|  |  |  |  |
| --- | --- | --- | --- |
| **SOFTWARE ENGINEERING**  **[ Revised Credit System ]**  **(Effective from the academic year 2018-19)**  **SEMESTER - V** | | | |
| **Subject Code** | **CSE 3154** | **IA Marks** | **50** |
| **Number of Lecture Hours/Week** | **03** | **Exam Marks** | **50** |
| **Total Number of Lecture Hours** | **36** | **Exam Hours** | **03** |
| **CREDITS – 03** | | | |
| **Course objectives:** This course will enable students to   * To illustrate how a given problem can be broken down into different modules. * To demonstrate the SDLC model. * To develop DFD and structure chart * To construct UML diagrams. | | | |
| **Module -1** | | | **Teaching Hours** |
| **INTRODUCTION:**  Evolution from an art form to an engineering discipline, Software development Projects, Exploratory style of software development, Emergence of software Engineering, Notable changes in software development practices. Computer Systems Engineering.    **Text Book 1:** Chapter: 1 | | | **3 Hours** |
| **Module -2** | | | |
| **SOFTWARE LIFE CYCLE MODELS:**  A few basic concepts, Waterfall model and its extensions, Rapid Application Development, Agile development models, Spiral Model, SSDLC, A Comparison of different Life Cycle models, SSDLC vs SDLC.  **Text Book 1:**  Chapter: 2, Ref: 5 | | | **5 Hours** |
| **Module – 3** | | | |
| **REQUIREMENT ANALYSIS AND SPECIFICATION:**  Requirement Gathering and Analysis, Software Requirement Specifications.  **Text Book 1:**  Chapter**:** 4 | | | **2 Hours** |
| **Module - 4** | | | |
| **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.  **Text Book 1:**  Chapter: **5** | | | **3 Hours** |
| **Module - 5** | | | |
| **FUNCTION-ORIENTED SOFTWARE DESIGN:**  Overview of SA/SD methodology, Structured analysis, Developing the DFD Model of a system, Structured design, Detailed design, Design review.  **Text Book 1:** Chapter: 6 | | | **5 Hours** |
| **Module-6** | | |  |
| **OBJECT MODELLING USING UML:**  Basic object-orientation concepts, UML, UML diagrams, Use case model, Class diagrams, Interaction diagrams, Activity Diagram, State chart diagram, Postscript, Design Patterns, An Object-Oriented Analysis and Design (OOAD) Methodology. **Text Book 1:**  Chapter: 7**,**  Chapter:8.1 - 8.3 | | | **11 hours** |
| **Module -7** | | |  |
| **CODING AND TESTING:**  Coding, Code review, Software Documentation, Testing, Unit Testing, Black-Box testing, White-Box Testing, Debugging, Program Analysis tools, Regression testing, Security testing, Robustness testing, Fuzzy testing, Integration testing, Testing OOP, System testing, Some general issues associated with testing.    **Text Book 1:**  Chapter:10, **Ref 4**: Ch: 8.2, Ch: 15.3, **Ref 6**: Ch: 3.1, Ch: 4.3, Ch: 4.4, **Ref 7** | | | **7 Hours** |
| **Course outcomes:** | | | |
| After studying this course, students will be able:   1. To understand basic concepts and life cycle models 2. To analyze the requirements of the project 3. To model and design the project 4. Understand the analysis and design of the project using UML 5. Ability to use standards in coding and testing | | | |
| **Text Books:**   1. Rajib Mall, *Fundamentals of Software Engineering* (4e)*,* PHI Learning, 2014 | | | |
| **Reference Books:**   1. Hans Van Vliet, *Software Engineering: Principles and Practice* (3e), Wiley India, 2012. 2. Roger S. Pressman, *Software Engineering - A Practitioner’s Approach* (7e), McGrawHill International Edition, 2010. 3. Bernd Bruegge, Allen H. Dutoit, *Object-Oriented Software Engineering using UML Patterns and Java* (2e) , Pearson Publication, 2011. 4. Ian Sommerville, *Software Engineering* (9e), Addison-Wesley, 2011. 5. Nooper Davis, *Secure Software Development Life Cycle Processes*, Software Engineering Institute, Carnegie Mellon University, 2013. 6. Julie Cohen, Dan Plakosh, Kristi Keeler, *Robustness Testing of Software-Intensive Systems: Explanation and Guide*, Carnegie Mellon University, 2005. 7. Online material (preferably www.tutorialspoint.com) | | | |