



## Prince Sultan University

### College of Computer and Info Sciences / Department of Computer Science

#### COURSE SYLLABUS

##### Mission Statement of the Bachelor of Software Engineering Program(s):

Prepare world-class software engineering graduates through an academic environment that promotes professional skills, ethical behavior, life-long learning, research and service to the community.

1. **Course number and name:** SE 311 Software Requirements Engineering
2. **Credits and contact hours:** 3(3, 0, 1)
3. **Instructor's or course coordinator's name:** Ms.Alhanouf Almutairi
  - a. **Scheduled Office Hours:** To be posted on my office door.
  - b. **Office Location:** W334
  - c. **Email:** aalmutairi@psu.edu.sa
4. **Text book, title, author, and year**
  - a. **Primary Text:** Software Requirements (3rd Edition), by Karl Wieggers and Joy Beatty
  - b. **Other References:**
    - SWEBOK Version 3 – Chapter 1 <http://www.computer.org/portal/web/swebok>
    - Requirements Engineering: Fundamentals, Principles, and Techniques by P. Klaus, 2010.
    - Tutorials on UML (**Unified Modeling Language**): [UML 2 tutorial](#), [Microsoft tutorial](#), [UML Introduction](#), [Top 7 UML cheat sheets](#)
    - Tutorials on URN (**User Requirements Notation**): [MCeTech'05](#), [JSW'11](#)
  - c. **Course Website [Optional]:**
  - d. **Learning Management System:** Moodle available at <https://lms.psu.edu.sa>
5. **Specific course information**
  - a. **Brief description of the content of the course (catalog description):**

This course covers software requirements, applied to a variety of types of software. It also covers techniques for discovering and eliciting requirements, requirements documentation standards, languages and models for representing requirements, analysis and validation techniques, including need, goal, and use case analysis, requirements in the context of system engineering, specifying and measuring external qualities: performance, reliability, availability, safety, security, etc., and requirements management: handling requirements changes, traceability, resolving feature interactions.
  - b. **Prerequisites or co-requisites:** SE 201 for SE students, CS 225 for CS students
  - c. **Indicate whether a required, elective, or selected elective (as per Table 5-1/university bulletin) course in the program:** Required for SE students, elective for CS students



6. Specific goals for the course

a. Specific outcomes of instruction. The student will be able to:

CLO 1: Recognize the different types of Requirements and Importance of Software Requirement Analysis. [Knowledge and understanding]

CLO2: Identify multiple techniques to elicit requirements from stakeholders, choosing from among alternative methods as appropriate for different situations. [Skills]

CLO3: Analyze documenting requirements for high-level software requirements engineering. [Skills]

CLO4: Design and develop models for requirement documentation using goals, use cases, UML class and activity diagrams and state charts. [Skills]

CLO5: Evaluate the software requirements using validation and negotiation techniques regarding priorities and scope with the stakeholders. [Skills]

CLO6: Measure the documented requirements using quality criteria techniques for accuracy, unambiguity, consistent and completeness of the requirements. [Skills]

CLO7: Demonstrate the management of requirements as they change over time (e.g., over multiple releases and over a product line). [Skills]

CLO8: Choose to work in a group exhibiting teamwork and leadership qualities to accept responsibility for own learning and developing a project requirement and documentation with limited supervision. [Values]

b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

Course LOs #	Student Outcomes		
	Computer Science	Software Engineering	Information Systems
1	1	1	
2	2	2	
3	1	6	
4	2	2	
5	1	6	
6	2	6	
7	6	2	
8	5	5	

