



## Course Specifications

<b>Course Title:</b>	Software Engineering
<b>Course Code:</b>	451CCS-3
<b>Program:</b>	BSc in Computer Science
<b>Department:</b>	Computer Science
<b>College:</b>	College of Computer Science& Information Systems
<b>Institution:</b>	Najran University

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## A. Course Identification

<b>1. Credit hours:</b> 3 (2, 1, 0) [Theory, Lab, Tutorial]
<b>2. Course type</b>
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
<b>3. Level/year at which this course is offered:</b> Year 4/ Level 10
<b>4. Pre-requisites for this course (if any):</b> 212CCS-4 Object Oriented Programming
<b>5. Co-requisites for this course (if any):</b> No  None

### 6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	50	100%
2	Blended		
3	E-learning		
4	Distance learning		
5	Other		

### 7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	20
2	Laboratory/Studio	20
3	Tutorial	10
4	Others (specify)	
<b>Total</b>		50
<b>Other Learning Hours*</b>		
1	Study	
2	Assignments	
3	Library	
4	Projects/Research Essays/Theses	
5	Others (specify)	
<b>Total</b>		

## B. Course Objectives and Learning Outcomes

### 1. Course Description:

Software engineering provide basic source of information for industrial engineers. This course introduces to 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.

### 2. Course Main Objective

Upon completion of this course student will be able to:

1. Model a system in UML using rational rose or ArgoUML.
2. Describe various software process models for information system. Apply design principles and architectures in designing software
3. Collect software requirements and build system requirements specification document.
4. Develop software architecture and understand detailed software design.
5. Implement the concept of software project management and perform software testing

### 3. Course Learning Outcomes

CLOs		Aligned PLOs
<b>1</b>	<b>Knowledge and Understanding</b>	
1.1	Describe various software process models for information system.	K1
1.2	Collect software requirements and build system requirements specification document.	K1, K2
<b>2</b>	<b>Skills:</b>	
2.1	Model a system in UML using rational rose or ArgoUML.	S1, S3, S5
2.2	Develop software architecture and understand detailed software design	S2,S4, S5
<b>3</b>	<b>Values:</b>	
3.1	Implement the concept of software project management and perform software testing	C1,C2,C3

## C. Course Content

No	List of Topics	Contact Hours
1	<b>Introduction to Software Engineering</b>	2
2	<b>Software development processes and activities</b>	4
3	<b>Software process models</b>	4
4	<b>Software requirements engineering</b>	8
5	<b>Software architecture</b>	8
6	<b>An Introduction into Object-Orientation</b>	10
7	<b>Software Architecture</b>	4

8	<b>Software Detailed Design</b>	4
9	<b>Software Testing</b>	4
10	<b>Software Project Management</b>	2
<b>Total</b>		<b>50</b>

## D. Teaching and Assessment

### 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	<b>Knowledge and Understanding</b>		
1.1	Describe various software process models for information system.	<ul style="list-style-type: none"> <li>● To explain and Learn new topics from various journals and magazines related to the course</li> <li>● Discuss different strategies to solve a certain problem by giving examples</li> <li>● Express the session interactive by asking questions during the lecture.</li> <li>● Revising the last lecture before starting the new lecture and subject topic.</li> <li>● Encouraging students to attend the seminars related to the course.</li> <li>● Explain the data show to better understanding the concepts of the subject.</li> </ul>	<ul style="list-style-type: none"> <li>● Home works and class works</li> <li>● Assignments</li> <li>● Quiz</li> <li>● Midterm examinations</li> <li>● Final examination</li> <li>● Asking Questions about previous topics discussed and getting replies.</li> <li>● Class participation</li> </ul>
1.2	Collect software requirements and build system requirements specification document.		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
		<ul style="list-style-type: none"> <li>● Upgrading the course by Browsing internet to search for solution and new technology.</li> <li>● Translate the difficult word into simple meaning to be able to explain clearly the topics.</li> <li>● Lecture notes are designed to achieve the course objectives</li> </ul>	
2.0	<b>Skills</b>		
2.1	Model a system in UML using rational rose or ArgoUML.	<ul style="list-style-type: none"> <li>● Most of cognitive skills will be achieved by lectures and explaining and highlighting the concepts.</li> <li>● Asking students at the end on each lecture to bring some materials or application related to the lecture's subject.</li> <li>● Explaining the difficult topics by taking extra tutorial to students.</li> <li>● Helping students to describe effective strategies to new situations.</li> </ul>	<ul style="list-style-type: none"> <li>● Quiz-2</li> <li>● Final Lab Exam &amp;Final Exam</li> <li>● Lab Assessment (Mini Project)</li> </ul>
2.2	Develop software architecture and understand detailed software design		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
		To develop creative thinking and to discuss new topics and make the session interactive	
...			
<b>3.0</b>	<b>Values</b>		
3.1	Implement the concept of software project management and perform software testing	<ul style="list-style-type: none"> <li>• Through group presentation and discussion of the assignment.</li> <li>• Evaluate student as a team member in the assignment and lab activities.</li> <li>• Students are guided to search the web to collect materials for assignments and to solve the lab activities.</li> <li>• Students presented seminar on the project.</li> <li>• Lectures, Small Group Work, Small Group Discussion,</li> </ul>	Mini Project, Final lab exam, Final Exam,

