INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal, Hyderabad -500 043

COMPUTER SCIENCE AND ENGINEERING

COURSE DESCRIPTOR

Course Title	**SOFTWARE TESTING METHODOLOGY LABORATORY**				
Course Code	AIT104				
Programme	B. Tech				
Semester	VII	CSE | IT			
Course Type	Core				
Regulation	IARE - R16				
Course Structure	**Theory**			**Practical**	
	Lectures	**Tutorials**	**Credits**	**Laboratory**	**Credits**
	-	-	-	3	2
Chief Coordinator	Ms. M Geetavani B, Assistant Professor				
Course Faculty	Ms. M GeethaYadav, Assistant Professor Ms. K Mayuri, Assistant Professor Ms. B Anupama, Assistant Professor				

I. COURSE OVERVIEW:

The software testing is a process of executing a program or application with the intent of finding the bugs. This course will help students learn catch bugs and break software as you discover different testing methods that will help build better software. It will teach and make students think like a software tester and help in finding bugs in code earlier and write better code. The course demonstrates an in-depth understanding of the tools and technologies for software testing and do better programming and test the programs efficiently

II. COURSE PRE-REQUISITES:

Level	Course Code	Semester	Prerequisites	Credits
UG	ACS008	V	Software Engineering	4

III. MARKS DISTRIBUTION:

Subject	SEE Examination	CIA Examination	Total Marks
Software Testing Methodology	70 Marks	30 Marks	100

IV. DELIVERY / INSTRUCTIONAL METHODOLOGIES:

✔	Chalk & Talk	✘	Quiz	✔	Assignments	✘	MOOCs
✔	LCD / PPT	✘	Seminars	✘	Mini Project	✔	Videos
✔	Open Ended Experiments						

V. EVALUATION METHODOLOGY:

Each laboratory will be evaluated for a total of 100 marks consisting of 30 marks for internal assessment and 70 marks for semester end lab examination. Out of 30 marks of internal assessment, continuous lab assessment will be done for 20 marks for the day to day performance and 10 marks for the final internal lab assessment.

Semester End Examination (SEE): The semester end lab examination for 70 marks shall be conducted by two examiners, one of them being Internal Examiner and the other being External Examiner, both nominated by the Principal from the panel of experts recommended by Chairman, BOS.

The emphasis on the experiments is broadly based on the following criteria:

20 %	To test the preparedness for the experiment.
20 %	To test the performance in the laboratory.
20 %	To test the calculations and graphs related to the concern experiment.
20 %	To test the results and the error analysis of the experiment.
20 %	To test the subject knowledge through viva – voce.

Continuous Internal Assessment (CIA):
CIA is conducted for a total of 30 marks (Table 1), with 20 marks for continuous lab assessment during day to day performance, 10 marks for final internal lab assessment.

Table 1: Assessment pattern for CIA

Component	**Laboratory**		**Total Marks**
Type of Assessment	**Day to day performance**	**Final internal lab assessment**	
CIA Marks	20	10	30

Continuous Internal Examination (CIE):
One CIE exams shall be conducted at the end of the 16th week of the semester. The CIE exam is conducted for 10 marks of 3 hours duration.

Preparation	**Performance**	**Calculations and Graph**	**Results and Error Analysis**	**Viva**	**Total**
2	2	2	2	2	10

VI. HOW PROGRAM OUTCOMES AREASSESSED:

Program Outcomes (POs)		Strength	Proficiency assessed by
PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.	3	Videos
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.	2	Case Studies
PO 3	**Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.	2	Assignments
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.	2	Case Studies
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.	3	Videos

3 = High; 2 = Medium; 1 = Low

VII. HOW PROGRAM SPECIFIC OUTCOMES AREASSESSED:

Program Specific Outcomes (PSOs)		Strength	Proficiency assessed by
PSO 1	**Professional Skills:** The ability to understand, analyze and develop computer programs in the areas related to algorithms, system software, multimedia, web design, big data analytics, and networking for efficient design of computer-based systems of varying complexity.	2	Videos
PSO 2	**Problem-Solving Skills:** The ability to apply standard practices and strategies in software project development using open-ended programming environments to deliver a quality product for business success	1	Case Studies
PSO 3	**Successful Career and Entrepreneurship:** The ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an Entrepreneur and a zest for higher studies.	1	Case Studies

3 = High; 2 = Medium; 1 = Low

VIII. COURSE OBJECTIVES(COs):

The course should enable the students to:	
I	Learn the importance of web testing tool and bug tracking tool.
II	Develop test case and test plan document for banking application.
III	Learn to write system specifications of any application and report various bugs in it.
IV	Use automated functional testing tool like Quick Test Professional.

