جامعة الجوف
Al Jouf University

INFORMATION SYSTEMS PROGRAM

Study Plan Specification of Bachelor's Degree Bachelor of Science (BSc) in Information Systems

1439 H

COLLEGE OF COMPUTER SCIENCE AND INFORMATION

Program Requirement Overview (university, electives, college and department)						
Required by	**Category**		**Course Details**	**Number of courses**	**Credit hours**	**Sub-total Credit-hours**
University Credit-hours:33	Islamic		Islamic studies 1,2,3,4	4	8	33
	General Education		Arabic 1,2 computer skills, Self-development skills, English Language 1,2	6	23	
	Electives		العمل التطوعي في المملكة العربية السعودية او ريادة الاعمال	1	2	
College Credit-hours:35 Basic science & Computer Science	**Basic Science**	**Science**	Chemistry	1	3	35
		Math	Introduction to Math ,Calculus, Integral , Probability & Statistics for Engineers	4	12	
	Computer Science		Introduction to programing, Programming I, Programming II , Discrete Math, Data Structures, Operating Systems.	6	20	
Department Credit-hours: 67	IS Environment courses		Business management, Accounting 111, Organizational behavior, Financial.	4	12	67
	Networking		Computer Network	1	3	
	Training		Practical Training	1	1	
	Information Systems required courses		Foundations of Information Systems Information Systems Analysis and Design Mathematical modeling for IS Database Systems Advanced Database Systems Web Application Development 1 Web Application Development 2 Data Mining Information Systems Project Management E-Commerce Information Security Selected topics in Information systems	12	34	
	Electives		Elective 1,2,3	3	9	
	Graduation Project		Graduation project (1), Graduation project (2)	2	5	
Total				**45 course**		**135 Hours**

Study Plan

Level	Course Code	Course Name	* Pre-Requisite Courses	Cr	Type			University/ College / Department	اسم المقرر	رمز المقرر
					Lec	Lab	Tut			
Level 1										
Level 1	ENGL 101	English Language (1)	-------	6				University	اللغة الانجليزية العامة 1	نجل 101
		Self-Development Skills	-------	2	1	0	1	University	مهارات تطوير الذات	
	CIS 101	Computer skills	------	3	2	2	0	University	مهارات الحاسب	حسب101
	MTH 101	Introductory Mathematics	------	3	2	0	2	College	مقدمة في الرياضيات	101 رياض
Total				**14**						
Level 2										
Level 2	ENGL210	English Language (2)	ENGL 101	6				University	اللغة الانجليزية العامة 2	نجل 102
	MTH 210	Differential Calculus	MTH 101	3	2	0	2	College	حساب التفاضل	102 رياض
		Chemistry		3	2	0	2	College	كيمياء عامة	
	CIS 102	Introduction to Computers Programming	CIS 101	3	2	2	0	Department	مقدمة في الحاسبات والبرمجة	حسب 102
Total				**15**						
Level 3										
Level 3	ISL 101	Islamic Studies:1 Islamic Culture	-------	2				University	أصول الثقافة الاسلامية	
	ARAB 101	Language Skills	-----	3				University	المهارات اللغوية	عرب 101
	MTH 203	Integral Calculus	MTH 210	3				College	حساب التكامل	203 رياض
	CIS 203	Computer Programing 1	CIS 102	4	3	2	0	Department	برمجة الحاسب 1	
	Bus 111	Principles of Business Management	------	3				Department	مبادئ إدارة الأعمال	
	IS 201	Foundations of Information System	-----	3	3	0	1	Department	مبادئ نظم المعلومات	نظم 221
Total				**18**						
Level 4										

	ISL 107	Islamic Studies:2 Ethics of the profession		2				University	أخلاقيات المهنة	سلم 107
Level 4	ARAB 102	Arabic Editing	ARAB 101	3				University	التحرير عربي	عرب 102
	CIS 520	Data Structures	CIS 203	3				College	تراكيب البيانات	حسب 205
	CIS 204	Computer Programming 2	CIS 203	4				Department	برمجة الحاسب 2	حسب 204
	CIS 211	Discrete Structures	----	3				Department	تراكيب محددة	حسب 211
	IS 251	Information Systems Analysis & Design	IS 201	3	2	0	2	Department	تحليل وتصميم نظم المعلومات	نظم 251
Total				18						
Level 5										
		Islamic Studies:3		2				University		
	STAT 309	Statistics & Probabilities for engineer	MTH 203	3	2	2	0	Department	الاحتمالات والاحصاء الهندسي	احص 309
	ACCT 111	Accounting 1		3	3	0	1	Department	مبادئ المحاسبة	ACCT 111
Level 5	CIS 321	Database Systems	CIS 220	4	3	2	0	Department	نظم قواعد البيانات	حسب 321
	IS 321	Mathematical Modeling for IS	MTH 210	3	3	1	0	Department	النمذجة الرياضية لنظم المعلومات	نظم 321
	IS 331	Information System Project Management	IS 251	3	3	1	0	Department	إدارة مشاريع نظم المعلومات	نظم 331
Total				**18**						
Level 6										
	IC 103	Islamic Studies:4		2				University		
	CIS 342	Operating System	CIS 205	3				College	نظم التشغيل	حسب 342
	IS 381	Web Application Development 1	CIS 204, CIS 321	3	2	0	2	Department	تطوير تطبيقات الويب 1	نظم 381
Level 6	CIS 422	Advanced Database Systems	CIS 321	3				Department	نظم قواعد البيانات متقدم	حسب 422
	ENT 101	Entrepreneurship	-----	2	2	0	1	University	ريادة الأعمال	
	BUS 311	Organizational Behavior	BUS 111	3				Department	السلوك التنظيمي	
	Total			**16**						
	IS 490	Practical Training	80 Hours	**1**				Department	التدريب العملي	نظم 490
Level 7										
		Principles of Financial	BUS 111	3	3	0	0		المالية العامة	
	IS 482	Web Application Development 2	IS 381	3	2	0	2	Department	تطوير تطبيقات الويب 2	نظم 482
Level 7	CIS 445	Computer Networks	CIS 342	3				Department	تراسل البيانات وشبكات الحاسب	حسب 445
	IS 441	Data Mining	CIS 321, IS 321	3	3	1	0	Department	التنقيب في البيانات	نظم 441
	--------	Department Elective (1)	90 Hours	3				Department	اختياري قسم 1	--------
	IS 491	Capstone Project (1)	85 Hours	2	2	0	0	Department	مشروع بحث 1	نظم 491

Total				**17**						
Level 8										
Level 8	IS 472	Information Security	CIS 445	3	2	0	2	Department	أمن المعلومات	نظم 472
	IS 483	E-Commerce	IS 482	3	3	1	0	Department	التجارة الالكترونية	نظم 483
	--------	Department Elective (2)	90 Hours	3				Department	اختياري قسم 2	--------
	-------	Department Elective (3)	90 Hours	3				Department	اختياري قسم 3	--------
	IS 461	Selected topics in Information systems	90 Hours	3				Department	موضوعات مختارة في نظم المعلومات	نظم 461
	IS 492	Capstone Project (2)	IS 491	3	1	0	4	Department	مشروع بحث 2	نظم 492
Total				**18**						
Total Credit Hours				**135**						

Elective courses

NO	Course Code	Course Title	Credit	Unit Type			* Pre-Requisite	اسم المقرر
				Lec	Lab	Tut		
1	IS 442	Data warehouse	3	2	2	0	CIS 422	مستودعات البيانات
2	IS 443	Decision Support Systems	3	3	0	1	CIS 321	نظم دعم القرار
3	IS 456	Software Quality and testing	3	3	0	1	IS 331	جودة واختبار البرمجيات
4	IS 484	Mobile Computing and Applications	3	2	2	0	IS 381	حوسبة وتطبيقات الجوال
5	IS 462	Multimedia information system	3	2	2	0	CIS 422	نظم معلومات الوسائط المتعددة
6	IS 445	Information Search, Retrieval & Visualization	3	2	2	0	CIS 422	البحث واسترجاع ورؤية المعلومات
7	IS 463	Advanced system analysis and design	3	3	0	1	IS 251	تحليل وتصميم نظم معلومات متقدم

