COURSE TITLE	**SOFTWARE TESTING**
COURSE CODE	**01CE0722**
COURSE CREDITS	**3**

Objective:

1 To understand and apply various testing techniques

Course Outcomes: After completion of this course, student will be able to:

1 Understand software testing life cycle and different testing techniques in depth.
2 Apply modern software testing methodology used in industry for software testing.
3 Design test cases for software development in any domain.
4 Apply test cases and test data to conduct test operations.
5 Understand the difference between software quality assurance, quality control and testing.

Pre-requisite of course: Software Engineering, Object Oriented Programming fundamental

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
2	0	2	50	30	20	25	25

Contents : Unit	Topics	Contact Hours
1	**Chapter 1** Basics of Software Testing, Software Testing, Importance of testing, , Seven Fundamental Principles of Testing,, Software Testing Life Cycle, Requirements Analysis/Design, , Traceability Matrix, Test Planning, Scope of Testing,, Schedule, Roles & Responsibilities. , Testing Strategies: Unit Testing, , Integration Testing, System Testing, Regression Testing,, Acceptance Testing. Scalability Testing, Compatibility Testing, Security Testing.	8
2	**Chapter 2** Software Testing Methodologies: White Box Testing,, Black Box Testing, Grey Box Testing,,, State Transition Technique, Cause Effective Graph,, Decision Table, Use Case Testing, Error guessing,, Exploratory testing.	6
3	**Chapter 3** Test Cases Design: Write Test cases,, Review Test cases, Test Cases Template, Types of Test Cases, Difference between Test Scenarios and Test Cases., Test Environment setup, Understand the SRS,, Hardware and software requirements, Test Data	6

Contents : Unit	Topics	Contact Hours
4	**Chapter 4** Test Execution and Test metrics: Execute test cases, Defect Tracking and Reporting, Types of Bugs, Bug/Defect Life Cycle, Reporting the Bugs, Severity and priority, Test Closure, Test summary report, Test Measurements, Test Metrics, , Metric Life Cycle, Types of Manual Test Metrics.	6
5	**Chapter 5** Quality Assurance & Quality Control: Quality Assurance,, Need for Software quality – Quality challenges – Software quality assurance (SQA), Definition and objectives. What is Quality Control	4
Total Hours		**30**

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**practical 1** Prepare a small project and submit SRS, design, coding and test plan	2
2	**practical 2** MANUAL TESTING for the project , a. Walkthrough b. White Box Testing c. Black Box Testing d. Unit Testing e. Integration Testing	2
3	**practical 3** Functional Testing, a. Boundary value Testing b. Equivalence class testing c. Decision Table based testing d. Cause-effect graphs.	2
4	**practical 4** Structural Testing , a. Path testing b. Data-flow testing	2
5	**practical 5** Write a program to perform decision table testing.	2
6	**practical 6** Regression Testing (use VTEST tool) using automated testing for websites	2
7	**practical 7** Write a program to perform boundary value analysis.	2
8	**practical 8** Write a program to perform equivalence class testing.	2
9	**practical 9** Develop the test plan for testing an e-commerce web/mobile application	2
10	**practical 10** Write a program to perform cause – effect testing techniques.	2
11	**practical 11** Write a program to find the path graph and find its V(G) by all three methods	2
12	**practical 12** Draw a DD path graph	2

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
13	**practical 13** Case study on Testing Tool-QTP	4
Total Hours		**28**

Textbook :

1 1. How to Break Software: A Practical Guide to Testing,, James Whittaker, Addison Wesley, 2003

References:

1 . Software Testing Techniques, . Software Testing Techniques, Boris Beizer,, Dreamtech, 2003

2 Software Testing: Principles and Practices, Software Testing: Principles and Practices, Srinivasan Desikan, Pearson Education Canada, 2006

3 Software Testing and Quality Assurance: Theory and Practice, Software Testing and Quality Assurance: Theory and Practice, Kshirasagar Naik and Priyadarshi Tripathy , Wiley, 2011

4 Software Quality Approaches: Testing, Verification, and Validation: Software Best Practice, Software Quality Approaches: Testing, Verification, and Validation: Software Best Practice, Michael Haug and Eric W Olsen, Springer Berlin Heidelberg, 2001

5 Software engineering- A practitioner's Approach,, Software engineering- A practitioner's Approach,, Roger S.Pressman, McGraw□Hill International Editions, 2020

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery

Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking / Creative
20.00	20.00	30.00	15.00	10.00	5.00

Instructional Method:

1 The course delivery method will depend upon the requirement of content and the needs of students. The teacher, in addition to conventional teaching methods by black board, may also use any tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

2 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room

3 Practical examination will be conducted at the end of semester for evaluation of performance of students in the laboratory.

4 Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.

Supplementary Resources:

1 https://onlinecourses.nptel.ac.in/noc18_cs42/
2 http://www.softwaretestinghelp.com
3 https://www.atlassian.com/software-testing

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DR. RAJENDRASINH BAHADURSINH JADEJA

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