III Year B.Tech. IT   II - Semester

L	T	P	To	C
4	-	-	4	4

CS435 SOFTWARE TESTING METHODOLOGIES

Course Description and Objectives:

Software testing is a subject where the student will learn and apply basic skills needed to create and automate the test plan of a software project.It aims to describe principles and strategies for generating system test cases and to understand the essential characteristics of tools used for test automation.

Course Outcomes:

Students who have completed this course would have learned

- *Various test processes and continuous quality improvement*
- *Types of errors and fault models*
- *Methods of test generation from requirements*
- *Behavior modeling using UML: Finite state machines (FSM)*
- *Test adequacy assessment using: control flow, data flow, and program mutations*

UNIT I - 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 & Domain Testing

Transaction flows, transaction flow testing techniques. Dataflow testing:- Basics of dataflow testing, strategies in dataflow testing, application of dataflow testing.

Domains and paths, Nice & ugly domains, domain testing, domains and interfaces testing, domain and interface testing, domains and testability.

UNIT III - Path products and expressions

Path products & path expression, reduction procedure, applications, regular expressions & flow anomaly detection.

UNIT IV - Logic Based Testing & State, State Graphs and Transition testing
Overview, decision tables, path expressions, kv charts, specifications.
State graphs, good & bad state graphs, state testing, Testability tips.

UNIT V - Graph Matrices and Application
Motivational overview, matrix of graph, relations, power of a matrix, node reduction algorithm, building tools. Usage of JMeter and Winrunner tools for functional / Regression testing (Ref Text book2).

TEXT BOOKS:
1. Boris Beizer, "Software Testing Techniques", 2nd ed., Dreamtech, 2006.
2. Dr.K.V.K.K.Prasad, "Software Testing Tools", 1st ed., Dreamtech. 2008.

REFERENCE BOOKS:
1. Brian Marick, "The craft of software testing", 2nd ed., Pearson Education, 2007.
2. Edward Kit, "Software Testing in the Real World ", 2nd ed., Pearson Education, 2008.