8	IS 457	Object Oriented Analysis and design	3	2	2	0	IS 251	التحليل والتصميم الموجه
9	IS 464	Enterprise Resource Planning	3	3	0	1	IS 251	تخطيط موارد المؤساسات
10	IS 458	System Design Pattern	3	3	0	1	IS 251	انماط تصميم النظم
11	IS 461	Geographic information system	3	2	2	0	CIS 422	نظم المعلومات الجغرافية
12	IS 458	IT auditing and control	3	3	0	1	IS 331	تدقيق وتحكم في تكنولوجيا المعلومات
13	IS 432	Information systems strategies and management	3	3	0	1	IS 331	استراتيجيات وادارة نظم المعلومات
14	IS 485	Web content management	3	2	2	0	IS 381	ادارة محتوى الويب
15	IS 463	Enterprise Architecture	3	2	2	0	CIS 422	هيكلة المؤساسات

SHORT DESCRIPTION FOR INFORMATION SYSTEMS COURSES

1	**Introduction to programing**
2	**Programing 1**
3	**Programing 2**
4	**Data Structure**
5	**Database Systems**
6	**Advanced Database Systems**
7	**Fundamental & Ethics of Information System**
8	**Information System Analysis & Design**
9	**Mathematical Modeling for IS**
10	**Web Application Development 1**
11	**Web Application Development 2**
12	**Information System Project Management**
13	**Data Mining**
14	**Information Security**
15	**E- Commerce**
16	**Capstone Project 1**
17	**Capstone Project 2**
18	**Practical Training**

Course Name	Introduction to computer programming	Course Code	English	Arabic
			CIS 102	102 حسب
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			2	2	0
Category	☐ General Education	☐ Math & Science	☒ CIS		
Type	☒ Required	☐ Elective			
Level	2nd	Prerequisite	CIS 101 and MTH 101		

Course Description:

This course gives the students an Introduction to computers and programs; Problem solving and algorithm development; Simple engineering and scientific problems; Introduction to the modular programming paradigm. Programming with emphasis on modular and structured programming technique: primitive data types, variables and constants, operators (arithmetic , assignment, increment , decrement, logical and relational); basic statements (Input and output); Boolean expressions; Control structures (conditional statements and loop statements); functions and parameter passing; Arrays (usefulness of arrays, declaration of arrays, access to array elements and operations on arrays); String(Declaration, initialization, access and defined functions); Pointers.

Course Objectives:

Introduction to computers and programs.
Programmer's algorithm.
Program's structure, constants, variables and built-in data types.
Primitive types.
The arithmetic, assignment, increment and decrement operators.
Relational and logical operators, Boolean expressions, conditional statements, loop statements.
Function and passing parameters.
Arrays, usefulness of arrays, declaration of arrays, access to array elements, operations on arrays.

Grading						
	☒ Mid-term 1,2	30	☒ Lab	10	☒ Assignments	10
	☒ Final	40	☒Project	10		

Text Book:

Harvey M. Deitel & Paul J. Deitel. "Java How to Program", Prentice Hall, 10th Edition, 2015.

References and Supplemental Materials:

Course Name	Computer programming 1	Course Code	English	Arabic
			CIS 203	203حسب
Credit Hours	4	Contact Hours	Lec 3	Lab 2	Tut 0
Category	☐ General Education	☐ Math & Science	☒ CIS	
Type	☒ Required	☐ Elective		
Level	3rd	Prerequisite		

Course Description:

This course covers topics such as object-oriented programming concepts, objects, classes, anatomy of classes, constructors, state, behavior, methods, fields, constructors, scope, lifetime, abstraction, modularization, encapsulation, and method overloading. It covers also inheritance and polymorphism.

Course Objectives:

The course aims at giving the students a broad foundation in the fundamental concepts of object oriented programming accompanied by specific labs to develop the basic skills in object oriented programming with Java. It introduces the basic concepts and principles of the Object Oriented approach such as:

1. Abstraction and Encapsulation principles,
2. Classes, objects and the constructor concepts,
3. Information hiding principle and the assessors concept.
4. Methods, the message passing and the overloading principles.

Grading						
	☒ Mid-term 1,2	30	Project	10	☒ Assignments	10
	☒ Final	40	☒ Lab	10		

Text Book:

1. An Introduction to Object-Oriented Programming with Java, 4th edition, by C. Thomas Wu (Otani), McGraw-Hill Higher Education, 2006.

References and Supplemental Materials:

2. Harvey M. Deitel & Paul J. Deitel**. "Java How to Program"**, Prentice Hall, 10th Edition, 2015.

Course Name	Programing 2	Course Code	English	Arabic
			CIS 204	204 حسب
Credit Hours	4	Contact Hours	Lec	Lab	Tut
			3	2	0
Category	☐ General Education ☐ Math & Science ☒ CIS			
Type	☒ Required ☐ Elective			
Level	4th	Prerequisite	CIS 203	

Course Description:

This course is the third course on computer programming; it deals with the application of advanced object-oriented concepts using java. Emphasizes graphical user interface, event-driven programming, error handling, database connectivity, inner classes, collection classes, networking, and threads. The student will learn to solve problems for which these are the primary tools.

Course Objectives:

1. Develop the students' ability to use the basics of object-oriented design and programming.
2. Students will improve his knowledge of the characteristic features of object orientation – classes, methods, polymorphism, and inheritance – through both the lectures and a sequence of illustrative programming assignments.
3. Students will learn about the **interface** construct and how to use a graphical user interface (GUI) type for implementing swing listeners. Develop solutions for a range of problems using object-oriented programming
4. Students will acquire the ability for exception handling. This includes the *try/catch/finally* statement, extending the **Exception** class for checked exceptions and the **RuntimeException** class for unchecked exceptions, the **throw** clause for throwing an **Exception** object, the propagation of exceptions, and the **throws** clause on method headings for propagating checked exceptions.
5. Students will learn about multithreading and write simple multi-threaded applications.
6. Students will learn about network programming. This includes Manipulating URLs, Client/Server Interaction with Stream Socket Connections and Connectionless Client/Server Interaction with Datagrams
7. Student will learn about database connectivity and use the JDBC API.
8. Student will learn about generics and collection.

Grading						
	☒ Mid-term 1,2	30	☒ Project	10	☒ Assignments	10
	☒ Final	40	☒ Lab	10		

Text Book:

1. Harvey M. Deitel & Paul J. Deitel**. "Java How to Program"**, Prentice Hall, 10th Edition, 2015.

References and Supplemental Materials:

1. Horstmann, Cay S., **"Core Java"** Prentice Hall, 2013

Course Name	Data Structures	Course Code	English	Arabic
			CIS 217	217 حسب
Credit Hours	3-0-1	Contact Hours	Lec / Lab / Tut	
			3 / 0 / 1	
Category	☐ General Education ☐ Math & Science ☒ CIS			
Type	☒ Required ☐ Elective			
Level	4th	Prerequisite	Programming-II	

Course Description:

This course explores the definitions and implementations of basic data structures such as stacks, queues, linked lists, binary trees, graphs, etc.; internal searching and sorting algorithms. Design of sort and search algorithms and introductory analysis associated with the basic data structures, as well as recursive algorithms, are discussed.

Course Objectives:

1. To be able to explain and implement linear and binary search.
2. To be able to explain and implement bubble sort, selection sort and insertion sort.-
3. To understand the abstract data types stack, queue and implement using programming language.
4. To understand prefix, infix, and postfix expression formats and implement and evaluate using stacks.
5. To introduce the recursion and implement Factorial and Fibonacci.
6. To be able to implement the abstract data type list as a linked list using the node and reference pattern.
7. To understand the idea of tree and graph and implement the tree and graph traversal algorithms.

Grading						
	☒ Mid-term 1,2	40	☒ Project	10	☒ Assignments	10
	☒ Final	40	☒ Lab	0		

Text Book:

1. Data Structures and Algorithms in Java, M. T. Goodrich and R. Tamassia, 2006, Jon Wiley & Sons Inc.

References and Supplemental Materials:

1. Harvey M. Deitel & Paul J. Deitel**. "Java How to Program"**, Prentice Hall, 10th Edition, 2015.

Course Name	Database	Course Code	English	Arabic
			CIS 321	321 حسب
Credit Hours	4	Contact Hours	Lec	Lab	Tut
			3	2	0
Category	☐ University	☐ College	☒ Department	
Type	☒ Required	☐ Elective		
Level	5th	Prerequisite	CIS 211	

Course Description:

The objective of this course is to introduce students to database management systems. Topics include Data, Information, File System, Database and Database Users, Database System Concepts and Architecture, Data Modeling using the Entity Relationship (ER) Model, The Relational Data Model and Relational Database Constraints, Functional Dependencies and Normalization for Relational Databases, The Relational Algebra and Relational Calculus, Relational Database Design by ER and EER to Relational Mapping, Disk Storage, Basic File Structure and Hashing, SQL-99 Schema Definition, Constraints, Queries and Views (DDL and DML).

