

Course E-Syllabus

1	Course title	Systems Analysis and Design
2	Course number	1902474
3	Credit hours	3
	Contact hours (theory, practical)	3
4	Prerequisites/corequisites	Database Management Systems
5	Program title	Computer Information Systems
6	Program code	2
7	Awarding institution	The university of Jordan
8	School	King Abdullah II School for Information Technology
9	Department	Computer Information Systems
10	Level of course	Undergraduate
11	Year of study and semester (s)	2022-2023 (Fall)
12	Final Qualification	Bachelor of Science in Computer Information Systems
13	Other department (s) involved in teaching the course	None
14	Language of Instruction	English
15	Teaching methodology	<input checked="" type="checkbox"/> Blended <input type="checkbox"/> Online
16	Electronic platform(s)	<input checked="" type="checkbox"/> Moodle <input checked="" type="checkbox"/> Microsoft Teams <input type="checkbox"/> Skype <input type="checkbox"/> Zoom <input checked="" type="checkbox"/> Juexams.com
17	Date of production/revision	5 th October 2022 / revision 10 th October 2022

18 Course Coordinator:

Name: Hamad Alsawalqah
Office number: KASIT 3rd Floor 323
Phone number: 5355000/ext.: 22643
Email: h.sawalqah@ju.edu.jo

19 Other instructors:

Dr. Mohammed A. M. Abushariah, e-mail: m.abushariah@ju.edu.jo

20 Course Description:

This course aims to provide students with a solid background in information systems analysis and design techniques through a combination of theory and practice. Students will be provided with the skills that are necessary for the analysis and design of information systems, and will apply these skills in a step-by-step manner leading from the recognition of a problem to the implementation of a solution on a case study. The course is divided into four major parts: Systems Analysis Fundamentals (Part I), Information Requirements Analysis (Part II), The Analysis Process (Part III), The Essentials of Design (Part IV). Delivery will combine traditional lectures with other active teaching methodologies, such as group discussions, group solving problems, analysis of cases and debates, case study from healthcare domain, and assignments. Assignments will include a term project illustrative of professional practice in computer information systems analysis and design.

21 Course aims and outcomes:

A- Aims:

The main goal of this course is to provide students with a solid background in information systems analysis and design techniques through a combination of theory and practice. It introduces the vital logical and design considerations addressed during system and application software development. Upon completion of the course, students are expected to be able to:

1. Define various systems analysis and design (SA&D) concepts and terminologies,
2. Describe the stages of the system development life cycle model.
3. Describe different methodologies and state-of-the-art developments in SA&D techniques and methods.
4. Comprehend the concepts of Unified Modeling Language (UML), the standard approach for modeling a system in the object-oriented world.
5. Address the managerial issues involved in SA&D.
6. Compare, use and synthesize different conceptual modeling techniques for systems analysis (including ERDs, DFDs and UML).
7. Apply logic modeling techniques (decision tree/table, structured English).
8. Model the importance of collaboration and communication during SA&D.
9. Apply analysis and design methodologies for real world systems development such as Clinical Information Systems.

B- Intended Learning Outcomes (ILOs):

Upon successful completion of this course students will be able to:

A. Knowledge and Understanding:

- A1) Understand the need for systems analysis and design in organizations.
- A2) Discuss/explain the essential concepts and major principle relevant to systems analysis and design.
- A3) Obtain the necessary knowledge and understanding about a wide range of methods, techniques and tools that support system analysts.
- A4) Discuss/explain the essential concepts and major principles relevant to the professional and ethical responsibilities of being systems analyst.

B. Intellectual skills:

- B1) Understand how projects are initiated and selected, define a business problem, and determine the feasibility of a proposed project.
- B2) Understand the need of applying different techniques for gathering and analyzing user needs.
- B3) Analyze a wide range of systems/healthcare systems and provide solutions through suitable designs, structures, diagrams, and other appropriate analysis and design methods.
- B4) Identify a range of solutions and critically evaluate them and justify proposed design and development solutions.
- B5) Identify the basic concepts and principles in order to design practical software systems.
- B6) Employ analytical skills as appropriate during the system development life cycle stages

C. Subject Specific skills:

- C1) Plan and undertake a major individual/group systems analysis project in the area of computer information systems / Clinical Information Systems.
- C2) Prepare and deliver coherent and structured verbal and written technical reports.
- C3) Give technical systems analysis presentations suitable for the time, and audience.
- C4) Be aware of health and safety of real world computer information systems.
- C5) Use appropriate CASE tools.
- C6) Follow and apply the principles of HCI to achieve effectively design inputs and outputs.

