

Petra University		جامعة البترا
(Private Accredited University)		(جامعة خاصة معتمدة)
Faculty of Information Technology		كلية تكنولوجيا المعلومات
Department of Software Engineering		قسم هندسة البرمجيات

Course Title	Course No.	Credit Hrs	Prerequisite	Year (semester)	Lec./Lab. Credit
Systems Analysis & Design	603391	3	601281 DB	2009-2010(1)	Lecture: 3 Lab : 0

Instructor Name	Office	e-mail/Web Site	Office Hours
Dr. Nuha El-Khalili	7301 Ext. 303	nuhak@uop.edu.jo	Sunday, Tuesday, Thursday: 11-12 Monday- Wednesday: 8:30-9:30

Coordinator	Dr. Nuha El-Khalili
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Text Book	1. Software Engineering. Ian Sommerville, 8th Edition, Addison – Wesley 2007 2. Systems Analysis and Design, 6th Ed., Kendall & Kendall, Prentice Hall, 2005
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Course Description	<i>Introduction to System Development Life Cycle (SDLC) covering: feasibility studies, requirements collection and analysis using the structural methodology, architectural design, system implementation and testing and system support and maintenance.</i>
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Aims

This course aims on the development of the fundamental skills required to work on large scale information systems projects. Different methodologies of systems analysis and design are introduced while emphasizing on the roles of each project team member. The topics covered by the course will be delivered in the following sequence: Project initiation, Determine Information Requirements and Analyze System Needs (System Analysis Phase), Design Phase, System Development and Testing Phase, Finally System Maintenance Phase. System analysis and design will be introduced using the structured approach.

Objectives

- ❖ Introduce students to the basics of systems analysis and design, different types of information systems, and management of software projects
- ❖ Experience data collection and information gathering techniques
- ❖ Emphasize the use of systematic and structured methodologies for system development
- ❖ Use DFDs in the analysis of requirements and information
- ❖ Introduce software design techniques
- ❖ Introduce system validation and verification
- ❖ Introduce system evolution and maintenance

Intended Learning Outcomes and their alignment with Program ILOs :

Successful completion of this course should lead to the following learning outcomes:

A- Knowledge and Understanding:

- 1) Understand the principles of and motivation behind systems analysis and design and where they fit in the context of systems development (CISA1)
- 2) Understand a typical Systems Development Life Cycle (SDLC) and explain the different characteristics of structured design methodology. (CISA2)
- 3) Understand how to successfully gather, analyze, and manage user requirements in preparation for system design. (CISA3)

B- Intellectual Skills:

- 1) Analyze requirements and plan for a solution to the given problem (CISB1)
- 2) Evaluate the feasibility of a project and selection of alternative solutions. (CISB3)
- 3) Express, present and defend the proposed solution. (CISB4)

C- Practical skills/Subject Specific Skills:

- 1) Design the solution to a given problem
- 2) Utilize Computer Aided Software Engineering (CASE) tools that support the structured design paradigm. (CISC3)
- 3) Professionally present work both in written and oral format. (CISC4)

D- Transferable Skills relevant to employability and personal development:

- 1) Gather, and organize material from various sources independently (including library, electronic and online resources), and critically evaluate its significance. (CISD1)
- 2) Recognize and identify views of others and work constructively with them - understand group dynamics and intercultural backgrounds in the use of negotiating skills to reach objectives (CISD2)
- 3) Make oral presentations, using appropriate media for a target audience (CISD3)
- 4) Schedule tasks in order of importance (CISD4)

Teaching and Learning Methods:

Interactive lectures (IIOs: A1, A2, A3)

Lecture on major concepts and issues: Interactive lectures with PowerPoint slides are conducted with lecturer explaining and illustrating the concepts. Students will be invited to share their view and experience in applying the concepts.

Group projects and presentation (ILOs: B1, B2, B3, C1, C2, C3, D1, D2, D3, D4)

Students will work on a course project (2 to 3 students in a group). Students will submit their project on phases. At the end of each phase, a report must be submitted summarizing the students work. Each group will give a presentation at the end of the semester.

Textbook Problems (ILOs: A1, A2, A3, B1)

Problems have been selected for in-class illustration of certain concepts and applications. Students will be encouraged to solve additional textbook problems to practice and gain better understanding of the concepts discussed.

Outside-classroom activities (ILOs: B1, B3, C1, C2, D2,D3, D4)

Students are required to schedule meetings with their groups, and to document the results of such meetings.

Companion Web Site (ILOs: A1, A2, A3)

<http://www.software-engin.com>

http://wps.prenhall.com/bp_kendall_sad_6/0,9729,1636069-,00.html

Students will be required to visit the companion web site and solve online quizzes.

Software Engineering Labs (ILOs: C2, C3)

Students will be encouraged to visit the laboratories and to utilize available software engineering tools (e.g. Smart Draw and Microsoft Visio).

