



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

Course title	Systems Analysis and Design
Course code	IS391

Form no. (11A) Knowledge and skills matrix for a course

Course content	Week study	Knowledge	Intellectual skills	Professional skills	General skills
Course Description and Introduction	1				
Assuming the Role of Systems Analyst: <ul style="list-style-type: none"> • Information as an Organizational Resource • Systems Analysis and Design Concepts • Role of Systems Analyst • The Systems Development Life Cycle • Using CASE Tools • Upper and Lower CASE 	2	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Be familiar with the main tasks of SDLC and the role of structured methodologies in IS development 	

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		a systems analyst.			
<u>Determining Feasibility and Managing Analysis and Design Activities:</u> <ul style="list-style-type: none"> • Project Fundamentals • Project Initiation • Determining Feasibility 	3	<ul style="list-style-type: none"> • Understand how IS projects are initiated and selected. • Determine the feasibility of a proposed project. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Write project feasibility reports • Demonstrate skills in team works
<u>Determining Feasibility and Managing Analysis and Design Activities (Cont.):</u> <ul style="list-style-type: none"> • Activity Planning and Control • Computer-Based Project Scheduling • Managing Analysis and Design Activities 	4	<ul style="list-style-type: none"> • Understand the main concepts related to IS projects planning 	<ul style="list-style-type: none"> • Evaluate available tools used for computer-based projects planning 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Communicate appropriately with team members • Write and present an effective systems proposal, concentrating on both content and design. • Demonstrate skills in team works
<u>Interviewing and Using Questionnaires:</u> <ul style="list-style-type: none"> • Kinds of Information Sought • Planning the Interview • Conducting Interview 	5	<ul style="list-style-type: none"> • Understand the concept of sampling for human information requirements analysis. • Understand the kinds of information sought from 	<ul style="list-style-type: none"> • Recognize the value of unobtrusive methods for information gathering. • Recognize the value of interactive methods for information gathering. 	<ul style="list-style-type: none"> • Construct useful samples of people, documents, and events for determining human information requirements. • Construct interview and 	<ul style="list-style-type: none"> • Write effective interview reports • Write effective questions to survey users about their work. • Demonstrate skills in

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<ul style="list-style-type: none"> • Writing the Interview Report • Planning for the Use of Questionnaires • Designing and Administrating the Questionnaire 		using interviews and questionnaires in gathering data about projects		survey questions to elicit human information requirements. <ul style="list-style-type: none"> • Structure interviews in a way that is meaningful to users. • Conduct effective interviews. • Design and administer effective questionnaires. 	team works
Prototyping: <ul style="list-style-type: none"> • Kinds of Information Sought • Initial User Reactions • Approaches to Prototyping • Developing a Prototype • User's Role in Prototyping 	6	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Learn the importance of values critical to agile modeling. 	<ul style="list-style-type: none"> • Use prototyping for human information requirements gathering. 	<ul style="list-style-type: none"> • Demonstrate skills in team works
Using Data Flow Diagrams: <ul style="list-style-type: none"> • The Data Flow Approach to Requirements Determination 	7	<ul style="list-style-type: none"> • Comprehend the importance of using logical and physical DFDs to graphically depict data movement for humans and systems in an organization. 	<ul style="list-style-type: none"> • Realize the main concepts of DFD approach. • Analyze the existing DFDs for the current systems. 	<ul style="list-style-type: none"> • Create, use, and explode logical DFDs to capture and analyze the current system through parent and child levels. • Develop and explode 	<ul style="list-style-type: none"> • Demonstrate the ability to understand different business processes. • Demonstrate the ability to work in group to build DFDs.

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<ul style="list-style-type: none"> • Developing DFDs • Logical and Physical DFDs 		<ul style="list-style-type: none"> • Understand the main DFD development steps. 		logical DFDs that illustrate the proposed system. <ul style="list-style-type: none"> • Produce physical DFDs based on logical DFDs you have developed. 	<ul style="list-style-type: none"> • Demonstrate skills in team works
<u>7th Week Exam</u>	8				
<u>Analyzing Systems Using Data Dictionaries:</u> <ul style="list-style-type: none"> • The Data Dictionary • The Data Repository • Creating Data Dictionary • Using Data Dictionary 	9	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Recognize the functions of data dictionaries in helping users update and maintain information systems. 	<ul style="list-style-type: none"> • Create data dictionary entries for data processes, stores, flows, structures, and logical and physical elements of the systems being studied, based on DFDs. 	<ul style="list-style-type: none"> • Demonstrate skills in team works
<u>Describing Process Specifications and Structured Decisions:</u> <ul style="list-style-type: none"> • Overview of Process Specifications • Structured English • Decision Tables • Decision Trees 	10	<ul style="list-style-type: none"> • Understand the purpose of process specifications. • Understand the different methods used to document process specifications. 	<ul style="list-style-type: none"> • Recognize the difference between structured and semi-structured decisions. • Analyze process logic in order to solve a specific problem. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Demonstrate skills in team works
<u>Designing Effective Output:</u> <ul style="list-style-type: none"> • Output Design 	11	<ul style="list-style-type: none"> • Understand the objectives for effective output design. 	<ul style="list-style-type: none"> • Relate output content to output methods inside and outside the organization. 	<ul style="list-style-type: none"> • Design display output. • Design printed outputs • Design a Web site for 	<ul style="list-style-type: none"> • Demonstrate skills in team works

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Objectives <ul style="list-style-type: none"> • Relating Output Contents to Output Method • Designing Printed Outputs • Designing Screen Outputs. • Designing Web sites. 		<ul style="list-style-type: none"> • Comprehend the different technological methods used for output producing. 	<ul style="list-style-type: none"> • Realize how output bias affects users. 	ecommerce.	
<u>Designing Effective Input:</u> <ul style="list-style-type: none"> • Input Design Objectives • Good Form Design • Good Screen Design 	12	<ul style="list-style-type: none"> • Understand the objectives for effective input design. • Understand the role of business forms in modern organizations 	<ul style="list-style-type: none"> • Realize the importance of designing effective input forms and screens. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Demonstrate skills in team works
<u>Designing The File or Database:</u> <ul style="list-style-type: none"> • Design Objectives • Conventional Files and Databases • Data Concepts • Normalization • Guidelines for File/Database Relation Design 	13	<ul style="list-style-type: none"> • Understand the objectives for effective file or database design. • Understand general data concepts • Understand file and database concepts. 	<ul style="list-style-type: none"> • Analyze business data models 	<ul style="list-style-type: none"> • Use normalization to efficiently design database. • Use databases for presenting data. 	<ul style="list-style-type: none"> • Demonstrate skills in team works

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<u>Designing The User Interface and Designing Accurate Data-Entry Procedures:</u> <ul style="list-style-type: none"> • User Interface Objectives • Types of User Interface • Dialogs and Desktops • Feedback for Users • Data-Entry Objectives • Effective Coding • Effective and Efficient Data Capture • Assuring Data Quality through input validation 	14	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Demonstrate the ability to consider personal and cultural attributes in designing user interface. • Demonstrate the ability of self reading activities. • Demonstrate skills in team works
<u>Quality Assurance Through Software Engineering:</u> <ul style="list-style-type: none"> • Approaches to Quality • The Total Quality management approach • Software Engineering and documentation 	15	<ul style="list-style-type: none"> • Understand the objectives for effective software design. • Understand the concepts of modular design 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Design effective modular software. • Apply the principles of modular design. 	<ul style="list-style-type: none"> • Demonstrate skills in team works
<u>Final Exam and Project Delivery</u>	16				

Course Instructor

Name:

Head of Department

Name:

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