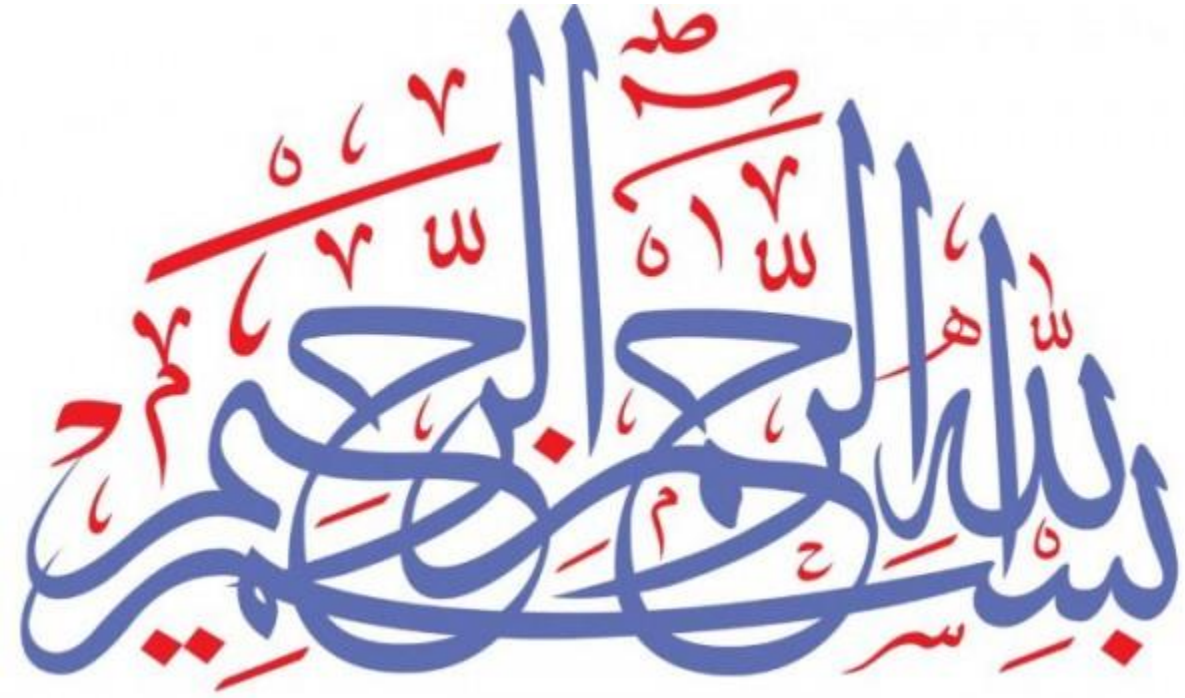
Information Systems Porogram Handbook

College of Computers and Information Sciences

1441-1442


بسم الله الرحمن الرحيم

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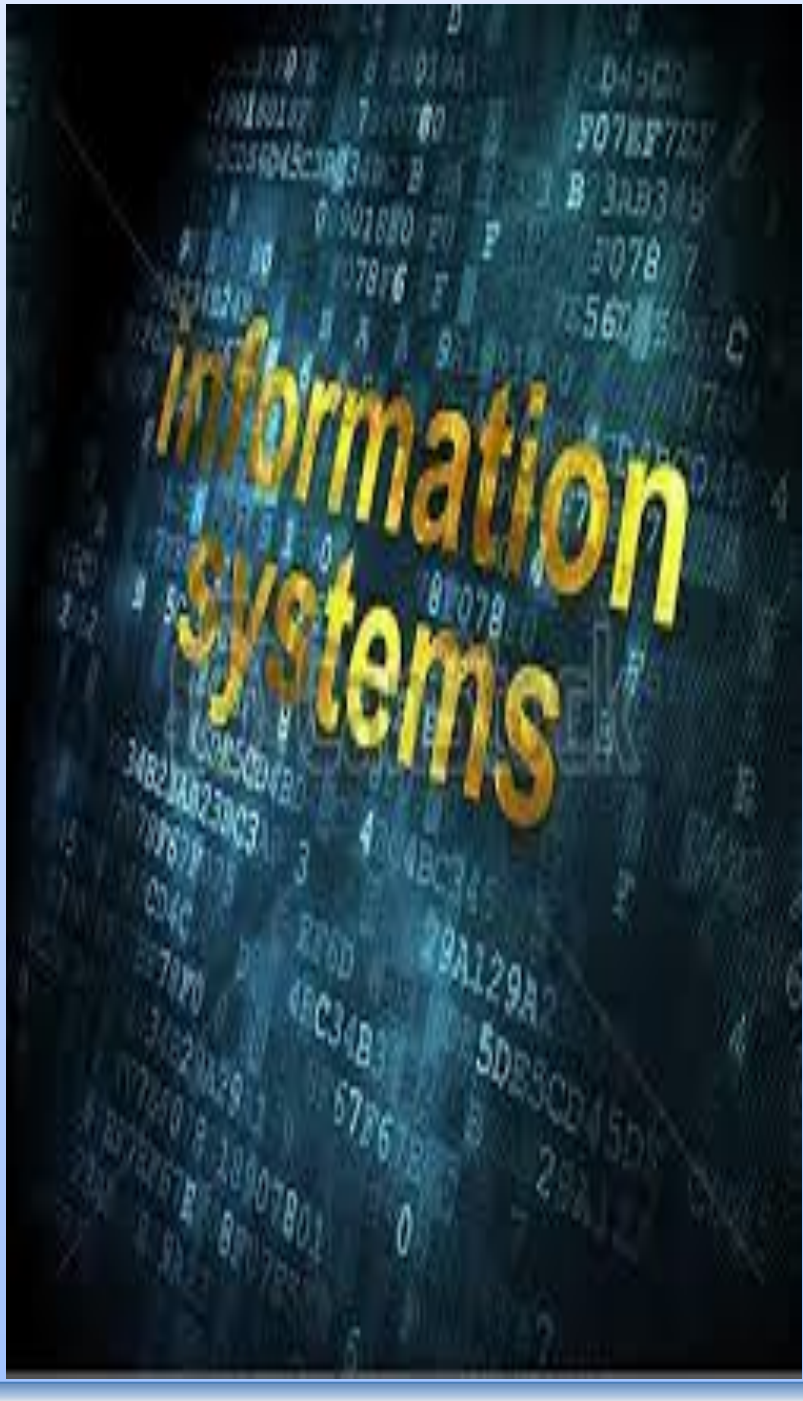

The word of His Excellency the Head of the Program

Information systems are of the utmost importance for the progress of many societies today. In the Kingdom of Saudi Arabia, information systems and various computer technologies play a vital role in the advancement of various local sectors by focusing a number of ministries and government sectors on adopting many technical solutions that, God willing, will contribute to achieving the Kingdom's 2030 vision.

Believing in this importance, the Program of Information Systems was established at the College of Computer and Information Sciences at Jouf University to actively contribute to the design, construction and development of various information systems in many sectors of work in the Kingdom. And to be a contributor to the development of many local sectors in order to achieve the Kingdom's visions and aspirations.

The Program of Information Systems aims to provide effective academic programs in the fields of information systems and technology in the undergraduate and postgraduate levels. We also seek in this section to prepare distinguished national cadres in the fields of information systems through academic programs in which the continuous development in various fields of computer is taken into account.

The Program includes many male and female students who receive technical skills and knowledge that, God willing, will enable them to be highly qualified and to be active individuals in achieving the Kingdom's aspirations. We are also proud in this section of many students who graduated after acquiring various technical skills and knowledge that will enable them to contribute to providing technical solutions in different work environments, which will contribute to achieving many of the development goals of the Kingdom, God willing.

