation, Verification, Metrics, monitoring & control

UNIT IV: TESTING AND PROJECT MANAGEMENT:

Taxonomy of software testing – levels – test activities – types of s/w test – black box testing – testing boundary conditions- Functional Testing, – structural Testing, Levels of Testing-Structural Testing, Test Plan, Test Cases Specification, Reliability assessment . Testing – integration testing – validation testing – system testing and debugging.

Software Project Management, Cost Estimation, Project Scheduling, Staffing. Software Configuration Management, Quality Assurance.

Measures and measurements – S/W complexity measure – size measure – data and logic structure measure – information flow measure. Software cost estimation COCOMO model- Delphi method.- software maintenance

Text Books:

1. Roger S.Pressman, Software engineering- A practitioner's Approach, McGraw-Hill International Edition, 5th edition, 2001.
2. Ian Sommerville, Software engineering, Pearson education Asia, 6th edition, 2000.
3. Pankaj Jalote- An Integrated Approach to Software Engineering, Springer Verlag, 1997.
4. Ali Behforooz and Frederick J Hudson, "Software Engineering Fundamentals", Oxford University Press, New Delhi, 1996