

## 4/4 B.Tech - FIRST SEMESTER

**IT7T2****SOFTWARE TESTING****Credits:3****Lecture: 3 Periods/week****Internal assessment: 30 marks****Practice/Interaction: 1Period/week****Semester end examination: 70 marks****Objectives:**

To provide a thorough understanding of

- The need for testing, types of bugs and their consequences.
- Path testing, system testing and Domain testing and its applications.
- Paths of various flow graphs, their interpretations and applications.
- Logic based testing and its implementation.
- State graphs and transition testing, matrix of a graph and node reduction algorithms.

**Outcomes:**

Students will be able to

- Understand the importance of testing and debugging.
- Interpret a model for testing and understand the process of testing and its limitations.
- Understand the path testing, transaction flow and data flow in a software system and selection criteria and their limitations.
- Understand the domain testing strategy for different dimension domains and concept of Logic based testing.
- Apply KV Charts, State Graphs, Transition testing and Graph Matrices.

**Prerequisite:**

Software Engineering

**Syllabus:****UNIT-I**

Introduction: Purpose of testing, Dichotomies, model for testing, consequences of bugs, taxonomy of bugs.

**UNIT-II**

Flow graphs and Path testing: Basics concepts, predicates, path predicates, achievable paths, path sensitizing, path instrumentation, application of path testing.

Transaction Flow Testing: Transaction flows, transaction flow testing techniques.

Dataflow testing: basics, strategies in dataflow testing, application of dataflow testing.

**UNIT-III**

Domain Testing: domains and paths, Nice &amp; ugly domains, domain testing, domain and interface testing, domains and testability.

Paths, Path products and Regular expressions: Path products &amp; path expression, reduction procedure, applications, regular expressions &amp; flow anomaly detection.

**UNIT-IV**

Logic Based Testing : Overview, decision tables, path expressions, kv charts, specifications.

State, State Graphs and Transition testing: State graphs, good &amp; 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.

**Text Book:**

1. Software Testing Techniques - Boris Beizer, Dreamtech, 2<sup>nd</sup> Edition.

**Reference Books:**

1. Software Testing Techniques–SPD (Oreille).
2. Software Testing in the Real World–Edward Kit, Pearson.
3. Effective methods of Software Testing, Perry, John Wiley.

**e-Learning Resources:**

1. <http://nptel.ac.in/courses/106101061/18>
2. <http://nptel.ac.in/courses/106101061/19>