Head of IS Program

Dr. Saleh Naif Almuayqil

About Information Systems Program

The program of Information Systems is one of the main Programs in the College of Computer and Information Sciences. The Program consists of two parts for male and female students. The Program also offers a bachelor's degree in information systems and a master's degree in data science. The Bachelor of Information Systems program has obtained international accreditation (ABET).

The information systems specialization is considered a bridge linking the computer specialization and the administrative and organizational fields. The Information Systems Program includes a number of highly scientifically qualified specialists from different countries of the world, and the Program sends a number of repeaters annually to complete their postgraduate studies outside the Kingdom.

The Bachelor of Information Systems requires the student to complete 135 credit hours, which are divided into eight academic levels. They are divided into computer science concepts and skills, and other concepts and skills in the field of management, communication, communication, presentation, analysis and design. The specialization of information systems is the link between the disciplines of computer science and the various fields of work. Through this section, male and female students can acquire the knowledge and skills necessary to analyze, design, develop and operate information systems in any governmental or private organizations and institutions.

Vision, Mission, and Goals

Vision

Leadership in education and scientific research and being nationally ranked among the best Programs for information systems programs.

Mission

Preparation of qualified scientific cadres in the various fields of Information Systems through innovative education and scientific research, which develops creative and analytical abilities that can serve the society.