Course Objectives: After completing this course the student will be able to:

1. Define Database, characteristics and functions of Database Management System and types of Database Users
2. Distinguish between a Traditional File System and a Database System.
3. Describe Data Models, Schemas, Instances, Three Schema Architecture and DBMS Component Modules.
4. Convert a conceptual Data Model into relational logical schema.
5. Define the Relational Data Model, its constraints, and the Relational Database Schema.
6. Demonstrate the use of SQL for Database creation and maintenance
7. Design Queries in relational Algebra and relational Calculus.
8. Use SQL queries for data aggregations, calculations, views, sub-queries, embedded queries, manipulation and report generation.
9. State the informal design guidelines for Relational database.
10. Apply normalization techniques to DB.

Grading						
	☒ Mid-term 1,2	30	☒ Project	10	☒ Assignments	10
	☒ Final	40	☒ Lab	10		

Text Book:

1. Fundamentals of Database Systems, ELMASRI & NAVATHE, 7-Edition, Pearson, 2016

References and Supplemental Materials:

1. An introduction to database systems , C.J. Date, 8th edition , Addison Wesley,2004

Course Name	Advanced database system	Course Code	English	Arabic
			CIS 422	422 حسب
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			3	0	1
Category	☐ University	☐ College	☒ Department	
Type	☒ Required	☐ Elective		
Level	7th	Prerequisite	CIS 321	

Course Description:

This course provide students with the theoretical background and practical experience relating to the following items: DBMS architecture, transaction management, indexing structure for file, disk storage and basic file structures and hashing, RAID technologies, database recovery and backup management, concurrency control concepts, distributed database concepts, Database security concepts and object oriented database.

Course Objectives: After completing this course the student will be able to:

1. Explore the DBMS structure.
2. Examine fundamental of Database Transaction management Theory.
3. Understand Database File Organization: Unordered, Ordered, and Hashed Files of Records, and RAID technology.
4. Understand database recovery and backup management.
5. Demonstrate Protocols for Concurrency Control in Databases
6. Learn the fundamentals of distributed database
7. Understand the key principles of data security and identify data security risk and violations in data management system design
8. Understand object oriented database.

Grading						
	☒ Mid-term 1,2	30	☒ Project	10	☒ Assignments	10
	☒ Final	50	☐ Lab			

Text Book:

1. Fundamentals of Database Systems, ELMASRI & NAVATHE, 7-Edition, Pearson, 2016

References and Supplemental Materials:

1. An introduction to database systems , C.J. Date, 8th edition , Addison Wesley,2004

Course Name	Foundation of Information Systems	Course Code	English	Arabic
			IS 201	201 نظم
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			3	0	1
Category	☐ University	☐ College	☒ Department		
Type	☒ Required	☐ Elective			
Level	3th	Prerequisite			

Course Description:

This course provides students with an overall understanding of the main concepts of information systems and to highlight the importance of information systems in modern organizations and societies. Topics include information ,data, and system concepts, information requirements in modern organizations and business (including decision making, operations, and other types of requirements), introducing different types of information systems, exploring the systems development life cycles (analysis, design, and implementation), methodologies of developing information systems, managing resources of information systems (data, hardware, software, etc.), knowledge management, quality and evaluation of information systems, ethical, social, and security issues of information systems.

Course Objectives:

1. List the fundamentals of Information systems and associated technologies.
2. Demonstrate an understanding of the definition, components and relationships, Specification, design and re- engineering of IS.
3. Explain the specification and design of IS.
4. Summarize the database features functions, and architecture.
5. Analyze different Package software solutions and developing a solution using database software.
6. Analyze the characteristics of IS professionals and IS career path.
7. Communicate and present results/information effectively
8. Work effectively as an individual or team.

Grading	☒ Mid-term 1,2	30	Project		☒ Assignments	10
	☒ Final	60	Lab			

Text Book:

1. Brian K. Williams & Stacey C. Sawyer, Using Information Technology 10th Edition, McGraw-Hill/Irwin, 2013

References and Supplemental Materials:

Course Name	Systems Analysis and Design	Course Code	English	Arabic
			IS 251	نظم 251
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			3	0	1
Category	☐ University	☐ College	☒ Department	
Type	☒ Required	☐ Elective		
Level	4th	Prerequisite	IS 201	

Course Description:

This course is concerned with the fundamental knowledge, methods and skills needed to analyze and design computer-based systems. It addresses the role of the systems analyst, the techniques and technologies used, and the ethical considerations in requirements specification. The structured software development life cycle approach, modeling techniques and development phases are comprehensively discussed and reviewed. In modeling techniques, process models are thoroughly described. A project is given to all students that should cover analysis and design phases of a relatively data-oriented business case; with emphases on data modeling (ER diagrams) and process modeling (DFDs).

Course Objectives:

This course enables students to:

1. Understand the types of business needs that can be addressed using information technology-based solutions
2. Understand general principles of process analysis in order to apply them to specific situations
3. Analyze existing processes based on interviewing, questionnaires, observation, documentation analysis, and other similar methods
4. Understand how the very large amounts of data collected by modern organizations can be used to review, redesign, and improve processes
5. Identify and capture the essential findings from the large amount of data produced by the analysis process
6. Research and apply industry reference models and best practices in order to improve process designs
7. Use analysis results as a basis for designing revised processes
8. Negotiate solutions that satisfy the political requirements for new processes
9. Understand the limitations of what can be achieved with available technology, financial resources, and organizational capabilities.

Grading						
	☒ Mid-term 1,2	30	☒ Project	10	☒ Assignments	10
	☒ Final	50	☐ Lab			

Text Book:

1. Systems Analysis and Design, Kendall and Kendall, Pearson, 2013.

References and Supplemental Materials:

1. Essentials of Systems analysis and Design, Joseph S. Valacich, Joey F. George, and Jeffery, Pearson/Printice Hall, 2006

Course Name	Mathematical Modeling for Information Systems	Course Code	English	Arabic
			IS 321	نظم 321
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			3	0	0
Category	☐ University	☐ College	☒ Department		
Type	☒ Required	☐ Elective			
Level	5th	Prerequisite	MTH 210		

Course Description:

Mathematical modeling course enables students to Achieve a broad understanding of Developing mathematical models of complex situations, use or derive solution techniques for analyzing the mathematical models, use spreadsheets or other specialized computer programs to perform the necessary mathematical operations to solve given mathematical models, and Analyze the results of the computer output. The course is designed to cover the concepts of mathematical models as applied to business. It covers the approaches that can be adopted for problem solving to executive decision making. The list of topics in this course include linear programming models, their graphical analysis, and applications, Network Models, Project Scheduling Models, Inventory Models, Queuing Models, and simulation models.

Course Objectives:

1. Introduces the Management Science Models.
2. Using of Spreadsheets in Management Science Models.
3. Describe Linear Programming, and the Graphical Analysis of Linear Programming.
4. Define the Role of Sensitivity Analysis of the Optimal Solution.
5. Demonstrate how to apply Linear and integer Programming Models.
6. Describe Network Models, Transportation Networks, Traveling Salesman Network and Minimal Spanning Tree Networks.
7. Describe the Project Scheduling Models.
8. Introduces the Inventory Models, Economic Order Quantity Model.
9. Describe the Queuing Models.
10. Explain the Simulation Models.

Grading						
	☒ Mid-term 1,2	30	☒ Project	10	☒ Assignments	10
	☒ Final	50	☒ Lab	0		

Text Book:

1. Lawrence John A., Pasternack Barry A.-Applied management science _ modeling, spreadsheet analysis, and communication for decision making 2and edition -John Wiley & Sons (2002).

