



University/Academy: Arab Academy for Science and Technology & Maritime Transport
Faculty/Institute: College of Computing and Information Technology
Program: Software Engineering

Form No. (12)
Course Specification

1- Course Data

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| Course Code: SE493 | Course Title: Software Quality Assurance | Academic Year/Level: Year 4 / Semester 7 |
| Specialization: Software Engineering | No. of Instructional Units: 2 hrs lecture 2 hrs lab | Lecture: |

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| 2- Course Aim | This course covers the 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. |
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3- Intended Learning Outcome:

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| a- Knowledge and Understanding | Students will be able to demonstrate knowledge of: K12. Understanding essential facts, concepts, principles and theories relevant to software engineering. K15. Demonstrate strong knowledge of software systems analysis & design, data and Information Management, software project management, and software development models. K17. Show a critical understanding of the broad context within software engineering including issues such as quality, reliability. K19. Perform specification, analysis, design, implementation and testing of software solutions. K21. Types and alternatives of software systems architectures, and their differences in terms of performance, cost consequences, and their implications for the software quality attributes needed. |
| b- Intellectual Skills | <u>By the end of the course, the student acquires high skills and an ability to understand:</u> I12. Identify attributes, components, relationships, patterns, main ideas, and errors. |

| c- Professional Skills | <p><u>By the end of the course the student will have the ability to:</u></p> <p>P17. Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.</p> <p>P20. Deploy effectively the tools used for the construction and documentation of software, with particular emphasis on understanding the whole process involved in using computers to solve practical problems.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| d- General Skills | <p>Students will be able to:</p> <p>G1. Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.</p> <p>G2. Demonstrate skills in group working, team management, time management and organizational skills.</p> <p>G3. Show the use of information-retrieval.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4- Course Content | <table border="1"> <thead> <tr> <th>#</th> <th>CLO</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Identify the unique characteristics and environment of SQA.</td> </tr> <tr> <td>2</td> <td>Identify the various causes of software errors.</td> </tr> <tr> <td>3</td> <td>Explain the need for comprehensive software quality requirements documents.</td> </tr> <tr> <td>4</td> <td>Explain the SQA architecture that contains the components of SQA system.</td> </tr> <tr> <td>5</td> <td>Discuss the importance of carrying out a contract review.</td> </tr> <tr> <td>6</td> <td>Identify the elements of a quality plan.</td> </tr> <tr> <td>7</td> <td>Identify the major software risk items.</td> </tr> <tr> <td>8</td> <td>Compare the major review methodologies.</td> </tr> <tr> <td>9</td> <td>Describe the various types of testing strategies and implementations.</td> </tr> <tr> <td>10</td> <td>Compare automated testing and manual testing.</td> </tr> <tr> <td>11</td> <td>List the contributions of CASE tools to product quality.</td> </tr> <tr> <td>12</td> <td>Describe the importance of infrastructure component of SQA system.</td> </tr> </tbody> </table> | # | CLO | 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 contains the components of SQA system. | 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 | Compare the major review methodologies. | 9 | Describe the various types of testing strategies and implementations. | 10 | Compare automated testing and manual testing. | 11 | List the contributions of CASE tools to product quality. | 12 | Describe the importance of infrastructure component of SQA system. |
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| 5- Teaching and Learning Methods | Lectures, Labs, Projects, Individual study & self-learning. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6- Teaching and Learning Methods for Students with Special Needs | <ul style="list-style-type: none"> • Students with special needs are requested to contact the college representative for special needs (currently Dr Hoda Mamdouh in room C504) • Consulting with lecturer during office hours. • Consulting with teaching assistant during office hours. • Private Sessions for redelivering the lecture contents. <p>For handicapped accessibility, please refer to program specification.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7- Student Assessment: | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| a- Procedures used: | Exams, assignments | | | | | | | | | | | | | | | | | | | | | | | | | | |
| b- Schedule: | <p>Week 7 exam</p> <p>Week 12 exam</p> <p>Week 16Final exam</p> | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| c- Weighing of Assessment: | 7 th week exam 30% 12 th week exam 20% Lab work 10% Final exam 40% |
| 8- List of References: | |
| a- Course Notes | From the Moodle on www.aast.edu |
| b- Required Books (Textbooks) | Daniel Galen, <i>Software Quality Assurance: From theory to implementation</i> , Pearson- Pearson, 2004. |
| c- Recommended Books | Watts S. Humphrey, <i>TSP (SM) Leading a Development Team</i> , Addison-Wesley professional, 2005. |
| d- Periodicals, Web Sites, ..., etc. | |

Course Instructor:

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Head of Department:

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