Course Objective: To understand software testing concepts and applications.

S. NO	Course Outcomes (CO)
CO1	Understand the fundamental concepts of verification and validation, including terminologies, goals, roles, and applicability in software testing.
CO2	Comprehend the software testing process, levels of testing, and testing activities, including debugging and stress testing.
CO3	Apply verification methods and functional testing techniques like boundary value analysis and equivalence class testing to ensure software quality.
CO4	Implement structural testing methods, including path testing, cyclomatic complexity, and object-oriented testing techniques.
CO5	Evaluate and utilize various testing tools and methodologies for automated testing and debugging in software projects.
CO6	Prioritize test cases and apply advanced testing techniques for web applications and automated test data generation.

S. NO	Contents	Contact Hours
UNIT 1	**Introductory concepts:** Verification &Validation Terminologies like Goals, Role, Objectives, Limitations, Approaches & Applicability.	**4**
UNIT 2	**Software Testing:** Testing Process, Limitations of Testing, Testing activities. **Levels of Testing:** Unit Testing, Integration Testing, System Testing, Debugging, Domain Testing, Regression Testing, Stress Testing, Slice based testing	**8**

UNIT 3	**Verification Testing:** Verification Methods, SRS Verification, Software Design Document Verification, Code Reviews, User Documentation Verification, Software Project Audits. **Functional Testing techniques:** Boundary Value Analysis, Equivalence Class Testing, Decision Table Based Testing, Cause Effect Graphing Technique.	**8**
UNIT 4	**Structural Testing:** Path testing, DD-Paths, Cyclomatic Complexity, Graph Metrics, Data Flow Testing, Mutation testing. Object Oriented Testing: Class Testing, GUI Testing.	**8**
UNIT 5	**Testing Activities:** Unit Testing, Levels of Testing, Integration Testing, System Testing, Debugging **Software Testing Tools Taxonomy:** Methodology to evaluate automated testing. Using tools: Load Runner, Win runner and Rational Testing Tools, Java Testing Tools, JMetra, JUNIT Cactus and other recent tools.	**8**
UNIT 6	**Advanced Topics** on Testing: Prioritizing the Test-cases, Testing Web Applications, Automated Test Data Generation.	**6**
	TOTAL	**42**

REFERENCES

S.No.	Name of Books/Authors/Publishers	Year of Publication / Reprint
1	Paul C. Jorgenson, Software Testing A Craftsman's approach, CRC Press.,	1997
2	Yogesh Singh, "Software Testing", 1st Ed., Cambridge University Press	2012
3	Louise Tamres, "Software Testing", Pearson Education Asia,	2002

B.Tech. Information Technology				
Course code: Course Title	**Course Structure**			**Pre-Requisite**
	L	**T**	**P**	