

**Arab Academy for Science and Technology and Maritime Transport
Computer Science Curriculum
Course Syllabus**

Course Code: SE493	Course Title: Software Quality Assurance	Classification: E	Coordinator's Name: Dr. Mohamed Mostafa	Credit Hours: 3
Pre-requisites: SE291 (Introduction to Software Engineering)	Co-requisites: None	Schedule: Lecture: 2 hours Tutorial-Lab: 2 hours		
Course Description: Study of issues related to the uniqueness of software quality assurance (SQA). Topics include the environments for SQA methods, Software errors and failures, Software quality factors, SQA architecture, Contract review, Quality plans, Formal technical reviews, Software testing strategies and implementations, Automated testing tools, CASE tools and quality, Infrastructure component of SQA system.				
Textbook: Daniel Galin, <i>Software Quality Assurance: From Theory to Implementation</i> , Pearson.				
References: Watts S. Humphrey, TSP (SM) Leading a Development Team, Addison-Wesley Professional.				
Course Objective/Course Learning Outcome:		Contribution to Program Student Outcomes:		
<ol style="list-style-type: none"> 1. Identify the unique characteristics and environment of SQA. 2. Identify the various causes of software errors. 3. Explain the need for comprehensive software quality requirements documents. 4. Explain the SQA architecture that 		<p>(SO1) Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.</p> <p>(SO4) Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.</p>		

<p>contains the components of SQA system.</p> <ol style="list-style-type: none"> 5. Discuss the importance of carrying out a contract review. 6. Identify the elements of a quality plan. 7. Identify the major software risk items. 8. Describe the various types of testing strategies and implementations. 9. Describe the importance of infrastructure component of SQA system. 	
<ol style="list-style-type: none"> 10. Compare the major review methodologies. 11. Compare automated testing and manual testing. 12. List the contributions of CASE tools to product quality. 	<p>SO3) Communicate effectively in a variety of professional contexts.</p> <p>(SO4) Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.</p> <p>(SO2) Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.</p>
<p>Course Outline:</p> <ol style="list-style-type: none"> 1. Introduction to Software Quality Assurance 2. Software Quality Factors, Models and Standards 3. Inspection: Verification and Validation 4. Introduction to Testing 	<ol style="list-style-type: none"> 5. Test Assessment 6. Testing Techniques 7. Reachability Analysis 8. Structural and Mutation Testing 9. Software Metrics