SOFTWARE QUALITY ASSURANCE AND TESTING

Course Code: 15IT2113

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Pre requisites: Software Testing Methodologies.

Course Outcomes:
At the end of the course, a student will be able to
CO1: Design a framework for quality assurance.
CO2: Evaluate a Software Testing Environment.
CO3: Classify different software testing techniques.
CO4: Design the testing process.
CO5: Test specialized systems.

UNIT – I (10-Lectures)

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 (10-Lectures)

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 (10-Lectures)

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 (10-Lectures)

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 (10-Lectures)

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"*, 1st Edition, Thomson Learning Publication, 2008.

References:

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

Web References:

http://docs.seliniumhq.org