The Hashemite University

الجامعـــــة الهاشميـــــة

Deanship of Academic Development and International Outreach

عمادة التطوير الأكاديمي والتواصل الدولي

# Software Quality Assurance (2010031440)

## Second Semester 2021/2022

| COURSE INFORMATION | |
|---|---|
| **Course Name:** Software Quality Assurance<br>**Semester:** Second Semester 2021/2022<br>**Department:** Department of Software Engineering<br>**Faculty:** Prince Al-Hussein Bin Abdullah II Faculty for Information Technology | **Course Code: 2010031440**<br>**Section:** Elective<br>**Core Curriculum**: |
| **Day(s) and Time(s):** Sunday, Thursday, Tuesday: 12:00-13:00<br>**Classroom:** **blended** _ Microsoft Teams & H.B 301 | **Credit Hours:** 3<br>**Prerequisites**: 2010031332 – Software Design |

**COURSE DESCRIPTION**

Credit Hours. The course explores a variety of software quality assurance components, activities, standards and tools that cover software project life cycle (requirements, design and implementation), project management, risk management, project budget and cost as well as development team. This course also covers quality metrics (metrics for the quality of analysis, design and code). Software complexity measures, case studies and hands on experiences covered in this course.. (٣)

**DELIVERY METHODS**

The course will be delivered through a combination of active learning strategies. These will include:

- PowerPoint lectures and active classroom based discussion
- Video lectures
- E-learning resources: e-reading assignments and practice quizzes through Model and Microsoft Team

**FACULTY INFORMATION**

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| **Name** | **Maryam AlZawahra** |
| **Academic Title:** | **Tutor** |
| **Office Location:** | **IT 250** |
| **Telephone Number:** | |
| **Email Address:** | **Maryam_alz@hu.edu.jo** |
| **Office Hours:** | Sunday 10:00-11:00<br>Thursday 10:00-11:00 |

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|---|---|
| | Tuesday 10:00-11:00<br>*Please send an e-mail (Maryam_alz@hu.edu.jo) to meet at any other time.* |

## REFERENCES AND LEARNING RESOURCES

**Required Textbook:**

- Software Engineering A Practitioner's Approach, Roger Pressman and Bruce R. Maxime, 9th edition, 2020.

**Suggested Additional Resources**:

- Software Quality Assurance, First Edition, Claude Y. Laporte, Alain April, 2017.
- Software Quality Assurance: Integrating Testing, Security, and Audit, Abu Sayed Mahfuz, 1st Edition ,2016.

## STUDENT LEARNING OUTCOMES MATRIX*

| Core Curriculum Learning Outcomes | Program Learning Outcomes | Course Objectives | Course Student Learning Outcomes | Assessment Method |
|---|---|---|---|---|
| | [EA2] Ability to identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques. | • Identify SQA concepts<br>• Understand technical review in practice<br>• Explain Software Testing strategies<br>• Identify software metrics and analyses them | • [CLO1] Have knowledge of Software Quality Assurance concepts and procedures.<br>• [CLO2] Get a knowledge about SQA elements, such as Testing, Measurement, Configuration and Change Management.<br>[CLO3] Have knowledge of applying Software Technical review in practice | • Exams<br>• Assignments<br>• Presentation |
| | [EP6] Understanding of appropriate codes of practice and industry standards. | | [CLO3] Have knowledge of applying Software Technical review in practice | • Exams<br>• Assignments<br>• Presentation |
| | [EP7] Awareness of quality issues and their application to continuous improvement. | | [CLO4] Communicate effectively on the project through technical reports and oral presentations. | • Exams<br>• Assignments<br>• Presentation |

## ACADEMIC SUPPORT

It is The Hashemite University policy to provide educational opportunities that ensure fair, appropriate and reasonable accommodation to students who have disabilities that may affect their ability to participate in course activities or meet course requirements. Students with disabilities are encouraged to contact their Instructor to ensure that their individual needs are met. The University through its Special Need section will exert all efforts to accommodate for individual's needs.

**Special Needs Section:**
**Tel:**
**Location:**
**Email**:

## COURSE REGULATIONS

***Participation***

Class participation and attendance are important elements of every student's learning experience at The Hashemite University, and the student is expected to attend all classes. A student should not miss more than 15% of the classes during a semester. *Those exceeding this limit of 15% will receive a failing grade regardless of their performance*. It is a student's responsibility to monitor the frequency of their own absences. **Attendance record begins on the first day of class irrespective of the period allotted to drop/add and late registration. It is a student's responsibility to sign-in; failure to do so will result in a non-attendance being recorded.**

In exceptional cases, the student, with the instructor's prior permission, could be exempted from attending a class provided that the number of such occasions does not exceed the limit allowed by the University. The instructor will determine the acceptability of an absence for being absent. A student who misses more than 25% of classes and has a valid excuse for being absent will be allowed to withdraw from the course.

***Plagiarism***

Plagiarism is considered a serious academic offence and can result in your work losing marks or being failed. HU expects its students to adopt and abide by the highest standards of conduct in their interaction with their professors, peers, and the wider University community. As such, a student is expected not to engage in behaviours that compromise his/her own integrity as well as that of the Hashemite University.

