CSPE2013 SOFTWARE TESTING AND QUALITY ASSURANCE (3-0-0)

Course Objectives:

1. The objective of this course is to impart understanding of techniques for software testing and quality assurance.
2. To help students to develop skills that will enable them to construct software of high quality - software that is reliable, and that is reasonably easy to understand, modify and maintain.
3. Introduce, Understand and learn features and working of various tools of software testing and apply different software artifacts.

MODULE-1 (8 Hour)

Introduction to Software Testing: Introduction, Software Testing Process, Objectives, Software testing life cycle, Concept of testing, types of errors, Stubs and drivers, verification and validation, Definition of a Bug, Role of a Software Tester, Software Testing Axioms, Software Testing Terms and Definitions, Code inspection and code walkthrough, Testing of component based software system, Energy efficient testing.

MODULE-2 (12 Hour)

Software testing methods, Fundamentals of Software Testing: Test case design, Testing Strategies and Techniques, Structural and Functional testing, Strategic approach to software testing, Unit Testing, Integration testing , System Testing, White box testing and its types, Black box testing and its types, Static Black Box and Dynamic Black Box Testing Techniques. Special Types of Testing: Configuration Testing, Compatibility Testing, Graphical User Interface Documentation Testing, Security Testing, Test planning, Budgeting and Scheduling.

MODULE-3 (8 Hour)

Software testing Metrics, Different types of metrics, Defect Management, Defect Management Process and Metrics related to defects, Configuration and Compatibility Testing.Testing Tools: Benefits of Automation Testing, Random Testing, Bug Bashes and Beta Testing. Test Planning: Test Planning, Test Cases, Bug life cycle.

MODULE-4 (7 Hour)

Software Quality Assurance: Definition of Quality, Testing and Quality Assurance at Workplace, Test Management and Organizational Structure, Software Quality Assurance Metrics, Six Sigma, Organizational Structure: CMM (Capability Maturity Model), ISO 9000, Software Engineering Standards.

Course Outcomes:

CO1. Understand and apply knowledge of key concepts of software testing, quality and testing tools.
CO2. Design test cases and Develop test suite, write test scripts, set environmental variables for carrying out the various levels of testing manually or automatically.
CO3. Manage software defects and risks within software project.
CO4. Understand software quality and software Engineering Standards

Reference Books:

1. Kshirsagar Naik and Priyadarshi Tripathy, Software Testing & Quality Assurance- Theory and Practice, Wiley Student edition
2. William E. Perry, Effective Methods for Software Testing, WILLEY, 3rd Edition
3. Alan C. Gillies, “Software Quality: Theory and Management”, International Thomson Computer Press, 1997.

4. M G Limaye, Software Testing, Tata McGraw-Hill Education, 2009