



DHANALAKSHMI SRINIVASAN ENGINEERING COLLEGE (AUTONOMOUS)

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)

Re-Accredited with 'A' Grade By NAAC, Accredited by TCS.

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PERAMBALUR - 621212.



COURSE PLAN (2025-2026) ODD SEMESTER

Name of the Faculty				
Designation/Department				
Course Code/Name	U23CSV25/ SOFTWARE TESTING AND AUTOMATION			
Year/Department	III/IT			
Credits Details	L: 3	T: 0	P: 0	C: 3
Total Contact Hours Required	45			

Syllabus:

UNIT I/ FOUNDATIONS OF SOFTWARE TESTING	No. Of Periods: 9
Why do we test Software? Black-Box Testing and White-Box Testing, Software Testing Life Cycle, V-model of Software Testing, Program Correctness and Verification, Reliability versus Safety, Failures, Errors and Faults (Defects), Software Testing Principles, Program Inspections, Stages of Testing: Unit Testing, Integration Testing, System Testing.	
UNIT II/ TEST PLANNING	No. Of Periods: 9
The Goal of Test Planning, High Level Expectations, Intergroup Responsibilities, Test Phases, Test Strategy, Resource Requirements, Tester Assignments, Test Schedule, Test Cases, Bug Reporting, Metrics and Statistics.	
UNIT III/ TEST DESIGN AND EXECUTION	No. Of Periods: 9
Test Objective Identification, Test Design Factors, Requirement identification, Testable Requirements, Modeling a Test Design Process, Modeling Test Results, Boundary Value Testing, Equivalence Class Testing, Path Testing, Data Flow Testing, Test Design Preparedness Metrics.	
UNIT IV/ ADVANCED TESTING CONCEPTS	No. Of Periods: 9
Performance Testing: Load Testing, Stress Testing, Volume Testing, Fail-Over Testing, Recovery Testing, Configuration Testing, Compatibility Testing, Usability Testing, Testing the Documentation, Security testing, Testing in the Agile Environment, Testing Web and Mobile Applications.	
UNIT V / TEST AUTOMATION AND TOOLS	No. Of Periods: 9
Automated Software Testing, Automate Testing of Web Applications, Selenium: Introducing Web Driver and Web Elements, Locating Web Elements, Actions on Web Elements, Different Web Drivers, Understanding Web Driver Events.	

Objective:

- ❖ To understand the basics of software testing.
- ❖ To learn how to do the testing and planning effectively.
- ❖ To build test cases and execute them.
- ❖ To focus on wide aspects of testing and understanding multiple facets of testing.
- ❖ To get an insight about test automation and the tools used for test automation.

Text Books:

T1: Yogesh Singh, "Software Testing", Cambridge University Press, 2012.
T2: Unmesh Gundecha, Satya Avasarala, "Selenium WebDriver 3 Practical Guide", Second Edition 2018.

Reference Books:

R1: Glenford J. Myers, Corey Sandler, Tom Badgett, The Art of Software Testing, 3rd Edition, 2012, John Wiley & Sons, Inc.
R2: Ron Patton, Software testing, 2nd Edition, 2006, Sams Publishing.
R3: Paul C. Jorgensen, Software Testing: A Craftsman's Approach, Fourth Edition, 2014, Taylor & Francis Group.
R4: Frank Cohen, "FastSOA", Elsevier, 2007. Carl Cocchiario, Selenium Framework Design in Data-Driven Testing, 2018, Packt Publishing.
R5: Elfriede Dustin, Thom Garrett, Bernie Gaurf, Implementing Automated Software Testing, 2009, Pearson Education, Inc.

