University/Academy: Arab Academy for Science and Technology & Maritime Transport
Faculty/Institute: College of Computing and Information Technology
Program: Information Systems / Computer Science / Software Engineering

Form No. (12)
Course Specification

1- Course Data

Course Code:	Course Title:	Academic Year/Level:
IS391	System analysis and design	Year 3 / Semester 5
Specialization:	**No. of Instructional Units:**	**Lecture:**
Information Systems	2 hrs lecture 2 hrs lab	

2- Course Aim	This course builds a solid understanding of the information systems analysis & design and implementation and introduces several tools and techniques used in information systems analysis & design. It also emphasizes the use of systematic and structured methodologies in the analysis & design and implementation phases of the software development life cycle.

3- Intended Learning Outcome:

a- Knowledge and Understanding	**Students will be able to demonstrate knowledge of:** **K13.** Information systems, data and information management, enterprise architecture, IS project management, IT infrastructure, systems analysis and design, and IS strategies. K15. The broad context within which computer information science including issues such as quality, reliability, enterprise, employment law, accounting and health. **K18.** Specification, analysis, design, implementation and testing of IS solutions. K19. Modeling organizational processes and data, defining and implementing technical and process solutions, managing projects, and integrating systems. • Understand information systems analysis and design phases of information systems development life cycle. • Know about the use of systematic and structured methodologies used to develop information systems. • Understand how users working in context with new technologies change the dynamics of a system. • Comprehend the basics of three development methodologies: SDLC, the agile approach, and object-oriented systems analysis and design. • Understand what CASE tools are and how they help a systems analyst. • Understand how IS projects are initiated and selected.

	• Determine the feasibility of a proposed project. • Understand the main concepts related to IS projects planning • Understand the concept of sampling for human information requirements analysis. • Understand the kinds of information sought from using interviews and questionnaires in gathering data about projects • Understand the kinds of information sought from prototyping. • Understand the four main types of prototyping. • Understand the concept of RAD for use in human information requirements gathering and interface design. • Understand agile modeling and the core practices that differentiate it from other methodologies. • Comprehend the importance of using logical and physical DFDs to graphically depict data movement for humans and systems in an organization. • Understand the main DFD development steps. • Understand how analysts use data dictionaries for analyzing data-oriented systems. • Understand the concept of a repository for analysts' project information and the role of CASE tools in creating them. • Understand the purpose of process specifications. • Understand the different methods used to document process specifications. • Understand the objectives for effective output design. • Comprehend the different technological methods used for output producing. • Understand the objectives for effective input design. • Understand the role of business forms in modern organizations • Understand the objectives for effective file or database design. • Understand general data concepts • Understand file and database concepts. • Understand the objectives for effective interface and data entry design. • Understand human–computer interaction (HCI). • Understand the importance of user feedback. • Understand the uses of effective coding to support users in accomplishing their tasks. • Understand the objectives for effective software design. • Understand the concepts of modular design
b- Intellectual Skills	**By the end of the course, the student acquires high skills and an ability to understand:** **I10.** Define traditional and nontraditional information systems problems, set goals towards solving them, and. observe results **I14.** Select the suitable tools, methods and techniques for modeling, analyzing IS, establishing criteria, and verify solutions **I15.** Identify a range of solutions and critically evaluate and justify proposed design solutions. **I18.** Perform problem analysis from written descriptions; derive requirements specifications from an understanding of problems (analysis, synthesis). • Evaluate different approaches used to develop information systems in modern organizations. • Recall the basic types of computer-based systems that a systems analyst

	needs to address. • Realize what the many roles of a systems analyst are. • Define a business problem. • Evaluate software by addressing the trade-offs among creating custom software, purchasing COTS software, and outsourcing to an application service provider. • Analyze tangible and intangible costs and benefits. • Evaluate available tools used for computer-based projects planning • Recognize the value of unobtrusive methods for information gathering. • Recognize the value of interactive methods for information gathering. • Learn the importance of values critical to agile modeling. • Realize the main concepts of DFD approach. • Analyze the existing DFDs for the current systems. • Recognize the functions of data dictionaries in helping users update and maintain information systems. • Recognize the difference between structured and semi-structured decisions. • Analyze process logic in order to solve a specific problem. • Relate output content to output methods inside and outside the organization. • Realize how output bias affects users. • Realize the importance of designing effective input forms and screens. • Analyze business data models • Articulate HCI implications for designing ecommerce Web site • Recognize how to ensure data quality through validation. • Articulate accuracy advantages of user input on ecommerce Web sites. • Recognize the importance of users and analysts taking a total quality approach to improve quality of software design and maintenance. • Realize the importance of documentation, testing, maintenance, and auditing.

