

ABOUT THE COURSE: SOFTWARE TESTING

TABLE 1	
OVERALL COURSE OBJECTIVE:	<ul style="list-style-type: none"> Software Testing: fundamental concepts, principles, and methodologies of software testing, including its importance in ensuring software quality and reliability.
	<ul style="list-style-type: none"> Explore Different Testing Techniques and Strategies: Study various testing techniques, such as functional testing, regression testing, performance testing, security testing, and usability testing. develop effective test strategies based on the specific requirements and constraints of software projects.
	<ul style="list-style-type: none"> Test Tools and Frameworks: Familiarize yourself with popular software testing tools and frameworks, such as Selenium, JUnit, TestNG, and Cucumber. Gain hands-on experience in using these tools to automate test cases, manage test data, and generate test reports.
	<ul style="list-style-type: none"> Test Case Design and Execution: Learn how to design comprehensive and effective test cases, including test case identification, prioritization, and traceability. processing of executing test cases, capturing test results, and reporting defects.
	<ul style="list-style-type: none"> Defect Management and Bug Tracking: Gain knowledge of defect management processes and tools, including bug-tracking systems like JIRA. Learn how to report, track, prioritize, and resolve software defects in a systematic manner.
	<ul style="list-style-type: none"> Test Environment Setup and Configuration: setting up a test environment, including hardware, software, and network configurations. Learn how to manage test environments effectively and ensure their stability and reliability.
	<ul style="list-style-type: none"> Test Planning and Documentation: Learn how to develop test plans, define test objectives, and create test documentation. importance of test coverage, traceability, and risk-based

	testing approaches.
	<ul style="list-style-type: none"> • Collaborative Testing and Agile Methodologies: Explore the role of software testing in agile development methodologies, such as Scrum and Kanban. collaborate effectively with developers, product owners, and other stakeholders in an agile environment.
	<ul style="list-style-type: none"> • Quality Assurance and Continuous Improvement: Gain knowledge of quality assurance processes, standards, and best practices in software testing. Learn how to implement continuous improvement strategies to enhance software testing activities' overall quality and efficiency.
	<ul style="list-style-type: none"> • Project Work: Apply the knowledge and skills gained throughout the course by working on practical projects. Project will involve designing test scenarios, developing cases, executing tests, and analyzing test results.

LEARNING OUTCOME:	<p>Testing the application, including its various</p> <ul style="list-style-type: none"> • types, importance in software development, fundamentals, introduction to test automation, advantages and disadvantages, appropriate timing for automation, and use of test automation tools.
	<p>Utilize Katalon Studio for software testing,</p> <ul style="list-style-type: none"> • including its features, installation, setup, and interface. Gain competence in basic operations such as creating projects, adding test cases, creating test suites, and executing tests within the Katalon Studio environment.
	<p>Develop advanced proficiency in test case</p> <ul style="list-style-type: none"> • creation and management within Katalon Studio, including recording, creating, and maintaining web test objects. Learn efficient organization and management techniques using test suites, test suite collections, and dynamic test suites. Master data-driven testing methods and debugging procedures within Katalon Studio. Advance skills in keyword-driven testing, custom keyword creation, and integrating Katalon Studio with

	Jenkins or other CI/CD tools for seamless automation in software testing workflows.
	<p>Working in Katalon Studio for cross-browser</p> <ul style="list-style-type: none"> • testing and mobile app testing, while adhering to best practices and implementing tips and tricks for efficient test automation. Gain proficiency in utilizing Katalon Studio extensions and integrations, including integrating with popular test management tools, version control systems like Git, and utilizing plugins to enhance functionality. Acquire fundamental knowledge of Git and its integration with Katalon Studio for streamlined collaboration and version control in test automation projects.
	<p>Develop proficiency in generating and</p> <ul style="list-style-type: none"> • customizing test reports in Katalon Studio, enabling efficient analysis of test results and obtaining actionable insights within the Katalon Platform. Acquire the capability to execute a comprehensive test automation project using Katalon Studio, demonstrating mastery of knowledge and skills gained throughout the course.

