SOFTWARE TESTING METHODOLOGY

VII Semester: CSE / IT

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P	C	CIA	SEE	Total
AIT008	Core	3	1	-	4	30	70	100
Contact Classes: 45	Tutorial Classes: 15	Practical Classes: Nil				Total Classes: 60		

OBJECTIVES:

The course should enable the students to:

I. Understand the concept of software testing objectives, process criteria, strategies and methods.
II. Demonstrate various software testing issues and solutions in software like unit test, integration, regression and system testing.
III. Demonstrate the techniques and skills on how to use modern software testing tools to support software testing projects.
IV. Understand important concepts of complexity metrics and object oriented metrics.

COURSE OUTCOMES:

1. Understand the basic concepts of testing, path testing and sensitization
2. An Ability to learn about the transaction flow testing
3. Understand the concepts of domain based testing and logic based testing
4. To describe about the path product and data flow anomaly detection
5. Understand the concepts of transitions testing.

COURSE LEARNING OUTCOMES:

1. Explain the importance of testing and purpose of testing.
2. Illustrate different dichotomies of testing.
3. Demonstrate the model for testing, different testing levels and role of models.
4. Describe the consequences and taxonomy of bugs and different bugs in project environment.
5. Illustrate the concepts of path testing, predicate loops and path sensitization.
6. Explain Path instrumentation and their applications
7. List out the Transaction flows techniques, structures and their test databases.
8. State the basics of data flow testing, Strategies in data flow testing and applications of dataflow testing
9. Describe Domains, paths and explain about bugs and their tools.
10. Demonstrate Domains and Interfaces testing.
11. Explain about the line arising transformation and coordinate transformation.
12. Describe Logic based testing, Decision tables and compare hardware and software testing..
13. Illustrate Path expression, KV Charts and their specifications.
14. State Path products and path expression, different laws used in path testing.
15. Demonstrate the Reduction procedure.
16. Explain about the Regular expressions.
17. Explain about Flow anomaly detection.
18. Explain State Graphs and state testing and their Testability Tips.
19. Explain about good and bad state graphs.
20. Explain finite state behavior in state graphs.

UNIT-I	**INTRODUCTION TO TESTING**	**Classes: 10**
Introduction: Purpose of testing, dichotomies, model for testing, consequences of bugs, taxonomy of bugs. Flow graphs and path testing: Basics concepts of path testing, predicates, path predicates and Achievable paths, path sensitizing, path instrumentation, application of path testing.		
UNIT-II	**TRANSACTION FLOW TESTING**	**Classes: 08**
Transaction flow testing: Transaction flows, transaction flow testing techniques, dataflow testing, basics of dataflow testing, strategies in dataflow testing, application of dataflow testing.		
UNIT-III	**LEVELS OF TESTING**	**Classes: 09**
Domain testing: Domains and paths, nice and ugly domains, domain testing, domains and interfaces testing, domain and interface testing, domains and testability. Logic based testing: Overview, decision tables, path expressions, kv charts, and specifications.		
UNIT-IV	**PATH PRODUCTS**	**Classes: 08**
Paths, path products and regular expressions: Path products and path expression, reduction procedure, applications, regular expressions and flow anomaly detection.		
UNIT-V	**TRANSITION TESTING**	**Classes: 10**
State, state graphs and transition testing: State graphs, good and bad state graphs, state testing, testability tips.		
Text Book:		
Boris Beizer, ―Software Testing Techniques‖, Dreamtech Press, 2nd Edition, 2003.		
Reference Books:		
1. P. C. Jorgenson, ―Software Testing: A Craftmen‘s Approach‖, Auerbach Publications, 3rd Edition, 2013. 2. Perry, ―Effective Methods of Software Testing‖, John Wiley, 2nd Edition, 1999. 3. P. Nageswara Rao, ―Software Testing Concepts and Tools‖, DreamTech Press, 2nd Edition, 2007.		
Web References:		
1. http://www.qatutorial.com/?q=Software_Test_Metrics 2. http://softwaretestingfundamentals.com/unit-testing/ 3. http://qainsights.com/challenges-in-test-automation/ 4. http://www.softwaretestinghelp.com/manual-and-automation-testing-challenges/		
E-Text Books:		
1. http://www.softwaretestinghelp.com/practical-software-testing-new-free-ebook-download/ 2. http://www.guru99.com/software-testing.html 3. http://www.fromdev.com/2012/04/8-best-software-testing-books-every-qa.html 4. https://onlinecourses.nptel.ac.in/noc16_cs16/preview		