BOS	**Computer Science**
Class	**T.Y.B.Sc.C.S**
Semester	**VI**
Subject Name	**Software Testing and Quality Assurance**
Subject code	**PUSCS601**
Level of The Subject	**Medium**

Course Objectives:

1. To Introduce basic concepts of software testing.
2. To provide learners with knowledge in Software Testing techniques.
3. To understand how testing methods can be used as effective tools in providing quality assurance concerning software.
4. To provide skills to design test case plan for testing software
5. To Understand the importance of software quality and assurance software systems development.

Unit No.	Name of Unit	Topic No.	Content	No. of Lectures
1	Introduction to Software Testing	1.1	Software Testing : Introduction, Nature of errors, an example for Testing.	15
		1.2	Introduction to quality : Definition of Quality , QA, QC, QM and SQA , Software Development Life Cycle, Software Quality Factors	
		1.3	Verification and Validation : Definition of V &V , Different types of V & V Mechanisms,	
		1.4	Software Review: Concepts of Software Reviews, Inspection and Walkthrough	
2	Introduction to Testing Techniques	2.1	Software Testing Techniques : Testing Fundamentals, Test Case Design.	15
		2.2	Testing: White Box Testing and its types, Black Box Testing and its types	

		2.3	Software Testing Strategies : Strategic Approach to Software Testing, Unit Testing, Integration Testing, Validation Testing, System Testing	
		2.4	Software Metrics : Concept and Developing Metrics, Different types of Metrics, Complexity metrics	
3	Software Quality Assurance	3.1	Defect Management: Definition of Defects, Defect Management Process, Defect Reporting, Metrics Related to Defects, Using Defects for Process Improvement.	15
		3.2	Software Quality Assurance : Quality Concepts, Quality Movement, Background Issues, SQA activities, Formal approaches to SQA, Statistical Quality Assurance, Software Reliability,	
		3.3	Formal Technical Reviews: The ISO 9000 Quality Standards, , SQA Plan , Six sigma, Informal Reviews	
4	Introduction to Quality Improvement	4.1	Quality Improvement : Introduction, Pareto Diagrams, Cause-effect Diagrams, Scatter Diagrams, Run charts	15
		4.2	CMM – Requirements management (RM), software configuration management (SCM), software product engineering (SPE).	
		4.3	peer reviews (PR), quantitative process management (QPM), defect prevention (DP), process change management	
Total No. of Lectures				**60**

Course Outcomes:

1. Describe fundamental concepts of software quality assurance.
2. Explore test planning and its management.
3. Demonstrate the quality management, assurance, and quality standard to the software system.
4. Apply fundamental concepts of software automation.
5. Assess Software Quality Tools and analyze their effectiveness.
6. Evaluate different quality Improvement techniques .

Reference Bookss:

1. Software Engineering for Students, A Programming Approach, Douglas Bell, 4th Edition,, Pearson Education, 2005
2. Software Engineering – A Practitioner's Approach, Roger S. Pressman, 5th Edition, Tata McGraw Hill, 2001
3. Quality Management, Donna C. S. Summers, 5th Edition, Prentice-Hall, 2010.
4. Total Quality Management, Dale H. Besterfield, 3rd Edition, Prentice Hall, 2003.

BOS	**Computer Science**
Class	**T.Y.B.Sc.C.S**
Semester	**VI**
Subject Name	**Software Testing and Quality Assurance Practical**
Subject code	**PUSCSP607P**
Level of The Subject	**Medium**

Practical No	Details
1.	Install Selenium IDE; Write a test suite containing minimum 4 test cases for different formats.
2.	Conduct a test suite for any two web sites.
3.	Install Selenium server (Selenium RC) and demonstrate it using a script in Java/PHP.
4.	Write and test a program to login to a specific web page.
5.	Write and test a program to update 10 student records into table into Excel file
6.	Write and test a program to select the number of students who have scored more than 60 in any one subject (or all subjects).
7.	Write and test a program to provide a total number of objects present / available on the page.
8.	Write and test a program to get the number of items in a list / combo box.
9.	Write and test a program to count the number of check boxes on the page checked and unchecked count.
10.	Load Testing using JMeter.