

Course Code: BTCS503-18	Course Title: Software Engineering	3L:1T:0P	3Credits	42 Hours
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Detailed Contents:

Module 1:

Evolution and impact of Software engineering, software life cycle models: Waterfall, prototyping, Evolutionary, and Spiral models. Feasibility study, Functional and Non-functional requirements, Requirements gathering, Requirements analysis and specification.

[10hrs] (CO 1)

Module 2:

Basic issues in software design, modularity, cohesion, coupling and layering, function-oriented software design: DFD and Structure chart, object modeling using UML, Object-oriented software development, user interface design. Coding standards and Code review techniques. **[8hrs] (CO2)**

Module 3:

Fundamentals of testing, White-box, and black-box testing, Test coverage analysis and test case design techniques, mutation testing, Static and dynamic analysis, Software reliability metrics, reliability growth modeling. **[10hrs] (CO 3)**

Module 4:
Software project management, Project planning and control, cost estimation, project scheduling using PERT and GANTT charts, cost-time relations: Rayleigh-Norden results, quality management **[8hrs] (CO4)**

Module 5:

ISO and SEI CMMI, PSP and Six Sigma. Computer aided software engineering, software maintenance, software reuse, Component-based software development.

[6hrs] (CO5)

) Text Books:

1. Roger Pressman, "Software Engineering: A Practitioners Approach,(6th Edition), McGraw Hill, 1997.

Reference Books:

1. Sommerville, "Software Engineering, 7th edition", Adison Wesley, 1996.
2. Watts Humphrey, "Managing software process", Pearson education, 2003.
3. James F. Peters and Witold Pedrycz, " Software Engineering – An Engineering Approach", Wiley.
4. Mouratidis and Giorgini. "Integrating Security and Software Engineering– Advances and Future", IGP. ISBN – 1-59904-148-0.
5. Pankaj Jalote, "An integrated approach to Software Engineering", Springer/Narosa.
6. Fundamentals of Software Engineering by Rajib Mall, – PHI-3rd Edition, 2009.

Course Outcomes:

At the end of the course the student should be able to:

CO 1: Students should be able to identify the need for engineering approach to software development and various processes of requirements analysis for software engineering problems.

CO 2: Analyse various software engineering models and apply methods for design and development of software projects.

CO 3: Work with various techniques, metrics and strategies for Testing software projects.

CO 4: Identify and apply the principles, processes and main knowledge areas for Software Project Management

CO 5: Proficiently apply standards, CASE tools and techniques for engineering software projects