**Academic Year:     2023-2024**


**lecturer: Wafaa Mustafa Hameed**

# Software Engineering

# 1. Information on the Programme

| | |
|---|---|
| **1.1. Higher Education Institution** | **Cihan University Sulaimaniya** |
| **1.2. College** | **Science** |
| **1.3. Department** | **Computer Science** |
| **1.4. Field of Study** | **Software Engineering** |
| **1.5. Cycle of Study[1]** | **1** |
| **1.6. Specialization/ Study Programme** | **Computer Science** |
| **1.7. Form of Education** | **Full Time** |

# 2. Information on the Discipline

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **2.1. Discipline Name** | | | | **Software Engineering** | | | | | |
| **2.2. Code** | | | | **CUE31025** | | | | | |
| **2.3. Language:** | | | | **English** | | | | | |
| **2.4. (Theory) Lecturer**<br>    **E-mail:**<br>    **Tel:**<br>**Webpage, Google Classroom** | | | | **Wafaa Mustafa Hameed**<br>Wafaa.mustafa@sulicihan.edu.krd<br>**009647711549467** | | | | | |
| **2.5. Practical/Seminar/ Laboratory/ Project Lecturer**<br>    **e-mail:**<br>    **Tel:**<br>    **Webpage,  Google Classroom** | | | | **Wafaa Mustafa Hameed**<br>Wafaa.mustafa@sulicihan.edu.krd<br>**009647711549467** | | | | | |
| **2.6.<br>Year of Study** | **-2022<br>2023** | **2.7 .Semester** | **1st** | **2.8. Assessment Type[2]** | Written exam, & CE | **2.9. Discipline Status** | | **Content[3]** | CD |
| | | | | | | | | **Mandotary [4]** | MD |

# 3. Total estimated time (Teaching Hours per Semester)

**University of Cihan Sulaimaniya**

**College of Science**

**Department:** Computer

**Discipline:** Software Engineering

**Stage:** second

| | |
|---|---|
| Total Contact Hours: | 26 |
| Total Self Study Hours: | 82 |
| Total No. Hours: | 108 |
| ECTS: | 4.00 |

| No. of Weeks | Contact Hours | | | | | Self-Study | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Theoretical | Practical | Lab. | Project | Visit | Quiz | Reading | Assignment | Report | Midterm Exam. | Final Exam. |
| 1st Week (Registration) | - | - | - | - | - | - | - | - | - | - | - |
| 2nd Week | 2 | | | | | | 2 | | | | |
| 3rd Week | 2 | | | | | | 2 | | | | |
| 4th Week | 2 | | | | | 2 | 2 | | | 10 | |
| 5th Week | 2 | | | | | | 2 | 2 | | | |
| 6th Week | 2 | | | | | 2 | 2 | | | | |
| 7th Week | 2 | | | | | | 2 | | | | |
| 8th Week | 2 | | | | | | 2 | | 2 | | 20 |
| 9th Week | 2 | | | | | | 2 | 2 | | | |
| 10th Week | 2 | | | | | 2 | 2 | | | 10 | |
| 11th Week | 2 | | | | | | 2 | | | | |
| 12th Week | 2 | | | | | | 2 | | 2 | | |
| 13th Week | 2 | | | | | 2 | 2 | | | | |
| 14th Week | 2 | | | | | | 2 | | | | |
| 15th Week ( Final Exam.) | | - | - | - | - | - | - | - | - | - | - |
| 16th Week ( Final Exam.) | - | - | - | - | - | - | - | - | - | - | - |
| TOTAL | 26 | 0 | 0 | 0 | 0 | 8 | 26 | 4 | 4 | 20 | 20 |

# 4. Prerequisites (if applicable)

| | |
|---|---|
| **4.1 Curriculum-Related** | |
| **4.2 Skills-Related** | |

## 5. Conditions (if applicable)

| | |
|---|---|
| **5.1. For the Theoretical** | 1. Read and comprehend the textbook material. <br> 2. Attend all the classes and take notes on class discussions. <br> 3. Actively participate in class discussions and activities. <br> 4. Submit all the assignments and the project on time. <br> 5. Pass tests and quizzes. |
| **5.2. For the Practical** | |