## 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz 1 & Quiz 2	3 & 7	10%
2	Midterm Exam	5 or 6	20%
3	Assignments (Theory & Lab)	8 & 11	10%
4	Lab Assessment (Mini Project)	4,11	10%
5	Final Lab	11	10%
6	Final Examination	12 or 13	40%
	<b>Total</b>		100%

\*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

## E. Student Academic Counseling and Support

**Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:**

- Weekly office hours: 10 hours a week (as per timetable)
- Feedback to students
- Teacher's email

## F. Learning Resources and Facilities

### 1. Learning Resources

<b>Required Textbooks</b>	<ul style="list-style-type: none"> <li>▪ Sommerville 10, Software Engineering 10, 2015</li> <li>▪ Laudon, K. &amp; Laudon, Management Information Systems: Managing the digital Firm, 2016.</li> <li>▪ Ammann &amp; Offutt, Introduction to Software Testing,</li> <li>▪ Boch, Jacobson, Rumbaugh, The Unified Modelling Language User Guide, Third Edition.</li> </ul>
<b>Essential References Materials</b>	<ul style="list-style-type: none"> <li>▪ Sommerville 10, Software Engineering 10, 2015</li> </ul>
<b>Electronic Materials</b>	<ul style="list-style-type: none"> <li>▪ 1. <a href="http://www.UML.org">www.UML.org</a>.</li> <li>▪ 2. <a href="http://www.filecrop.com/software-engineering-ian-sommerville-pdf.html">http://www.filecrop.com/software-engineering-ian-sommerville-pdf.html</a></li> </ul>
<b>Other Learning Materials</b>	For ArgoUML software: <a href="https://www.filehorse.com/download-argouml/download/">https://www.filehorse.com/download-argouml/download/</a>

### 2. Facilities Required

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul style="list-style-type: none"> <li>▪ Lecture Room with +30 seats with PC, Auto Projector and a white board</li> <li>▪ E books are required</li> <li>▪ Smart Boards.</li> </ul>
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	<ul style="list-style-type: none"> <li>▪ Network printer is required.</li> <li>▪ More efficient antivirus is required in Labs.</li> <li>▪ Wireless projector is required in labs.</li> </ul>
<b>Other Resources</b> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	<ul style="list-style-type: none"> <li>▪ Research facility is required for the teachers and students.</li> </ul>



## G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Online course survey: By the end of each semester, students give their opinions about many factors in the course. They give feedback about the teaching strategies, assessment methods, textbooks, instructor, etc.	Students	Indirect Method
Discuss the best way of teaching with other faculty members.	Department Instructor/Program Instructor	Indirect Method

**Evaluation areas** (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

**Evaluators** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

## H. Specification Approval Data

Council / Committee	Computer Science Departmental Council
Reference No.	14440203-0185-00002
Date	1st Sep, 2022