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| **جامعة العلوم التطبيقية الخاصة**  **(ج.ع.ت)**  **عمان – الأردن**  QA lloyds ukas logo | Logo | **APPLIED SCIENCE PRIVATE UNIVERSITY**  **(A.S.U)**  **AMMAN - JORDAN** |

فلنـجعل مـن أردن العـرب جامعة للـعرب

Faculty: Faculty of Information Technology

Department: Software Engineering

Academic Year: 2021/2022

Semester: First

(Course Syllabus)

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| Subject Name | Credit Hours | Course No. | Prerequisite | Concurrent course |
| Intoduction into Software Engineering | 3 | 1302281 | 1301108 |  |

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| Coordinator Name | Lecturer/s | Room No. | E-mail | Course website | Office Hours |
| Dr. Suhair AlHaj Hassan | Dr. Suhair AlHaj Hassan  Dr. Hani El-Bloush | 1215 | [Su\_hassan@asu.edu.jo](mailto:Su_hassan@asu.edu.jo) | http://bio.asu.edu.jo/bio/index.jsp | Posted on office door & LMS |

# Type of Learning: Blended Learning

* 2 hours in-class (face-to-face) learning
* 1 hour online asynchronous learning using a LMS

# Course Description:

This course covers the fundamentals of software engineering, including understanding system requirements, finding appropriate engineering compromises, effective methods of design, coding, and testing, team software development, and the application of engineering tools.

# Course Aims:

The course aims at delivering an understanding of the different stages of the software life cycle. In addition, the course helps the students acquiring the knowledge of the common methodologies and techniques in software engineering. In this course, it is aone of the aims to understand the concepts and tools in the development of software engineering models. Finally, the course aims at showing the awareness of the importance of software engineering in software system development.

# Student Outcomes:

SO-(1) Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.

SO-(2) Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program’s discipline.

SO-(3) Communicate effectively in a variety of professional contexts.

# Intended Learning Outcomes:

Following the successful completion of this course, the student should be able to:

## Knowledge and Understanding:

### Describe the software engineering processes and acitivities. (CO#1)

## Subject Specific Skills:

B1. Distinguish the different software processes and how to select the right process to project in hand. (CO#2)

B2. Apply software project management techniques. (CO#4)

## Cognitive and Intellectual Skills:

C1. Distinguish the software requirements (e.g. functional and non-functional  requirements) (CO#3)

C2. Sketch the UML Software Models. (CO#5)

## Transferable Skills:

# Teaching and Learning Methods:

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| Development of ILOs is promoted through the following teaching and learning methods:   |  |  |  | | --- | --- | --- | | ILOs | Learning Methods | Evaluation Methods | | A1 | In-class lectures | Exams and assignments | | B1 – B2 | In-class lectures | Exams and assignments | | C1 – C2 | Online sessions (asynchronous) | * Watching pre-recorded videos * Research projects or group projects * Student presentation * Online discussions * Assignments * Quizzes, games, and problem solving |  Learning skills: |