References and Supplemental Materials:

1. introduction to database systems , C.J. Date, 8th edition , Addison Wesley,2004

Course Name	Web Application Development 1	Course Code	English	Arabic
			IS 381	نظم 230

Credit Hours	3	Contact Hours	Lec	Lab	Tut
			2	2	0

Category	☐ University	☐ College	☒ Department
Type	☒ Required	☐ Elective	
Level	6th	Prerequisite	CSI 204, CSI 321

Course Description:

Web programming course gives the students the necessary knowledge about the techniques and tools that can be used for developing dynamic web sites. It enables them to differentiate between client side and server side programming. Also it enables them to set the layout of the web pages using CSS when developing areal web application based on the designed solution. This course covers the languages, tools, and techniques that can be used for developing an interactive and dynamic web sites. The topics that will be handled include cascading style sheets, web page layout, client side scripting, and server side scripting. The course also covers the techniques that can be used for interacting with databases.

Course Objectives:

1. Define the Internet, its Organizations and Technologies.
2. Distinguish between Client side programming and Server side programming.
3. Describe URLs and DNS, Hypertext Transmit Protocol (HTTP), Languages of the Web
4. Use HTML language and its tags
5. Describe the BASICs of CSS (CSS Syntax, Applying CSS to a Web Page, Color Properties, CSS Comments)
6. Apply CSS PROPERTIES (Font Properties, Text Properties, Background Properties, List Properties, Table Properties)
7. Describe the KEY JAVASCRIPT CONCEPTS, (Client-Side Scripting, Event-Driven Programming, A JavaScript Program, The Document Object Model (DOM)).
8. Presents the form basics.
9. Use form controls and show how to submit data
10. Describe how to process data in PHP.
11. Perform Queries, Error Checking, MySQL-specific Database Functions.

Grading	☒ Mid-term 1,2	30	☒ Project	10	☒ Assignments	10
	☒ Final	40	☒ Lab	10		

Text Book:

1. Web Programming Step by Step, 2nd edition, By Jessica Miller, Victoria Kirst, Marty Stepp, Step by Step Publishing, 2012.

References and Supplemental Materials:

Course Name	Web Application Development 2	Course Code	English	Arabic
			IS 482	482 نظم

Credit Hours	3	Contact Hours	Lec	Lab	Tut
			2	2	0

Category	☐ University	☐ College	☒ Department
Type	☒ Required	☐ Elective	
Level	7th	Prerequisite	IS 381

Course Description:

Application design and development course gives the students the necessary knowledge to design and develop software application. The students will learn the important steps in designing users centered web application. In the process of creating software application students will learn the concepts of online transaction processing systems and relational database design. Also he will learn how to acquire competency in new programming languages quickly. This course will cover the concepts of design that can be applied in web plication using an application development tool or programming language that can be used in creating a professional web application. The topics covered include relational database concepts and design, users centered design, Ajax and CSS. The course also cover the database access technologies that can be used for data access and manipulation.

Course Objectives:

1. Describe the Software engineering life cycle, Phases in the software life cycle.
2. Introduces web application development tools.
3. Describe how to Design web forms.
4. Describe how to Develop with MVC.
5. Demonstrate how to Code web services with web AP.
6. Describe how to accomplish the web applications testing, testing MVC and API projects, and Publishing web application tasks.
7. Describe how to work with databases and connecting them to web sites.
8. Binding Controls to data, Editing Typed Data set Data Binding in WPF applications, and Data binding with web controls.
9. Describe Object Relational Mapping
10. 10 Mapping using the O/R Designer, LINQ Code

Grading	☒ Mid-term 1,2	30	☒ Project	10	☒ Assignments	10
	☒ Final	40	☒ Lab	10		

Text Book:

1. Microsoft Visual Studio 2015 Unleashed, Third Edition , Mike Snell, Lars Powers,Sams.

References and Supplemental Materials:

Course Name	Information System Project Management	Course Code	English	Arabic
			IS 331	331 نظم
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			3	0	1
Category	☐ University	☐ College	☒ Department		
Type	☒ Required	☐ Elective			
Level	5th	Prerequisite	IS 251		

Course Description:

This course studies the process, methods, techniques, and tools that organizations use to manage their information systems projects. The course covers a systematic methodology for initiating, planning, executing, controlling, and closing projects. This course assumes that projects management in the modern organization is a complex team based activity, where various skills required for developing large scale applications that take long periods of time. The course presents the latest methods and techniques used in software engineering obtained from the actual practice in the field as well as latest advances accomplished by specialist research centers. Also, it particularly emphasizes on the role of team work on developing software and the skills required to work as part of a team.

Course Objectives:

1. Initiate, specify, and prioritize information systems projects and to determine various aspects of feasibility of these projects.
2. Know the foundations of project management, including its definition, scope, and the need for project management in the modern organization.
3. State the phases of the project management lifecycle.
4. Manage project teams, including the fundamentals of leadership and team motivation.
5. Manage project communication, both internal to the team, and external to other project stakeholders.
6. Initiate projects, including project selection and defining project scope.
7. Manage project schedules with appropriate techniques and tools.
8. Manage project resources, including human resources, capital equipment, and time.
9. Manage project quality; including the identification of the threats to project quality, techniques for measuring project quality, and the techniques for ensuring project quality is achieved.
10. Manage project risk, including the identification of project risk, and the techniques for ensuring project risk is controlled.
11. Manage the project procurement process, including understanding external acquisition and outsourcing, as well as the steps for managing external procurement.
12. Manage project execution, including monitoring project progress and managing project change, and appropriately documenting and communicating project status.
13. Control projects through information tracking and cost and change control techniques.
14. Close projects, including administrative, personnel, and contractual closure.
15. Know the mechanisms for dealing with legal issues in complex project contexts.
16. Determine the analytical steps of plan and control for the project.
17. Proposes the teamwork of the project.
18. Analysis and Assesses the cost effects.
19. Lead project team
20. Organize and lead meetings Involved in the preparation of project.
21. Prepare functional and organizational structures of project.
22. Use software to manage project

Grading	☒ Mid-term 1,2	30	☒ Project	10	☒ Assignments	10
	☒ Final	50	Lab			

Text Book:

1. Kathy Schwalbe, Information Technology Project Management 2nd edition, Cengage Learning, 2002

References and Supplemental Materials:

Course Name	Data Mining	Course Code	English	Arabic
			IS 441	نظم 441

Credit Hours	3	Contact Hours	Lec	Lab	Tut
			3	1	0

Category	☐ University	☐ College	☒ Department
Type	☒ Required	☐ Elective	
Level	7th	Prerequisite	CSI 422

Course Description:

This course concerns the new data mining algorithms and emerging new applications of data mining as in credit rating, fraud detection, database marketing, customer relationship management, and stock market investments. Several techniques to be covered are data classification, data clustering, data association, induction, neural network, etc.

Course Objectives:

1. Explain the basics concepts of Data Mining
2. Illustrate the concept of Data Preprocessing and summary statistics
3. Know the concepts and techniques of classification, Prediction, and clustering algorithms
4. Know applications of data mining in real life
5. Learn how to use statistical measures.
6. Learn how to apply the graphical displays of data summaries
7. Handle data quality problems Noisy and outliers data, and missing values
8. Learn how to apply data transformation and reduction
9. Predict useful information from given data
10. Use data mining techniques in real data mining life applications
11. Implement different classification/prediction/clustering techniques
12. Work effectively as individuals or as a part of a team to apply skills gained throughout the course
13. Apply problem solving capabilities

Grading	☒ Mid-term 1,2	20	☒ Project	20	☒ Assignments	10
	☒ Final	50	Lab			

Text Book:

1. Jiawei Han, Micheline Kamber and Jian Pei, Data Mining: Concepts and Techniques, Third Edition, Elsevier, 2012.

References and Supplemental Materials:

Course Name	Information Security	Course Code	English	Arabic
			IS 472	472 نظم

Credit Hours	3	Contact Hours	Lec	Lab	Tut
			2	0	2

Category	☐ University	☐ College	☒ Department
Type	☒ Required	☐ Elective	
Level	8th	Prerequisite	CSI 445

Course Description:

Information Security studies the principles and practices of computer system security including operating system security, network security, software security and web security. Topics include common attacking techniques such as virus, Trojan, worms and memory exploits, threats to network security and schemes for breaking security, classical encryption techniques, block ciphers and stream ciphers, DES and triple DES, AES, block ciphers operation modes, asymmetric ciphers: RSA, Diffie-Hellman key exchange, ElGamal cryptosystem, hash functions, MAC functions, digital signature, key management and distribution, X.509 certificates, transport level security: SSL and TLS intrusion, and types and configurations of firewalls.