TABLE 2: MODULE WISE COURSE CONTENT AND OUTCOME

SL .N O	MODULE NAME	MODULE CONTENT	MODULE LEARNING OUTCOME	DURATION (HRS)
1	Introduction to Software Testing	<p>What is Software testing</p> <p>Different types of software testing -</p> <p>Importance of software testing in software development</p> <p>Fundamentals of software testing-</p> <p>Fundamentals of Test Automation:</p> <p>Introduction to test automation</p> <p>Advantages and disadvantages of</p>	<p>Exploring software testing, including its various types, importance in software development, fundamentals, introduction to test automation, advantages and disadvantages, appropriate timing for automation, and familiarity with</p>	6

		test automation - When to automate tests - Test automation tools.	test automation tools.	
2	Introduction to Katalon Studio	Introduction to Katalon Studio - Features of Katalon Studio - Installation and setup of Katalon Studio Katalon Studio interface Katalon Studio Basic Operations: Creating a new project in Katalon Studio Adding test cases in Katalon Studio - Creating test suites in Katalon Studio Running tests in Katalon Studio	Utilize Katalon Studio for software testing, including its features, installation, setup, and interface. Gain competence in basic operations such as creating projects, adding test cases, creating test suites, and executing tests within the Katalon Studio environment.	04
3	Test Case Creation and Management in Katalon Studio	Test case creation and management in Katalon Studio - Recording and creating test cases in Katalon Studio - Creating and maintaining web test objects using Katalon Studio Organizing and Managing Katalon Tests for Better Testing Efficiency (with TS, TSC, and dynamic TS) Data-driven testing with Katalon Studio -	Develop advanced proficiency in test case creation and management within Katalon Studio, including recording, creating, and maintaining web test objects. Learn efficient organization and management techniques using test suites, test suite collections, and dynamic test suites. Master	10

		<p>Test case debugging in Katalon Studio</p> <p>Advanced Test Automation with Katalon Studio: Keyword-driven testing with Katalon Studio -</p> <p>Creating custom keywords in Katalon Studio -</p> <p>Advanced test automation techniques with Katalon Studio -</p> <p>Integrating Katalon Studio with Jenkins or other CI/CD tools</p>	<p>data-driven testing methods and debugging procedures within Katalon Studio. Advance skills in keyword-driven testing, custom keyword creation, and integrating Katalon Studio with Jenkins or other CI/CD tools for seamless automation in software testing workflows.</p>	
4	Katalon Studio Best Practices and Tips	<p>Using Katalon Studio for cross-browser testing -</p> <p>Using Katalon Studio for mobile app testing -</p> <p>Best practices for using Katalon Studio Tips and tricks for efficient test automation with Katalon Studio-Katalon Studio Extensions and Integrations: Katalon Studio extensions and integrations</p> <p>Integrating Katalon Studio with popular test management tools -</p> <p>Integrating Katalon Studio with Git or other</p>	<p>Working in Katalon Studio for cross-browser testing and mobile app testing, while adhering to best practices and implementing tips and tricks for efficient test automation. Gain proficiency in utilizing Katalon Studio extensions and integrations, including integrating with popular test management tools, version control systems like Git, and utilizing plugins</p>	10

		version control systems - Using Katalon Studio plugins to enhance functionality - Git 101 and integration with Katalon	to enhance functionality. Acquire fundamental knowledge of Git and its integration with Katalon Studio for streamlined collaboration and version control in test automation projects.	
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5	Katalon Studio Reporting and Analysis	Katalon Studio reporting and analysis - Test case execution reports in Katalon Studio Customizing test reports in Katalon Studio - Getting actionable insights in the Katalon Platform - Analyzing test results in Katalon Studio- Katalon Studio Reporting and Analysis: Developing and executing a comprehensive test automation project using Katalon Studio Demonstrating knowledge and skills learned throughout the course	Generating and customizing test reports in Katalon Studio, enabling efficient analysis of test results and obtaining actionable insights within the Katalon Platform. Acquire the capability to execute a comprehensive test automation project using Katalon Studio, demonstrating mastery of knowledge and skills gained throughout the course.	10
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TABLE 3: OVERALL COURSE LEARNING OUTCOME ASSESSMENT CRITERIA AND USE CASES

LEARNING OUTCOME	ASSESSMENT CRITERIA	USE CASES
<ul style="list-style-type: none"> software testing, including its various types, importance in software development, fundamentals, introduction to test automation, advantages and disadvantages, appropriate timing for automation, and familiarity with test automation tools. 	<ul style="list-style-type: none"> Software Testing: Assess comprehension of software testing fundamentals, including types, importance, and its role in software development. Test Automation Proficiency: Evaluate familiarity with test automation, covering advantages, appropriate timing, and knowledge of popular automation tools and frameworks. 	<p>Use Case 1: E-commerce Website Testing</p> <p>Scenario: A leading e-commerce company is gearing up to launch a new website for online shopping, aiming to provide customers with a seamless and secure shopping experience.</p> <p>Task: The testing team performs various types of software testing, including unit testing for individual components, integration testing to verify interactions between modules, system testing to assess overall functionality, and acceptance testing to ensure alignment with user requirements. They also prioritize test automation for repetitive tasks like regression testing, using tools such as Selenium WebDriver and JUnit to enhance efficiency and maintainability.</p> <p>Use Case 2: Financial Management System</p> <p>Scenario: A financial</p>

