

Course Title:	<i>Software Design And Architecture</i>
Course Code:	SEN-322
Credit Hours Theory:	2
Credit Hours Lab (If Applicable):	1
Instructor Name with Qualification:	Dr Awais Majeed – PhD (Informatics)
Course Objectives:	This course focuses on the problems of the software design methodologies especially the object-oriented software design. This course also focuses on the architectural design issues as well as the use of design patterns for solving different design problems.
Learning Outcomes:	<ol style="list-style-type: none"> 1. Understand the role of design and its major activities within the OO software development process, with focus on the Unified process. 2. Apprehend the problems of consistent and reliable software design 3. Understand the issues and activities within the discipline of the software design 4. Create OOD models and refine them to reflect implementation details 5. Use UML to visualize and document the design of software systems 6. Implement the design model using an object-oriented programming language
Contents (Catalog Description):	Introduction to OO Design, System design and software architecture, Object design, Mapping design to code, User interface design, Persistent layer design, Web applications design, State machine diagrams and modeling, Agile software engineering, Exploring inheritance, Interactive systems with MVC architecture, Software reuse.
Recommended Text Books:	<ol style="list-style-type: none"> 1. Craig Larmen, “Applying UML & Patterns: An Introduction to Object-Oriented Analysis & Design and Iterative Development” 3rd Edition. 2. Eric Freeman, Elisabeth Freeman, Kathy Sierra and Bert Bates, “Head First Design Patterns”, O’Reilly Media, Inc., 2004.
Reference Books:	

Helping Web Sites:	
General Instructions for students:	There is 0 tolerance for plagiarism. Attendance is mandatory. You must meet all deadlines and there will be penalties for missing the deadlines. Students are required to take all the tests. No makeup tests will be given under normal circumstances. 75% attendance is mandatory. Latecomers will be marked as absent.

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Sixteen Week Lesson Plan	Week	Topics Covered
	1-2	Introduction to the Course: Elementary Design Concepts
	3	Object-Oriented Design with UML-I
	4	Object-Oriented Design with UML-II
	5	Design Patterns-I
	6	Design Patterns-II
	7	Design Patterns-III
	8	Design Patterns-IV
	9	Software Architecture
	10	Architectural Structures & Styles-I
	11	Architectural Structures & Styles-II
	12	Architectural Patterns-I
	13	Architectural Patterns-II
	14	Architectural & Design Qualities
	15	Qualities Tactics
	16	Architectural Evaluation

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME LEARNING OUTCOMES

SOFTWARE ENGINEERING		ARTIFICIAL INTELLIGENCE											
No.	Program Outcomes	Course Learning Outcomes											
		1	2	3	4	5	6						
1	Engineering Knowledge	√	√	√	√	√							
2	Problem analysis	√	√	√	√		√						
3	Design/Development of solutions	√	√	√	√	√	√						
4	Investigation		√										
5	Modern tool usage			√			√						
6	Engineer and society			√									
7	Environment and sustainability												
8	Ethics												
9	Individual and Team work			√	√	√	√						
10	Communication				√								
11	Project Management						√						
12	Lifelong learning	√	√	√	√	√	√						