Website:

W1: <https://www.geeksforgeeks.org/software-testing/software-testing-life-cycle-stlc/>
W2: <https://www.geeksforgeeks.org/software-engineering/software-engineering-sdlc-v-model/>
W3: <https://www.geeksforgeeks.org/software-testing/selenium-webdriver-event-listener/>

Online Mode of Study:

W1: <https://www.geeksforgeeks.org/software-testing/automation-testing-software-testing/>
W2: <https://www.tutorialspoint.com/automation-testing-tutorial-for-beginners-process-benefits-tools>
W3: <https://www.youtube.com/watch?v=g4sgTJM55Ng>
W4: <https://www.youtube.com/watch?v=-jYGMPy4rNk>
W5: https://onlinecourses.nptel.ac.in/noc25_cs113/preview
W6: https://onlinecourses.swayam2.ac.in/ntr25_ed118/preview

Course Plan:

Topic Number	Topic	Reference Detail	Page Number	Mode of teaching	Number of Periods Required	Cumulative Period
UNIT I – FOUNDATIONS OF SOFTWARE TESTING						9
1	Why do we test Software?	T1	1.13 – 1.15	BB	1	1
2	Black-Box Testing	T1	1.17 – 1.19	BB	1	2
3	White-Box Testing	T1	1.20 – 1.25	PPT	1	3
4	Software Testing Life Cycle	T2	1.25 – 1.30	BB	1	4
5	V-model of Software Testing	T1,R1	1.30 – 1.32	BB	1	5
6	Program Correctness and Verification	T2	1.32 – 1.50	BB	1	6
7	Reliability versus Safety Failures, Errors and Faults (Defects)	T1	1.50 – 1.58	BB	1	7
8	Software Testing Principles, Program Inspections	T1	1.58 – 1.62	BB	1	8
9	Stages of Testing: Unit Testing, Integration Testing, System Testing.	T2	1.85 – 1.87	PPT	1	9
Outcome of Unit I						
CO1: Understand the basic concepts of software testing and the need for software testing.						
UNIT II - TEST PLANNING						9
10	The Goal of Test Planning	T2, R1	2.0 – 2.1	BB	1	10
11	High Level Expectations	T1	2.2 – 2.4	PPT	1	11
12	Intergroup Responsibilities	T2	2.4 – 2.6	BB	1	12
13	Test Phases	T1,W1	2.6	BB	1	13
14	Test Strategy	T2, R2	2.6 - 2.7	PPT	1	14
15	Resource Requirements	T1, W1	2.7	BB	1	15

16	Tester Assignments	T2	2.7 – 2.8	BB	1	16
17	Test Schedule - Test Cases	T2,R2	2.8 – 2.18	PPT	1	17
18	Bug Reporting, Metrics and Statistics.	T1	2.18 – 2.42	BB	1	18
Outcome of Unit II						
CO2: Design Test planning and different activities involved in test planning.						
UNIT III - TEST DESIGN AND EXECUTION						9
19	Test Objective Identification, Test Design Factors	T1	3.1 – 3.7	BB	1	19
20	Requirement identification, Testable Requirements	T1	3.7 – 3.17	BB	1	20
21	Modeling a Test Design Process	T2	3.17 – 3.20	PPT	1	21
22	Modeling Test Results	T2, R2	3.20 – 3.21	BB	1	22
23	Boundary Value Testing	T2, W3	3.21	BB	1	23
24	Equivalence Class Testing	T1, R2	3.21 – 3.25	BB	1	24
25	Path Testing	T2	3.42 – 3.48	BB	1	25
26	Data Flow Testing	T2	3.49 – 3.57	BB	1	26
27	Test Design Preparedness Metrics	T2	3.58 – 3.59	PPT	1	27
Outcome of Unit III:						
CO3: Design effective test cases that can uncover critical defects in the application.						
UNIT IV – ADVANCED TESTING CONCEPTS						9
28	Performance Testing: Load Testing	T1	4.1 – 4.23	PPT	1	28
29	Stress Testing - Volume Testing	T1/W3	4.23 - 4.38	BB	1	29
30	Fail-Over Testing - Recovery Testing	T2	4.38 – 4.46	BB	1	30
31	Configuration Testing - Compatibility	T1	4.46 –	PPT	1	31

	Testing		4.63			
32	Usability Testing	T1	4.63 – 4.74	BB	1	32
33	Testing the Documentation	T2/W3	4.74 – 4.96	BB	1	33
34	Security testing	T1/W2	4.110 – 4.123	PPT	1	34
35	Testing in the Agile Environment	T2	4.123 – 4.134	BB	1	35
36	Testing Web and Mobile Applications.	T2	4.134 – 4.138	BB	1	36

Outcome of Unit IV:

CO4: Extend out advanced types of testing.