		<p>services company is developing a new financial management system to streamline accounting processes and enhance financial reporting capabilities.</p> <p>Task: The testing team ensures accuracy, reliability, and compliance of the system. They conduct unit, integration, system, and compliance testing. Test automation is prioritized for repetitive tasks using tools like Selenium WebDriver and TestNG. The goal is to deliver a robust and compliant system that enhances financial processes.</p>
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<ul style="list-style-type: none"> Acquire proficiency in utilizing Katalon Studio for software testing, including its features, installation, setup, and interface. Gain competence in basic operations such as creating projects, adding test cases, creating test suites, and executing tests within the Katalon Studio environment. 	<ul style="list-style-type: none"> Demonstrated ability to effectively utilize Katalon Studio for software testing, including its features, installation, setup, and interface. Mastery of basic operations within Katalon Studio, such as creating projects, adding test cases, creating test suites, and executing tests seamlessly. Ability to efficiently set up and configure the testing environment within Katalon Studio, ensuring smooth execution of test cases. 	<p>Use Case 1: Web Application Functional Testing</p> <p>Scenario: A company is developing a new web application for managing inventory in their warehouse.</p> <p>Task: Utilize Katalon Studio to set up a testing project for the web application's functional testing. Install and configure Katalon Studio, ensuring compatibility with the web application. Create a project, add relevant test cases to cover inventory management functionalities, and organize them into test suites. Execute the tests within Katalon Studio and analyze the results to validate the application's functionality.</p> <p>Use Case 2: Mobile App UI Testing</p> <p>Scenario: A mobile app development team is creating a new e-commerce app for iOS and Android platforms.</p> <p>Task: Utilize Katalon</p>
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				<p>Studio to create a testing project for the mobile app's UI testing. Install Katalon Studio and set up the testing environment for mobile app testing. Add test cases to cover UI elements and interactions, such as navigation, buttons, and forms. Create test suites to group related test cases. Execute the UI tests within Katalon Studio and review the results to ensure the app's user interface meets the requirements.</p>
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<ul style="list-style-type: none"> • Develop advanced proficiency in test case creation and management within Katalon Studio, including recording, creating, and maintaining web test objects. Learn efficient organization and management techniques using test suites, test suite collections, and dynamic test suites. Master data-driven testing methods and debugging procedures within Katalon Studio. Advance skills in keyword-driven testing, custom keyword creation, and integrating Katalon Studio with Jenkins or other CI/CD tools for seamless automation in software testing workflows. 	<ul style="list-style-type: none"> • Demonstrate advanced proficiency in creating, organizing, and managing test cases within Katalon Studio, including recording, creation, and maintenance of web test objects. • Mastery of efficient organization and management techniques using test suites, test suite collections, and dynamic test suites within Katalon Studio. • Proficiency in data-driven testing methods and effective debugging procedures within Katalon Studio to ensure robust test development and execution. 	<p>Use Case 1: Automated Regression Testing for Web Application</p> <p>Scenario: A company has an established web application for online shopping and wants to automate regression testing for faster release cycles.</p> <p>Task: Utilize Katalon Studio to develop an advanced automated regression testing suite for the web application. Record and create test cases covering critical functionalities. Organize test cases using efficient techniques. Implement data-driven testing methods. Develop custom keywords and integrate Katalon Studio with Jenkins. Execute the automated regression tests and analyze results for defects.</p> <p>Use Case 2: API Testing for Travel Booking Platform</p> <p>Scenario: A travel booking platform is enhancing its API services to improve integration with</p>
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			<p>partner systems and provide additional functionality to users.</p> <p>Task: Develop an API testing suite in Katalon Studio for a travel booking platform. Create test cases covering critical API endpoints, organize them efficiently, implement data-driven testing, develop custom keywords, integrate with Jenkins, execute tests, and analyze results for discrepancies.</p>