D. Transferable Skills:

- D1) Display an integrated approach to the deployment of communication skills.
- D2) Work effectively with systems owners and for systems users.
- D3) Display personal responsibility by working to multiple deadlines during stages of systems analysis and development.

ABET Students Outcomes (SOs):

- 1- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- 2- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3. Communicate effectively in a variety of professional contexts.
- 5- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

Mapping ILOs to ABET SOs

ILOs	ABET SOs
A1, A3, B1, B2, B3, C1, C4	1
A2, B4, B5, B6, C5, C6	2
C2, C3, D1,	3
A4, D2, D3	5

22 Topic Outline and Schedule:

Week	Lecture	Topic	ILOs	Teaching Methods* / Platform	Evaluation Methods	References
Week 1	1.1	Welcome and orientation (review syllabus, objectives, textbook, project and assignments, online material and teaching methods) + Introduction to the course	-	In class (face to face) lecture	-	Course Syllabus and Announcements on MOODLE
	1.2	Ch1: Assuming the Role of the Systems Analyst: Fundamentals of different kinds of information systems	A1, A2, A3, C4	In class (face to face) lecture	In-lecture questions	Text Book - Chapter 1; lecture notes(slides) (MOODLE)
	1.3	Ch1: Assuming the Role of the Systems Analyst: Roles of systems analysts		Synchronous lecture (MS-Teams)	In-lecture questions	Text Book - Chapter 1; lecture notes(slides) (MOODLE)
Week 2	2.1	Ch1: Assuming the Role of the Systems Analyst: Phases in the systems development life cycle as they relate to Human-Computer		In class (face to face) lecture	Assignment -1: CASE tools	Text Book - Chapter 1 and lecture notes (slides); recorded presentation (MOODLE)

Week	Lecture	Topic	ILOs	Teaching Methods* / Platform	Evaluation Methods	References
		Interaction (HCI) factors				
	2.2	Ch1: Assuming the Role of the Systems Analyst: CASE tools		In class (face to face) lecture	In-lecture questions	Text Book - Chapter 1 and lecture notes (slides); recorded presentation (MOODLE)
	2.3	Ch1: Assuming the Role of the Systems Analyst: OOAD and the Agile approach		In class (face to face) lecture	In-lecture questions	Text Book - Chapter 1 and lecture notes (slides); recorded presentation (MOODLE)
Week 3	3.1	Ch2: Understanding Organizational Style and Its Impact on Information Systems: Organizations as systems	A2, A4,	In class (face to face) lecture	Self-reading assignment -1 (case study in health care information systems)	Text Book - Chapter 2 and lecture notes (slides); System Analysis and Design for Healthcare Information Systems (slides on MOODLE)
	3.2	Ch2: Understanding Organizational Style and Its Impact on Information Systems: Depicting systems graphically; Data flow diagram; Entity-relationship model, Use case model		In class (face to face) lecture	In-lecture questions	Text Book - Chapter 2; lecture notes (slides); Context diagram examples (MOODLE)
	3.3	Ch2: Understanding Organizational Style and Its Impact on Information Systems: Levels of management; Organizational culture		Blended Lecture	Assignment 1	Text Book - Chapter 2; lecture notes (slides); recorded presentation (MOODLE)
Week 4	4.1	Ch3: Project Management: Project initiation	B1, C1, C2, C3, D2, D3	In class (face to face) lecture	In-lecture questions	Text Book - Chapter 3 and lecture notes (slides) (MOODLE)
	4.2	Ch3: Project Management: Determining resources		In class (face to face) lecture	In-lecture questions	Text Book - Chapter 3 and lecture notes (slides) (MOODLE)
	4.3	Ch3: Project Management: Feasibility analysis		Blended Lecture	-	Text Book - Chapter 3 and lecture notes (slides); recorded

