17CS42O2 - SOFTWARE ENGINEERING

(Common to ECE, EEE, CE and ME)

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| **Course Category:** | Open Elective | **Credits:** | 3 |
| **Course Type:** | Theory | **Lecture – Tutorial – Practical:** | 2-2-0 |
| **Prerequisite:** | Require the fundamental concepts of computers and basic analytical capabilities | **Sessional Evaluation:**  **Univ. Exam Evaluation:**  **Total Marks:** | 40  60  100 |
| **Objectives** | * To define and understanding various software engineering phases. * Explore the concepts of software processes. * To facilitate the environment of software development in the outside world. * To explore the importance of Software maintenance. | | |

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| **Course Outcomes** | Upon successful completion of the course, the students will be able to: | |
| CO1 | Understand the basics of software engineering concepts. |
| CO2 | Learn various process models and study different example paradigms. |
| CO3 | Study the requirement concepts to create a behavioural model. |
| CO4 | Identify various design issues and their applicability |
| CO5 | Examine different coding and testing strategies for conventional software development. |
| CO6 | Study various estimation and risk strategies to improve software quality. |
| **Course Content** | UNIT-I  **INTRODUCTION:** What is Software Engineering? A Systems Approach, An Engineering Approach.  UNIT-II  **MODELLING THE PROCESS AND LIFE CYCLE:** The meaning of process, Software process models, Process Improvement model (Capability Maturity Model).  UNIT-III  **CAPTURING THE REQUIREMENTS:** The requirement process, Characteristics of Requirements, How to express requirements, SRS;  UNIT-IV  **DESIGNING THE SYSTEM:** Definition of Design, Issues in Design creation, Characteristics of good design, Design Reviews, Function oriented software design;  UNIT-V  CODING AND TESTING: Coding, Code review, Internal documentation, External documentation, Software faults and failures, Testing Issues, Unit testing, Integration testing, Test plan;  UNIT-VI  **PLANNING AND MANAGING THE PROJECT:** Tracking Progress, Project Personnel, Effort Estimation, Risk Management, and The project plan. | |
| **Text Books and References:** | **Text Books:**   1. Shari Lawrence Pfleeger, Joanne M. Atlee “Software Engineering Theory and Practice” 4th edition Pearson 2010   Rajib Mall “Fundamentals of Software Engineering” 3rd edition PHI learning 2009.  **Reference Books:**   1. Roger S. Pressman “Software Engineering A Practioner’s Approach, McGraw-Hill, 6th edition, 2005. 2. Ian Sommerville “Software Engineering”, Pearson, 9th edition, 2010 3. Pankaj Jalote “An integrated approach to Software Engineering” Springer, 3rd edition, 2005. | |
| **E-Resources** | 1. [**https://nptel.ac.in/courses**](https://nptel.ac.in/courses) 2. [**https://freevideolectures.com/university/iitm**](https://freevideolectures.com/university/iitm) | |