Goals

1. Develop competitive capabilities of graduates to contribute in building effective information systems solutions.
2. Contribute effectively to scientific research and the discovery of modern knowledge and methods in information systems.
3. Provide community services and consulting in the field of information systems.
4. Ensure the continuous development of the performance of faculty members in the fields of information systems.
5. Successfully engage in life-long learning and demonstrate the capability to adapt to rapidly changing technologies in the Information Systems field.

Community Service

There are many job opportunities waiting for Saudi cadres specialized in information systems that meet the needs of the Saudi labor market in the public and private sectors in many fields such as software building companies, banks, trade, business, health, education, higher education, telecommunications companies, the Internet, and many companies and institutions related to the field Specialization.

List of graduate information system jobs includes:

1. **Enterprise Information System Analyst**
2. **Database designer and administrator**
3. **Information system developer**
4. **Industrial data processing**
5. **Business Data Analyst**
6. **Information systems architecture consultant**
7. **Technical support**
8. **Web content manager**

The demand for computer information systems professionals with a scientific background has increased in the past decade as a result of the increasing demand for advanced computing environments, applications, and scientific research within and outside academia. The Information Systems Program works to compensate for the deficiency in the specialization of computer information system for local and regional communities, to raise the level of accreditation for national graduates, to provide training, consultations and services in the field of information systems for society, - to prepare graduates for postgraduate studies (Master, PhD, etc.) in the field of computer information system Contributing to the technological development plans of the Kingdom of Saudi Arabia as a partial achievement of the national development plan, and preparing specialized cadres in the computer field capable of serving the community in various fields of work, whether educational or practical.

IS Program Committees

1. Program Quality Assurance Committee
2. Assessment and Analysis Committee
3. Academic Advising Committee
4. Community Services Committee
5. Alumni Committee
6. E-Learning Committee
7. Study Plan Committee
8. Graduation Project Committee
9. Laboratories Management Committee
10. Scientific Research & Graduate Studies Committee
11. Summer Training Committee

Program Staff

Male Section				
No	**Name**	**Academic rank**	**General specialty**	**Detailed specialty**
1	Dr. Saleh Naif Almuayqil	Assistant Professor	Information Systems	Health Informatics
2	Dr. Bandar M. Alshammari	Associate Professor	Computer Science	Software Security Engineering
3	Dr. Murtada Elfaki	Associate Professor	Information Technology	Machine Learning and Bioinformatics
4	Dr.Ayman Mohamed Mostafa	Assistant Professor	Information Systems	Cloud Computing, Database Security, Data Science
5	Dr. Hamood Al Shamry	Assistant Professor	Information Systems	Information Systems
6	Dr. Khalaf Alsalem	Assistant Professor	Information Systems	Geographic Information Systems
7	Dr. Sameh Abdelghany	Assistant Professor	Information Systems	Information Storage and retrieval
8	Dr. Abd El-Aziz El-Damarany	Assistant Professor	Information Systems	Information Security
9	Dr. Abdullah Almotylaq	Assistant Professor	Information Systems	Software Project Management
10	Dr. Kais Khrouf	Assistant Professor	Information Systems	Data Storage and Analysis
11	Dr. Majed Ahmed Alfayad	Assistant Professor	Information Systems	Information systems
12	Dr. Nacim YANES	Assistant Professor	Information Systems	Software Reuse
13	Mr. Bandar Saied Al Qahtani	Lecturer	Information Systems	Information Systems
14	Mr. Hasam Naser Altaleb	Lecturer	Computer Science	Computer Science
15	Mr. Khaled Saleh Aljbab	Lecturer	Computer Science	Computer Science
16	Mr. Hisham Zayed	Lecturer	Information Systems	Information Systems
17	Mr. Abdullah Saleh Aljbab	Teaching Assistant	Computer Science	Computer Science

Female Section				
No	**Name**	**Academic rank**	**General specialty**	**Detailed specialty**
1	Dr. Maram Fahad Almufareh	Assistant Professor	Information Systems	Program Coordinator (Female Section)
2	Dr. Ines Hosni	Assistant Professor	Communication systems	Communication systems
3	Dr. Mamoona humayun	Assistant Professor	Software Engineering	Software Development
4	Dr. Hala Eldaw	Assistant Professor	Communication Engineering	Wireless Networks
5	Mrs. Amjad Almubarak	Teaching Assistant	Computer Science	Computer Science
6	Mrs. Ruba Khalid Almuwayshir	Teaching Assistant	Information Systems	Information Systems
7	Mrs. Azza Khalaf	Teaching Assistant	Computer Science	Internet Technologies
8	Mrs. Mashael Nasser	Teaching Assistant	Software Engineering	Software Engineering
9	Mrs. Malak Zayed	Teaching Assistant	Computer Science	Software Engineering

Program laboratories and classrooms

- The College of Computer and Information Sciences includes several classrooms and 4 computer labs in order to provide the appropriate applied environment and create conditions for students to take advantage of the university's available capabilities, which provided the necessary devices to enhance the concepts of computer science.
- The Program of Information Systems includes 17 classrooms. Each of which is equipped with a visual display device and white board.

