- **Sem.**   : 5
- **Subject Code**   : 05BC1502
- **Subject**   : Software Testing
- **Course Objectives**   :

    1. To understand the basics of software testing and its processes.

    2. To understand and apply various testing techniques.

    3. To understand and appraise levels of testing.

    4. To prepare test plan, design and various test reports.

    5. To understand software quality management and its models.

- **Prerequisites** : Knowledge of System Development Life Cycle

Unit No	Topics Covered	No of lectures required
1	**Introduction to Software Testing and Software Testing Terminology and Methodology:** Introduction, Software Testing Definition, Goals of Software Testing, Software Testing As Process, Failure, Fault, Error, Test Case, Testware, Incident, Test Oracle, Life cycle of Bug, States of Bug, Bugs Classification based on criticality, Bugs Classification based on SDLC, Testing Principle, STLC, Verification and Validation Activities	10
2	**Testing Techniques** Dynamic Testing: Black-Box Testing Techniques, Boundary Value Analysis, Equivalence Class Testing, State Table Based Testing, Decision Table Based Testing, Cause-Effect Graphing Based Testing, Error Guessing. Dynamic Testing : White-Box Testing Techniques, Need of White-box testing, Logic Coverage Criteria, Basis Path Testing, Graph Matrices, Loop testing, Data Flow testing, Mutation testing	10

	Static Techniques Introduction, Benefit of static testing, Types of Static techniques, Inspections, Inspection Team, Inspection Process, Benefit of Inspection Process, Effectiveness of Inspection Process, Structured Walkthroughs, Technical Review		
3	**Validation Activities** Unit Validation Testing, Benefit of Designing stub and driver, Integration Testing, Decomposition based Integration, Comparison between top down and bottom up integration testing, Call Graph Based Integration, Pair-wise Integration, Neighborhood Integration, Path Based Integration, Function Testing, System Testing, Categories of System Tests, Acceptance Testing, Alpha Testing, Beta Testing, Regression Testing.	10	
4	**Test Management** Test Organization, Structure of Test Group, Test Planning, Test Plan Components, Test Plan Hierarchy, Master Test Plan, Test Design Specification, Test Case Specification, Test Procedure Specification, Test Log, Test Incident Report, Test Summary Report	10	
5	**Software Quality Management** Software Quality, Broadening the concept of Quality, Quality cost, Benefits of Investment on Quality, Quality Control and Quality Assurance, Quality Management QM, QM and Project Management, Quality Factors, Methods of Quality Management, Procedural Approach to QM, Quantitative Approach to QM, Software Quality Metrics, SQA Models, ISO 9126, Capability Maturity Model CMM, Software Total Quality Management STQM	10	

Course Outcomes :

1. Student will be able to understand the difference between bugs, errors and faults and build basic test cases.
2. Student will be able to apply testing techniques.
3. Student will be able to compare various levels of testing.
4. Student will be able to prepare test plans, design and various test reports.
5. Student will be able to understand software quality and its various models.

Course Outcomes – Program Outcomes Mapping Table :

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	H	M			L		H	M
CO2	H	H			L		H	M
CO3	H	M			L		H	M
CO4	H	M	L	M	L		H	M
CO5	H	L		M	L		H	M

Text Book   :

1. **Software Testing Principles and Practices, Naresh Chauhan, Oxford University Press, Second Edition**

Reference Books   :

1. **Software Testing Concepts and Tools, Nageshwar Rao Pusuluri, Dreamtech Press, First Edition**
2. **Software Testing: Concepts and Practices, K. Mustafa and R.A. Khan, Narosa, First Edition**
3. **Software Testing: Principles, Techniques and Tools, M G Limaye, McGraw Hill Education, First Edition**

Web References :

1. **www.istqb.org**
2. **www.softwaretestinghelp.com**

App References :

1. **Software Testing | QA Learning (NK Mobile Education)**
2. **Software Testing (Asha Tech Solutions)**

FACULTY OF COMPUTER APPLICATIONS
Bachelor of Computer Applications

Syllabus Coverage from text /reference book & web/app reference:

Unit #	Chapter Numbers
1	1,2,3
2	4,5,6
3	7,8
4	9
5	13