**SOFTWARE ENGINEERING**

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| **Course Code** | 23CS  3403 | 23IT  3403 | **Year** | II | **Semester** | II |
| **Course Category** | **PC**  Professional Core | | **Branch**  **Branch** | **CSE/IT**  **CSE,IT** | **Course Type** | Theory |
| **Credits** | 3 | | **L – T – P** | 3-0-0 | **Pre requisites** |  |
| **Continuous Evaluation:** | 30 | | **Semester End Evaluation:** | 70 | **Total Marks:** | 100 |

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| **Course Outcomes** | | |
| Upon successful completion of the course, the student will be able to: | | |
| **CO1** | Understand the fundamentals of Software Engineering and various process models | L2 |
| **CO2** | Apply project management and requirement analysis techniques for the software Projects. | L3 |
| **CO3** | Use various design elements along with testing to prepare software system. | L3 |
| **CO4** | Use of CASE to improve Software development and Software maintenance. | L3 |

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| **Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3: Substantial,2: Moderate,1: Slight)** | | | | | | | | | | | | | | |
|  | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** | **PSO1** | **PSO2** |
| **CO1** | 3 |  |  |  |  |  |  |  | 1 |  |  |  |  |  |
| **CO2** |  | 2 |  |  |  |  |  |  |  |  | 1 |  | 1 |  |
| **CO3** |  | 2 | 1 |  | 1 |  |  |  |  |  |  |  |  |  |
| **CO4** |  |  |  |  | 1 |  |  |  | 1 |  | 1 |  |  |  |

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| **Syllabus** | | |
| **Unit No.** | **CONTENTS** | **Mapped**  **CO** |
| **I** | **Introduction:** Evolution, Software development projects, Exploratory style of software developments, Emergence of software engineering, Notable changes in software development practices.  **Software Life Cycle Models:** Basic concepts, Waterfall model and its extensions, Rapid application development, Agile development model, Spiral model. | **CO1** |
| **II** | **Software Project Management:** Software project management complexities, Responsibilities of a software project manager, Project Planning, Metrics for project size estimation, Project estimation techniques, Empirical Estimation techniques, COCOMO-A heuristic estimation technique, Risk Management  **Requirements Analysis and Specification:** Requirements gathering and analysis, Software Requirements Specification (SRS). | **CO1,**  **CO2** |
| **III** | **Software Design:** Overview of the design process, How to characterize a good software design? Cohesion and Coupling, Layered arrangement of modules, Approaches to software design  **Function-Oriented Software Design:** Overview of SA/SD methodology, Structured analysis, Developing the DFD model of a system, Structured design, Detailed design, and Design Review.  **User Interface Design**: Characteristics of a good user interface, Basic concepts, Types of user interfaces, Golden Rules. | **CO1,**  **CO3** |
| **IV** | **Coding and Testing:** Coding, Code review, Software documentation, Testing, Unit Testing, Black-box testing, White-Box testing, Debugging, Integration testing**,** testing object-oriented programs, System testing.  **Software Reliability and Quality Management:** Software reliability. Statistical testing, Software quality, Software quality management system, ISO 9000.SEI Capability maturity model. | **CO1,**  **CO3** |
| **V** | **Computer-Aided Software Engineering (Case):** CASE and its scope, CASE environment, CASE support in the software life cycle, other characteristics of CASE tools, Towards second generation CASE Tool, and Architecture of a CASE Environment.  **Software Maintenance:** Characteristics of software maintenance, Software reverse engineering, Software maintenance process models and Estimation of maintenance cost. | **CO1,**  **CO4** |
| **Learning Resources** | | |
| **Text Books** | | |
| 1. Fundamentals of Software Engineering, Rajib Mall, 5th Edition, PHI. 2. Software Engineering A practitioner’s Approach, Roger S. Pressman, 9th Edition, Mc-Graw Hill International Edition. | | |
| **Reference Books** | | |
| 1. Software Engineering, Ian Sommerville,10th Edition, Pearson. 2. Software Engineering, Principles and Practices, Deepak Jain, Oxford University Press. | | |
| **E-Resources & other digital material** | | |
| 1. <https://nptel.ac.in/courses/106/105/106105182/> 2. <https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_01260589506387148827_shared/overview> 3. <https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_013382690411003904735_shared/overview> | | |

**Course Coordinators Module Coordinators**

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3. Dr K Koteswara Rao

4. Dr. A Ramana Lakshmi

5. Ms A Divya

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