INFORMATION SYSTEMS PROGRAM- NEW PLAN

COURSES DESCRIPTION

COLLEGE OF COMPUTER AND INFORMATION SCIENCES

DEPARTMENT OF INFORMATION SYSTEMS

1444-2022

Course Name	Systems Analysis and Design(I)	Course Code	English	Arabic
			IS 251	نظم 251
Credit Hours	3	Contact Hours	Lec: 4	Lab: 0 / Tut: 1
Category	☐ University	☐ College	☒ Department	
Type	☒ Required	☐ Elective		
Level	5th level / 2nd year	Prerequisite	IS 211	

Course Description:

This course is concerned with the fundamental knowledge, methods and skills needed to analyze, design computer-based information 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; data models and 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). Object modeling is explored and contrasted. A user centered design approach is adopted.

Text Book:

1- K. E. Kendall, J. E. Kendall, Systems Analysis and Design, 9th Edition. ISBN: ISBN-13: 978-0133023442, Pearson, 2013.
2- Modern systems analysis and design, Jeffrey A. Hoffer, PEARSON, 8th edition, 2017.

Course Name	Foundations of Information Systems	Course Code	English	Arabic
			IS 211	نظم 211
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			3	0	0
Category	☐ University	☐ College	☒ Department		
Type	☒ Required	☐ Elective			
Level	4th / 2nd	Prerequisite	None		

Course Description:

This course provides students with an overall understanding of the main concepts of information systems and highlights 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.

Text Book:

R. Kelly Rainer, B. Prince, Introduction to Information Systems, 7th Edition, ISBN: ISBN-13: 978-1119403500, Wiley, 2017

Course Name	Database Management Systems	Course Code	English	Arabic
			IS 323	نظم 323
Credit Hours	3	Contact Hours	Lec: 4	Lab: 0 / Tut: 0
Category	☐ University	☐ College	☒ Department	
Type	☒ Required	☐ Elective		
Level	9th level / 3rd year	Prerequisite	CIS 322	

Course Description:

This course provides students with the theoretical background and practical experience relating to the database Management systems. The following items will be covered DBMS architecture, transaction management, query processing and optimization, 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. New trends in database.

Text Book:

1. ELMASRI & NAVATHE, "Fundamentals of Data Base Systems", 7th Edition, 2016.
2. Database System Concepts 6th Edition, by Abraham Silberschatz ProfessorHenry F. Korth, S. Sudarshan, McGraw-Hill, 2011.

Course Name	Field Training	**Course Code**	English		Arabic
			IS 391		391 نظم
Credit Hours	1	**Contact Hours**	Lec	Lab	Tut
Category	☐ University	☐ College	☒ Department		
Type	☒ Required	☐ Elective			
Level	9th	**Prerequisite**	Pass 90 Credit Hours		

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.

Text Book:

NO SPECIFIC REFERENCE

Course Name	E-business	**Course Code**	English	Arabic	
			IS 406	406 نظم	
Credit Hours	3	**Contact Hours**	Lec	Lab	Tut
			4	0	0
Category	☐University	☐College	☒Department		
Type	☒ Required	☐ Elective			
Level	11th	**Prerequisite**	CIS 428		

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.

Text Book:

1. Digital-Business and E-Commerce Management: Strategy, Implementation and Practice, Dave Chaffey ,5th edition ,Prentice Hall, 2015.

2- Electronic Commerce: A Managerial and Social Networks Perspective, Efraim Turban,David King,Jae Kyu Lee,Ting-Peng Liang,Deborrah C. Turban, 8th edition , Springer, 2015.

Course Name	Information Security	Course Code	English	Arabic
			IS 461	نظم 461
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			2	3	0
Category	☐ University	☐ College	☒ Department	
Type	☒ Required	☐ Elective		
Level	10th	Prerequisite	CNE 463	

Course Description:

Information Security needs to ensure the confidentiality, integrity, and availability of information. This course introduces students the principles of network and operating system security through hands-on exploration. Students learn how to harden an operating system as well as secure the network by implementing technologies such as firewalls, Virtual Private Networks (VPN), and Intrusion Detection Systems (IDS).

