SOFTWARE QUALITY ASSURANCE AND TESTING

Course Code: 13IT2113 **L P C**
4 0 3

Pre requisites: Software Testing Methodologies.

Course Educational Objectives:
The main objective of the course is to expose the students to Software quality assurance Framework and Standards, Software Quality Assurance Metrics, Software Testing process and Software Testing techniques. Upon completion of this course, the student should be able to get an idea on:

1. Software quality assurance framework and standards.
2. Software quality assurance metrics and measurements.
3. Software quality indicators, Fundamentals in Measurement Theory.
4. Software testing process, software testing techniques and also testing tools.
5. Testing Specialized Systems and Applications.

Course Outcomes:
At the end of the course the student should be able to

1. Design a framework for quality assurance and analyze metrics and measurements.
2. Build a Software Testing Environment
3. Learn Software Testing Techniques
4. Understand the testing process
5. Understand testing specialized systems and their applications.

UNIT - I
Software quality assurance Framework and Standards
SQA Frame work: What is Quality? Software Quality Assurance. Components of Software quality Assurance.
Software Quality Assurance Plan : Steps to develop and implement a Software quality Assurance Plan.
Standards: ISO9000, CMM, CMMI, PCMM, Malcom Balridge, 3 Sigma, 6 Sigma

UNIT- II

Software Quality Assurance Metrics: Product Quality metrics, In-Process Quality metrics, Metrics for Software Maintenance. Examples of Metric Programs.

Software quality indicators, Fundamentals in Measurement Theory

Building Software Testing Environment : Writing Policy for software testing, Economics of testing, Building a structured approach to software testing .

Software Testing process: Defects Hard to find, Functional and structured testing, Workbench concept, Customising the software testing process, testing tactics check list.

UNIT- III

Software Testing Techniques: Black-Box , Boundary value, Bottom-up, Branch Coverage, Cause- Effect graphing, CRUD, database, Exception, Gray BOX, Histogram, Inspections, JADs, Pareto Analysis, Prototyping, random Testing, Risk based Testing, Regression Testing, Structured Walkthrough, Thread testing, Performance Testing, White-Box Testing.

Software Testing Tools: Taxonomy of Testing tools, Methodology to evaluate automated testing tools, Load Runner, Win Runner and Rational Testing Tools, Java testing Tools, JMetra, JUNIT and Cactus**.**

UNIT- IV

Testing Process PART I: Advantages of following a process, Cost of computer testing, Seven step software Testing Process, Define the scope of testing, Developing the test plan, Verification Testing.

Testing Process PART II: Validation Testing, Analyzing and reporting test results, Acceptance and operational Testing, Post Implementation Analysis.

UNIT- V

Testing Specialized Systems and Applications: Testing Client/Server System, Testing COTS and Contracted Software, Testing security, Testing Data Warehouse.

Text Books:

1. William E.Perry , *Effective Methods for Software Testing*, 3rdEdition, Wiley Publications, 2006.

2. Mordechai Ben-Menachem, Garry S. Marliss, *Software Quality*, 1stEdition , Thomson Learning Publication, 2008.

References:

1. Kshirasagar Naik, Priyadarhi Thripathy, *Software Testing and Quality Assurance Theory and Practice*, Ist Edition, Wiley, 2008.

Web references :

http://docs.seliniumhq.org