

# CSE377:WEB AUTOMATION TESTING

L:2 T:0 P:2 Credits:3

**Course Outcomes:** Through this course students should be able to

CO1 :: explain the fundamentals of web automation testing, Selenium architecture, Eclipse IDE, and browser automation concepts

CO2 :: use Selenium IDE and Selenium WebDriver to execute browser automation test scripts

CO3 :: apply Selenium WebDriver features, locators, XPath, and web element handling techniques to automate functional testing of web applications

CO4 :: analyze web automation frameworks using Maven, TestNG, Selenium Grid, and cross-browser testing techniques

CO5 :: apply performance testing techniques using Apache JMeter to evaluate web application performance and generate test reports

CO6 :: create and execute automated web application test scripts using Playwright and Katalon Studio

## Unit I

**Introduction to Selenium** : Who developed Selenium?, Selenium Components, Creating your First Selenium script, Creating and Running Tests, installing selenium, Comparison with Selenium RC, Launching AUT and Inspecting properties of Elements, Launching AUT in FireFox and Chrome, Downloading and Configuring latest Eclipse IDE

## Unit II

**Selenium IDE and WebDriver** : Introduction to Selenium IDE, Features of Selenium IDE, Creating a script by recording, Introduction to Selenium IDE Commands, Debugging in Selenium IDE using Breakpoint and Start Point Methods, Selenium Browser Automation using WebDriver, Types of Browser Support for Selenium WebDriver, Browser Navigation Commands in selenium

## Unit III

**Selenium Locators** : Introduction to Locators in Selenium WebDriver, FindElement and FindElements in Selenium WebDriver, Selenium Form WebElement, Clicking on Image in Selenium Webdriver, Selecting CheckBox and Radio Button in Selenium WebDriver, Select Value from DropDown using Selenium Webdriver, Locate Elements by Link Text & Partial Link Text in Selenium Webdriver, Action Class in Selenium Webdriver, XPath in Selenium WebDriver, Alert & Popup Window Handling in Selenium WebDriver, Finding Broken links using Selenium Webdriver

## Unit IV

**Selenium Validation and Grid** : Introduction to Maven project, Maven Project configuration, Introduction to TestNG, TestNG API Doc, TestNG configuration, types assertions and Annotations, Test Case Creation, implementing assertions, Selenium Grid, Grid Architecture, Components, Configuration, Create Test Script, Test Execution, Cross Browser Testing, Endpoints, Customizing a Node

## Unit V

**Performance Testing Tools** : Open-Source Vs Commercial Performance Testing Tools, Introduction to JMeter, Advantages of JMeter, Download and Installation Process of JMeter, Elements of JMeter, Configuration Elements of JMeter, Understanding JMeter GUI, Test Plan and Workbench, Adding elements, Creating and Running JMX file, Elements Configuration, Saving a Test Plan, , Creating Test Reports from running testplan, Creation of Performance Test Plan using JMeter, Understanding JMeter Timers, Using Assertions in JMeter, Using Controllers in JMeter, Processors in JMeter, Distributed Testing with JMeter, Creating Test Reports from running testplan

## Unit VI

**Web Testing tools** : Introduction to Playwright tool, Installation and configuration of Playwright, Handling Inputs, Handling Dropdowns, Capturing Screenshots, Handle Frames And iFrames, Handling Windows, Tabs and Popups, Handling Alerts in Playwright, Running Playwright Tests, Introduction to Katalon Studio, Installing Katalon Studio, Writing test case using Katalon Recording with Verify Options, Work with Object Spy, Create Test Suite, Create Test Suite Collection, Use CSS and Xpath in Katalon Studio

## List of Practicals / Experiments:

**List of Practicals**

- Installing Selenium
- Installing Eclipse
- Creating your First Selenium IDE script
- Test Programs using Assertions, Verify and Wait Commands.
- Test Programs for Locators in Selenium WebDriver
- Test Programs for Mouse Click & Keyboard Event
- Creation of Performance Test Plan using JMeter
- Creating and Running JMX file
- Creating Test Reports
- Creating test cases using Record & Playback
- Creating Locator Strategies in katalon studio
- To execute the same Selenium WebDriver test on multiple browsers using Selenium Grid
- To automate a simple web application using Playwright by interacting with common web elements.

**Text Books:**

1. SCIENCE OF SELENIUM by KALILUR RAHMAN, BPB PUBLICATIONS

**References:**

1. WEB AUTOMATION TESTING USING PLAYWRIGHT by KAILASH PATHAK, BPB PUBLICATIONS
2. SELENIUM WEBDRIVER by RAJEEV GUPTA, Pearson Education India
3. SELENIUM WITH JAVA A BEGINNERS GUIDE by PALLAVI SHARMA, BPB PUBLICATIONS