



Kot Bhalwal, Jammu



Model Institute of Engineering  
& Technology (Autonomous)  
Course Handout

## COURSE HANDOUT

SOFTWARE TESTING AND AUTOMATION

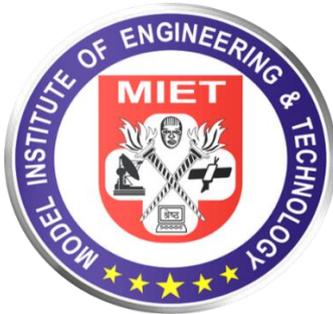
(COM-702 B) CSE 7<sup>TH</sup> SEMESTER

ACADEMIC YEAR (2024-25)

**Ms. Parul Sharma**

Assistant Professor

Computer Science and Engineering



Department of Computer Science and Engineering

Model Institute of Engineering & Technology (Autonomous)

Kot Bhalwal, Jammu - 181122

[www.mietjmu.in](http://www.mietjmu.in)



Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Sessional	Final Exam	Total
CSE-702B	Software Testing and Automation	PEC	3	3	0	0	50	100	150

### COURSE OUTCOMES

At the end of the course the student will be able to:	
CO1	Explain software testing principles, processes, and defect classification in SDLC.
CO2	Analyze manual test case design techniques and conceptualize user acceptance testing.
CO3	Describe test automation concepts, frameworks, and build knowledge of automation tools.
CO4	Design proficient test automation solutions with popular tools and integration.
CO5	Evaluate advanced testing methods for assessing performance and security for different applications.

### Section-A

#### Unit-I

Introduction to Software Testing: Overview of software testing principles and concepts, Testing process and its phases, Software development life cycle and testing, Types of software defects and their classification. (8 Hours)

#### Unit-II

Manual Testing Techniques: Test case design and test coverage, Black-box testing techniques (equivalence partitioning, boundary value analysis, etc.), White-box testing techniques (statement coverage, branch coverage, etc.), User acceptance testing and usability testing. (8 Hours)

#### Unit-III

Test Automation Fundamentals: Introduction to test automation and its benefits, Automation framework types (linear, modular, data-driven, keyword-driven, etc.), Selecting appropriate test automation tools, Test automation scripting and execution. (10 Hours)

### Section-B

#### Unit-IV

Test Automation Tools and Frameworks: Introduction to popular test automation tools (e.g., Selenium, Appium), Creating and executing automated test scripts, Test data management and automation, Continuous integration, and test automation. (11 Hours)

#### Unit-V

Advanced Testing Topics: Performance testing and load testing, security testing and vulnerability assessment, mobile application testing, test management and defect tracking. (8 Hours)

### Textbooks

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Software Testing: Principles and Practices	Srinivasan Desikan	Pearson Education	1st (2005)
2	Software Testing: Concepts and Operations	Ali Mili, Fairouz Tchier	Wiley	3rd (2015)



### Reference Books

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Fundamentals of Software Testing	ISTQB Certification	Cambridge	2nd (2017)

COURSE PLAN		
Unit-I		
S.No	Topics	Recommended Books
1	Overview of Software Testing	Book 3, Ch.1
2	Testing Process Overview	Book 2, Ch.3
3	Phases of Testing	Book 2, Ch.3
4	SDLC and Testing	Book 1, Ch.2
5	Types of Software Defects	Book 2, Ch 6
6	Classification of Defects	Book 2, Ch 6
7	Testing and Quality Assurance	Book 1, Ch 2
Unit-II		
13	Test Case Design and Test Coverage	Book 3, Ch.4
14	Black-box Testing Techniques	Book 1, Ch.4
15	White-box Testing Techniques	Book 1, Ch. 3
16	User Acceptance Testing	Book 1, Ch.12
17	Usability Testing	Book 1, Ch.12
Unit-III		
19	Introduction to Test Automation	Book 1, Ch.16
20	Automation Framework Types	Book 2, Ch.15
21	Selecting Test Automation Tools	Book 1, Ch.16
22	Test Automation Scripting and Execution	Book 2, Ch. 15
Unit-IV		
31	Overview of Test Automation Tools	Book 1, Ch.15
32	Introduction to Selenium	Book 1, Ch.15
33	Introduction to Appium	Book 1, Ch.15
34	Script Development for Automated Testing	Book 2, Ch. 6



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35	Executing Automated Test Scripts	Book 2, Ch. 6
36	Test Data Management Strategies	Book 2, Ch. 6
37	Automation of Test Data Handling	Book 1, Ch. 15
38	Basics of Continuous Integration	Book 2, Ch. 6
39	Integrating Test Automation with CI Tools	Book 2, Ch. 9
40	Best Practices in Test Automation and CI Integration	Book 2, Ch. 9
<b>Unit-V</b>		
43	Fundamentals of Performance Testing	Book 2, Ch. 6
44	Techniques for Load Testing	Book 2, Ch. 1
45	Introduction to Security Testing	Book 1, Ch. 32
46	Methods for Vulnerability Assessment	Book 1, Ch. 32
47	Strategies for Mobile Application Testing	Book 1, Ch. 31
48	Principles of Test Management	Book 1, Ch. 31
49	Tools and Techniques for Defect Tracking	Book 1, Ch. 31
50	Integration of Testing Practices into Development Cycles	Book 1, Ch. 31

#### ADDITIONAL WEB RESOURCES

1.	<b>MOOC:</b> Software Testing and Automation Specialization <a href="https://www.coursera.org/specializations/software-testing-automation">https://www.coursera.org/specializations/software-testing-automation</a>
2.	<b>NPTEL:</b> Video lectures on Software Testing Lecture series by Prof. Meenakshi D'Souza IIT Bengaluru <a href="https://onlinecourses.nptel.ac.in/noc22_cs61/preview">https://onlinecourses.nptel.ac.in/noc22_cs61/preview</a>

#### GRADING AND ASSESSMENT

- **Sessional Test:** 20 marks
- **Assignment:** 20 marks
- **Attendance:** 10 marks
- **Final Examination:** 100 marks



### COURSE POLICIES

- **Attendance:** Minimum 75% attendance is mandatory to appear in the final examination of the course.
- **Academic Integrity:** MIET's academic integrity policies apply. Plagiarism will not be tolerated.
- **Late Submissions:** Assignments and projects must be submitted by the specified timelines.

### FACULTY INFORMATION

- **Office Hours**  
Wednesday (10:00 AM - 12:00 PM)  
Friday (10:00 AM - 12:00 PM)
- **Contact Information**  
[parul.cse@mietjammu.in](mailto:parul.cse@mietjammu.in)