Course Specification
(Bachelor)

Course Title:	Software Engineering
Course Code:	451CCS-3
Program:	Bachelor of Science in Computer Science
Department:	Department of Computer Science
College:	Computer Science and Information Systems
Institution:	Najran University
Version:	2.0
Last Revision Date:	August 2022

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A. General information about the course:

1. Course Identification

1. Credit hours: (3)					
3 (2, 2, 1) [Theory, Lab, Tutorial]					
2. Course type					
A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (Level 7/Year 4)					
4. Course General Description:					
Software engineering provides a basic source of information for industrial engineers. This course introduces students to information systems and computer science. Students will also learn about the design and implementation of software and information systems using Unified Modeling Language.					
5. Pre-requirements for this course (if any)**:**					
212CCS-4					
6. Co-requisites for this course (if any)**:**					
None					
7. Course Main Objective(s):					
Upon completion of this course, the student will, 1. Model a system in Diagrams.net or any other UML tools. 2. Describe various software process models for information systems. 3. Collect software requirements and build system requirements specification documents. 4. Develop software architecture and understand detailed software design. 5. Implement the concept of software project management and perform software testing.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	75	100%

No	Mode of Instruction	Contact Hours	Percentage
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	30
2.	**Laboratory/Studio**	30
3.	**Field**	
4.	**Tutorial**	15
5.	**Others (specify)**	
Total		75

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Describe various software process models for information systems.	K1	TS 1: To explain and Learn new topics from various journals and magazines related to the course TS 2: Discuss different strategies to solve certain problems by giving examples TS 3: Express the session interactive by asking questions during the lecture.	- Home works and class works - Assignments - Quiz - Midterm examinations - Final examination - Asking Questions about previous topics discussed and getting replies.
1.2	Collect software requirements and build system requirements specification documents.	K1		

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
			TS 4: Revise the last lecture before starting the new lecture and subject topic. TS 5: Encouraging students to attend the seminars related to the course. TS 6: Explain the data to better understand the concepts of the subject. TS 7: Upgrading the course by Browsing internet to search for solution and new technology. TS 8: Translate the difficult word into simple meaning to be able to explain clearly the topics. TS 9: Lecture notes are designed to achieve the course objectives	- Class participation
2.0	**Skills**			
2.1	Model a system in UML using Rational Rose or ArgoUML.	S5	TS 1: Most of cognitive skills will be achieved by lectures and explaining and highlighting the concepts. TS 2: Asking students at the end on each lecture to bring some materials or application related to the lecture's subject. TS 3: Explaining the difficult topics by taking extra tutorial to students. TS 4: Helping students to describe effective	- Quiz-2 - Mid-Term2 - Final Lab Exam &Final Exam - Lab Assessment (Mini Project)
2.2	Develop software architecture and understand detailed software design	S2,S4, S5		

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
			strategies for new situations. TS 5: To develop creative thinking to discuss new topics and make the session interactive	
...				
3.0	**Values, autonomy, and responsibility**			
3.1	Implement the concept of software project management and perform software testing	C1, C2, C3	TS 1: Through group presentation and discussion of the assignment. TS 2: Evaluate the student as a team member in the assignment and lab activities. TS 3: Students are guided to search the web to collect materials for assignments and to solve the lab activities. TS 4: Students presented a seminar on the project. Lectures, Small Group Work, Small Group Discussion,	- Mini Project, - Final lab exam, - Final Exam,
3.2				
...				

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction	5
2.	Digital Firm	10
3.	Managing the Making of Information Systems	5
4.	Software Process Models for Information Systems Development	10
5.	Software requirements engineering	10

6.	An Introduction to Object-Orientation Design	10
7.	Software Architecture	5
8.	Software Detailed Design	5
9.	Software Testing	5
10.	Software Project Management	10
Total		75

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quiz 1 & Quiz 2	4	5%
2.	Midterm Examinations	6 & 10	30%
3.	Assignments (Theory & Lab)	8 & 11	5%
4.	Lab Assessment (Mini Project)	10,11,12	10%
5.	Final Lab	14	10%
6.	Final Examination	16	40%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	1. Sommerville 8, Software Engineering 8, 2007 2. Laudon, K. & Laudon, Management Information Systems: Managing the Digital Firm, 2006. 3. Ammann & Offutt, Introduction to Software Testing, 4. Boch, Jacobson, Rumbaugh, The Unified Modelling Language User Guide, 1996.
Supportive References	1. Sommerville 10, Software Engineering 10, 2015
Electronic Materials	1. www.UML.org. 2. http://www.filecrop.com/software-engineering-ian-sommerville-pdf.html
Other Learning Materials	For ArgoUML software: www.argouml.tigris.org

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Lecture Rooms with 30 seats and a whiteboard or a smartboard.
Technology equipment (projector, smart board, software)	Desktop/ Laptop computer Multimedia Projector
Other equipment (depending on the nature of the specialty)	A File cabinet to keep Class Stuff, Markers, papers and student Files, and a printer to print program screenshots.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Collecting students' suggestions to facilitate more during the class.	Students	Verbal discussion
Student's questionnaire once during the semester about course learning outcomes.	Students	Indirect Survey
Achievement percentage of course learning outcomes, direct evaluation using CLO assessment sheet	Course Instructor	Direct evaluation using CLO achievement calculation
Teaching strategies	Quality unit	Indirect
Assessment methods	Quality unit	Indirect
Instructor performance	Quality unit	Indirect
Course content	Quality unit	Indirect

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Computer Science Departmental Council
REFERENCE NO.	14440203-0185-00002
DATE	1st Sep, 2022