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<ul style="list-style-type: none"> Attain expertise in leveraging Katalon Studio for cross-browser testing and mobile app testing, while adhering to best practices and implementing tips and tricks for efficient test automation. Gain proficiency in utilizing Katalon Studio extensions and integrations, including integrating with popular test management tools, version control systems like Git, and utilizing plugins to enhance functionality. 	<ul style="list-style-type: none"> Demonstrate expertise in leveraging Katalon Studio for cross-browser testing and mobile app testing, ensuring adherence to best practices and implementing efficient automation techniques. Mastery of utilizing Katalon Studio extensions and integrations, including integration with popular test management tools, version control systems like Git, and plugins for enhanced functionality. <p>Acquire fundamental knowledge of Git and demonstrate the ability to integrate it with Katalon Studio for</p>	<p>Use Case 1: Cross-Browser Testing for E-Commerce Website</p> <p>Scenario: A company operates an e-commerce website and wants to ensure consistent functionality across different web browsers.</p> <p>Task: Utilize Katalon Studio to perform cross-browser testing for the e-commerce website. Develop automated test cases to verify critical functionalities such as user authentication, product search, and checkout process. Implement best</p>
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<p>Acquire fundamental knowledge of Git and its integration with Katalon Studio for streamlined collaboration and version control in test automation projects.</p>	<p>streamlined collaboration and version control in test automation projects.</p>	<p>practices for cross-browser testing and leverage Katalon Studio's features for efficient automation. Execute the tests across various browsers and analyze the results to identify any compatibility issues.</p> <p>Use Case 2: Mobile App Testing for Banking Application</p> <p>Scenario: A leading bank has developed a mobile banking application to provide customers with convenient access to banking services on their smartphones.</p> <p>Task: Utilize Katalon Studio to perform mobile app testing for the banking application. Develop automated test cases to verify critical functionalities such as account login, funds transfer, bill payment, and account balance inquiries. Implement best practices for mobile app testing and leverage Katalon Studio's features for efficient automation. Execute the tests across various mobile devices and analyze the results to identify</p>
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			any compatibility issues or functional defects.
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<ul style="list-style-type: none"> Developing and executing a comprehensive test automation project using Katalon Studio. Demonstrating knowledge and skills learned throughout the course. 	<ul style="list-style-type: none"> Demonstrate the ability to develop and execute a comprehensive test automation project using Katalon Studio, covering various aspects of testing and applying knowledge and skills acquired throughout the course. Showcase the application of learned knowledge and skills, including proficiency in test case creation, management, execution, debugging, and integration with other tools or systems, in the development and execution of the test automation project. Evaluate the effectiveness of the test automation project in terms of test coverage, reliability, efficiency in defect detection, and contribution to overall software quality improvement. 	<p>Use Case 1:API Testing for Finance Application Integration</p> <p>Scenario: A financial services company is integrating its banking application with third-party financial APIs to provide users with additional financial management features. They need to ensure seamless integration and data accuracy.</p> <p>Task: Utilize Katalon Studio to develop a comprehensive test automation project for API testing. Create automated test cases to validate API endpoints for functionalities such as account balance retrieval, transaction history retrieval, fund transfers, and bill payments. Perform data validation to ensure the accuracy and integrity of financial data exchanged between the banking application and third-party APIs. Additionally, conduct performance testing to evaluate API response times and scalability</p>
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			<p>under different load conditions.</p> <p>Use Case 2: Mobile App Testing</p> <p>Scenario: A mobile app development team is creating a new finance management app for iOS and Android platforms.</p> <p>Task: Develop a test automation project using Katalon Studio to validate key functionalities such as user authentication, transaction processing, and account management across different mobile devices and platforms. Apply the knowledge and skills learned throughout the course in test case creation, management, execution, and debugging. Integrate the project with CI/CD tools like Jenkins for automated testing as part of the development pipeline. Execute the automated tests and analyze the results to ensure the app's functionality and reliability across various devices and platforms.</p>
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TABLE 4: LIST OF FINAL PROJECTS (10 PROJECTS THAT COMPREHENSIVELY COVER ALL THE LEARNING OUTCOME)

SL.NO	FINAL PROJECT
1	CRAFERIA Manual Testing
2	Orange HRM-Open Source HR Management
3	CURA Healthcare Service
4	Facebook - User Registration ; Posting Content ;Privacy Settings; Messaging ; Notifications
5	AMAZON - Product Search ; Adding to Cart ; Payment Processing ; Order Tracking ; Customer Reviews
6	ActiTIME Manual Testing
7	Nopcommerce Manual Testing
8	Manual Testing Calendly
9	Manual Testing BLUESTONE
10	Mercury Tours Demo