Text Book:

1. W. Stallings, Cryptography and Network Security: Principles and Practice, Prentice Hall, Six Edition. 2013.
2. Information Security: Principles and Practice, Mark Stamp, Wiley, 2nd Edition, 2011 (additional textbook).

Course Name	Data Warehousing and Mining	Course Code	English	Arabic
			IS 424	424 نظم
Credit Hours	4	**Contact Hours**	Lec	Lab	Tut
			3	3	0
Category	☐ University	☐ College	☒ Department	
Type	☒ Required	☐ Elective		
Level	10th	**Prerequisite**	IS 323, MTH 281	

Course Description:

This course introduces technologies and managerial issues related to data mining and business intelligence. Data mining is a rapidly growing field that is concerned with developing techniques to assist managers to make intelligent use of data repositories.
Topics covered introduction to business intelligence, design and development of business intelligence applications, extracting, transforming, and loading strategies for data warehousing, dimensional modelling design, OLAP and data cube expansion and support of a data mining algorithm to support BI and decision making such as frequent pattern analysis, classification and prediction and finally clustering.

Text Book:

- J. Han, M. Kamber and J. Pei, Data Mining: Concepts and Techniques. ISBN-13: 978-9380931913, Elsevier, 2012
- R. Kimball, M. Ross, The Data Warehouse Toolkit: The Complete Guide to Dimensional Modeling. 3rd Edition, ASIN: B07JJQ6Z45, Wiley, 2013

Course Name	Graduation Project (1)	Course Code	English	Arabic
			IS 492	نظم 492
Credit Hours	2	Contact Hours	Lec	Lab	Tut
			3	0	0
Category	☐ University	☐ College	☒ Department	
Type	☒ Required	☐ Elective		
Level	11th level / 4th year	Prerequisite	IS 352, CIS 323	

Course Description:

This course is the first part of a sequence of two courses that constitute the BSc graduation capstone project. In this part, the student is expected to propose, analyze, 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.

Text Book:

NO SPECIFIC REFERENCE

Course Name	Graduation Project 2	Course Code	English	Arabic
			IS 493	نظم 493
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			2	3	0
Category	☐ University	☐ College	☒ Department	
Type	☒ Required	☐ Elective		
Level	12th level / 4th year	Prerequisite	IS 492	

Course Description:

This course is the second part of a sequence of two courses that constitute 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 implement the design and produce an executable system. He will also deliver oral presentations, progress reports, and a final report.

Text Book:

NO SPECIFIC REFERENCE

Course Name	Enterprise Architecture	**Course Code**	English	Arabic
			IS 471	نظم 471
Credit Hours	3	**Contact Hours**	Lec	Lab	Tut
			4	0	**1**
Category	☐ University	☐ College	☒ Department	
Type	☒ Required	☐Elective		
Level	10th	**Prerequisite**	IS 352	

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 .These topics are addressed both within and beyond the organization, with attention paid to managing risk and security within audit and compliance standards. Topics covered include: enterprise and enterprise architecture concepts, enterprise architecture constructs and methodologies, the enterprise architect, architectural frameworks (e.g. TOGAF, ZACHMAN, FEAF, DODAF).

Text Book:

1. M. Lankhorst, Enterprise Architecture at Work. 4th Edition, ISBN-13: 978-3662539323, Springer, 2017
2. S. Bernard, An Introduction To Enterprise Architecture. 3rd Edition, ISBN-13: 978-1477258002, AuthorHouse, 2012

Course Name	System Analysis and Design(II)	Course Code	English	Arabic
			IS 352	نظم 352
Credit Hours	3	Contact Hours	Lec: 2	Lab: 3	Tut: 0
Category	☐ University	☐ College	☒ Department	
Type	☒ Required	☐ Elective		
Level	7th	Prerequisite	IS 251	

Course Description:

The objective of this course is to familiarize students with detail of system analysis and design with Object-Oriented Approach. 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 modeling, system structure modeling, system behavior modeling, user-interface design, classes design, system construction and installation and operation. This course also discusses some advanced topics as enhancing the qualities of design of an information system, which may include: coupling, and cohesion . Students should work as teams on a project to build a real system.