Week	Lecture	Topic	ILOs	Teaching Methods* / Platform	Evaluation Methods	References
						presentation (MOODLE)
Week 5	5.1	Ch3: Project Management: Feasibility analysis		In class (face to face) lecture	In-lecture questions about 4.3 blended lecture	Text Book - Chapter 3 and lecture notes (slides); recorded presentation (MOODLE)
	5.2	Ch3: Project Management: Feasibility analysis		In class (face to face) lecture	In-lecture questions	Text Book - Chapter 3 and lecture notes (slides); recorded presentation (MOODLE)
	5.3	Ch3: Project Management: Activity planning and control (PERT-Gantt)		Blended Lecture	Assignment 2 (costs and benefits forecasting techniques)	Text Book - Chapter 3 and lecture notes (slides); recorded presentation (MOODLE)
Week 6	6.1	Ch3: Project Management: Activity planning and control (Project risks, EVM, Schedule expediting)		In class (face to face) lecture		Text Book - Chapter 3 and lecture notes (slides); EVM and schedule expediting examples (MOODLE)
	6.2	Ch3: Project Management: Team Management		In class (face to face) lecture	In-lecture questions	Text Book - Chapter 3 and lecture notes (slides); recorded presentation (MOODLE)
	6.3	Ch3: Project Management		Blended Lecture	Project Task 1	Text Book - Chapter 3 and lecture notes (slides); recorded presentation (MOODLE)
Week 7	7.1	Ch4: Information Gathering: Interactive Methods (Question format Interviewing techniques)		In class (face to face) lecture	In-lecture questions	Text Book - Chapter 4; lecture notes(slides); recorded presentation; video on requirements gathering techniques (MOODLE)

Week	Lecture	Topic	ILOs	Teaching Methods* / Platform	Evaluation Methods	References
	7.2	Ch4: Information Gathering: Interactive Methods (Joint Application Design (JAD) Questionnaires)		In class (face to face) lecture		Text Book - Chapter 4; lecture notes(slides); recorded presentation; material on JAD (MOODLE)
	7.3	Ch5: Information Gathering: Unobtrusive Methods: Sampling		Blended Lecture	-	Text Book - Chapter 5; lecture notes(slides); recorded presentation; (MOODLE)
Week 8	8.1	Ch5: Information Gathering: Unobtrusive Methods: Investigation; Observation	B2, B5, D1, D2	In class (face to face) lecture	In-lecture questions about 7.3 blended lecture	Text Book - Chapter 5; lecture notes(slides); recorded presentation; (MOODLE)
	8.2	Examples on sample size		In class (face to face) lecture	In-lecture questions	Text Book - Chapter 5; lecture notes(slides); recorded presentation; Example on sampling's material (MOODLE)
	8.3	Ch6: Agile Modeling and Prototyping	B3, B4, B5, B6, C5	Blended Lecture	Self-reading assignment -2	Text Book - Chapter 6; lecture notes(slides) (MOODLE)
Week 9	9.1	Ch7: Using Data Flow Diagrams: Defining and using Data Flow Diagrams - 1	B2, B3, B6, C5	In class (face to face) lecture	In-lecture questions	Text Book - Chapter 7; lecture notes(slides); recorded presentation parts 1 & 2; DFD tutorials and examples (MOODLE)
	9.2	Ch7: Using Data Flow Diagrams: Defining and using Data Flow Diagrams - 2		In class (face to face) lecture	In-lecture questions	
	9.3	Ch7: Using Data Flow Diagrams: Defining and using Data Flow Diagrams - 3		Blended Lecture	Assignment 3: DFD	
Mid Term Exam				Will be announced later	Mid-term exam	Chapters 1 ~ 5 and 7
Week 10	10.1	Ch 8: Analyzing Systems Using Data Dictionaries: Data	B2, B3	In class (face to face) lecture	In-lecture questions	Text Book - Chapter 8; lecture notes(slides);