Plagiarism includes the following examples and it applies to all student assignments or submitted work:

- **Use of the work, ideas, images or words of someone else without his/her permission or reference to them.**
- **Use of someone else's wording, name, phrase, sentence, paragraph or essay without using quotation marks.**

- **Misrepresentation of the sources that were used.**

**The instructor has the right to fail the coursework or deduct marks where plagiarism is detected**

***Late or Missed Assignments***

In all cases of assessment, students who fails to attend an exam, class project or deliver a presentation on the scheduled date without prior permission, and/or are unable to provide a medical note, will automatically receive a fail grade for this part of the assessment.

- Submitting a term paper on time is a key part of the assessment process. Students who fail to submit their work by the deadline specified will automatically receive a 10% penalty. Assignments handed in more than 24 hours late will receive a further 10% penalty. Each subsequent 24 hours will result in a further 10% penalty.
- In cases where a student misses an assessment on account of a medical reason or with prior permission; in line with University regulations an incomplete grade for the specific assessment will be awarded and an alternative assessment or extension can be arranged.

***Student Complaints Policy***

Students at The Hashemite University have the right to pursue complaints related to faculty, staff, and other students. The nature of the complaints may be either academic or non-academic. For more information about the policy and processes related to this policy, you may refer to the students' handbook.

## COURSE ASSESSMENT

***Course Calendar and Assessment***

Students will be graded through the following means of assessment and their final grade will be calculated from the forms of assessment as listed below with their grade weighting taken into account. The criteria for grading are listed at the end of the syllabus

| Assessment | Grade Weighting | Deadline Assessment |
|---|---|---|
| Mid Exam | 35 % | |
| Presentation & assignments | 25 % | |
| Final Exam | 40% | |

**Description of Exams**

Test questions will predominately come from material presented in the lectures. Semester exams will be conducted during the regularly scheduled lecture period. Exam will consist of a combination of multiple choice, short answer, writing code or descriptive questions.

No make-up exams, homework or quizzes will be given. Only documented absences will be considered as per HU guidelines.
Grades are not negotiable and are awarded according to the following criteria*:

| Letter Grade | Description | Grade Points |
|---|---|---|
| A+ | Excellent | 4.00 |
| A | | 3.75 |
| A- | | 3.50 |
| B+ | Very Good | 3.25 |
| B | | 3.00 |
| B- | | 2.75 |
| C+ | Good | 2.50 |
| C | | 2.25 |
| C- | | 2.00 |
| D+ | Pass | 1.75 |
| D | Pass | 1.50 |
| F | Fail | 0.00 |
| I | Incomplete | - |

| WEEKLY LECTURE SCHEDULE AND CONTENT DISTRIBUTION | | |
|---|---|---|
| **Topic** | **Chapter in Text** | **Week #** |
| Quality Concepts<br>15.1 What Is Quality?<br>15.2 Software Quality<br>15.3 the software quality dilemma<br>15.4 Achieving software quality | 15 | Week1<br>(3 Lectures) |
| Reviews – A Recommended Approach:<br>16.1 Cost impact of software quality<br>16.2 Defect amplification and removal<br>16.3 Review metrics<br>16.4 Criteria for types of review<br>16.5 Informal Review<br>16.6 Formal Technical review | 16 | Week2,3<br>(6 Lectures) |
| Software Quality Assurance<br>17.1 Elements software assurance<br>17.2 SQA process and product characteristic<br>17.3 SQA tasks, goals and metrics | 17 | Week 4,5<br>(6 Lectures) |

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|---|---|---|
| 17.4<br>17.5 Formal approach for SQA<br>17.6 Statistical SQA<br>17.7 The ISO 9000 standards | | |
| Software Testing – Component Level<br>19.1 strategic approach for testing<br>19.2 Planning and Recordkeeping<br>19.3 Test case design<br>19.4 White Box Testing | 19 | Week 6,7<br>(6 Lectures) |
| Software Testing – Integration Level<br>20.1 Software Testing fundamental<br>20.2 Integrating Testing<br>20.3 Integrating Testing in OO Context<br>20.4 Validation Testing | 20 | Week 8,9<br>(6 Lectures) |
| Software Testing – Specialized Testing for Mobility<br>21.1Mobile Testing Guideline<br>21.2 The Testing Strategies<br>21.3 User Experience testing<br>21.4 Web application testing<br>21.5 Security Testing<br>21.6 Testing in System<br>21.7 Testing in virtual Environment | 21 | Week 10,11<br>(6 Lectures) |
| Software Configuration Management<br>22.1 Software Configuration testing<br>22.2 Continuous Integration<br>22.3 Version Control Testing<br>22.4 Continuous Integration | 22 | Week 12,13<br>(6 Lectures) |
| Software Metrics and Analytics<br>23.1 Software Management<br>23.2 Software analytic<br>23.3 Product metrics<br>23.4 Metrics for management<br>23.5 process and project management | 23 | Week 14<br>(3 Lectures) |

## ASSESSMENT RUBRICS

| ASSESSMENT for the Project | | | | | |
|---|---|---|---|---|---|
| **Criteria** | **Quality** | | | | **Total** |
| Presentation | Full with a good SQA topic and good presentation | Full but with weak | Lot of missing things | Report is very poor and there is no much work on it | |
| | 5 | 3 | 2 | 0 | **/5** |
| Assignments | Upload all assignments correct and good working | Upload some assignment with mistakes | Incomplete or small number of assignments | No or incorrect assignments | |
| | 20 | 12 | 8 | 0 | **/20** |
| | | | | | **Total out of 25** |