CSH515: Software Testing & Quality Assurance

Teaching Scheme	Examination Scheme
Lectures: 4 hrs/Week	Class Test -20 Marks
Tutorials: 2 hr/Week	Teachers Assessment – 10 Marks
	Attendance – 20 Marks
	End Semester Exam – 100 marks
Credits: 6	

Head

partment of Computer Applications
Faculty of Computer Applications
Invertis University, Bareilly (UP)

Pre-requisites: programming languages, software engineering.

Bachelor of Science (Honors) in Computer Science

Dean Academics
Faculty of Computer Applications
Invertis University, Bareilly (UP)

Course Objectives:

The objectives of this course are

1. To study fundamental concepts in software testing, including software testing objectives, process, criteria, strategies, and methods.
2. To highlight the strategies for software testing and understand the various types of black box and white box testing methods.
3. To discuss various software testing issues and solutions in unit testing, integration, regression, and system testing
4. To identify the issues in testing management and understand test planning.
5. To gain the techniques and skills on how to use modern software testing tools to support Software testing projects.

Detailed Syllabus:

UNIT I (6 Hours)
Software Quality Assurance: Software crisis, Birth of software engineering, Why Software engineering, Criteria for the success of a software project, phases in SDLC, Software Quality Assurance, Quality Management Systems.

UNIT II (10 Hours)
Software Testing Process: Verification and Validation, Cost of Quality, Why Testing is difficult, Levels of testing-Unit Testing, Module Testing, Integration and System Testing, Acceptance Testing, Testing Approaches: Top-down versus Bottom-up, Functional versus Structural testing, Mutation testing, Regression Testing, Types of Testing, Manual Testing and its Limitations.

UNIT III (10 Hours)
Software Testing Tools: Need for Automated Testing Tools, Taxonomy of testing tools, Functional/Regression Testing Tools, Performance Testing tools, Testing Management Tools, Source Code Testing Tools, How to select a Testing Tool?

UNIT IV (12 Hours)
WinRunner: Overview, Testing an application using WinRunner, TestScript Language(TSL), GUI MAP file, Synchronization of Test cases, Data driven testing, Checking GUI objects.

UNIT V (12 Hours)
SQA Robot: overview, testing an application, Synchronization of Test procedures, creating checkpoints.TestDirector: overview, testing management process, managing the testing process using TestDirector.

UNIT VI (6 Hours)
Source Code Testing Utilities in Unix and Linux Environnement: GNU tools, Timings of programs, Profiler, Code optimization, Productivity tools, Portability Testing Tool, Configuration Management Tools, Coding Guidelines and Standards.

Text and Reference Books

1. "Effective Software Testing", Elfriede Dustin, Pearson Education, IV edition.
2. "Software Testing Concepts and Tools", N. Rarasuluri, Dreamtech press, 2008.
3. "Automated Software Testing", Jeff Rashka, John Paul and E. Dustin, Pearson
4. Education, 2008.
5. "Effective Methods For Software Testing", W. E. Perry, Wiley-India, III edition.