Software Testing Course Outline

FAST-NU, Lahore

Course Code	**CS4036**
Course Title	Software Testing
Credit Hours	3
Prerequisite	
Grading Criteria	Quizzes (10%), Assignments + Class Activities (25%), Mid Terms (25%), Final Exam (40%)
Semester	Fall 2025
Class and Exam Schedule	6A [04:00 am -05: 20am] Tuesday and Thursday
Course Instructor	M. Waqas Manzoor waqas.manzoor@nu.edu.pk
Instructor Office Hours	**After Class**
Course TA	
Plagiarism Policy	All the parties involved will be awarded negative or Zero in first instance. Repeat of the same offense will result in (F) grade.
Textbook(s)	Naik and Tripathy, Software Testing and Quality Assurance: Theory and Practice. Wiley 2008 Yogesh Singh, Software Testing, CAMBRIDGE UNIVERSITY PRESS,2012
Reference Material	1. Code Complete by Steve McConnel (2nd Edition) 2. A Practitioners Guide to Software Test Design by Lee Copeland

	3. Software Testing: A Craftsman's Approach by Paul C. Jorgensen 4. Anne MetteJonassen Hass, *Guide to Advanced Software Testing*, Artech House, 2008. 5.
Course Goals	• Familiarize the students with the terms, software quality and software testing. • Introduce Software Quality Assurance Process and its steps to students • Explain complete process of testing to students • Familiarize the students with common methods used for testing • Familiarize the students different methods used for test case selection. • Familiarize students with software testing tools.
Learning Outcomes	After successful completion of the course, the students will be able to: 1. List different steps of a Software Quality Assurance Program. 2. Differentiate between black box and white box testing. 3. Design test cases for black box and white box testing. 4. Select appropriate number of test cases using an appropriate strategy. 5. Execute test cases using software testing tools. 6. Understand Software Testing Process
Programming Assignments Done in the Course	Yes

Tentative Topics and Course Plan (might be slightly changed)

Week #	Lecture #	Topics Covered
1	1	Course Introduction. [Fundamentals of Testing]
	2	Fault Errors and Failures. RIPR Model . [Fundamentals of Testing]
2	3	Verification and Validation, Levels of Testing, and Types of Unit Testing . [Fundamentals of Testing]
	4	**White box Testing: Structural Testing**, Basis Path Testing, Control Flow graph, Cyclomatic Number, Selection of minimum number of test cases, Test coverage (EclEmma, JUnit) [Test Analysis & Design] [static testing]
3	5	**White box Testing:** Structural Testing, Basis Path Testing, Control Flow graph, Cyclomatic Number, Selection of minimum number of test cases, Test coverage [Test Analysis & Design] [static testing]
	6	**White box Testing:** Structural Testing, Basis Path Testing, Control Flow graph, Cyclomatic Number, Selection of minimum number of test cases, Test coverage [Test Analysis & Design] [static testing]
4	7	**White box Testing:** Data flow testing [Test Analysis & Design] [static testing]
	8	**Black box testing:** Functional Testing, GUI Testing (SilkTest/Abbot)

		[Test Analysis & Design]
5	9	**Black box testing:** Equivalence Class Partitioning [Test Analysis & Design]
	10	**Black box Testing:** Boundary Value Analysis, Domain Analysis Testing [Test Analysis & Design]
6	**Midterm 1**	
7	11	**Black box testing:** Decision Table based testing, State transition testing. [Test Analysis & Design]
	12	**Black box testing:** Pairwise Testing, Orthogonal Testing [Test Analysis & Design]
8	13	**Black box Testing:** Orthogonal Testing [Test Analysis & Design]
	14	**Black box Testing:** Use Case based Testing [Test Analysis & Design]
9	15	**Integration:** Unit Testing, debugging, diagnosis. Integration Testing. Big Bang, Top Down, Bottom UP, Call Graph based [Testing throughout SDLC]
	16	**Levels of Testing:** Integration Testing. Integrating Component/Off-the-shelf components

		[Testing throughout SDLC]
10	17	**Levels of Testing:** System Testing, Performance Testing, Load and Stress Testing, Security Testing, Usability Testing [Testing throughout SDLC]
	18	**Levels of Testing:** Regression Testing. Acceptance Testing. [Testing throughout SDLC]
11	19	**Testing Process. Test Documentation** [Managing The Test Activities]
	20	**Software Testing Tools: Automated Testing. Selenium.** [Test Tools]
12	**Midterm 2**	
13	21	**Software Testing Tools:** **[**Test Tools**]**
	22	**Presentations**
14	23	**Presentations**
	24	**Presentations**
15	25	**Presentations**
	26	**Presentations**
16	**Final**	