

## IV B.Tech I Semester

## 15ACS51-SOFTWARE TESTING

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**Course Objectives**

1. To study fundamental concepts in software testing, including software testing objectives, process, criteria, strategies, and methods.
2. Analysis of various testing methodologies and procedure to design test cases.

**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**

Introduction to Testing Design Strategies – The Smarter Tester – Test Case Design Strategies

**Test Case Design Black-Box Approach** - Using Black Box Approach to Test Case Design  
Random Testing – Requirements based testing –Boundary Value Analysis – decision tables - Equivalence Class Partitioning- statebased testing– cause effect graphing – error guessing - compatibility testing – user documentation testing – domain testing.

**UNIT III**

**Test Case Design White-Box Approach**-Using White-Box Approach to Test design – Test Adequacy Criteria – static testing vs. structural testing – code functional testing - Coverage and Control Flow Graphs – Covering Code Logic – Paths – Their Role in White-box Based Test Design – code complexity testing – Evaluating Test Adequacy Criteria.

**UNIT IV**

**Paths, Path products and Regular expressions:** path products & path expression, reduction Procedure, applications, regular expressions & flow anomaly detection. **Logic Based Testing:** overview, decision tables, path expressions, kv charts, specifications.

**UNIT V**

**State, State Graphs and Transition testing:** state graphs, good & bad state graphs, state testing, Testability tips. **Graph Matrices and Application:** Motivational overview, matrix of graph, relations, power of a matrix, node reduction algorithm, building tools. (Student should be given an exposure to tools like Win runner, QTP, Selenium, Jmeter).

**Course Outcomes**

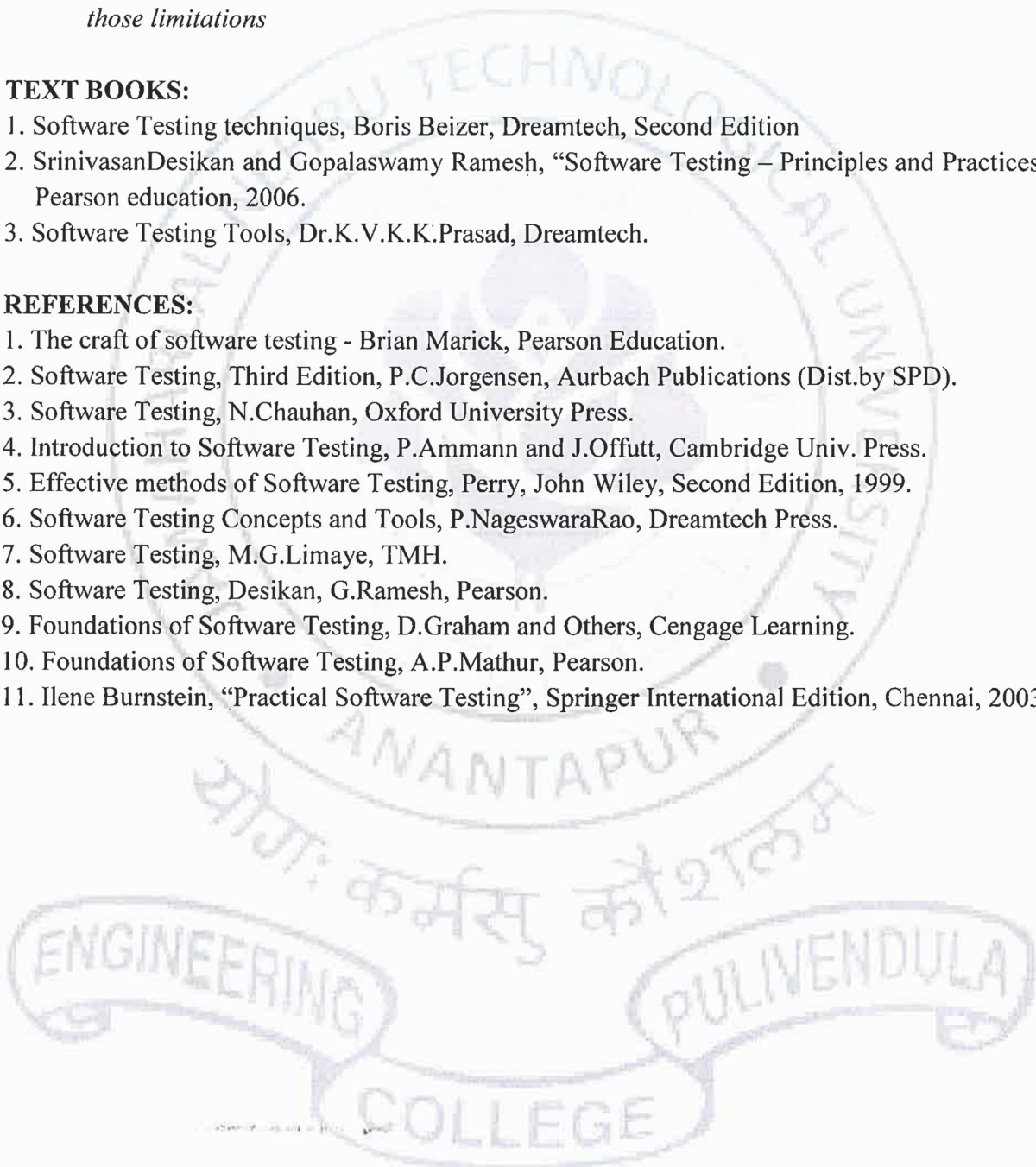
1. Analyze requirements to determine appropriate testing strategies.
2. Apply a wide variety of testing techniques in an effective and efficient manner
3. Compute test coverage and yield according to a variety of criteria
4. Evaluate the limitations of a given testing process and provide a succinct summary of those limitations

**TEXT BOOKS:**

1. Software Testing techniques, Boris Beizer, Dreamtech, Second Edition
2. SrinivasanDesikan and Gopaldaswamy Ramesh, "Software Testing – Principles and Practices", Pearson education, 2006.
3. Software Testing Tools, Dr.K.V.K.K.Prasad, Dreamtech.

**REFERENCES:**

1. The craft of software testing - Brian Marick, Pearson Education.
2. Software Testing, Third Edition, P.C.Jorgensen, Aurbach Publications (Dist.by SPD).
3. Software Testing, N.Chauhan, Oxford University Press.
4. Introduction to Software Testing, P.Ammann and J.Offutt, Cambridge Univ. Press.
5. Effective methods of Software Testing, Perry, John Wiley, Second Edition, 1999.
6. Software Testing Concepts and Tools, P.NageswaraRao, Dreamtech Press.
7. Software Testing, M.G.Limaye, TMH.
8. Software Testing, Desikan, G.Ramesh, Pearson.
9. Foundations of Software Testing, D.Graham and Others, Cengage Learning.
10. Foundations of Software Testing, A.P.Mathur, Pearson.
11. Ilene Burnstein, "Practical Software Testing", Springer International Edition, Chennai, 2003



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