



Paper Code : SWE:601
Paper Name :Software Engineering

Teaching Hours (Per Week)		Examination Scheme		
TH. (hours)	Pr. (hours)	Internal	External	Total
		Th. (marks)	Th. (marks)	100 (marks)
4		30	70	

Lectures = 68 Hours

Objective: Software Engineering is the systematic Approach to the design, development, operation, and maintenance of a software system. Objectives of Software Engineering are :

1. **Maintainability** – the ease with which changes in a functional unit can be performed in order to meet prescribed requirements.
2. **Correctness** – the extent to which software meets its specified requirements
3. **Reuseability** – the extent to which a module can be used in multiple applications.
4. **Testability** – the extent to which software facilitates both the establishment of test criteria and the evaluation of the software with respect to those criteria.
5. **Reliability** – an attribute of software quality. The extent to which a program can be expected to perform its intended function, over an arbitrary time period.
6. **Portability** – the ease with which software can be transferred from one computer system or environment to another.
7. **Adaptability** – the ease with which software allows differing system constraints and user needs to be satisfied by making changes to the software.

UNIT 1 : **(13 hrs)**

Introduction: The importance of software, software myths, software engineering paradigms, generic view of software engineering, Software Crisis, Software processes, Software life cycle models : Waterfall, Prototype, Evolutionary and Spiral models.

UNIT 2 : **(15 hrs)**

Software matrices like LOC, token count, Function count, Design Metrics, Data Structure matrices, Information Flow Metrics, Software Project Planning : Cost Estimation, static, Single and multivariate models, COCOMO Model, Putnam Resource Allocation Model, Risk management.

UNIT 3 : **(15 hrs)**

Software Requirement Analysis and Specifications:

Overview of DFD, Data Dictionary, E-R Diagrams, Software requirement and Specifications, Behavioral and non-behavioral requirements, Software prototyping.

Software Design : Cohesion & Coupling, Classification of cohesiveness & Coupling, Function Oriented Design, User Design Interface.



UNIT 4 :

(10 hrs)

Software quality assurance: Quality concept, quality movement, Software quality assurance, Software review, formal technical review, formal approach to SQA, statistical SQA, Software Reliability, Mistake proofing of software, SQA plan, ISO quality standards

UNIT 5 :

(15 hrs)

Software Testing: S/W Testing Fundamentals, White Box Testing, Black Box Testing, Validation Testing, System Testing, Debugging.

Software Maintenance:

Management of Maintenance, Maintenance Process and Models, Reverse Engineering and Re-engineering, Documentation.

Book References:

1. R. Pressman, "Software Engineering-A Beginners Guide"
2. K. K. Agarwal and Y. Singh, "Software Engineering"
3. Ian Sommerville, "Software Engineering(9th edition)"
4. R.Pressman,"Software Engineering-A Practitioners Approach"
5. Eric J.Braude and Michael E.Bernstein,"Software Engineering-Modern Approach".
7. David A.Gustafson,"Schaum's outline of Software Engineering".
8. Carlo Ghezzi, Mehdi Jazayeri and Dino Mandrioli,"Fundamentals of Software Engineering".
9. Pfleeger,"Software Engineering".
10. Richard H.Thayer,"Software engineering Project Management".