Software Testing Course Outline

FAST-NU, Lahore

Course Code	CS497
Course Title	Software Testing
Credit Hours	3
Prerequisite	
Grading Criteria	Quizzes (10%), Assignments + Class Activities (25%), Mid Terms (25%), Final Exam (40%)
Semester	Fall 2023
Class and Exam Schedule	See TimeTable Exam: See date sheet
Course Instructor	Lehmia Kiran lehmia.kiran@nu.edu.pk
Instructor Office Hours	**TBD**
Course TA	TBD
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
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.

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.** **Software Lifecycle. Software development processes.** Where does testing phase fit in?
	2	**Software Quality Landscape:** What is quality? Characteristics of quality. Introduction of Defect Detection Techniques. Relationship among the quality characteristics, Types of quality characteristics, Improving Quality, Effectiveness of Defect Detection Techniques. General Quality Principle. Significance of testing. Test case Design.
2	3	**Unit Testing:** Debugging.
	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)
3	5	**White box Testing:**Structural Testing, Basis Path Testing, Control Flow graph, Cyclomatic Number, Selection of minimum number of test cases, Test coverage
	6	**White box Testing:**Structural Testing, Basis Path Testing, Control Flow graph, Cyclomatic Number, Selection of minimum number of test cases, Test coverage
4	7	**White box Testing:** Data flow testing
	8	**Black box testing:** Functional Testing, GUI Testing (SilkTest/Abbot)
5	9	**Black box testing:** Equivalence Class Partitioning
	10	**Black box Testing:** Boundary Value Analysis
6	**Midterm 1**	
7	11	**Black box testing:** Decision Table based testing, State transition

		testing.
	12	**Black box testing:** Pairwise Testing,
8	13	**Black box Testing:**
	14	**Black box Testing:** Use Case based Testing
9	15	**Levels of Testing:**Unit Testing, debugging, diagnosis. Integration Testing. Big Bang, Top Down, Bottom UP, Call Graph based
	16	**Levels of Testing:** Integration Testing. Integrating Component/Off-the-shelf components
10	17	**Levels of Testing:** System Testing, Performance Testing, Load and Stress Testing, Security Testing, Usability Testing
	18	**Levels of Testing:** Regression Testing. Acceptance Testing.
11	19	**Testing Process. Test Documentation**
	20	**Software Testing Tools: Automated Testing. Selenium.**
12	**Midterm 2**	
13	21	**Software Testing Tools:**
	22	**Presentations**
14	23	**Presentations**
	24	**Presentations**
15	25	**Presentations**
	26	**Presentations**
16	**Final**	