



AMITY UNIVERSITY
— UTTAR PRADESH —

Course Name: SOFTWARE TESTING & TOOLS

Course Level : Ph.D.

Course Type : PCC

Course Code: CSIT904

Credit Unit: 04

L	T	P/S	SW/FW	TOTAL CREDIT UNITS
3	1	-	-	4

Course Objective:

The Objective of the course is to:

- To understand the requirement of software testing during SDLC.
- To study the different software testing tools and techniques.
- To apply Software release time problems, Multi-criteria release time problems, Fault Tolerant systems etc
- To learn about some applications like Web applications, Data Warehousing is briefly discussed as well.

Pre-requisites:

Fundamentals of Software Engineering

- **Course Contents/Syllabus:**

	Weightage (%)
Module-I: Introduction	
Software Testing Strategy and Environment, Establishing testing policy, structured approach to testing, test factors, Economics of System Development Life Cycle (SDLC) Testing , Software Testing Methodology, verification and validation, workbench concept, testing tactics checklist.	20
Module-II: Testing Process	
Eleven Step Testing Process: Assess Project Management Development Estimate and Status, Develop Test Plan, Requirements Phase Testing, Design Phase Testing, Program Phase Testing, Execute Test and Record Results, Acceptance Test, Report test results, testing software installation, Test software changes, Evaluate Test Effectiveness.	25
Module III: Software Testing Techniques	
Black-Box, Boundary value, Bottom-up, Branch coverage, Cause-Effect graphing, Gray-Box, Histograms, Inspections, Prototyping, Random Testing, Risk-based Testing, Regression Testing, Structured Walkthroughs, Thread Testing, Performance Testing, White-Box Testing	20
Module IV: 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.	20
Module V: Fault Tolerant Systems and Software Reliability Tools	
Testing Client/Server – Web applications, Testing off the Shelf Components, Testing Security, Testing a Data Warehouse.	15

Student Learning Outcomes:

The student will be able:

- Explain about Software Testing Strategy and Environment.
- Describe about software Economics of System Development Life Cycle (SDLC) Testing

- Describe about concept of verification and validation
- Explain about concept of Eleven Step Testing Process.
- Describe about Software Testing Techniques.
- Use software testing tools.
- Explain about Testing Specialized Systems and Applications.

- **Pedagogy for Course Delivery:**

The class will be taught using software testing Strategy and Environment. In addition to assigning the case studies, the course instructor will spend considerable time in understanding the concept of innovation through the eyes of the software developer and tester. The instructor will cover the ways to think innovatively liberally using thinking techniques.

- **Assessment/ Examination Scheme:**

Theory L/T (%)	Lab/Practical/Studio (%)	Total
100	-	100

- **Theory Assessment (L&T):**

Continuous Assessment/Internal Assessment					End Term Examination
Components (Drop down)	Mid-Term Exam	Assignments	Project/Viva	Attendance	
Weightage (%)	10	10	5	5	70

Text & References:

Text:

- Effective Methods for Software Testing, 2nd Edition by William E. Perry , Second Edition, published by Wiley, 2009
- Software Quality, by Mordechai Ben-Menachem/Garry S. Marliss, by Thomson Learning publication,2005

References:

- Software Testing Techniques, by Bories Beizer, Second Edition, Dreamtech Press,2009
- Managing the Testing Process, by Rex Black, Wiley , 2009
- Software Testing and continuous Quality Improvement, by William E.Lewis, Gunasekaran Veerapillai, Second Edition, Auerbach Publication, 2009

Journals:

- International Journal of System Assurance Engineering and Management, Springer
 - IEEE Transactions on Software Engineering, IEEE
 - Information and Computation, Elsevier
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