Text Book:

A. Dennis, B. Wixom, Systems Analysis and Design: An Object Oriented Approach with UML. ISBN-13: 978-1118804674, Wiley, 2015

Elective Courses

Course Name	Decision Support Systems	Course Code	English	Arabic
			IS 442	نظم 442
Credit Hours	3	**Contact Hours**	Lec	Lab	Tut
			4	0	0
Category	☐University	☐College	☒Department	
Type	☐ Required	☒ Elective		
Level	11th or 12th Level	**Prerequisite**	Pass 90 Credit Hours	

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.

Text Book:

1. R. Sharda, D. Delen, E. Turban, Business Intelligence and Analytics: Systems for Decision Support. 10th Edition, ISBN-13: 978-0133050905, Pearson, 2014

Course Name	Information System Strategy and Management	Course Code	English	Arabic
			IS 432	432 نظم
Credit Hours	3	**Contact Hours**	Lec: 4	Lab: 0 / Tut: 0
Category	☐ University	☐ College	☒ Department	
Type	☐ Required	☒ Elective		
Level	11th or 12th / 4 year	**Prerequisite**	Pass 90 Credit Hours	

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.

Text Book:

David, Fred R. Strategic management: Concepts and cases. Peaeson/Prentice Hall, 2011.

Course Name	Information Retrieval & Visualization	Course Code	English	Arabic
			IS 426	نظم 426
Credit Hours	3	Contact Hours	Lec: 2	Lab: 3 / Tut: 0
Category	☐ University	☐ College	☒ Department	
Type	☐ Required	☒ Elective		
Level	11th or 12th	Prerequisite	Pass 90 Credit Hours	

Course Description:

This course will introduce the student to the fundamentals of Information storage and retrieval systems. It focuses on the theory and core concepts of information retrieval systems; introduce the basic principles of information representation, storage formats and different processing, and retrieval techniques and query representation. The course also discusses social media and visualization retrieval techniques.

Text Book:

1. Ricardo Baeza-Yates, Berthier Ribeiro-Neto,Modern Information Retrieval: The Concepts and Technology behind Search, 2/E, Addison-Wesley Professional, 2011, ISBN: 9780321416919

Course Name	Enterprise Resource Planning	Course Code	English	Arabic
			IS 472	472 نظم

Credit Hours	3	Contact Hours	Lec	Lab	Tut
			2	3	0

Category	☐ University	☐ College	☒ Department
Type	☐ Required	☒ Elective	

Level	11th or 12th	Prerequisite	Pass 90 Credit Hours

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.

Text Book:

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

Course Name	Geographic Information Systems	Course Code	English	Arabic
			IS 482	482 نظم

Credit Hours	3	Contact Hours	Lec	Lab	Tut
			2	3	0

Category	☐ University	☐ College	☒ Department
Type	☐ Required	☒ Elective	

Level	11th or 12th	Prerequisite	Pass 90 Credit Hours

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.

Text Book:

Paul A. Longley, Mike Goodchild, David J. Maguire, David W. Rhind, Geographic Information Systems and Science, John Wiley & Sons, 2015.

Course Name	Database Administration	Course Code	English		Arabic
			IS 425		نظم 425
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			2	3	0
Category	☐ University	☐ College	☒ Department		
Type	☐ Required	☒ Elective			
Level	11th or 12th level / 4rd Year	Prerequisite	IS 323		

Course Description:

The aim of this course is to introduce students to the basic database management administration concepts and practice on the selected DBMS environment (ORACLE or MS SQL SERVER). This course covers the following topics: Selection of DBMS, Architecture of the chosen DBMS, Installation issues, DB creation, Indexing, Integrity Constraints triggers, DB Backups, Security management, Recovery issues, Performance management and tuning. Other features of the DBMS, Data distribution, fragmentation, and replication issues, Management issues of the DBA activity. This course also covers some aspects of Practical part that not covered in the first database system course such as triggers, functions and stored procedures.

Text Book: The book depends on the type of the used DBMS(ORACLE or SQL SERVER)

1. Carlos Coronel, Steven Morris and Peter Rob, (2013) Database Systems: Design, Implementation, and Management, 9th Edition, Cengage Learning
2. Ramez Elmasri, and Shamkant Navathe, (2016) Fundamentals of Database Systems, 7th edition, Addison-Wesley.
3. Jeffrey A. Hoffer et al, (2013) Modern Database Management, 11th edition, Prentice Hall, Pearson Education Inc
4. Joel Murach and Bryan Syverson, (2012) Murach's SQL Server 2012 for Developers, Mike Murach & Associates Inc

Course Name	Modern Web Design and Development	Course Code	English	Arabic
			IS 407	407 نظم