Course Objectives:

1. To be familiar with computing systems security and their significance.
2. To be familiar with the division of computer systems in terms of security requirements.
4. To measure computer systems performance and making sure that they have not been breached.
5. To protect software and information against potential threats.
6. To determine the requirements of computer systems.
7. To know the environmental and external threats to computer systems.
8. Use appropriate tools and techniques for IS security.
9. Implement Operating System (OS) hardening practices and procedures to achieve workstation and server security

Grading	☒ Mid-term 1,2	30	☒ Project	10	☒ Assignments	10
	☒ Final	40	☒ Lab	10		

Text Book:

1. Matt Bishop, Computer Security: Art and Science, Addison-Wesley, 2002

References and Supplemental Materials:

1. Charles P. Pfleeger and Shari Lawrence Pfleeger , Security in Computing 4th Edition, 2006, Prentice Hall, ISBN 978-0132390774.

Course Name	Electronic Commerce	Course Code	English	Arabic
			IS 483	483 نظم
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			3	0	1
Category	☐University	☐College	☒Department	
Type	☒ Required	☐ Elective		
Level	8th	Prerequisite	IS 482	

Course Description:

This course covers the following topics: Introduction to E-commerce, E-commerce strategy, Cyber-Services models and applications, Web Advertising, Internet data and payment security, B2C models and examples, B2B and supply chain management, and E-payment.

Course Objectives:

1. Analyze the e-commerce and e-marketplace models and structures
2. Define all types of e-commerce systems and describe their major business and revenue models
3. Describe all the major mechanisms and tools that are used in e-commerce
4. Analyze the e-commerce applications
5. Describe all methods and models of selling products and services online
6. Describe online business-to-business activities
7. Apply various e-commerce support services for e-commerce Storefront.
8. Apply marketing and advertising in the Web environment
9. Apply the e-payment models
10. Apply the data and e-payment security approaches
11. Prepare an e-commerce business strategy and implementation
12. Develop e-commerce storefront

Grading	☒Mid-term 1,2	30	☒Project	10	☒Assignments	10
	☒Final	50	☐ Lab			

Text Book:

1. Efraim Turban, David King, Jae Kyu Lee, Ting-Peng Liang, Deborrah C. Turban, Electronic Commerce: A Managerial and Social Networks Perspective, Springer, 2015.

References and Supplemental Materials:

1. E-business, Gary P. Schneider, Course Technology Cengage Learning, 2011.

Course Name	Graduation Project 1	Course Code	English	Arabic
			IS 491	نظم491
Credit Hours	2	Contact Hours	Lec	Lab	Tut
			2	0	0
Category	☐ University	☐ College	☒ Department		
Type	☒ Required	☐ Elective			
Level	7 th	Prerequisite	85 Hours		

Course Description:

This course is the first part of a sequence of two courses that constitue the BSc graduation capstone project. In this part, the student is expected to propose, analize, and design a software system or conduct a thorough investigation of a particular IS-related problem for research-based projects. The student will deliver oral presentations and written reports.

Course Objectives:

1. Identify IS-related problem.
2. Analyze the problem and develop an initial solution.
3. Demonstrate his ability to work independently and as part of a team with colleagues and advisors utilizing good work dynamics.
4. Plan effectively for the various project lifecycle activities.
5. Conduct an effective literature survey and be able to contrast and critique related work.
6. Generate and articulate functional requirements and a preliminary design of the system/project.
7. The student will demonstrate a level of effectiveness expected by employers when he produces written documents, delivers oral presentations, and develops, prepares and interprets visual information.
8. Produce an academic proposal.

Grading	☒ Mid-term 1,2		☒ Project		☒ Assignments	
	☒ Final		☒ Lab			

Text Book:

1. NO SPECIFIC REFERENCE

References and Supplemental Materials:

Course Name	Graduation Project 2	Course Code	English	Arabic
			IS 493	493 نظم
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			1	4	0
Category	☐ University	☐ College	☒ Department	
Type	☒ Required	☐ Elective		
Level	8th	Prerequisite	IS 492	

Course Description:

This course is the second part of a sequence of two courses that constitue the BSc graduation capstone project. In this project, the student will continue the System/Research development of the project that started in graduation project 1. The student will deliver oral presentations, progress reports, and a final report.

Course Objectives:

1. Commit to the plan and monitor the decisions made in the previous course in developing their software system.
2. Apply mathematical or scientific concepts.
3. Apply core computing knowledge such as programming, database, algorithm analysis, etc .
4. Produce a complete design of the system.
5. Implement the design and produce an executable system.
6. Apply testing concepts and techniques to the system.
7. Demonstrate a level of effectiveness expected by employers when he produces written documents, delivers oral presentations, and develops, prepares and interprets visual information.
8. Demonstrate their awareness of the impact of their product on society at different levels.
9. Work independently and in a team.
10. Demonstrate their awareness of the social obligations of developing their product such as being professional, ethical and legal issues, etc.
11. Work on a CS-related project of a degree of complexity that is proportionate to the given time and number of members of the team.
12. Learn new knowledge and skills required to realize the project in an independent way through the guidance of the supervisor.
13. Apply mathematical foundation, algorithmic principle, or computer science theory in modeling and design, demonstrating the comprehension of trade-offs.

Grading	☒ Mid-term 1,2		☒ Project		☒ Assignments	
	☒ Final		☒ Lab			

Text Book:
2. NO SPECIFIC REFERENCE
References and Supplemental Materials:

Course Name	Practical Training	Course Code	English	Arabic
			IS 490	490 نظم
Credit Hours	1	Contact Hours	Lec	Lab	Tut
			0	0	0
Category	☐ University	☐ College	☒ Department		
Type	☒ Required	☐ Elective			
Level	After the 6th and before 7th	Prerequisite	80 credits hours should be passed		

Course Description:

This training is intended to give the student an opportunity to spend some time working at the different establishments in government/private sectors side-by-side with experienced practitioners in different fields using IT resources. The aim of the training is to give the student experience with an environment devoted to computer technology and its applications.

Course Objectives:

1. Gain a field experience in a working environment.
2. Discover the tasks and disciplines needed to be professional information systems.
3. Explore job market opportunities.
4. Apply teamwork approach, communication skills and interpersonal skills.
5. Discover how to apply theories in a real life situation.
6. Putting theory into practice
7. Work environment on the spot training skills.
8. Submit job market needs.
9. Achievement information systems professionalism

Grading	☐ Mid-term 1,2		☐ Project		☐ Assignments	
	☐ Final		☐ Lab			

Text Book:

References and Supplemental Materials:

"Executive Instructions for Summer Training notes"

Course Name	Data Warehouses	Course Code	English	Arabic
			IS 442	442 نظم
Credit Hours	3	Contact Hours	Lec: 2	Lab: 2	Tut: 0
Category	☐University	☐College	☒Department	
Type	☐ Required	☒ Elective		
Level	7th or 8th	Prerequisite	CSI 422	

Course Description:

The primary focus of this course is on Data Warehousing and it's applications to business intelligence. We will concentrate on topics like: requirements gathering for data warehousing, data warehouse architecture, dimensional model design for data warehousing, physical database design for data warehousing, extracting, transforming, and loading strategies, introduction to business intelligence, design and development of business intelligence applications, expansion and support of a data warehouse.

Course Objectives:

1. Gather requirements for data warehousing
2. Explain data warehouse architecture
3. Design a dimensional model for data warehousing
4. Design a physical model for data warehousing
5. Comprehend extract, transform and load strategies
6. Identify Online Analytical Processing (OLAP) databases
7. Design and develop business intelligence applications
8. Expand and support a data warehouse

Grading						
	☒Mid-term 1,2	30	☒Project	10	☒Assignments	10
	☒Final	40	☒ Lab	10		

Text Book:

1. R. Kimball, M. Ross, "The Data Warehouse Toolkit: The Complete Guide to Dimensional Modeling", Third edition, John Wiley & Sons Inc., 2013.