## 7. Brief list of topics to be covered

Week No.	Topics	CLO(s) Alignment	Assessments
1, 2	<b>Basics of Requirements Engineering</b> <ul style="list-style-type: none"> <li>• Definition and Importance of Requirements</li> <li>• Types of Requirements</li> <li>• The Requirements Engineering Process</li> <li>• Requirements Engineering: Main Activities</li> </ul>	1	Major exam and project
2	<b>Documentation standards</b> <ul style="list-style-type: none"> <li>• IEEE 830-1998 Standard</li> </ul> Relationship of IEEE 830 and ISO/IEC 12207	3,4	Assignment Major Exams Final Project
3	<b>Requirements Inception</b> <ul style="list-style-type: none"> <li>• Problem Analysis</li> <li>• Business Requirements</li> <li>• Steps for Problem Analysis</li> <li>• Vision and Scope Document</li> <li>• Project Viability</li> </ul>	2	Quizzes Major Exams Final Project
4, 5	<b>Requirements Elicitation</b> <ul style="list-style-type: none"> <li>• Goals, Risks, and Challenges</li> <li>• Sources of Requirements</li> <li>• Requirements Elicitation Tasks</li> <li>• Elicitation Problems</li> <li>• Elicitation Techniques</li> </ul>	2	Quizzes Major Exams Final Project
6	<b>Requirements Analysis and Specification</b> <ul style="list-style-type: none"> <li>• What is requirements analysis?</li> <li>• Stages</li> <li>• Methods and tools</li> </ul>	3, 6	Major Exams Final Project
7	<b>Requirements Modeling</b> <ul style="list-style-type: none"> <li>• Data Modeling Concepts</li> <li>• Scenario-based modeling (User Case Diagram)</li> <li>• Class-based modeling (classes and objects, attributes, operations, CRC models, collaboration diagrams)</li> </ul>	4	Assignment Major Exams Final Project

8	<b>Requirements Modeling</b>	4	Assignment Major Exams Final Project
9	<b>Requirements Modeling</b>  • Goal Modeling (URN, GRL) GRL Workshop		
9	<b>Requirements Verification and Validation</b>	5	Quizzes Major Exams Final Project
14	<b>Requirements Prioritization</b>  Requirements negotiation	5	Quizzes Major Exams Final
15	<b>Requirements Prioritization</b>  Requirements Prioritization	5	Quizzes Final
16	<b>Requirements Management</b>  • Introduction to Requirements Management • Traceability • Baselines • Change Management • Requirements Management Tools	7	Assignment Final Project
17	<b>Requirements Management</b>  Tool Doors Workshop	7	Assignment Final Project
18,19	<b>Requirements approaches in typical development processes.</b>  • Software Process Engineering and Frameworks Agile Methods <b>Project presentations</b>	2  8	Final



## 8. Weight of Assessments

Assessment	Assessment Task	Proportion of Final Assessment
1	Assignments, participation, and attendance	5 %
2	Two quizzes Week 6-11	10 %
3	Midterm Exam Week 8-9	30 %
4	Project and presentation	15%
5	Final Exam	40 %

## 9. Additional Information

**Plagiarism and Academic Dishonesty:** “Plagiarism can be defined as unintentionally or deliberately using another person’s writing or ideas as though they are one’s own. Plagiarism includes, but is not limited to, copying another individual’s work and taking credit for it, paraphrasing information from a source without proper documentation, and mixing one’s own words with those of another author without attribution. In addition, buying a paper or project, or downloading a paper from the Internet, and submitting them as your own are also plagiarism. The penalty for academic dishonesty will bring course expulsion and failure, or even suspension” (Academic Integrity and Syllabus Acknowledgement Form).

**Attendance Policies:** The University attendance policy will be strictly followed. Students are expected to attend all class sessions and be in class on-time. Attendance is taken during the first 5 minutes of the class. Missing a class session is a student’s responsibility. Missed classes will not be repeated. A total of 16 absences may lead to denial grade DN. It is the student’s responsibility to periodically use Moodle for course content, projects assignments, updates and notifications.

**Major Exam Policies:** It is not possible to reschedule a major exam. If any student missed an assessment, the makeup will be at the end of the semester and all the materials are included (comprehensive assessment). Makeup exam will only be approved in limited cases as stipulated in the university bylaws. Generally, the final exam includes all material covered during the semester (comprehensive).

### **Assignment/Project Policies:**

Assignments must be submitted before whatever deadline is posted with the assignment notice. Late submissions will be penalized 10 per cent per day.

**Any other course policy that is necessary for a course**