IX. COURSE LEARNING OUTCOMES(CLOs):

CLO Code	CLO's	At the end of the course, the student will have the ability to:	PO's Mapped	Strength of Mapping
AIT104.01	CLO 1	Implement and find practical solutions to the case tools problems.	PO 1	3
AIT104.02	CLO 2	Analyze online system and study its system specifications and report the various bugs.	PO 1, PO 4	3
AIT104.03	CLO 3	Write down the test cases for any online system	PO 1, PO 2	3
AIT104.04	CLO 4	Design a test plan for library management system using testing tools.	PO 1, PO 2	3
AIT104.05	CLO 5	Understand the benefits of win runner	PO 2, PO 3	3
AIT104.06	CLO 6	Execute how to do performance testing using testing tools including selenium.	PO 1, PO 5	3
AIT104.07	CLO 7	Demonstrate the Bug Tracking Tool for Testing	PO 2, PO 5	3
AIT0104.08	CLO 8	Simulate test cases for a software project using different testing and tracking tools	PO 2	2
AIT104.09	CLO 9	Analyze different testing tools like test director and test link for web testing and bug tracking.	PO 1, PO 3	3
AIT104.10	CLO 10	Demonstrate the Bug Tracking Tool for Testing	PO 1	3
AIT104.11	CLO 11	Study of QTP (Quick Test Professional) automated functional testing tool	PO 1, PO 2	3
AIT104.12	CLO 12	Analyze and design test cases for Matrix problem.	PO 3, PO 5	2

3 = High; 2 = Medium; 1 = Low

X. MAPPING COURSE LEARNING OUTCOMES LEADING TO THE ACHIEVEMENT OF PROGRAM OUTCOMES AND PROGRAM SPECIFICOUTCOMES:

Course Learning Outcomes (CLOs)	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CLO 1	3												3		1

Course Learning Outcomes (CLOs)	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CLO 2	3			2									1		1
CLO 3	3	3												1	
CLO 4	3	2											2		
CLO 5		2	3												1
CLO 6	3				3										
CLO 7		2											2		
CLO 8		2													
CLO 9	3		3										2	1	
CLO 10	3												2		
CLO 11	3	2											2		
CLO 12			2		3								2		

3 = High; 2 = Medium; 1 = Low

XI. ASSESSMENT METHODOLOGIES –DIRECT

CIE Exams	PO 1, PO2 PO 3, PO4,PSO1	SEE Exams	PO 1, PO2 PO 3, PO4,PSO2	Assignments	PO 1, PO2	Seminars	PSO1
Laboratory Practices	PO 1, PO2 PO 4, PSO2,PSO3	Student Viva	PO 1, PO2 PO 3, PO4	Mini Project	-	Certification	-

XII. ASSESSMENT METHODOLOGIES –INDIRECT

✔	Early Semester Feedback	✔	End Semester OBE Feedback
✘	Assessment of Mini Projects by Experts		

XIII. SYLLABUS

LIST OF EXPERIMENTS	
Week-1	**CONSTRUCTS**
Write programs in C language to demonstrate the working of the following constructs: a) while b) switch c) for d) if-else e) do-while	
Week -2	**SYSTEM SPECIFICATIONS**
a. Study the system specifications of ATM system and report various bugs in it. b. Study the system specifications of banking application and report various bugs in it.	
Week-3	**TEST CASES**
a. Write the test cases for ATM system. b. Write the test cases for banking application.	