## 6. Cumulated Specific Competences

| | |
|---|---|
| Professional Competencies | Requirements Analysis: The skill to gather, analyze, and document software requirements effectively. This involves understanding user needs, translating them into functional and non-functional requirements, and ensuring that the software solution meets the specified requirements. <br><br> Software Design and Architecture: The capability to design software systems using appropriate design methodologies, patterns, and architectural styles. This competency includes understanding the principles of modularity, scalability, and extensibility, and the ability to create software architectures that align with the project goals and requirements <br><br> Ethical and Professional Conduct: The adherence to ethical standards and professional conduct in software engineering. This includes understanding and applying ethical guidelines in software development, respecting intellectual property rights, and maintaining confidentiality and data privacy**. |
| Transversal competences | Critical Thinking: The ability to analyze and evaluate software engineering problems and situations from multiple perspectives, considering various factors and potential solutions. This includes logical reasoning, problem-solving skills, and the capacity to make informed decisions based on evidence and sound judgment. <br><br> Communication Skills: The proficiency to effectively communicate ideas, concepts, and technical information related to software engineering. This includes oral and written communication skills, active listening, and the ability to present complex information in a clear and concise manner to different audiences, including technical and non-technical stakeholders. |

| | Teamwork and Collaboration: The capability to work collaboratively in software development teams, understanding and respecting diverse perspectives and roles. This competency involves active participation, effective communication, and the ability to contribute to shared goals, promote cooperation, and resolve conflicts constructively |
|---|---|

## 7. Discipline Objectives (Based on the cumulated specific Competences)

| | |
|---|---|
| **7.1. General Objective** | 1. Understand the software development life cycle and its different phases.<br>2. Analyze software requirements and create effective specifications.<br>3. Apply various design methodologies to develop high-quality software.<br>4. Manage software projects using appropriate project management techniques.<br>5. Demonstrate an understanding of software quality assurance and maintenance.<br>6. Collaborate effectively in software development teams.<br>7. Stay updated with current trends and practices in software engineering. |
| **7.2. Specific Objectives** | 1. To discuss project planning and the planning process<br>2. To show how graphical schedule representations are used by project management<br>3. To discuss the notion of risks and the risk management process<br>4. To introduce the concepts of user and system requirements<br>5. To describe functional and non-functional requirements<br>6. To explain how software requirements may be organized in a requirements document<br>7. To describe the principal requirements engineering activities and their relationships<br>8. To introduce techniques for requirements elicitation and analysis<br>9. To describe requirements validation and the role of requirements reviews<br>10. To discuss the role of requirements management in support of other requirements engineering processes<br>11. To introduce architectural design and to discuss its importance<br>12. To explain the architectural design decisions that have to be made<br>13. To introduce three complementary architectural styles covering organization, decomposition and control |

## 8. Content

| week | 8.1. Theoretical-Number of Hours | Teaching methods | Observation |
|---|---|---|---|
| 1 | Introduction to software engineering, Software process. | lecture | **1 lecture = 2 hours** |
| 2 | Characteristics of good software | lecture | **1 lecture = 2 hours** |
| 3 | Software Processes | lecture , | **1 lecture = 2 hours** |
| 4 | Requirement Elicitation and Analysis: | Lecture, Quiz | **1 lecture = 2 hours** |
| 5 | Software Engineering \| Rapid application development model (RAD) | lecture , assignment | **1 lecture = 2 hours** |
| 6 | Software Requirement Specification: | lecture | **1 lecture = 2 hours** |
| 7 | **MIDTERM EXAM 1** | | |
| 8 | Requirements Engineering Processes | Lecture, Report | **1 lecture = 2 hours** |
| 9 | Software Requirement Validation: | Lecture, assignment | **1 lecture = 2 hours** |
| 10 | Activities carried out during each phase of a spiral model. | Lecture, Quiz | **1 lecture = 2 hours** |
| 11 | **MIDTERM EXAM 2** | | |
| 12 | System Testing Stages | Lecture, Report | **1 lecture = 2 hours** |
| 13 | Coding and unit testing | lecture | **1 lecture = 2 hours** |
| 14 | Maintenance: | lecture | **1 lecture = 2 hours** |

- *Compulsory Bibliography:*

- **Software Engineering, Seventh Edition, Ian Sommerville.**

- **Pressman R, Software Engineering Jalote P, An integrated Approach to Software Engineering**

# 9. Assessment

| Type of Activity | 9.1. Assessment Criteria[2] | 9.2. Assessment Type | 9.3. Percentage of the final Grade |
|---|---|---|---|
| **9.4. Theoretical** | Written exam | Exam | **%60** |
| **9.5. Practical/ Seminar/Laboratory** | Programming Practical exam | Exam | |
| **9.6. Activity during Semester** | Quizzes Assignment Reports | Practical and theoretical Quizzes | **%40 (20 +10+10)** |
| **Minimum performance Standards:** | | | |

| | |
|---|---|
| **Theoretical Lecturer** | **Wafaa Mustafa Hameed** |
| **Practice Lecturer** | |

| Approved by the Curriculum Development Committee: | |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| **Head of the Department/ Dean** | |

---------------------------------------