SARVAJANIK UNIVERSITY
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SARVAJANIK UNIVERSITY
Sarvajanik College of Engineering and Technology
Bachelor of Technology

Year: B. Tech IV (Semester VII)

Subject Name: Software Testing **Subject Code:** BTIT14703
Type of course: Professional Elective Course
Prerequisite (if any): Software Engineering

Rationale: Over the years several testing techniques have been developed and tools have become available. Testing has been acknowledged as the primary technique for ensuring software reliability. The course would provide a brief introduction to test process and techniques available for black box and white box test case design. Integration, system and regression testing would also be discussed.

Teaching and Examination Scheme:

Teaching Scheme				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	CA3	
3	0	0	3	60	25	15	0	0	100

CA1: Continuous Assessment (assignments / projects / open book tests / closed book tests) CA2: Sincerity in attending classes / class tests / timely submissions of assignments / self-learning attitude / solving advanced problems TEE: Term End Examination TEP: Term End Practical Exam (Performance and viva on practical skills learned in course) CA3: Regular submission of Lab work / Quality of work submitted / Active participation in lab sessions / viva on practical skills learned in course.

Contents:

Sr. No.	Contents	Total Hours
1.	**Introduction to Testing** Software Testing, Software Testing Principles, Role of Tester, Testing As A Process, Overview of Testing Maturity Model, Defects, Hypothesis and Tests	04
2.	**White Box Testing Strategies** White Box Testing- Static Testing, Static Testing by Humans, Static Analysis Tools, Structural Testing, Unit/Code Functional Testing, Code Coverage Testing, Code Complexity Testing, Challenges in White Box Testing	05
3.	**Black Box Testing Strategies** Black Box Testing – Need of it, Requirements Based Testing, Positive and Negative Testing, Boundary Value Analysis, Decision Tables, Equivalence Partitioning, State Based or Graph Based Testing, Compatibility Testing, User Documentation Testing, Domain Testing	08

4.	**Integration Testing** Integration Testing - Integration Testing as a Type of Testing, Top-Down Integration, Bottom-Up Integration, Bi-Directional Integration, System Integration, Choosing Integration Method, Integration Testing as a Phase of Testing, Scenario Testing, System Scenarios, Use Case Scenarios	06
5.	**System and Acceptance Testing** System Testing Overview, Need for System Testing, Functional Versus Non-Functional Testing, Functional System Testing, Non-Functional Testing, Acceptance Testing	08
6.	**Regression Testing** Regression Testing - Types of Regression Testing, Need of Regression Testing, Ways to do Regression Testing, Performing an Initial "Smoke" or "Sanity" Test, Understanding the Criteria for Selecting the Test Cases, Classifying Test Cases, Methodology for Selecting Test Cases, Resetting the Test Cases for Regression Testing	07
7.	**Software Test Automation and Test Metrics** Test Automation - Terms Used in Automation, Skills Needed for Automation, Metrics, Need of Metrics in Testing, Types of Metrics, Project Metrics, Progress Metrics, Productivity Metrics	07

Suggested Specification table with Marks (Theory): (For B. Tech only)

Distribution of Theory Marks					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
10	15	30	5	-	-

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (Revised Bloom's Taxonomy)

Reference Books:

Sr no	**Title of book /article**	**Author(s)**	**Publisher and details like ISBN**	**Year of publication**	**Publication Edition**
1	Software Testing : Principles and Practices	Srinivasan Desikan and Gopalaswamy Ramesh	Pearson Education	2006	
2	Software testing: A	C. J. Paul	CRC Press	2014	Fourth Edition

	craftsmen's approach				
3	Software Engineering	Rajib Mall	PHI	2014	
4	The art of software testing	G. J. Myers	Wiley Interscience	2012	Third Edition

Course Outcomes (CO):

Sr. No.	CO statements	Marks % weightage
CO-1	To study fundamental concepts in software testing.	15%
CO-2	Apply appropriate black box / white box testing techniques for the given application scenario.	30%
CO-3	To expose the software testing topics, such as integration testing methods, System and Acceptance Testing and Regression testing issues, challenges, and solutions.	40%
CO-4	To understand software test automation problems and solutions.	15%

List of Open learning website:

- https://onlinecourses.nptel.ac.in/noc21_cs13/preview
- https://www.edx.org/course/software-testing-fundamentals