# Course Content:

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| ***Week*** | ***Main Topic  (Chapter Title)*** | ***Topic’s Details*** | ***Method of instruction*** | ***Main Reference (Chapter #)*** |
| 1, 2 | Intoduction | The Evolving Role of Software  Software costs, Software products  FAQs about SW engineering | In-class lecture | Chapter 1 |
| Software Engineering: definition, processes, models and methods  Quality attributes of good software systems | In-class lecture | Chapter 1 |
| 3 | Software Characteristics & Ethics | Software process activities | In-class lecture | Chapter 1 |
| Software Characteristics and Applications  Web software engineering  Professional and ethical responsibilities | In-class lecture | Chapter 1 |
| 4 | Software Process Models | The software process  The waterfall model  Software process models | Watching pre-recorded video | Chapter 2 |
| Evolutionary Software Process  Reuse-oriented software engineering | Discussion Forum | Chapter 2 |
| 5 | Software Process Activites | SW Process activities (RE, design, implementation, testing, and evolution) | In-class lecture | Chapter 2 |
| Software prototyping (Throw away prototyping) | In-class lecture | Chapter 2 |
| 6 | Further software Processes | Software Processes:  Spiral Model | In-class lecture | Chapter 2 |
| Rational Unified Process (RUP) | In-class lecture | Chapter 2 |
| 7 | Software Management | Software management distinctions  Management activities | In-class lecture | Chapter 22 |
| Risk management  Managing people & Teamwork | In-class lecture | Chapter 22,23 |
| 8 | Project palnning | Project Planning | Watching pre-recorded video | Chapter 23 |
| Project Schedualing | Group Project | Chapter 23 |
| 9 | Requirements Engineering -1 | Requirements Engineering:   * RE: definition and context   - User and System requirements | Assignment 1 | Chapter 4 |
| -Functional and non-functional requirements | Discussion Forum  **Midterm Exam** | Chapter 4 |
| 10 | Requirements Engineering -2 | Requirements engineering processes:   * The software requirement document   -Requirements specification | In-class lecture | Chapter 4 |
| -Requirements elicitation and analysis  -Requirements discovery  -Requirements classification and organization | In-class lecture | Chapter 4 |
| 11 | Requirements Engineering -3 | -Requirements prioritization and negotiation  -Requirements specification | In-class lecture | Chapter 4 |
| -Requirements validation  -Requirements Management | In-class lecture | Chapter 4 |
| 12 | System Modelling -1 | System modeling:  Context models | In-class lecture | Chapter 5 |
| Interaction models  Use case diagrams  Sequence diagrams | In-class lecture | Chapter 5 |
| 13 | System Modelling -2 | System modeling (Cont.):  Structural models  Class diagrams – generalization and aggregation | In-class lecture | Chapter 5 |
| Behavioral models  Data-driven modeling  Event-driven modeling | In-class lecture | Chapter 5 |
| 14 | Development Testing | Unit testing   * Component testing   System testing  - Test-driven development | Watching pre-recorded video | Chapter 8 |
| * Release testing * Requirements based testing * Performance testing | Assignment 2 | Chapter 8 |
| 15 | User and Design Testing | User testing | Interactive video | Chapter 8 |
| Test case design | Problem Solving | Chapter 8 |
| 16 | Revision | Revision | **Final Exam** |  |
| Revision |

# Grade Distribution:

Your course grade will be determined by the following:

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| Assessment Method | Final Grade % | Due Date |
| - Asynchronous learning activities | 30% | TBA |
| - Midterm Exam (paper-based) | 30% | TBA |
| - Final Examination (paper-based) | 40% | TBA |

***\*Distribution of examination material (may vary depending on material included)***

# Course Policies:

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| 1. Attendance policies:  * Attendance: Mandatory. * First warning – with 3 absences * Last warning – with 6 absences * Failing in the subject – with 8 absences  1. Absences from exams and handing in assignments on time:   Will result in zero achievement unless health report or other significant excuse is documented.   1. Health and safety procedures: 2. Honesty policy regarding cheating, plagiarism, misbehavior:   The participation, the commitment of cheating will lead to applying one or more of the following penalties together:   1. Failing the subject he/she cheated at 2. Failing the other subjects taken in the same course 3. Not allowed to register for the next semester. The summer semester is not considered as a semester 4. Grading policy:   Exams and Quizzes:   * Mid Exam: 30 points * Asynchronous online activities: 30 points * Final Exam: 40 points * Total: 100 points      1. Available university services that support achievement in the course:   Teacher assistants (TAs) help students to improve their programming skills, lecturers’office hours, review sessions organized by students. |

# Required Equipment and Tools:

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| Computer-equipped classroom to enhance student-teacher interaction |

# Make-up Exam Policy:

Make-up exams will be offered for valid reasons. They may be different from regular exams in content and format.

# Textbook information:

Sommerville, Software Engineering, 10th edition, Addison-Wesley, USA, 2016.

# Main Reference:

Sommerville, Software Engineering, 10th edition, Addison-Wesley, USA, 2016.

# Other References:

-Beginning Software Engineering, Rod Stephens, ISBN: 978-1-118-96914-4, 2015

-Object-Oriented Software Construction SECOND EDITION Bertrand Meyer ISE Inc. Santa Barbara (California)

-Software Engineering: A Practitioner's Approach, 7th , R. S. Pressman, McGraw Hill, 2010.

# Additional information:

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| No side talks during lecture  No mobile phones during lecture  Entering the lecture theatre after the instructor is not permitted.  Homework should be done by students independently or by team work and will be asked at the exams |

# Course Material and Announcements:

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| Students need to use the e-learning page at the ASU website in order to get all lecture handouts and guidelines which will be uploaded there.  In addition, course related announcements and exam results will be posted on the e-learning page and is the responsibility of each student to check the site regularly. |

Course Coordinator: Dr Suhair AlHaj Hassan Signature: Date: 14/10/2021

Head of curriculum committee: Dr Yousra Odeh (SE Dept) Signature: Date: 14/10/2021

Head of Department: Dr Yousra Odeh Signature: Date: 14/10/2021

Dean: Dr Mohammad Hijjawi Signature: Date: 14/10/2021

# Copy to:

* Head of Department
* Head of curriculum committee
* Course File

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