References and Supplemental Materials:

1. W. H. Inmon, Building the Data Warehouse, John Wiley & Sons Inc., 2004.

Course Name	Decision Support Systems	Course Code	English	Arabic
			IS 443	443 نظم
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			3	0	1
Category	☐University	☐College	☒Department	
Type	☐ Required	☒ Elective		
Level	7th or 8th	Prerequisite	CSI 321	

Course Description:

This course studies how Decision Support Systems (DSS) work and the theory behind different DSS techniques, thereby enabling them to understand today's turbulent business environment and how organizations survive and even excel in such environments (particularly solving problems and exploiting opportunities). This course provides the required skills and knowledge of the various decision-making models so that decisions can be based on logical and mathematical foundations under different circumstances, such as in cases of uncertainty, lack of information, or certainty. This course studies also the design of computerized systems to support individual or organizational decisions. Moreover, the course presents the need for computerized support of managerial decision making and what was an early framework for managerial decision making.

Course Objectives:

1. Explain today's turbulent business environment and describe how organizations survive and even excel in such an environment.
2. Appraise the need for computerized support of managerial decision making.
3. Describe the conceptual foundation of the decision support system (DSS) and business intelligence (BI) methodology and relate them each other.
4. Appraise the major tools of computerized decision support and major issues in implementing computerized decision support systems.
5. Apply conceptual foundations of decision making.
6. Apply Simon’s four phases for decision making: Intelligence, Design, Choice, and Implementation.
7. Develop major DSS components: the data management subsystem, the model management subsystem, the user interface subsystem, and the knowledge-based management subsystem.
8. Explain internet impacts on DSS and vice versa also describe DSS hardware and software platforms and DSS modeling language.
9. Describe the basic concepts of management support system modeling.
10. Use of spreadsheet for Management Support Systems modeling and solutions.
11. Apply the basic concept of optimization, simulation, linear programming and heuristic, and when to use them using several examples.
12. Define and explain (with practical examples) sensitivity analysis, what-if analysis, and goal seeking.
13. Explain the basic concepts of data warehousing, its architectures, and operations.
14. Describe the processes used in developing and managing data warehouses.

Grading	☒Mid-term 1,2	30	☒Project	10	☒Assignments	10
	☒Final	50	☐ Lab			

Text Book:

1. Business Intelligence and Analytics: Systems for Decision Support, Ramesh Sharda, Dursun Delen, Efraim Turban, Pearson, 2014.

References and Supplemental Materials:

Course Name	Information System Strategy, Management & Acquisition	Course Code	English	Arabic
			IS 332	نظم 332
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			3	0	1
Category	☐ University	☐ College	☒ Department		
Type	☒ Required	☐ Elective			
Level	6th	Prerequisite	IS 331		

Course Description:

This course explores the issues and approaches in managing the information systems (IS) function in organizations, and how the IS function integrates / supports / enables various types of organizational capabilities. It takes a senior management perspective in exploring the acquisition, development and implementation of plans and policies to achieve efficient and effective information systems. The course addresses issues relating to defining the high-level IS infrastructure and the systems that support the operational, administrative and strategic needs of the organization. The remainder of the course is focused on developing an intellectual framework that will allow leaders of organizations to critically assess existing IS infrastructures and emerging technologies as well as how these enabling technologies might affect organizational strategy. The ideas developed and cultivated in this course are intended to provide an enduring perspective that can help leaders make sense of an increasingly globalized and technology intensive business environment.

Course Objectives:

1. State the various functions and activities within the information systems area, including the role of IT management and the CIO, structuring of IS management within an organization, and managing IS professionals within the firm.
2. View an organization through the lens of non-IT senior management in deciding how information systems enable core and supportive business processes as well as those that interface with suppliers and customers.
3. Explain the concepts of information economics at the enterprise level.
4. Appreciate how IS represents a key source of competitive advantage for firms.
5. Structure IS-related activities to maximize the business value of IS within and outside the company.
6. Explain the existing and emerging information technologies, the functions of IS and its impact on the organizational operations.
7. Evaluate the issues and challenges associated with successfully and unsuccessfully incorporating IS into a firm.
8. Demonstrate how strategic decisions are made concerning acquiring IS resources and capabilities including the ability to evaluate the different sourcing options.
9. Apply information to the needs of different industries and areas.
10. Write the role of IT control and service management frameworks from the perspective of managing the IS function in an organization.

Grading						
	☒ Mid-term 1,2	30	☒ Project	10	☒ Assignments	10
	☒ Final	50	☐ Lab			

Text Book:

1. David, Fred R. Strategic management: Concepts and cases. Peaeson/Prentice Hall, 2011.
2. O'Brien, James A., and George M. Marakas. Management information systems. McGraw-Hill Irwin, 2006.

References and Supplemental Materials:

1. Sprague Jr, Ralph H., and Barbara C. McNurlin. Information systems management in practice. Prentice Hall PTR, 1993.

Course Name	Information Technology Audit and Controls	Course Code	English	Arabic
			IS 458	458 نظم
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			3	0	1
Category	☐ University	☐ College	☒ Department		
Type	☐ Required	☒ Elective			
Level	8th	Prerequisite	IS 331		

Course Description:

This course introduces the fundamental concepts of the information technology audit and control function. The main focus of this course is on understanding information controls, the types of controls and their impact on the organization, and how to manage and audit them. The concepts and techniques used in information technology audits will be presented. Students will learn the process of creating a control structure with goals and objectives, audit an information technology infrastructure against it, and establish a systematic remediation procedure for any inadequacies. The challenge of dealing with best practices, standards, and regulatory requirements governing information and controls is addressed.

Course Objectives:

1. Develop an appropriate information technology audit process.
2. Identify risks to the confidentiality, integrity, and availability of information and processes.
3. Examine the risks inherent in various types of information systems ranging from manual, basic accounting, to advanced operational information and knowledge for decision making.
4. Design and implement assurance procedures and control measures to effectively manage risks.
5. Analyze best practices, standards, and regulatory requirements governing information and controls that may vary for an organization's location and customers

Grading	☒ Mid-term 1,2	30	☐ Project		☒ Assignments	10
	☒ Final	60	☐ Lab			

Text Book:

1. Moeller, Robert R, " IT audit, control, and security ", John Wiley & Sons, 2010

References and Supplemental Materials:

1. Senft, Sandra, and Frederick Gallegos, " Information technology control and audit ", CRC Press, 2008

Course Name	Advanced Analysis and Design	Course Code	English	Arabic
			IS 463	463نظم
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			3	0	1
Category	☐ University	☐ College	☒ Department		
Type	☐ Required	☒ Elective			
Level	7th or 8th	Prerequisite	90 Hours		

Course Description:

This course is concerned with discussing advanced issues in systems analysis and design. These issues are categorized into three parts. The first part shows and discusses the subsystems of an information system as help system, installation system, backup system, security system, setup system, and demonstration systems. The second part discussed the activities of the implementation phase, as programming, testing, conversion, documentation, and training, while the third part discusses some advanced topics as enhancing the qualities of design of an information system, which may include: coupling, cohesion, information hiding, fan-in/fan-out, editing, … . In addition to how to evaluate an existing IS.

Course Objectives:

The student should be able to:

1. Make good planning for the implementation phase
2. Recognize the different types of subsystems of an information system
3. Code the system using a suitable programming language
4. Test the resulted programs
5. Write system documentation
6. Deploy the new system
7. Train users on the new system
8. Enhance the qualities of system design
9. Evaluate working information systems

Grading						
	☒ Mid-term 1,2	30	☐ Project		☒ Assignments	10
	☒ Final	60	☐ Lab			

Text Book:

1. Modern Systems analysis and Design, Joey F. George, and Jeffery Hoffer, Pearson,2016

References and Supplemental Materials:

1. Systems Analysis and Design, Kendall and Kendall, Pearson, 2013

Course Name	Object Oriented Analysis and Design	Course Code	English	Arabic
			IS 457	457 نظم
Credit Hours	3	Contact Hours	Lec: 2	Lab: 2 / Tut: 0
Category	☐ University	☐ College	☒ Department	
Type	☐ Required	☒ Elective		
Level	7th or 8th	Prerequisite	90 Hours	

Course Description:

The objective of this course is to familiarize students with the fundamental foundations of Object-Oriented Approach in relation to systems and the advantages of this method. This course includes a thorough discussion of UML. It also covers various approaches and methodologies used in different phases of software development lifecycle, as use-case modelling, system structure modeling, system behavior modeling, system architecture design, user-interface design, classes design, DB and File design. Students should work as teams on a project to build a real system.