Week -4	**TEST PLAN**
Create a test plan document for any application (e.g. Library management system).	
Week -5	**TESTING TOOL**
Study of any testing tool (e.g. Win runner).	
Week-6	**SELENIUM**
Study of web testing tool (e.g. Selenium).	
Week-7	**BUG TRACKING TOOL**
Study of bug tracking tool (e.g. Bugzilla).	
Week-8	**BUGBIT**
Study of bug tracking tool (e.g. Bugbit).	
Week-9	**TEST MANAGEMENT TOOL**
Study of any test management tool (e.g. Testdirector).	
Week-10	**OPEN SOURCE TESTING TOOL**
Study of any Open Source Testing Tool (e.g. Test Link).	
Week -11	**AUTOMATED FUNCTIONAL TESTING TOOL**
Study of QTP (Quick Test Professional) automated functional testing tool.	
Week -12	**INTROSPECTION OF MATRIX MULTIPLICATION**
A program written in C language for matrix multiplication fails, introspect the causes for its failure and write down the possible reasons for its failure.	

Text Books:

1. Boris Beizer, ―Software Testing Techniques‖, Dream Tech Press, 2nd Edition, 2000.
2. Dr. K. V. K. K. Prasad, ―Software Testing Tools‖, Dream Tech Press, Revised Edition, 2004.
3. Perry, ―Effective methods of Software Testing‖, John Wiley, 2nd Edition, 1999.

Reference Books:

1. Paul Jorgensen, ―Software Testing: A Craftsman's Approach‖, Auerbach Publications,3rd Edition, 2012.
2. P. C. Jorgensen, ―Software Testing‖, Auerbach Publications, 3rd Edition, 2000.

XIV. COURSEPLAN:

The course plan is meant as a guideline. Probably there may be changes.

Week No.	Topics to be covered	Course Learning Outcomes (CLOs)	Reference
1	Write programs in C language to demonstrate the working of the following constructs: a) while b) switch c) for d) if-else e) do-while	CLO 1, CLO 2	T1:1.4 R1:1.2
2	a. Study the system specifications of ATM system and report various bugs in it. b. Study the system specifications of	CLO 1, CLO 2	T1:1.5 R1:2.4

Week No.	Topics to be covered	Course Learning Outcomes (CLOs)	Reference
	banking application and report various bugs in it.		
3	a. Write the test cases for ATM system. b.Write the test cases for banking application.	CLO 1, CLO 2, CLO 3, CLO 4	T1:2.5 R1:2.5
4	Create a test plan document for any application (e.g. Library management system).	CLO 1, CLO 2, CLO 3, CLO 4	T1:2.5 R1:2.6
5	Study of any testing tool (e.g. Win runner).	CLO 3, CLO 4, CLO 5	T1:22.7
6	Study of web testing tool (e.g. Selenium).	CLO 3, CLO 4, CLO 5, CLO 6	T1:6.3 R1:5.3
7	Study of bug tracking tool (e.g. Bugzilla).	CLO 3, CLO 4, CLO 5, CLO 6,CLO 7	T1:7.5 R1:6.3
8	Study of bug tracking tool (e.g. Bugbit).	CLO 1, CLO 2, CLO 8	T1:8.5 R1:6.8
9	Study of any test management tool (e.g. Test director).	CLO 1, CLO 3, CLO 6, CLO 9	T1:12.2 R1:13.1
10	Study of any Open Source Testing Tool (e.g. Test Link).	CLO 8, CLO 9, CLO 10	T1:12.3 R1:13.2
11	Study of QTP (Quick Test Professional) automated functional testing tool.	CLO 8, CLO 9, CLO 11	T1:12.10 R1:13.7
12	A program written in C language for matrix multiplication fails, introspect the causes for its failure and write down the possible reasons for its failure.	CLO 8, CLO 9, CLO 12	T1:11.2 R1:10.2

XV. GAPS IN THE SYLLABUS - TO MEET INDUSTRY / PROFESSIONREQUIREMENTS:

S No	Description	Proposed actions	Relevance with POs	Relevance with PSOs
1	Node reduction algorithm, building tools	Seminars	PO 1, PO 4	PSO 1

Prepared by:
Ms. Geetavani B, Assistant Professor

HOD, CSE