

<b>Course Title</b>	<b>Software Testing</b>
<b>Course Code</b>	IT905 (Elective-IV)
<b>Course Credit</b>	Theory : 03
	Practical : 01
	Tutorial : 00
	Credits : 04

**Course Learning Outcomes**

On the completion of the course, students will be able to:

- **Apply knowledge** of software testing principles to design, develop, and verify system and application software in industrial, business, and personal applications.
- **Identify, formulate** and **solve** software engineering problems encountered in system and software development.
- **Develop** good **understanding** of issues, techniques and tools for software testing.
- **Interpret** types of possible flows and errors with the software under development and **Judge** the best possible solution for the same.
- **Understand** critical edge software automation problems and the solutions.
- **Construct** test cases and **generate** test reports.
- **Demonstrate** and **conclude** the software quality improvement process for the software work products.
- **Understand** and **apply** White box and Black box testing approaches.
- **Understand** the importance of Performance testing and Regression Testing.
- **Differentiate** object oriented Testing from the conventional Testing.

Sr. No.	Name of chapter & details	Hours Allotted
<b>Section – I</b>		
1	<b>Basic Concepts of Testing &amp; SDLC:</b> Introduction to basic terms like errors, fault, failures, defect, bug, etc., Roles and objectives of Testing, Defect Management, Overview on Test Generation Strategies, Overview on Classification of Techniques for testing.	06
2	<b>Types of Testing:</b> White-Box Approach to Test design, Static testing vs. Structural testing, Challenges in White box testing Black-Box approach to Test Design, Requirements based testing, positive	08

	and negative testing, Boundary Value Analysis, Decision tables, Equivalence Class Partitioning, state-based or Graph based testing.	
<b>3</b>	<b>Integration Testing, System and Acceptance Testing:</b> Integration Testing as a type of testing, Integration Testing as a Phase of testing, Scenario Testing, System Testing overview, Functional System Testing, Non – Functional Testing, Acceptance Testing,	<b>10</b>
<b>Section – II</b>		
<b>4</b>	<b>Performance and Regression Testing:</b> Introduction, Factors governing Performance Testing, Methodology for Performance Testing, Tools for Performance Testing, Process and Challenges for Performance Testing, Types of Regression Testing, various techniques for performing regression testing	<b>08</b>
<b>5</b>	<b>Testing of Object – Oriented Systems:</b> Overview, Primer on Object – Oriented Software, Differences in OO Testing, Regression testing of OO systems, Tools for testing of OO systems,	<b>06</b>
<b>6</b>	<b>Test Management and Automation:</b> Test planning, Test management, Test process, Test Reporting, Basic terms in Automation, Design and Architecture for Automation, Process model for Automation	<b>10</b>

### Instructional Method and Pedagogy

- Activities to be conducted for the topics like analysis.
- Feedback by posing a question, quiz, multiple choice questions.
- Group work assigning real world application
- Power point presentations integrated with video lectures.
- Simulators providing a mock scenario
- Will use Active Learning methodologies consists of problem-solving exercises, informal small groups, simulations, case studies, role playing, and other activities.
- Instructional strategies that engage students in the learning process stimulate critical thinking and a greater awareness of other perspectives

### Reference Books

- Aditya P.Mathur, Foundations of Software Testing, Pearson Education,2008.
- Srinivasan Desikan and Gopaldaswamy Ramesh, Software Testing – Principles and Practices, Pearson education, 2006
- KshirsagarNaik and PriyadarshiTripathy, Software Testing &Quality

Assurance, Wiley Student edition

- Robert Culbertson, Chris Brown and Gary Cobb , Rapid Testing, Prentice-Hall, 2002. ISBN 0-13-091294-8
- Boris Beizer, Black-Box Testing: Techniques for Functional Testing of Software and Systems, John Wiley & Sons, Inc., 1995. ISBN# 0-471-12094-
- Louise Tamres ,Introducing Software testing- A practical guide to getting started, Pearson

#### Additional Resources

- <http://www.softwaretestinghelp.com>
- <http://etestinghub.com>

#### List of Experiments

**Tutorial 1:**

**Prepare** a document which consists of various Software Testing tools by examining their work pattern.

**Tutorial 2:**

**Explore** the Commonly Used Selenium IDE Commands and **Demonstrate** the Recording and running of test cases in Selenium IDE

**Tutorial 3:**

**Using** Selenium IDE, Write a test suite containing minimum 3 test cases.

**Tutorial 4:**

**Conduct** a test suite for any two web sites.

**Tutorial 5:** Write a C/C++/JAVA program to demonstrate the working of the following constructs:

1. do...while 2. while...do 3. if ... 4. for Loops in C/C++/JAVA language.

To understand the working of each of constructs with different range of values and test cases.

Positive values within range

Negative values within a range

Out of range values testing

**Tutorial 6:**

**Explore** Bug Tracking Tool **Bugzilla** on following activities

- Setting Parameters and Default Preferences
- Creating a New User
- Impersonating a User
- Adding Products
- Adding Product Components
- Modifying Default Field Values
- Creating a New Bug
- Viewing Bug Reports

**Tutorial 7:**

Take ATM system and **scrutinize** its system specifications and **report** the various bugs.

**Tutorial 8:**

**Construct** test cases for banking application. Should cover minimum 5 test cases.

**Tutorial 9:**

**Create** a test plan document for Library Management System.

**Tutorial 10:**

**Search** a research paper on a specific topic which gives complete idea about testing concept. Student can **choose** any topic from software testing syllabus.