Course Contents:

Week	Topics	Topic Details	Reference (chapter)
1	Introduction	Terminology of Software Engineering. Software Engineering vs. Computer Science Software Engineering vs. System Engineering	Chp. 1 (Sommerville)
2	Introduction	-Types of systems, role of systems analyst -Computer –aided software engineering	Chp.1 (Kendall & Kendall)
3, 4	Software Process models	-Software process models: Waterfall model, spiral, evolutionary model -Rapid application development, Prototyping, Extreme Programming	Chp. 4 (Sommerville) Chp. 6 (Kendall & Kendall)
5	Project Management	Management activities, Project Initiation, Determine Feasibility, Project Management	Chp. 5 (Sommerville)
First Exam			
6	Requirements Engineering	-Requirements engineering phases: requirements inception, elicitation, analysis, validation and management. -Categorization of requirements into functional and non – functional	Chp. 6, Chp. 7 (Sommerville)
7	Systems Analysis: Information Requirement Analysis	-Interactive Information Gathering (Interviewing, JAD, Questionnaires) -Unobtrusive Information Gathering (Sampling, Observation)	Chp. 4, Chp.5 (Kendall & Kendall)
Requirement Gathering Phase of the Project			
8, 9	Systems Analysis: Analyzing Systems Needs	Data Flow Diagrams (Requirement Determination using DFDs, Developing DFDs, Logical and Physical DFDs, Partitioning DFDs)	Chp.7 (Kendall & Kendall)
10	Systems Analysis: Analyzing Systems Needs	Data Dictionary, Data Repository	Chp. 8 (Kendall & Kendall)
Second Exam			
11	Design Phase	Architectural design decisions	Chp.11.1, 11.2, 11.4 (Sommerville)
Group project: Systems Data Flow Diagrams & Data Dictionary			
12	Software Validation and Verification	-Difference between validation and verification -Introduction to system testing techniques	Chp. 22 (Sommerville)
13	Software Maintenance & re-engineering	-The need for software maintenance -Types of maintenance - Introduction to software re-engineering & its stages	Chp. 21 (Sommerville)
14	Group Project: Group Presentation		
15	Final Exam		
16	Final Exam		

CONTINUAL COURSE QUALITY IMPROVEMENT

The following measures are taken seriously to continuously improve the quality of the course:

- ❖ Student Feedback: Using the University Student Evaluation, and the IT Faculty Special Evaluation Form to provide instructor and department with feedback.
- ❖ Peer Visitation: Feedback from faculty members with similar specialization
- ❖ Course Coordinator: Participates in course updates, and monitors course progress
- ❖ Internal Examiner: Feedback pertaining to course outline, exams and projects, course objectives and ILOs
- ❖ External Examiner: Feedback pertaining to course outline, exams and projects, course objectives and ILOs
- ❖ ACM Curriculum Guidelines and Software Engineering Body of Knowledge
- ❖ MOHE Guidelines for Standard Efficiency Exams

Assessment and Grade Distribution

Assessment	ILOs	Requirement for Grading / Due Date	Points	Total
I. Group Work	<i>B1, B2, B3, C1, C2, C3, D1, D2, D3, D4</i>			15%
Project		Written reports + Presentation	15%	
II. Individual Work	<i>A1, A2, A3, B1, C1</i>			5%
Quizzes		Unannounced short quizzes		
III. Exams	<i>A1, A2, A3, A4, C1, C3, C4</i>			80%
First Exam		Multiple Choice Questions and Essay Questions.	15%	
Second Exam		Multiple Choice Questions and Essay Questions.	15%	
A Comprehensive Final examination		Multiple Choice Questions and Essay Questions.	50%	
TOTAL				100%

References:

- [R1] Jeffrey A. Hoffer, Joey F. George, and Joseph S. Valacich (2005), Modern Systems Analysis and design 4th ed. Prentice Hall.
- [R2] Roger S Pressman, Software Engineering – A Practitioners Approach, McGraw Hill, 2006.

COURSE POLICIES

- ❖ The University Regulations on academic dishonesty will be strictly enforced! Please check the University Statement on plagiarism.
- ❖ Make-up Exams: Only students with valid excuses are allowed to have make up exams. All excuses must be signed by the Faculty Dean. Student has the responsibility to arrange with his/her instructor for an exam date before the occurrence of the next regular exam.
- ❖ All assignments and classwork must be submitted at the specified due date. Marks will be deducted from late work (no later than 2 days).
- ❖ Attendance policy will be strictly enforced (refer to student's Handbook).
- ❖ No make up for quizzes under any circumstance.

Last updated by Dr. Nuha El-Khalili, October 12 , 2009

Approved by:	Name	Date	Signature
Course Coordinator			
Curriculum Committee			
Quality Assurance Committee			
Faculty Dean			