PRASAD V. POTLURI SIDDHARTHA INSTITUTE OF TECHNOLOGY KANURU, VIJAYAWADA

**II B. TECH – II SEM**

**23CS3403**

SOFTWARE ENGINEERING

|  |  |  |  |  |  |  |
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| **CO** | **Statement** | | **Skill** | **Blooms** | | **Units** |
| **CO1** | Understand the fundamentals of Software Engineering and various process models | | Understand | L2 | | 1,2,3,4,5 |
| **CO2** | Apply project management and requirement analysis techniques for the software Projects. | | Apply, Problem Analysis, Teamwork, Project management and finance | L3 | | 2 |
| **CO3** | Use various design elements along with testing to prepare software system. | | Problem Analysis, Design, Modern Tool Usage | L3 | | 3,4 |
| **CO4** | Use of CASE to improve Software development and Software maintenance. | | Modern Tool Usage, Team Work, Project management and finance | L3 | | 5 |
| **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** | | |

**CO-PO Mapping**

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| **Contribution of Course Outcomes towards achievement of Program Outcomes** | | | | | | | | | | | | | | |
|  | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** | **PSO1** | **PSO2** |
| CO1 | **√** |  |  |  |  |  |  |  | **√** |  |  |  |  |  |
| CO2 |  | **√** |  |  |  |  |  |  |  |  | **√** |  | **√** |  |
| CO3 |  | **√** | **√** |  | **√** |  |  |  |  |  |  |  |  |  |
| CO4 |  |  |  |  | **√** |  |  |  | **√** |  | **√** |  |  |  |

**Strength of Correlation**

Distribution of marks weightage to POs through CO’s. • The strength of correlation levels is based on percentage of marks distribution towards PO.

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| --- | --- | --- | --- |
| CIE | **Test** | **Test Number** | **Marks** |
| Objective Exam (10) | Objective Exam -1 | 10 |
| Objective Exam -2 | 10 |
| Assignment (5) | Assignment -1 | 5 |
| Assignment – 2 | 5 |
| Descriptive Exam (15) | Descriptive Exam - 1 | 15(30) |
| Descriptive Exam - 2 | 15(30) |

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| **CO** | **Skill** | **Blooms** | **Units** | **Assessing Tools can be used to measure CO (CIE)**  **Marks** | **Assessing Tools can be used to measure CO (SEE)**  **Marks** |
| CO1 | Understand | L2 | 1,2,3,4,5 | **Descriptive – I (10)**  **Assignment-I (1)**  **Objective-1(10)**  **Objective-2(10)** | **26** |
| CO2 | Apply, Problem Analysis, Design, Project management and finance | L3 | 2 | **Descriptive – I (20)**  **Assignment-I (4)** | **14** |
| CO3 | Apply, Problem Analysis, Design, Modern Tool Usage, Project management and finance | L3 | 3,4 | **Descriptive – II (20)**  **Assignment-II (2.5)** | **12.5** |
| CO4 | Apply, Modern Tool Usage | L3 | 5 | **Descriptive –2 (10)**  **Assignment-II (2.5)** | **7.5** |

**Strength of Correlation**

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| --- | --- |
| **% of questions towards PO** | **Level (Weight)** |
| >= 20% of total marks | 3 |
| >=10% and < 20 of total marks | 2 |
| < 10% of total marks | 1 |

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| **CO** | **Skill** | **Bloom's** | **Units** | **Assessing tools can be used to measure CO (CIE) Marks** | **CIE-Total** | **Assessing tools can be used to measure CO (SEE) Marks** | **Total (CIE+SEE)** | **Percentage** | **Strength of Correlation** | **PO** |
| CO1 | Understand | L2 | 1,2,3,4,5 | **Descriptive (7.5)**  **Assignment (1)**  **Objective Exam (10)** | 3.75  1  10 | 26 | 36  4.75 | 36%  5% | 3  1 | PO1  PO9 |
| CO2 | Apply, Problem Analysis, Design, Project management and finance | L3 | 2 | **Descriptive (7.5)**  **Assignment (1.5)** | 3.75  1.5 | 14 | 17.75  0.5  1 | 18%  0.5%  1% | 2  1  1 | PO2  PO11  PSO1 |
| CO3 | Apply, Problem Analysis, Design, Modern Tool Usage, Project management and finance | L3 | 3,4 | **Descriptive (10)**  **Assignment (2)** | 5  1  1 | 12.5 | 17.5  1  1 | 17.5%  1%  1% | 2  1  1 | PO2  PO3  PO5 |
| CO4 | Apply, Modern Tool Usage | L3 | 5 | **Descriptive (5)**  **Assignment (0.5)** | 2.5  0.25  0.25 | 7.5 | 10  0.25  0.25 | 10%  0.25%  0.25% | 1  1  1 | PO5  PO9  PO11 |

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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 |  |  |  |
| **Average** | **3** | **2** | **1** |  | **1** |  |  |  | **1** |  | **1** |  | **1** |  |

Course Coordinators: **Dr K. Koteswara Rao,**

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