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| **Unit No.** | | | **CONTENT** | **CONTACT HOURS** | |
| **1** | | | **Introduction:** Introduction to software engineering, Importance of software, The evolving role of software, Software Characteristics, Software Components, Software Applications, Software Crisis, Software engineering problems.  **Software Development Life Cycle** **Models:** Water Fall Model, Incremental Model, RAD, Prototyping, Spiral Model, comparisons, advantages and disadvantages of models. | 8 | |
| **2** | | | **Software Requirement Engineering:** Requirements elicitation, Problem Analysis, Requirement specifications characteristics, Components of SRS, SRS Document.  **Software-Design:** Design principles, problem partitioning, abstraction, top down and bottom up-design, Structured approach, functional versus object oriented approach, design specifications and verification, Monitoring and Control, Cohesiveness, coupling, Fourth generation techniques, Functional independence. | 8 | |
| **3** | | | **Coding:** Top-Down and Bottom –Up programming, Structured Programming, Information hiding, programming style and internal documentation.  **Testing:** Testing principles, Levels of testing, functional testing, structural testing, test plane, test case specification, reliability assessment, software testing strategies, Verification & validation, Unit testing, Integration Testing, Alpha & Beta testing, system testing and debugging, Software Maintenance. | 8 | |
| **4** | | | **Software Reliability & Quality Assurance:** Reliability issues, Reliability metrics, Role of matrices and measurement, Reliability growth modeling, Software quality, ISO 9000 certification for software industry, SEI capability maturity model, and comparison between ISO & SEI CMM. | 9 | |
| **5** | | | **Software Project Management:** The Management spectrum- (The people, the product, the process, the project), cost estimation, project scheduling, staffing, software configuration management, quality assurance, project monitoring, risk management, Role of management in software development**.**  **CASE (Computer Aided Software Engineering):** CASE and its Scope, CASE support in software life cycle, Documentation, Project Management, internal interface, Reverse Software Engineering, Architecture of CASE environment. | 9 | |
|  | | | **TOTAL** | **42** | |
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| **11** | **Suggested Books:** | | |  | |
| **Sl. NO.** | | **NAME OF AUTHERS/BOOKS/PUBLISHERS** | | | **YEAR OF PUBLICATION** |
| **1** | | Pressman, Roger S., “Software Engineering: A Practitioner’s Approach Ed. Boston: McGraw Hill, 2001 | | | 2004 |
| **2** | | Jalote, Pankaj, “Software Engineering Ed.2”, New Delhi: Narosa 2002 | | | 2002 |
| **3** | | Schaum’s Series, “Software Engineering”, TMH | | | 1999 |
| **4** | | Ghezzi, Carlo and Others, “Fundamentals of Software Engineering”, PHI | | | 1998 |
| **5** | | Alexis, Leon and Mathews Leon, “Fundamental of Software Engineering”, Vikas | | | 2001 |
| **6** | | Sommerville, Ian, “Software Engineering”, AWL, 2000 Fairly, “Software Engineering”, New Delhi: TMH | | | 2000 |