UNIT V - TEST AUTOMATION AND TOOLS

9

37	Automated Software Testing	T2	5.1 – 5.17	PPT	1	37
38	Automate Testing of Web Applications	T1	5.17 – 5.27	PPT	1	38
40	Selenium: Introducing Web Driver	T2/W2	5.28 – 5.40	BB	1	39
41	Web Elements	T2	5.40 – 5.41	PPT	1	40
42	Locating Web Elements	T2	5.41 – 5.47	BB	1	41
43	Actions on Web Elements	T1/W1	5.47 – 5.50	BB	1	42
44	Different Web Drivers	T2	5.50 – 5.53	PPT	1	43
45	Understanding Web Driver Events.	T1	5.53 – 5.54	PPT	1	44

Outcome of Unit V:

CO5: Explain the software testing using Selenium and TestNG.

CO6: Understand Web driver events using automation tools.

Course Outcome:

At the end of course: Students should be able to do:

CO1: Understand the basic concepts of software testing and the need for software testing.

CO2: Design Test planning and different activities involved in test planning.

CO3: Design effective test cases that can uncover critical defects in the application.

CO4: Extend out advanced types of testing.

CO5: Explain the software testing using Selenium and TestNG.

CO6: Understand Web driver events using automation tools.

Course Outcome Vs Program Outcome Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	1	1	1	2	3	1	3	2	2	3	3	2	2	3	1
CO2	1	1	2	3	3	2	2	2	2	3	2	2	1	2	1
CO3	1	2	2	2	3	2	2	2	2	2	3	3	2	1	2
CO4	2	1	3	2	2	3	3	3	2	2	2	3	3	3	2
CO5	1	2	2	2	3	2	2	2	2	2	3	3	2	1	1
CO6	1	1	3	3	3	3	1	3	2	3	3	2	3	3	2
AVG	1.16	1.33	2.16	2.33	2.83	2.16	2.16	2.33	2.00	2.50	2.66	2.50	2.16	2.16	1.50

Content beyond Syllabus:

- ❖ Selenium Web Driver & Automation Frameworks
- ❖ Performance Testing (Load, Stress, Volume)
- ❖ Continuous Testing in DevOps
- ❖ Behavior-Driven Development (BDD)

Internal Evaluation Components:

Webportal	Assignment	Components	Topic Number with Topic / Unit Details	Relevance to CO
Webportal 1	--	Assessment - I (60)	Unit I and II	CO1 & CO2
	1	Handwritten (20)	Software Testing Life Cycle, Program Inspections , Stages of Testing	CO1
	2	Poster Presentation / PPT (20)	Bug Reporting, Intergroup Responsibilities,	CO2
Webportal 2	--	Assessment - II (60)	Unit III and IV	CO3 & CO4
	3	Seminar (20)	Data Flow Testing, Equivalence Class Testing, Boundary Value Testing	CO3
	4	Case Study Report (20)	Load Testing and Stress Testing, Configuration Testing, Compatibility Testing, Usability Testing	CO4 & CO5
Webportal 3	--	Model Exam (75)	Unit I to V	CO1 to CO6

	5	MCQ (15)	Unit I to V	C01 to C06
	-	Course Attendance (10)	--	--

Submission Details:

Phase 1 (Before AT 1)		Phase 2 (Before AT 2)		Phase 3 (Model)
Assignment 1	Assignment 2	Assignment 3	Assignment 4	Assignment 5

Google Class Code Details: krvpn5m2

Class Name: U23CSV25 – SOFTWARE TESTING AND AUTOMATION

PLAN OF ASSESSMENT TEST - DISTRIBUTION OF MARKS:

TEST	CO- MARK WISE DISTRIBUTION						BLOOM'S LEVEL MARK WISE DISTRIBUTION					
	C01	C02	C03	C04	C05	C06	BTL1	BTL2	BTL3	BTL4	BTL5	BTL6
AT-1	23	37	--	--	--	--	20	27	13	--	--	--
AT-2	--	--	37	23	--	--	20	26	14	--	--	
MODEL	C01	C02	C03	C04	C05	C06	BTL1	BTL2	BTL3	BTL4	BTL5	BTL6

Prepared By

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