# 20CS32O1 - SOFTWARE ENGINEERING

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| Course Category: | Open Elective | Credits: | 3 |
| Course Type: | Theory | Lecture-Tutorial-Practical: | 3-0-0 |
| Prerequisite: | Require the fundamental concepts of computers and basic analytical capabilities | Sessional Evaluation:  Univ. Exam Evaluation:  Total Marks: | 40  60  100 |

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| Course Objectives: | * To define various software engineering phases. * Explore the concepts of software products and processes. * To facilitate the environment of software development in the outside world. * To expose the importance of risk management and strive for quality assurance. | |
| Course Outcomes: | Upon successful completion of the course, the students will be able to: | |
| CO1 | Understand the basics of software engineering layers. |
| CO2 | Learn about different process models, planning and construction of analysis models. |
| CO3 | Study the data modeling concepts to create a behavioral model and exposure on design concepts. |
| CO4 | Identify various architectural styles to get the support for designing conventional components. |
| CO5 | Examine different Testing Strategies for conventional software. |
| CO6 | Study various ways to improve software quality assurance. |
| Course Content | UNIT-I  **Introduction to Software Engineering:** Software evolution, Legacy software, Software myths.  **A Generic View of Process:** Software engineering layers, Process frame work, Capability Maturity Model Integration (CMMI).  UNIT-II  **Process Models:** Prescriptive models, Waterfall model, Incremental process models, Evolutionary process models and Unified process, Agility, Agile Process, Principles, XP, FDD.  UNIT-III  **Analysis Model and Design:** Analysis model, Analysis modeling approaches, Data modeling concepts, Design process, Design quality, Design concepts.  UNIT-IV  **Creating and Modeling the Design:** Software architecture, Architectural design, Nature of component,Designing class-based components: Principles, Guidelines, Cohesion, Coupling, Conducting component level design.  UNIT-V  **Testing strategies:** A strategic approach to software testing, Test strategies for conventional software, Test strategies for object-oriented software, Validation testing, System testing, Art of debugging.  UNIT-VI  **Quality Management**: Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability. | |
| Text Books &  References  Books | **TEXT BOOKS:**   1. Pressman R S, Software Engineering-A Practitioner‟s Approach, 6th edition, McGraw-Hill   **REFERENCE BOOKS:**   1. Sommerville I, Software Engineering, 5th edition, Pearson Education, 1996. 2. Jawadekar W S, Software Engineering – Principles and Practice, Tata McGraw-Hill, 2004.Hill, 2005. 3. Carlo gezzi, Fundamentals of Software Engineering, Second edition, Prentice Hall | |
| E-Resources | 1. <https://nptel.ac.in/courses> 2. <https://freevideolectures.com/university/iitm> | |