

**Jerash University**

**Faculty of Computer Science and Information Technology**

**Computer Sciences Department**

**Semester**: Fall Semester 2018/2019

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| **Course symbol and number:** 1002321 | **Course Name:** هندسة البرمجيات |
| **Teaching Language:** English | **Prerequisites:** 1002220 |
| **Credits:** 3 hours**.** | **Course Level:** 300 |

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| **Course Description**  |
| This course is an introduction to software Engineering. It provides students with a broad perspective of Software Engineering discipline and emphasizes the differences between software engineering discipline and other engineering disciplines. It highlights the theories, methods, and tools used in professional software developments. The covered topics include the software process, project management, requirement engineering, system modeling, architectural design, design and implementation, agile methods, software testing, and software evolution. |

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| **Course Objectives**  |
| * Understand and explain software development as a series of engineering activities, and processes.
* Select an appropriate life cycle and process model for development of a software product.
* Explain the importance of software quality evaluation activities
* To introduce ethical and professional issues of software engineers
* To discuss project management, planning, and risks
* To describe requirements types, analysis, validation, and management
* To describe some types of system models.
* To introduce system design techniques and to discuss its importance
* To explain how an iterative, incremental, and other types of development process leads to faster delivery of more useful software
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| **Learning Outcomes**  |
| Upon completion of this course, students should be able to: * Understand and explain software development as a series of engineering activities, and processes.
* Demonstrate software development team-working skills.
* Analyze client/user needs.
* Select an appropriate life cycle and process model for development of a software product.
* Explain the importance of software quality evaluation activities.
* Develop a series of software life-cycle deliverables.
* Develop representations/models and descriptions of an evolving software product for inclusion in a requirements specification document.
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|  | **Text Book(s)**  |
| **Title**  | Software Engineering |
| **Author(s)**  | Ian Sommerville |
| **Publisher**  | Pearson |
| **Year**  | 2007 |
| **Edition**  | Eighth Edition  |

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|  | **References** |
| **Books**  |  |
| **Internet links**  | http://www.jpu.edu.jo/lms |
| **Course link**  | [Click here](http://www.jpu.edu.jo/lms) |

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|  | **Instructors**  |
| **Instructor**  |  Dr. Ghaith M. Jaradat |
| **Office Location**  | الطابق السادس - 612 |
| **Office Phone**  | 189 |
| **E-mail**  | g.jaradat@jpu.edu.jo |

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| **Topics Covered**  |
| **Topics**  | **Chapters in Text**  | **Week number**  | **Teaching hours**  |
| **Introduction to Software Engineering:*** SE Introduction
* difference between SE, Computer science, and system engineering
* SW process and SW process model
* Costs of software engineering
* Software engineering methods
* Attributes of good software
* Challenges facing SE
* Professional and ethical responsibility
 | Chapter 1 | 1, 2 | 6 |
| **Socio-Technical Systems:*** Emergent system properties
* Systems engineering
* Organizations, people and computer systems
* Legacy systems
 | Chapter 2 | 3 | 3 |
| **Assignment 1** |  |  |  |
| **Software Process:** * Software process models
* Process iteration
* Process activities
* The Rational Unified Process
* Computer-aided software engineering
 | Chapter 3 | 4, 5 | 6 |
| **First Exam** |  |  |  |
| **Project Management:*** Management activities
* Project planning
* Project scheduling
* Risk management
 | Chapter 4 | 6, 7  | 6  |
| **Software Requirements:** * Functional and non-functional requirements
* User requirements
* System requirements
* Interface specification
* The software requirements document
 | Chapter 6 | 8  | 3  |
| **Assignment 2** |  |  |  |
| **Requirement Engineering:*** Feasibility studies
* Requirements elicitation and analysis
* Requirements validation
* Requirements management
 | Chapter 7 | 9, 10 | 6 |
| **Assignment 3** |  |  |  |
| **System Modeling:** * Context models
* Behavioural models
* Data models
* Object models
* CASE workbenches
 | Chapter 8  | 11, 12  | 6  |
| **Second Exam** |  |  |  |
| **Architectural Design:** * Architectural design decisions
* System organisation
* Decomposition styles
* Control styles
* Reference architectures
 | Chapter 11  | 13, 14  | 6  |
| **Rapid Software Development:*** Agile methods
* Extreme programming
* Rapid application development
* Software prototyping
 | Chapter 17 | 15 | 3 |
| **Assignment 4** |  |  |  |
| **Project Submission and Presentation** |  |  |  |
| **Final Exam** |  |  |  |

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|  | **Evaluation**  |  |
| **Assessment Tool**  | **Expected Due Date**  | **Weight**  |
| Programming assignments and LMS | - | 20 %  |
| First Exam  | 25/11/2018 | 20 %  |
| Second Exam  | 23/12/2018 | 20 %  |
| Final Exam  | According to the University final examination schedule  | 40 %  |

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|  | **Policy**  |
| **Attendance**  | Attendance is very important for the course. In accordance with university policy, students missing more than the allowed absence rate of total classes are subject to failure. Penalties may be assessed without regard to the student's performance. Attendance will be recorded at the beginning or end of each class.  |
| **Exams**  | All exams will be CLOSE-BOOK; necessary algorithms/equations/relations will be supplied as convenient. |

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| **Class Schedule & Room**  |

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| **Office Hours**  |
|  Sun: 11-12:30  Mon: 9:30-11  Tues: 11-12:30  Wed: 9:30-11 |
|  | \* Or by an appointment through email |  |

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|  | **Teaching Assistant**  |
| To announced later on. |  |

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|  | **Prerequisites**  |
| **Prerequisites by course** | 1001223  |