الجامعة الافتراضية السورية
SYRIAN VIRTUAL UNIVERSITY

Software Quality

Course Definition

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Syrian Arab Republic		الجمهورية العربية السورية
Ministry of Higher Education and Scientific Research		وزارة التعليم العالـــي والبحث العلمي
Syrian Virtual University		الجامعة الافتراضية السورية

1. Basic Information:

Course Name	Software Quality
Course Code	SSQ601
Number of Presentational Sessions*	20
Number of Synchronous Sessions**	10
Number of Shorter Tests***	2
Number of Exams***	1
Theoretical Sessions Work Load (hrs.)	60
Practical Sessions Work Load (hrs.)	30
Credit Hours	6

***Each presentational session comprises both recorded lecture (1.5 hrs.) and interactive learning content (1.5 hrs.).**

****Each synchronous session comprises the interactive lecture carried out in real time in a virtual class (1.5 hrs.).**

*****Each shorter test is 0.5 hr. long. The final exam is 2 hrs. long.**

N.B.

Generally, each chapter requires two presentational sessions: one for the recorded content and one for the interactive content (unless the chapter is too long, in which case it may require more sessions (. This note applies to synchronous sessions as well, where each chapter requires one synchronous session generally.

2. Prerequisites courses:

Course	Code
Software Engineering II	SSE602

3. Course Objectives:

The course aims to emphasize the importance of quality in the production and development of information and confirms the basic concepts of program quality in all stages of development, starting from the planning, analysis, design, programming, installation, testing and maintenance stages.

4. Learning Outcomes (LO):

Upon completion of the course, the student must have:

- Full knowledge of various information systems quality systems such as CMM.
- Full understanding of the different quality testing methods in all stages of information systems software development.
- Identify tools, methods and techniques for software testing.

Learn about standard quality testing systems and various testing

5. Assessment Results:

Chapter Number	Chapter Title	General Objectives	Assessment Type				
			Interactive Content & Recorded Sessions	Applied Activities (Synch. Sessions)	Final Exam*/ Shorter Tests**	Presentations and Interviews***	Reports****
CH1	Quality Concept and Perspectives	Comprehension –Analytical Thinking – Tools and Application Hands– On	√	√	√	√	√
CH2	Software Management and Process	Comprehension –Analytical Thinking – Tools and Application Hands– On	√	√	√	√	√
CH3	Software Testing	Comprehension	√	√	√	√	√

		–Analytical Thinking – Tools and Application Hands– On					
CH4	Software Inspections, Code Reviews, and Safety Arguments	Comprehension –Analytical Thinking – Tools and Application Hands– On	√	√	√	√	√
CH5	Risk Management	Comprehension –Analytical Thinking – Tools and Application Hands– On	√	√	√	√	√
CH6	software Audits	Comprehension –Analytical Thinking – Tools and Application Hands– On	√	√	√	√	√

CH7	CMMI model	Comprehension –Analytical Thinking – Tools and Application Hands– On	√	√	√	√	√
CH8	Software Verification and Validation	Comprehension –Analytical Thinking – Tools and Application Hands– On	√	√	√	√	√

***The final exam is two hours long and is given at the end of the course.**

****Shorter tests are about 30 minutes long and are given after three or four lectures throughout the semester during synchronous sessions.**

*****Presentations, interviews, and reports are submitted once after each three or four lectures throughout the semester during synchronous sessions.**

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6. Course Syllabus:

Chapter	Subject	Content	Number of Learning Objects	Number of synchronous Learning Objects
CH1	**Quality Concept and Perspectives**	1. Introduction 2. Software Quality Concept 3. Software Quality Characteristics 4. The Software Engineering Challenge 5. History of Software Failures 6. Modern Software Quality Management	6	3
CH2	**Software Management and Process**	1. Introduction 2. Software Management 3. Software Life Cycle Models 4. Life Cycle Processes and Quality Assurance Process	4	2
CH3	**Software Testing**	1. Introduction 2. Test Process 3. Testing in the Software Life Cycle 4. Software Testing Life Cycle	9	4