Week	Lecture	Topic	ILOs	Teaching Methods* / Platform	Evaluation Methods	References
		dictionary concepts, Defining data flow, data structures, data stores -1				recorded presentation (MOODLE)
	10.2	Ch 8: Analyzing Systems Using Data Dictionaries: Data dictionary concepts, Defining data flow, data structures, data stores -2		In class (face to face) lecture	In-lecture questions	
	10.3	Checking the progress of groups' projects + feedback	-	In class (face to face) lecture	Project Progress Evaluation	Project Specifications (MOODLE)
Week 11	11.1	Ch9: Describing Process Specifications and Structured Decisions: Process specifications, Structured English, Decision tables, Decision trees -1	B2, B3, B4	In class (face to face) lecture	In-lecture questions	Text Book - Chapter 9; lecture notes(slides); recorded presentation (MOODLE)
	11.2	Ch9: Describing Process Specifications and Structured Decisions: Process specifications, Structured English, Decision tables, Decision trees -2		In class (face to face) lecture	In-lecture questions	
	11.3	Example for linking DFD and process specifications		Blended Lecture	Project Task2	Recorded presentation (MOODLE)
Week 12	12.1	Ch 10: Object-Oriented Systems Analysis and Design Using UML	B3, B4, B5, B6, C5	In class (face to face) lecture	In-lecture questions about 11.3 blended lecture	Text Book - Chapter 10; lecture notes(slides); recorded presentation; online tutorial (MOODLE)
	12.2	Ch 10: Object-Oriented Systems Analysis and Design Using UML: Commonly Used UML Diagrams		In class (face to face) lecture	In-lecture questions	
	12.3	Practical session on UML		Synchronous lecture (MS-Teams) for A and B	Apply to your project	
Week 13	13.1	Ch11: Designing Effective Output-1	B5, C5, C6	In class (face to face) lecture	In-lecture questions about 12.3	Text Book - Chapter 11; lecture

Week	Lecture	Topic	ILOs	Teaching Methods* / Platform	Evaluation Methods	References
			B5, C5, C6		blended lecture	notes(slides) (MOODLE) Text Book - Chapter 11; lecture notes(slides); recorded presentation (MOODLE)
	13.2	Ch11: Designing Effective Output-2		In class (face to face) lecture	In-lecture questions	
	13.3	Ch11: Designing Effective Output-2		Blended Lecture	Apply to your project	
Week 14	14.1	Ch11: Designing Effective Input-1	B5, C5, C6	In class (face to face) lecture	In-lecture questions about 13.3 blended lecture	Text Book - Chapter 12; lecture notes(slides) (MOODLE)
	14.2	Ch11: Designing Effective Input-2	B5, C5, C6	In class (face to face) lecture	In-lecture questions	Text Book - Chapter 12; lecture notes(slides) (MOODLE)
	14.3	Case Studies in Clinical Information Systems	A1, B1, B3, C1	Blended lecture	Self-reading assignment -3	Materials on MOODLE
Week 15	15.1	Q & A about term project	-	In class (face to face) lecture	Term project final submission	Project specifications and evaluation criteria (MOODLE)
	15.2	Projects discussions	A1-A4, B1-B6, C1-C6, D1-D3	In office	Term Project	
	15.3	Projects discussions		In office	Term Project	
	Final Exam					

23 Evaluation Methods:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

- Three Assignments (10%)
- Project (20%)
- Mid Exam (30%)
- Final Exam (40%)

24 Course Requirements:

- Software design drawing tools (i.e., CASE tools)
- Account on Microsoft Teams + Moodle.

25 Course Policies:

A- Attendance policies

Attending online meetings is mandatory. Attendance will be taken for each meeting. Regular attendance is essential for satisfactory completion of this course and university regulations will be applied.

B- Absences from exams and handing in assignments on time

- Any student who misses any exam will receive a zero grade. Permission for makeup will be granted only if the student notifies the instructor in due time and presents evidence of an officially excused absence.
- Submitting the assignments will be through the Moodle platform, the time duration for each home assignment will be determined clearly. **Late submissions are not allowed; 50% of points will be deducted from the tasks that were not submitted on time.**

C- Health and safety procedures

All students should comply with the university Health and Safety procedures.

