Devi Ahilya University, Indore, India **Institute of Engineering & Technology**				**III Year B.E.** **Information Technology** **(Full Time)**			
Subject Code & Name	**Instructions Hours per Week**			**Credits**			
ITR6E1 **Software Testing & Quality Assurance**	**L**	**T**	**P**	**L**	**T**	**P**	**Total**
	3	**1**	**2**	**3**	**1**	**1**	**5**
Duration of Theory Paper: 3 Hours							

Learning Objectives:

To develop software testing skills and create awareness about software quality assurance processes.

Prerequisite:

Good knowledge of software Engineering and programming.

COURSE CONTENTS

UNIT-I

Software Testing Principles: Fundamental of software testing: History, Prerequisite for testing, Testing Principles and Concepts, Scope of testing, testing constraint, software development Life cycles (SDLC), Agile software development, software testing life cycle (STLC), 'V' concept of testing, challenges in testing, Testingprocess: fundamental test process, role and responsibility.

UNIT-II

Verification and Validation: Levels of testing: Unit, Integration and System Testing, Acceptance testing, Test case Planning, Test case Design, Test case template, Test case execution, Test case misconception, Test case management.

UNIT-III

Static and Dynamic Testing: White Box Testing techniques and methodology, statement coverage, branch coverage, single /multiple condition coverage, data flow coverage.
Black Box Testing: boundary value analysis, Equivalence partitioning, System testing: functional and non-functional testing, Acceptance testing, Integration testing, database testing.

UNIT-IV

Testing Strategies: Bug, bug life cycle, defect management life cycle, defect severity and priority, test matrices, fuzz testing, special testing: UI testing, load testing, stress testing, performance testing, configuration testing, compatibility testing, security and recovery testing. Factors and Methodology for Performance testing, Regression testing: Methodology for Regression testing.

Mobile apps testing: Mobile app testing (popular apps), game testing, mobile testing tools: Appium, Calabash, Monkey Talk, Robotium, EggPlant.

Case study: Social Media, compiler, project under ISRO, NASA, DRDO, System Driver, kernel. Hard real time applications testing.

UNIT-V

Quality Assurance & Automation: Quality Assurance and Software Quality management, CMM levels, CMMI, ISO 9000 standard, Metrics for software quality, Risk management, Automation Testing tools: QTP (10.0), VSTS - WebTest, Load Runner, Performance Testing, Selenium

Bug management tools: Bugzilla,Winrunner, TestDirector

Learning Outcomes:

Upon completing the course, students will be:

- Familiar with software testing tools and techniques, and software quality assurance processes.
- Able to apply skills for quality software development as per requirement.

Books Recommended:

1. Srinivasan Desikan&Gopalswamy Ramesh “Software testing Principles and Practices” Pearson education, 2006
2. R. Patton; Software Testing; Techmedia (SAMS) 2000
3. Glenford J. Myers, “The Art of Software Testing ", John Wiley & Sons, 1979.
4. Boris Beizer, Black-Box Testing: “Techniques for Functional Testing of Software and Systems ", John Wiley & Sons, 1995.
5. Beginner's Guide for Mobile Applications Testing Paperback – 28 May 2015 by Jeesmon Jacob
6. How to Test Mobile Applications: A Practical Guide to Mobile Application Testing Kindle Edition by Kishore Nuvvula
7. Software Testing Tools by K.V.K.K Prasad.

List of Practical Assignments:

Students are given programming assignments to learn following.

- SDLC, agile and STLC phases.
- Test website performance with different parameters using GTmatrix, PageSpeed.
- Check Web Browsers performance for loading websites.(as IE, Mozilla, Opera, Chrome, UC Browser.
- Prepare & execute test cases for application and system software.
- Perform load testing for web application using LoadRunner, Jmeter, WebLOAD.
- Perform web security testing using AppScan, Webscarab.

- Perform automation testing using selenium & QTP 10.0(UFT).
- Execute mobile app testing using Appium, calabash, MonkeyTalk, Robotium, Eggplant.
