



K. S. INSTITUTE OF TECHNOLOGY

An Autonomous Institution under VTU, Approved by AICTE
Department of Computer Science & Engineering
M.Tech FIRST SEMESTER SYLLABUS

Course: Software Engineering		Semester	I
Course Code	25MCS104E	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	2:0:2	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	03	Exam Hours	03
Examination type (SEE)	Theory		

Course Objectives (Course Skill Set)

1. Reduce the development time, and resources required to maintain existing applications.
2. Increase code reuse, and provide a competitive advantage to organizations that uses it

Module-1

INTRODUCTION: What is software engineering? Software Engineering Concepts, Development Activities, Managing Software Development, Modelling with UML, Project Organization and Communication.

Module-2

REQUIREMENT ELICITATION AND ANALYSIS: Requirements Elicitation: Requirements Elicitation Concepts, Requirements Elicitation Activities, Managing Requirements Elicitation, Analysis: Analysis Concepts, Analysis Activities, Managing Analysis.

Module-3

SYSTEM DESIGN: System design-Decomposing the system: Overview of System Design, System Design Concepts, System Design Activities: Objects to Subsystems, System Design – Addressing design goals: Activities: An overview of system design activities, UML deployment diagrams, Addressing Design Goals, Managing System Design.

Module-4

OBJECT DESIGN, IMPLEMENTATION AND TESTING : Object design-Reusing pattern solutions: An Overview of Object Design, Reuse Concepts: Design Patterns, Reuse Activities, Managing Reuse, Object design-Specifying interface: An overview of interface specification, Interfaces Specification Concepts, Interfaces Specification Activities, Managing Object Design, Mapping model to code: Mapping Models to Code Overview, Mapping Concepts, Mapping Activities, Managing Implementation, Testing: An overview of testing, Testing concepts, Managing testing.

Module-5

SOFTWARE MAINTENANCE AND SOFTWARE CONFIGURATION MANAGEMENT: Software maintenance: What is Software Maintenance, Factors that Mandate Change, Lehman's Laws of system evolution, Types of software maintenance, Software maintenance process and activities, Reverse Engineering, Software Re-engineering, Patterns for Software Maintenance, Tool support for Software Maintenance. Software Configuration Management: The baseline of Software Life Cycle, What is Software Configuration Management, Why Software Configuration Management, Software Configuration Management Functions, Software Configuration Management Tools.

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:

- Three Unit Tests each of **25 Marks**
- Two assignments each of **25 Marks** or one Skill Development Activity of **25 marks**
- to attain the COs and POs

The sum of three tests, two assignments/skill Development Activities, will be scaled down to 50 marks.

CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.

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.

Suggested Learning Resources:**Text Books:**

1. Object-Oriented Software Engineering, Bernd Bruegge, Alan H Dutoit, Pearson Education, 3 rd edition, 2014.

Reference Books:

1. Object oriented software engineering, David C. Kung, Tata McGraw Hill 2015.
2. Object oriented software engineering, Stephan R. Schach, Tata McGraw Hill 2008.
3. Applying UML and Patterns, Craig Larman, Pearson Education 3rd ed, 2005

Web links and Video Lectures (e-Resources):

1. <https://medium.com/javarevisited/my-favorite-courses-to-learn-object-oriented-programming-and-design-in-2019-197bab351733>
2. https://www.youtube.com/watch?v=BqVqjJq7_vI

Skill Development Activities Suggested

The students with the help of the course teacher can take up relevant technical activities which will enhance their skill. The prepared report shall be evaluated for CIE marks.

Sl. No.	Description	Blooms Level
CO1	Apply Object Oriented Software Engineering approach in every aspect of software.	L3
CO2	Adapt appropriate object oriented design aspects in the development process.	L4
CO3	Adapt the concepts and tools related to software configuration management.	L4

Program Outcome of this course

	PO1	PO2	PO3	PO4	PO5	PO6
CO1	X					X
CO2		X	X			
CO3			X		X	
CO4		X	X			