c- Professional Skills	**By the end of the course the student will have the ability to:** **P10.** Use quantitative analysis techniques appropriately and effectively. **P12.** Plan and manage an information systems project from inception to final implementation and cut-over **P15.** Apply the principles of effective information acquisition, information management, organization, and information-retrieval to text, images, sound, and video. **P19.** Maintain existing information systems. • Apply several tools and techniques used in information systems analysis and design. • Be familiar with the main tasks of SDLC and the role of structured methodologies in IS development • Inventory and appraise current and proposed hardware and software and the way it supports human interactions with technology. • Forecast tangible and intangible costs and benefits. • Plan a project by identifying activities and scheduling them. • Manage team members and analysis and design activities so that the project objectives are met while the project remains on schedule. • Construct useful samples of people, documents, and events for determining human information requirements. • Construct interview and survey questions to elicit human information requirements. • Structure interviews in a way that is meaningful to users.

	• Conduct effective interviews. • Design and administer effective questionnaires. • Use prototyping for human information requirements gathering. • Create, use, and explode logical DFDs to capture and analyze the current system through parent and child levels. • Develop and explode logical DFDs that illustrate the proposed system. • Produce physical DFDs based on logical DFDs you have developed. • Create data dictionary entries for data processes, stores, flows, structures, and logical and physical elements of the systems being studied, based on DFDs. • Use structured English, decision tables, and decision trees to analyze, describe, and document structured decisions. • Choose an appropriate decision analysis method for analyzing structured decisions and creating process specifications. • Design display output. • Design printed outputs • Design a Web site for ecommerce. • Design functional input forms for users of business systems. • Design engaging input displays for users of information systems. • Design useful input forms for people interacting on the Web. • Use normalization to efficiently design database. • Use databases for presenting data. • Design a variety of user interfaces. • Design effective dialog for HCI. • Apply the principles of HCI. • Design effective and efficient data capture approaches for people and systems. • Design effective modular software. • Apply the principles of modular design.
d- General Skills	**Students will be able to:** **G1.** Demonstrate the ability to make use of a range of learning resources and to manage one's own learning. **G3.** Show the use of information-retrieval.
4- Course Content	

#	CLO
1	Build a solid understanding of the information systems design and implementation phases of systems development life cycle (SDLC).
2	Introduce several tools and techniques used in information systems design.
3	Emphasize the use of systematic and structured methodologies in the design and implementation phases of SDLC.

5- Teaching and Learning Methods	Lectures, Labs, Projects, Individual study & self-learning.
6- Teaching and Learning Methods for Students with	• Students with special needs are requested to contact the college representative for special needs (currently Dr Hoda Mamdouh in room C504) • Consulting with lecturer during office hours.

Special Needs	• Consulting with teaching assistant during office hours. • Private Sessions for redelivering the lecture contents. For handicapped accessibility, please refer to program specification.

7- Student Assessment:

a- Procedures used:	Exams, term work , and Projects
b- Schedule:	Week 7 exam Projects through the semester Week 16Final exam
c- Weighing of Assessment:	7th week exam 30% Projects 20% Lab work 10% Final exam 40%

8- List of References:

a- Course Notes	From the Moodle on www.aast.edu
b- Required Books (Textbooks)	Kenneth E. Kendall & Julie E. Kendall, Systems Analysis and Design, PRENTICE-HALL 7ED. 2007.
c- Recommended Books	1- Jeffrey A. Hoffer, Joey F. George, and Joseph S. Valacich, Modern Systems Analysis and Design, Addison Wesley Longman, Inc., 2002. 2- Lejk, M. and Deeks, D., An Introduction to Systems Analysis Techniques: Second Edition, Addison Wesley, 2002.
d- Periodicals, Web Sites, ..., etc.	

Course Instructor: Head of Department:

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