الجامعـــــــــة الهاشـــميـــــــــة
كلية الامير الحسين بـــــن عبدالله الثاني لتكنولوجيا المعلـــومات

The Hashemite University
Prince Al-Hussein Bin Abdullah II Faculty for Information Technology
Department of Software Engineering

Course Syllabus
Second Semester 2017/2018

Course Title: Software Design **Course Number:** 151003332 **Prerequisite:** 151003221 (Object-Oriented Software Development)	**Assessment and Course Grade:** • First Exam 25% • Second Exam 25% • Final Exam 40% • Assignments 10%
Instructors: Dr. Maen Hammad **Office No**: **Contact Info**: mhammad@hu.edu.jo	
Office Hours: **Daily 10-11**	

Course Description

Fundamental design concepts, design notations, architectural design methods for Large-scale software systems, and design patterns. Several design methods are presented and compared, with examples of their use. We will present a range of effective methods to evaluate and meet professional quality standards.

Material

- **Textbook:** Software Architecture and Design illuminated, Kai Qian, Xiang Fu, Lixin Tao, Chong-Wei Xu, and Jorge Diaz-Herrera, Jones and Bartlett Publishers. ISBN: 076375420-X, 2010
- **Textbook:** Software Engineering, A practitioners Approach, Roger Pressman, 7th Edition by Press Man., McGraw Hill 2010.
- **Textbook:** Design Patterns, Elements of Reusable Object-Oriented Software, Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides, Addison-Wesley 1995, ISBN: 0201633612

Additional Reading

- Design Patterns in Java, Steven John Metsker and Steven John Metsker, Second edition, Addison-Wesley, 2006. ISBN 0321333020
- Head First Design Patterns, Elisabeth Freeman, Eric Freeman, Bert Bates, Kathy Sierra, and Elisabeth Robson, O'Reilly, 2003, ISBN: 0596007124

Course Objectives

- Apply a wide variety of design patterns, frameworks, components, and architectures in designing a wide variety of software.
- Develop different design solutions taking into consideration conflicting design principals.
- Being able to measure and assess the quality of the software.
- Restructure existing design in order to improve its quality.
- Work effectively as leader/member of a development team to deliver quality software design.

Course Plan (Tentative)

Week no.	Topic	Reading
1	Introduction to software Design	Ch.8 (Pressman)
2	Design Quality	Ch. 1 (Qian)
3	Component-Level Design	Ch. 10 (Pressman)
4	Object Oriented Paradigm	Ch. 4 (Qian)
5	Data-Flow Architectures	Ch.5 (Qian)
6	Data-Centered Architecture	Ch.6 (Qian)
	Hierarchal architecture	Ch.7 (Qian)
7	Introduction to Design Patterns	Class Notes
8	Creational Patterns (Abstract Factory, Builder, Factory Method)	Class Notes
9	Creational Design Patterns (Singleton, Prototype, Summary)	Class Notes
9	Structural Design Patterns (Adapter, Bridge, Composite, Decorator)	Class Notes
10	Structural Design Patterns (Flyweight, Façade, Proxy)	Class Notes
11	Behavioral Design Patterns (Chain of Responsibility, Command)	Class Notes
12	Behavioral Design Patterns (State, Observer, Strategy)	Class Notes
13	Behavioral Design Patterns (Visitor, Summary)	Class Notes
14	Summary of Design Patterns	Class Notes
Final Exam		