Course Objectives:

The student should be able to:

1. Recognize the types of information systems.
2. Differentiate among different system's building approaches
3. Recognize art of collecting requirements.
4. Select the suitable object oriented analysis tools.
5. Modelling a system with OO modelling Tools
6. Describe the phases of building information systems with object oriented way.
7. Know how to analyze and design a system with object oriented way.
8. Understand how, why, and when to use OO analysis tools

Grading						
	☒ Mid-term 1,2	30	☒ Project	10	☒ Assignments	10
	☒ Final	40	☒ Lab	10		

Text Book:

1. Systems Analysis and Design: An Object Oriented Approach with UML, Alan Dennis and Barbara Wixom, WILEY, 2015.

References and Supplemental Materials:

1. Object-Oriented Analysis, Design and Implementation: An Integrated Approach, Sarnath Ramnath and Brahma Dathan, Springer, 2015
2. Object-Oriented Analysis and Design with Applications, Grady Booch and R. Maksichuck, 2007.

Course Name	Fundamentals of Multimedia	Course Code	English	Arabic
			IS 462	نظم 462
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			2	2	0
Category	☐ University	☐ College	☒ Department		
Type	☐ Required	☒ Elective			
Level	7th or 8th	Prerequisite	90 hours		

Course Description:

This course covers aspects related the Multimedia Information System. It provides in details the explanation of the following topics :

- The principles and current technologies of multimedia systems, multimedia standards
- Gaining hands-on experience in multimedia systems
- Representing, processing, and retrieving multimedia data.
- Comprehensive understanding with multimedia standards, tools and systems.
- Extensive practices from multimedia capturing, processing, transmitting, content representing to retrieval

Course Objectives:

1. introduce the multimedia data types
2. provide knowledge about standards and tools related to multimedia data
3. learn techniques of working on multimedia database (insert, delete, update, …)
4. define and describe the different types of images (Binary,Gray,True color , …) and their representation
5. convert between different types of images
6. define audio and video data and their representation
7. use tools for using and processing audio and video data
8. demonstrate the use of multimedia database
9. do various manipulation and generate reports on multimedia database
10. convert between different forms of multimedia types

Grading						
	☒ Mid-term 1,2	30	☒ Project	10	☒ Assignments	10
	☒ Final	40	☒ Lab	10		

Text Book:

1. Fundamentals of Multimedia by Li Ze-Nian , By (author) Mark S. Drew , By (author) Jiangchuan Liu, Springer International Publishing AG , 2014.

References and Supplemental Materials:

1. Digital Multimedia , Nigel Chapman and Jenny Chapman © 2009 Published by John Wiley & Sons, Ltd.

Course Name	Enterprise Resource Planning	Course Code	English	Arabic
			IS 464	464 نظم
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			3	0	1
Category	☐University	☐College	☒Department	
Type	☐ Required	☒ Elective		
Level	7th or 8th	Prerequisite	IS 351	

Course Description:

This course covers aspects related to the Enterprise Resources Planning (ERP). It provides in details the following topics: definition of Enterprise Resource Planning (ERP), organization, business processes, and integration. Differences between Software Development Life Cycle (SDLC) and implementation of ERP, the environment of ERP, the architecture of ERP, the critical success factors of ERP implementation, planning of ERP implementation, the preparation of ERP implementation, technologies related to ERP and ERP Security.

Course Objectives:

1. Introduce the Enterprise Resources Planning (ERP)
2. Present the Evolution of ERP
3. Define techniques of Business integration and intelligence
4. Describe E-commerce and E-business
5. Provide knowledge about the Risks and the benefits of ERP
6. Define the environment and the architecture of ERP.
7. Use technologies related to ERP
8. Learn techniques of ERP Security
9. Define the ERP implementation life cycle

Grading						
	☒Mid-term 1,2	30	☒Project	10	☒Assignments	10
	☒Final	40	☒ Lab	10		

Text Book:

1. Ellen Monk, Concepts in Enterprise Resource Planning, CENGAGE Learning Custom Publishing, 2011.

References and Supplemental Materials:

1. Enterprise Resource Planning: Fundamentals of Design and Implementation, K. Ganesh, Sanjay Mohapatra, S. P. Anbuudayasankar, Springer, 2014

Course Name	Geographic Information Systems	Course Code	English	Arabic
			IS 461	نظم 461
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			2	2	0
Category	☐University	☐College	☒Department	
Type	☐ Required	☒ Elective		
Level	7th or 8th	Prerequisite	CSI 422	

Course Description:

This course covers aspects related to the Geographic Information Systems. . It provides in details the following topics: Spatial Analysis, Maps as a Model of Geographic Data, Cartographic and GIS Data Structures, GIS Data Input, Elementary Spatial Analysis, Spatial Arrangement, GIS Design and GIS Output.

Course Objectives:

1. Introduce the Geographic Information Systems (GIS)
2. List the primary functions of a GIS.
3. Describe the nature of geographic data.
4. Define image, geographic and database methods of representing data.
5. Provide knowledge about the geographic data modeling.
6. Learn techniques about the GIS Data Collection.
7. Use different types of graphic symbols.
8. List and identify different file structures and their advantages and disadvantages.
9. Creating and Maintaining Geographic Databases.
10. Define the cartography and map production.
11. Describe the techniques of spatial data analysis.
12. Describe data storage, editing and retrieval techniques used in a GIS
13. Demonstrate the use of GIS Software.
14. Create a GIS using image, geographic and database information.

Grading	☒Mid-term 1,2	30	☒Project	10	☒Assignments	10
	☒Final	40	☒ Lab	10		

Text Book:

1. Business Intelligence and Analytics: Systems for Decision Support, Ramesh Sharda, Dursun Delen, Efraim Turban, Pearson, 2014.

References and Supplemental Materials:

1. Geographical Information Systems: Principles, Techniques, Management and Applications, Paul A. Longley, Michael F. Goodchild, David J. Maguire, David W. Rhind, Wiley, 2005.

Course Name	Enterprise Architecture	Course Code	English		Arabic
			IS 463		نظم 363
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			2	2	u
Category	☐ University	☐ College	☒ Department		
Type	☒ Required	☐ Elective			
Level	7th or 8th	Prerequisite	90 hours		

Course Description:

This course explores the design, selection, implementation and management of enterprise IT solutions. The focus is on applications and infrastructure and their fit with the business. Students learn frameworks and strategies for infrastructure management, system administration, data / information architecture, content management, distributed computing, middleware, legacy system integration, system consolidation, software selection, Total cost of ownership calculation, IT Investment analysis, and emerging technologies. These topics are addressed both within and beyond the organization, with attention paid to managing risk and security within audit and compliance standards.

Course Objectives:

1. State a variety of frameworks for enterprise architecture analysis and decision making.
2. Evaluate the Total cost of ownership and return on investment for architecture alternatives.
3. Utilize techniques for assessing and managing risk across the portfolio of the enterprise.
4. Evaluate and plan for the integration of emerging technologies.
5. Administer systems, including the use of virtualization and monitoring, power and cooling issues.
6. Manage proliferating types and volume of content.
7. Know the core concepts of data/information architecture and evaluate existing data/information architecture designs.
8. Plan for business continuity.
9. State the benefits and risks of service oriented architecture.
10. Describe and discuss the role of audit and compliance in enterprise architecture
11. Know how to integrate enterprise systems with inter-organizational partners such as suppliers, government, etc.
12. Explain the use of modeling tools, Relate Models with real business problems
13. Utilize techniques for assessing and managing risk across the portfolio of the enterprise

Grading	☒ Mid-term 1,2	30	☒ Project	20	☒ Assignments	10
	☒ Final	40	Lab			

Text Book:

1. Jeanne W. Ross, Peter Weill, and David C. Robertson, Enterprise Architecture as Strategy, Harvard Business Press, 2006

References and Supplemental Materials:

Course Name	Information Search, Retrieval & Visualization	Course Code	English	Arabic
			IS 446	نظم 446

Credit Hours	3	Contact Hours	Lec	Lab	Tut
			2	2	0

Category	☐ University	☐ College	☒ Department
Type	☒ Required	☐ Elective	
Level	5th	Prerequisite	CSI 422

Course Description:

This course discusses about Evaluation & Information Retrieval models, Text categorization & Statistical characteristics of text, Document filtering & information extraction, Parallel, Distributed & Multimedia retrieval, Types of information retrieval, systems and search engine, Query transformation and interface design, Visualization literacy, Usability research, Theories of visual perception and cognition, Visualization models and Visual analytics and data graphics.