D- Honesty policy regarding cheating, plagiarism, misbehavior

Assignments are individual or done in learning teams. While students are free to discuss their individual assignments with anybody, including fellow students, individual assignments are expected to show the expertise, creativity and critical faculty of the individual student. Virtually identical individual assignments (in the judgment of the instructor) are not acceptable. Plagiarism is unacceptable and will be punished with an F for the full course. References to all source materials are necessary. For more details on University regulations please visit <http://www.ju.edu.jo/rules/index.htm>

E- Grading policy + Weighting (i.e. weight assigned to exams as well as other student work)

All of the following are important in the evaluation of a student's work.

- Written Reports:
 - Organization, clarity and continuity.
 - Quality, completeness and soundness of the analysis
 - Quality of presentation.
- Oral Presentation:
 - Organization and continuity.
 - Selection and support of recommendations.
 - Time, style and clarity.
 - Professionalism.
- Assessment Weights:
 - Assignments + project + participations: 30%
 - Mid exam: 30%
 - Final exam: 40%
- Satisfactory completion of this subject requires a 50% pass in the end-of-semester
- Suggested Grading Scale:

0-44 F 45-49 D- 50-54 D 55-59 D+ 60-63 C- 64-68 C

69-72 C+ 73-76 B- 77-80 B 81-84 B+ 85-89 A- 90-100 A

F- Available university services that support achievement in the course:

elearning.ju.edu.jo

Juexams.com

G- Statement on Students with disabilities

Students with Disabilities: Students with disabilities who need special accommodations for this class (online meetings) are encouraged to contact the instructor and/or their academic advisor as soon as possible. In order to receive accommodations for academic work in this course, students must inform the course instructor and/or their academic advisor, preferably in a written format, about their needs no later than the 2nd week of classes.

26 References:

A- Required book (s), assigned reading and audio-visuals:

1. Kendall & Kendall, "Systems Analysis and Design", (10th Edition.) Pearson, 2019
2. System Analysis and Design Tutorial, https://www.tutorialspoint.com/system_analysis_and_design/

B- Recommended books, materials, and media:

1. Valacich, Joseph S, George, Joey F; Modern Systems Analysis and Design; 8th; Pearson, 2016.
2. Satzinger, John W, Jackson, Robert B, Burd, Stephen D; Systems Analysis and Design in a Changing World; 7th; 2016.
3. Roberta M. Roth, Alan Dennis, Barbara Haley Wixom. Systems Analysis and Design, 5th Edition International Student Version.. ISBN: 978-1-118-09374-0. OR http://www.uoitc.edu.iq/images/documents/informaticsinstitute/Competitive_exam/Systemanalysisanddesign.pdf
4. Bentley, L. and Whitten, J., "Systems Analysis and Design for the Global Enterprise", Seventh Edition, McGraw-Hill Irwin, 2007
5. Whitten, J., Bentley, L. and Barlow, V., "Systems Analysis and Design Methods", IRWIN, 3rd Ed. Latest.
6. Power Designer: <http://www.sybase.com/products/modelingmetadata/powerdesigner>
7. Unified Modeling Language (UML): <http://WWW.UML.ORG>
8. Microsoft Visio: <http://WWW.MICROSOFT.COM>
9. Rational Software: <http://WWW.RATIONAL.COM>
10. Data flow diagram tutorial: <http://www.getaheaddirect.com/gwbadfd.htm>
11. Microsoft Project: <http://www.brighthub.com/office/projectmanagement/articles/71235.aspx>
12. 16. Healthcare Information and Management Systems Society: <http://www.himss.org/>
13. Journal of Medical Systems: <https://link.springer.com/journal/10916>
14. Healthcare IT News: <http://www.healthcareitnews.com/>

C- Educational Platforms:

1. Elearning.ju.edu.jo
2. JUExams.com
3. <http://teams.office.com/>

27 Additional information:

- Students are encouraged to make heavy use of the library, E-LIBRARY. <http://ezlibrary.ju.edu.jo/login> or from within the university using (<http://e-library>).
- The instructor can make changes to this syllabus when necessary.
- University regulations will be preserved at all times.
- Online office hour: all working week days and only by through emails

Name of Course Coordinator: Dr. Hamad Alsawalqah-----Signature: -----

Date: 10/10/2022

Head of Curriculum Committee/Department: -----Signature: -----

Head of Department: -----Signature: -----

Head of Curriculum Committee/Faculty: -----Signature: -----

Dean: -----Signature: -----