



Kot Bhalwal, Jammu



Model Institute of Engineering
& Technology (Autonomous)
Course Handout

COURSE HANDOUT

SOFTWARE TESTING AND AUTOMATION (MCA-403(B))

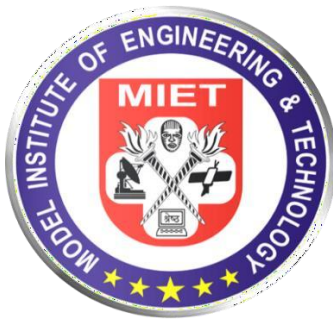
MCA- 4th SEMESTER

ACADEMIC YEAR (2024-25)

Ms. Arti Kotru

Associate Professor

Department of Computer Applications



MIET
FUTURE BEGINS HERE....

Department of Computer Applications

Model Institute of Engineering & Technology (Autonomous)

Kot Bhalwal, Jammu - 181122

www.mietjmu.in



Dr. Arun K. Gupta Teaching-Learning Centre

Version 1.1



Please Do Not Print Unless Necessary



Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Sessional	Final Exam	Total
MCA-403(B)	Software Testing and Automation	PEC	4	3	0	0	40	60	100

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 Hrs.)

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 Hrs.)

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 Hrs.)

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. (11Hrs.)

Unit-V

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

Textbooks

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

COURSE PLAN

Unit-I Introduction to Software Testing		
S.No	Topics	Recommended Books
1	Overview of software testing principles and concepts	Book 1(reference), Ch.1
2	Testing process and its phases	Book 1(reference), Ch.1
3	Software development life cycle	Book 1, Ch.2
4	Types of software defects and their classification.	Book 1, Ch.1
Unit-II Manual Testing Techniques		
5	Test case design and test coverage	Book 1, Ch.4
6	Black-box testing techniques (equivalence partitioning, boundary value analysis, etc.)	Book 1, Ch.4
7	White-box testing techniques (statement coverage, branch coverage, etc.)	Book 1, Ch.3
8	User acceptance testing and usability testing	Book 1, Ch.12
Unit-III Test Automation Fundamentals		
9	Introduction to test automation and its benefits	Book 1, Ch.16
10	Automation framework types (linear, modular, data-driven, keyword-driven, etc.)	Book 1, Ch.16
11	Selecting appropriate test automation tools	Book 1, Ch.16
12	Test automation scripting and execution	Book 1, Ch.16
Unit-IV Test Automation Tools and Frameworks		
13	Introduction to popular test automation tools (e.g., Selenium, Appium)	Book 1, Ch.16
14	Creating and executing automated test scripts	Book 1, Ch.16
15	Test data management and automation	Book 1, Ch.16
16	Continuous integration	https://www.geeksforgeeks.org/what-is-ci-cd/
17	Test automation	Book 1, Ch.16
Unit-V Advanced Testing Topics		
18	Performance testing and load testing	Book 1, Ch.7
19	Security testing and vulnerability assessment.	Book 1(reference), Ch.6
20	Mobile application testing	https://www.geeksforgeeks.org/what-is-mobile-application-testing/
21	Test management and defect tracking	Book 1, Ch.15

ADDITIONAL WEB RESOURCES

1.	MOOC: Software Testing and Automation Specialization https://www.coursera.org/specializations/software-testing-automation
2.	NPTEL: Video lectures on Software Testing Lecture series by Prof. Rajib Mall, Department of C.Sc., IIT Kharagpur https://www.youtube.com/watch?v=g6zGd6yckY&t=707s

GRADING AND ASSESSMENT



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- **Sessional Test:** 20 marks
- **Assignment:** 10 marks
- **Attendance:** 10 marks
- **Final Examination:** 60 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**
Friday (12:55 PM - 1:45 PM)
- **Contact Information**
arti.mca@mietjammu.in