Course Objectives:

1. Have profound understanding of the concept of information retrieval and the fundamental ideas of Web IR.
2. Design the infrastructure of a search engine or any text retrieval system.
3. Develop web applications with retrieval capabilities.
4. Conduct research in the area of information retrieval.
5. Involve aspects of information visualization, HCI, and text mining in further research related to information retrieval and web IR.
6. Have practiced knowledge from different courses taken prior to the IR course such as machine learning, data mining, and information visualization.
7. Be familiar with classical techniques of Information Retrieval, and the additional techniques employed by Web search engines sufficient to understand how Web search engines work and how they could be improved.
8. Be familiar with techniques for conveying the meaning of documents or hypermedia content, for example, metadata, thesauri, and classification taxonomies – sufficient to understand their application to the "semantic Web".
9. Implement techniques for the preprocessing needed for information retrieval systems.
10. Develop a small information retrieval system.
11. Be familiar with the fundamentals of hypermedia systems sufficient to know how to develop a good Web hypermedia and why a Web site is good or bad.

Grading	☒ Mid-term 1,2	20	☒ Project	10	☒ Assignments	10
	☒ Final	40	☒ Lab 20			

Text Book:

1. Christopher D. Manning, Prabhakar Raghavan and Hinrich Schütze, Introduction to Information Retrieval, Cambridge University Press New York, NY, USA, 2008

References and Supplemental Materials:

1. Ricardo Baeza-Yates, Berthier Ribeiro-Neto, Modern Information Retrieval, 2nd edition, ddison-Wesley, 2011
2. Bruce Croft, Donald Metzler, and Trevor Strohman, Search Engines: Information Retrieval in Practice, Pearson Education, 2009.

Course Name	Mobile Computing and Application	Course Code	English	Arabic
			IS 484	484 نظم
Credit Hours	3	Contact Hours	Lec: 2	Lab: 2 / Tut: 0
Category	☐ University	☐ College	☒ Department	
Type	☐ Required	☒ Elective		
Level	8th	Prerequisite	IS 482	

Course Description:

Mobile computing and Android Apps Development course is designed to make students attentive about how mobile communication works, the use open source mobile technology and how to build mobile apps for android operating System. It presents the basics of developing mobile applications using android, it covers the necessary concepts which support mobile application development .Topics covered include Basics of Application development, Android Activities lifecycle and UI Layout, Expressions, Manifest, GUI Objects, Layout Design concepts, Android Event driven Programming, Splash screen, Activity Lifecycle, Exception handlings.

Course Objectives:

1- Introduces mobile generation and technology.
2- Explain the characteristic of GSM and CDMA.
3- Analyze Open source mobile technology.
4- Explain the Basics of Application development.
5- Define and Explain Android Activities lifecycle and UI Layout,.
6- Explain Expressions, Manifest, other necessary UI concept.
7- List GUI Objects, Layout Design concepts.
8- Explain Android Event driven Programming, Splash screen, Activity Lifecycle, Exception handling.
9- Perform Working with menu and dialog, Themes, Perform Demo Application Launching.
10- Perform Database operation

Grading						
	☒ Mid-term 1,2	30	☒ Project	10	☒ Assignments	10
	☒ Final	40	☒ Lab	10		

Text Book:

1. Professional Android 2 Application Development, Reto Meier, Wiley, 2010

References and Supplemental Materials:

Course Name	Software Quality and Testing	Course Code	English	Arabic
			IS 455	نظم 445
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			3	0	1
Category	☐ University	☐ College	☒ Department		
Type	☒ Required	☐ Elective			
Level	8th	Prerequisite	IS331		

Course Description:

This course aims to assure the significance of the concept of quality during the process of developing software. It emphasizes on the basic concepts of software quality assurance during all the stages of software development process: planning, analysis, design, programming, installation, testing and maintenance stages. It introduces the quality standard systems used in the field of software industry and Information Systems such as: CMM and IEEE standards in order to assure complying with standard criteria during the process of software production, while ensuring continuous development.

Course Objectives:

1. Learn and implement main methods and tools of software testing.
2. State different testing techniques used in designing test plans.
3. Distinguish the relationship between black-box and white-box testing and know how to apply as appropriate.
4. Learn to use automated testing tools in order to measure code coverage.
5. Identify the basic concepts of quality management in software development.
6. Examine the quality management process.
7. Examine the importance of standards in the quality management process.

Grading						
	☒ Mid-term 1,2	30	Project		☒ Assignments	10
	☒ Final	60	Lab			

Text Book:

1. Srinivasan D and Gopalswamy R, Software Testing: Principles and Practices, PearsonEd, 2006

References and Supplemental Materials:

Course Name	System Design Patterns	Course Code	English	Arabic
			IS 455	نظم 445
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			3	0	1
Category	☐ University	☐ College	☒ Department	
Type	☒ Required	☐ Elective		
Level	8th	Prerequisite	IS331	

Course Description:

"Software Design Pattern" is designed to help the students understanding the principles behind the patterns of software and to applying a number of basic patterns. This course covers fundamental aspects of large scale software architecture, and also defined frameworks, design patterns and ways of developing and establishing systems based on components. The purpose of this course is: (1) To know the classical styles of software pattern and the need for a language to describe the architecture, (2) To understand how to express the qualities we want our architecture to provide to the system or systems we are building from it,
Topics include: Envisioning Architecture (architecture business cycle), Architectural Patterns, Reference Models, and Reference Architectures, Understanding Quality Attributes, Achieving Qualities using tactics, and how to document software architecture..

Course Objectives:

1. Demonstrate a thorough understanding of patterns and their underlying principles.
2. Demonstrate knowledge about The Architecture Business Cycle, What is Software Architecture, stating Quality Attributes, Achieving Qualities
3. Document Software Architectures
4. know what design pattern to apply to a specific problem
5. Use design patterns when developing software
6. Demonstrate what tradeoffs need to be made when implementing a design pattern

Grading	☒ Mid-term 1,2	30	☒ Project	10	☒ Assignments	10
	☒ Final	50	Lab			

Text Book:

1. L. Bass, P. Clements, R. Kazman, Software Architecture in Practice, 2nd Ed., Addison-Wesley, 2003, ISBN 0321154959.

References and Supplemental Materials:

1. S. J. Metsker, Design Patterns Java Workbook, Addison-Wesley, 2002, ISBN 0201743973.

Course Name	Web Content management	Course Code	English	Arabic

Credit Hours	3	Contact Hours	Lec	Lab	Tut
			3	2	0

Category	☐ University	☐ College	☒ Department
Type	☐ Required	☒ Elective	
Level	7th or 8th	Prerequisite	CIS 211

Course Description:

This course teaches the students how to use content management systems (CMS) to allow them to instantly and dynamically update web pages and properties as new content becomes available so that every visit to a site is engaging, informative, and meaningful. This course covers topics such as the use of the three most popular open source web-based content management systems—WordPress, Joomla, and Drupal—to create dynamic and flexible websites and landing pages, the fundamentals of planning dynamic websites, CMS database management, developing CSS-controlled site templates, and creating database-driven websites through the planning and creation of their own topic-based sites.

Course Objectives:

1. Introduce the three most popular open source content management systems (CMS) in use on the web today, including WordPress, Drupal, and Joomla.
2. Distinguish between a CMS website, a static website, and websites using other server-side technologies.
3. Describe the benefits of working with a server-side database and the power it brings to creating and managing websites.
4. Compare and contrast the three most popular open source CMS.
5. Create and deploy websites using CMS, including creating and editing content, adding functionality, and creating custom templates and themes.
6. Explain the ongoing maintenance considerations with CMS websites.
7. Describe how to work with plug-ins and widgets, including identifying a good plug-in or widget, installing, and configuring them.
8. Describe themes as well as how to modify themes using CSS and HTML tricks.
9. Describe the custom view, and how to use additional display module (e.g. a carousel or a calendar).

Grading	☒ Mid-term 1,2	30	☒ Project	10	☒ Assignments	10
	☒ Final	40	☒ Lab	10		

Text Book:

1. Web Content Management Systems, Features, and Best Practices, Deane Barker, O'Reilly Media,2016

References and Supplemental Materials: