K. S. INSTITUTE OF TECHNOLOGY

An Autonomous Institution under VTU, Approved by AICTE

Department of Master of Computer Applications

SECOND SEMESTER SYLLABUS

Course : Software Engineering		Semester	II
Course Code	**25MMC204**	CIE Marks	50
Teaching Hours/Week (L:P:T)	2:0:2	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	03	Exam Hours	03
Examination type (SEE)	**Theory**		

Course Objectives (Course Skill Set)

- Understand the importance of various Software Engineering Lifecycle Models.
- Document the Software Requirements Specification (SRS) for the identified system.
- Gain knowledge of the System Analysis and Design concepts using UML.

Module-1

SOFTWARE PROCESS AND AGILE DEVELOPMENT: Introduction to Software Engineering, Software Process, Perspective and Specialized Process Models –Introduction to Agility-Agile process-Extreme programming-XP Process-Case Study, Agile Methodologies: Scrum, Kanban, Domain engineering.

Number of Hours: 8

Module-2

REQUIREMENTS ANALYSIS AND SPECIFICATION: Requirement analysis and specification – Requirements gathering and analysis Software Requirement Specification – Formal system specification – Finite State Machines – Petrinets Object modelling using UML – Use case Model – Class diagrams – Interaction diagrams – Activity diagrams – State chart diagrams – Functional modelling –Data Flow Diagram- CASE TOOLS.

Number of Hours: 8

Module-3

SOFTWARE DESIGN: Software design – Design process – Design concepts – Coupling – Cohesion – Functional independence Design patterns Model-view-controller Publish-subscribe Adapter Command – Strategy – Observer – Proxy – Facade – Architectural styles – Layered - Client Server -Tiered - Pipe and filter- User interface design-Case Study

Number of Hours: 8

Module-4

TESTING AND MAINTENANCE: Testing – Unit testing – Black box testing – White box testing – Integration and System testing–Regression testing – testing for specialized environment-testing GUI-testing client-server architectures-testing for documentation – Debugging - Program analysis – Symbolic execution – Model Checking Case Study.

Number of Hours: 8

Module-5

PROJECT MANAGEMENT: Software Project Management- Software Configuration Management - Project Scheduling- DevOps: Motivation-Cloud as a platform-Operations-Deployment Pipeline: Overall Architecture Building and Testing-Deployment- Tools- Case Study.

Number of Hours: 8

Course outcome (Course Skill Set)

At the end of the course, the student will be able to:

CO1: Identify the principles of software process and Agile methodologies.

CO2: Determine the requirement specification for a given scenario.

CO3: Construct a software design for a given case study.

CO4: Utilize the software testing methodologies to evaluate the quality & reliability of software.

CO5: Utilize the principles of project management to build a solution for a given case study.

Suggested Learning Resources:

1. Bernd Bruegge and Allen H Dutoit, "Object-Oriented Software Engineering : using UML , patterns and Java"
2. Roger S Pressman, Object-Oriented Software Engineering: an Agile unified methodology, first edition, McGraw-Hill International edition, 2014.
3. Len Bass, Ingo Weber and Liming Zhu, DevOps: A software architect's perspective, Person Education 2016
4. Rajib Mall – Fundamentals of Software Engineering, 3rd edition, PHI learning private Limited, 2009.
5. Pankajjalote- Software Engineering, A Precise Approach, Wiley India, 2010

Teaching-Learning Process (Innovative Delivery Methods)

The following are sample strategies that educators may adopt to enhance the effectiveness of the teaching- learning process and facilitate the achievement of course outcomes.

Lectures with PowerPoint presentations, Interactive discussions and case study sessions, Assignments and quizzes for assessment.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 50% (50 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

1. Three Unit Tests each of 25 Marks (scale down to 25 Marks)
2. Two assignments each of 25 Marks or one Skill Development Activity of 50 marks to attain the COs and POs which will be scale down to 25 marks.

The sum of **three**-unit tests, two assignments/Skill Development Activities (CIE), will be 50 marks.

Semester-End Examination:

1. The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.
2. The question paper consists of Part A and Part B. Part A consists of 10 questions from 5 modules, each carrying 2 marks.

3. Part B consists of 10 questions. Each full question is for 16 marks. There will be two full questions (with a maximum of three sub-questions) from each module.
4. Each full question will have a sub-question covering all the topics under a module.
5. The students will have to answer five full questions, selecting one full question from each module