Software Quality Engineering

Code	Credit Hours
SE-321	3-0

Course Description

The Software Quality Engineering course emphasizes on software quality: how QA activities fit into the overall software development life cycle, the kind of QA practices implemented by practitioners, different types of testing techniques, and how to choose the best one in a given situation. It also focuses on software quality metrics, how we can manage the risks associated with software quality that threaten our project's success, and what are the ways of approaching software development process improvement in a systematic way.

Textbook

Tian, Jeff (2006). Software Quality Engineering: Testing, Quality Assurance, and Quantifiable Improvement | ISBN-10: 0471713457 | ISBN-13: 978-0471713456 | Edition: 1

Reference Books:

Nina S Godbole (2004). Software Quality Assurance: Principles and Practice | ISBN-10: 1842651765 | ISBN-13: 978-1842651766

Paul C. Jorgensen (2002). Software Testing, A Craftsman's Approach, CRC Press | ISBN-10: 0849308097 | ISBN-13: 978-0849308093 | Edition: 2

Stephen H. Kan (2002). Metrics and Models in Software Quality Engineering, Addison-Wesley Professional | ISBN-10: 0201729156 | ISBN-13: 978-0201729153 | Edition: 2

Prerequisites

SE-200 (Software Engineering)

ASSESSMENT SYSTEM FOR THEORY

Quizzes	10%
Assignments	10%
Mid Terms	30%
ESE	50%

Teaching Plan

Week No	Topics	Learning Outcomes
1	Introduction	Course Outline, objectives, teaching plan, assessment method, concepts review

2-6	Black box and white box testing	Introduction of various types of black-and-white box testing techniques which mainly include, Branch testing, data flow testing, statement coverage, decision coverage, stress testing, load testing, mobile Application testing, web security testing etc. Creation of different test cases based on type of technique.
7-8	Unit testing, integration testing and system testing	Desing and implementation of different test cases for a complete system, covering all levels of testing. Unit testing, integration testing and system testing.
9	**MID TERM EXAM**	
10-12	Quantifiable Quality Improvement: Defects Classification Comparing QA Techniques Effectiveness comparison Cost comparison Quantifiable Quality Improvement: Risk Identification	Various Quantifiable Quality Improvement: Defects detection prevention and containment related topics. Classification and Comparing various QA Techniques. Effectiveness comparison and Cost comparison for Quantifiable Quality
13-17	Software Development Process and Models: ISO Standards	Various Software Development Processes and Models: a complete study of ISO Standards. What is ISO 9000, ISO 12207, ISO 15504, ISO 9126 ISO requirement. How to use ISO 9000, 9000-3, Cost and Benefits

	Fault Tolerance and Containment Recovery blocks N-Version Programming Failure containment	Fault Tolerance and Containment Recovery blocks N-Version Programming Failure containment
18	**End Semester Exams**	