Credit Hours	3	Contact Hours	Lec	Lab	Tut
			2	3	0

Category	☐ University	☐ College	☒ Department
Type	☐Required	☒Elective	

Level	11th or 12th level / 4th Year	Prerequisite	CIS 428

Course Description:

The course introduces modern concepts and skills to design and develop web applications. Topics covered include responsive and interactive pages (e.g. Bootstrap, jQuery and Angular JS), server-side stacks and packages (e.g. LAMP, WISA, Ruby on Rails, Node.js), and a focus on a selected back end framework. Other topics include modern web development technologies (e.g. state and profile management, Version Control Systems such as GitHub) and modern techniques (e.g. MVC). The course also cover the database access technologies that can be used for data access and manipulation. The course also includes the use RSS and integration of Web Services and APIs in webapps and use of data interchange formats such as XML or JSON.

Text Book:

1. Programming the World Wide Web, Robert W. Sebesta, Pearson/ 8th Edition , 2015.
2. Internet & World Wide Web: How to Program", 5th Edition, 2012, Pearson Education
3. Microsoft Visual Studio 2015Mike Snell, Lars Powers,Sams Unleashed, Third Edition

Course Name	Software Quality and Testing	**Course Code**	English		Arabic
			IS 433		433 نظم
Credit Hours	3	**Contact Hours**	Lec	Lab	Tut
			4	0	0
Category	☐ University	☐ College	☒ Department		
Type	☐ Required	☒ Elective			
Level	11th or 12th	**Prerequisite**	Pass 90 Credit Hours		

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.

Text Book:

- Software Quality Assurance, Testing and Metrics, 2015, Anirban Basu, Prentice-Hall

Course Name	Mathematical Modeling for IS	Course Code	English	Arabic
			IS 441	نظم 441
Credit Hours	3	**Contact Hours**	Lec: 4	Lab: 0 / Tut: 1
Category	☐ University	☐ College	☒ Department	
Type	☐Required	☒Elective		
Level	11th level or 12th level	**Prerequisite**	MTH 281	

Course Description:

This 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.

Text Book:

1. W. Fox, Mathematical Modeling for Business Analytics. 1st Edition, ISBN-13: 978-1138556614, Chapman and Hall/CRC, 2017
2. J. Lawrence, B. Pasternack A., Applied Management Science: Modeling, Spreadsheet Analysis, and Communication for Decision Making, 2nd Edition, ISBN-13: 978-0471391906, Wiley, 2002

Course Name	Knowledge Management	Course Code	English	Arabic
			IS 428	نظم 428
Credit Hours	3	**Contact Hours**	Lec: 4	Lab: 0 / Tut: 1
Category	☐ University	☐ College	☒ Department	
Type	☐ Required	☒ Elective		
Level	11th or 12th / 4 year	**Prerequisite**	Pass 90 Credit Hours	

Course Description:

This course studies the basic concepts of Knowledge Management. It covers the characteristics of Knowledge Management and the practical models used in Knowledge Management. It discusses the methods of collecting, classifying, deploying knowledge to serve the overall goals of the organization.

Text Book:

1.I. Becerra-Fernandez, R. Sabherwal, Knowledge management: Systems and Processes. 2nd Edition, ISBN-13: 978-0765639158, Routledge Taylor and Francis Group, 2015

Course Name	Distributed Information Systems	Course Code	English		Arabic
			IS 484		نظم 484
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			2	3	0
Category	☐ University	☐ College	☒ Department		
Type	☐ Required	☒ Elective			
Level	11th or 12th level	Prerequisite	CNE 463		

Course Description:

This course explains a set of information systems physically distributed over multiple sites, which are connected with some kind of communication network. A system where, applications (cooperative among one another) stay on different elaborative nodes and the information property, unique, is hosted on different elaborative nodes.

Text Book:

1. Andrew S. Tanenbaum. Computer Networks. Prentice-Hall, 5th edition, 2010.
2. Andrew S. Tanenbaum and Maarten Van Steen. Distributed Systems: Principles and Paradigms. Prentice Hall, 2nd edition, October 2006.

Course Name	Fundamentals of Multimedia	Course Code	English	Arabic
			IS 481	481 نظم
Credit Hours	3	**Contact Hours**	Lec: 2	Lab: 3 / Tut: 0
Category	☐ University	☐ College	☒ Department	
Type	☐ Required	☒ Elective		
Level	11th or 12th / 4 year	**Prerequisite**	Pass 90 Credit Hours	

Course Description:

This course covers aspects related the Multimedia Information System. It covers 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.