		5. Kinds/Types of Testingl 6. Testing: Plan and Design 7. Testing and Quality Improvement 8. Traceability of Requirements 9. Test Tools		
CH4	**Software Inspections, Code Reviews, and Safety Arguments**	1. Introduction 2. Economic Benefits of Software Inspections 3. formal software inspections 4. Modern Code Reviews – Reviewing Code During Development 5. Code Reviewing Techniques 6. Safety Arguments and Inspections of Safety Requirements 7. Key Points	**7**	**3**
CH5	**Risk Management**	1. Types of Risks 2. Impact of Risk 3. Dealing with Risk 4. Risk Management Life Cycle 5. Nine Effective Methods to Identify Risks 6. Risk Assessment 7. Risk Response	**8**	**4**

		8. Risk Contingency Plan		
CH6	**software Audits**	1. Introduction 2. Types of Audits 3. Audit Roles and Responsibilities 4. Audit Process 5. Audit Tools	**5**	**2**
CH7	**CMMI model**	1. The principles of CMMI 2. Objectives and Representation of CMMI 3. Model Framework 4. CMMI Maturity levels 5. CMMI Capability levels 6. The best way to use the CMMI 7. CMMI Certifications and Tools	**7**	**3**
CH8	**Software Verification and Validation**	1. Introduction 2. Benefits and Costs of V&V 3. V&V Standards and Process Models 4. V&V According to ISO/IEC/IEEE 12207 5. V&V According to the CMMI Model 6. ISO/IEC 29110 and V&V 7. Independent V&V 8. Traceability	**16**	**8**

		9. Validation Phase of Software Development 10. Tests 11. Checklists 12. V&V Techniques 13. V&V Plan 14. Limitations of V&V 15. V&V in the SQA Plan 16. Implementation of Verification Activities in Projects		

7. Practical Activity:

- **Tools and Labs:**

Tool Name	Description
QA Wolf	QA Wolf is an open-source end-to-end automated testing tool and one of the fastest ways to create QA tests
Selenium	One of the best open source testing tools. Being compatible with quite a lot of programming languages, testing frameworks, browsers and operating systems, Selenium is an awesome

	automation testing tool for web apps.
Apache JMeter	Apache JMeter is an open source Java desktop app which is intended mainly for web applications' load testing. It also supports unit testing and limited functional testing.

- **Practical Activities per Chapters:**

Chapter	Activities Type	Remarks
CH1	☑ Exercises ☑ Homework ☐ Webinars ☐ Project ☑ Experiment ☐ Other	
CH2	☑ Exercises ☑ Homework ☐ Webinars ☐ Project ☑ Experiment ☐ Other	
CH3	☑ Exercises ☑ Homework ☐ Webinars ☐ Project	

	☑ Experiment ☐ Other	
CH4	☑ Exercises ☑ Homework ☐ Webinars ☐ Project ☑ Experiment ☐ Other	
CH5	☑ Exercises ☑ Homework ☐ Webinars ☐ Project ☑ Experiment ☐ Other	
CH6	☑ Exercises ☑ Homework ☐ Webinars ☐ Project ☑ Experiment ☐ Other	
CH7	☑ Exercises ☑ Homework ☐ Webinars ☐ Project ☑ Experiment ☐ Other	

CH8	☑ Exercises ☑ Homework ☐ Webinars ☐ Project ☑ Experiment ☐ Other	

8. References:

- George Stepanek , Software Project Secrets: Why Software Projects Fail, 2012
- Abu Sayed Mahfuz, Software Quality Assurance, 2016
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- Claude Y. Laporte, Alain April, Software Quality Assurance, 2018
- Alexander Tarlinder, Developer Testing(Building Quality into Software), 2017
- Ivan Mistrik et al., Software Quality Assurance(In Large Scale and Complex Software-Intensive Systems), 2016
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- Daniel Galin, Software Quality- Concepts and Practice, 2018
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