Text Book:

1. Fundamentals of Multimedia by Li Ze-Nian , By (author) Mark S. Drew , By (author) Jiangchuan Liu, Springer International Publishing AG , 2014.
2. Digital Multimedia 2009 Nigel Chapman and Jenny Chapman ,John Wiley & Sons, Ltd..

Course Name	Intelligent Systems	Course Code	English		Arabic
			IS 483		483 نظم
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			4	0	1
Category	☐ University	☐ College	☒ Department		
Type	☐ Required	☒ Elective			
Level	11th or 12th	Prerequisite	Pass 90 Credit Hours		

Course Description:

This course aims to equip students with the required skills to be able to access information and be able to use it efficiently through using intelligent systems that lead to success and economic superiority. The goals of this course are two-fold. First, as its name indicates, one of the purposes is for the student to explore the idea of intelligent systems in some depth. In this course, we will define intelligence as "the capacity to acquire and apply knowledge" thus intelligent systems are those which modify their actions based on prior interactions. The student will study the techniques and concepts common to this sub-discipline of AI by constructing a non-trivial intelligent system. The second goal of the course is to provide a capstone experience to the student undergraduate information systems curriculum. To this end, the course provides an opportunity for the student, as a part of a software development team in a studio format in conjunction with his instructor, to construct a large software system. The project will require the student to implement working software, produce a number of supporting documents, and present his results to the department community.

Text Book:

1. A. Meystel, J. Albus, Intelligent Systems: Architecture, Design, and Control. 1st Edition, ISBN-13: 978-8126556243, Wiley India, 2015

Course Name	Cloud Computing Solutions and Applications	Course Code	English	Arabic
			IS 485	485 نظم
Credit Hours	3	Contact Hours	Lec: 2	Lab: 3	Tut: 0
Category	☐ University	☐ College	☒ Department	
Type	☐ Required	☒ Elective		
Level	11th or 12th / 4 year	Prerequisite	Pass 90 Credit Hours	

Course Description:

This course provides a hands-on comprehensive study of Cloud concepts and capabilities across the various Cloud service models including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS), and Business Process as a Service (BPaaS). IaaS topics start with a detailed study the evolution of infrastructure migration approaches from VMWare/Xen/KVM virtualization, to adaptive virtualization, and Cloud Computing / on-demand resources provisioning. Mainstream Cloud infrastructure services and related vendor solutions are also covered in detail. PaaS topics cover a broad range of Cloud vendor platforms including AWS, Google App Engine, Microsoft Azure, Eucalyptus, OpenStack and others as well as a detailed study of related platform services such as storage services that leverage Google Storage, Amazon S3, Amazon Dynamo, or other services meant to provide Cloud resources management and monitoring capabilities.

Text Book:

1. Cloud Computing--Web Based Applications That Change the Way You Work and Collaborate, Que Publishing, 2008.

Course Name	Fundamentals of Big Data	Course Code	English	Arabic
			IS 427	نظم 427
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			2	3	0
Category	☐ University	☐ College	☒ Department	
Type	☐ Required	☒ Elective		
Level	7th or 8th	Prerequisite	Pass 90 Credit Hours	

Course Description:

The course covers Big Data Fundamentals, including the characteristics of Big Data, the sources Big Data (such as social media, sensor data, and geospatial data), as well as the challenges imposed around information management, data analytics, privacy and security, as well as platforms and architectures. Emphasis will be given to non-relational databases by examining techniques for storing and processing large volumes of structured and unstructured data as well as streaming data.

Text Book:

1. Big Data: Related Technologies, Challenges and Future Prospects, Chen, M., Mao, S., Zhang, Y., Leung, V.C, Springer, 2014.

Course Name	Health Information Management	Course Code	English	Arabic
			IS 486	نظم 486
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			4	0	0
Category	☐ University	☐ College	☒ Department		
Type	☐ Required	☒ Elective			
Level	11th or 12th	Prerequisite	Pass 90 Credit Hours		

Course Description:

This course introduces modern information systems for medical data in a clinical environment. It seeks to apply information and computing technologies to improve some aspects of healthcare, including patient care, research and education. Topics covered include: the nature of biomedical information and terminologies, clinical configuration, user interface design, the electronic medical records, the role of information and computing technologies to support clinical decision making, system analysis and technology assessment, and crucial issues of informatics in medical ethics, medical device integration, and community health information exchange.

Text Book:

1. Health Informatics: Practical Guide For Healthcare And Information Technology Professionals (Fifth Edition) (Hoyt, Medical informatics) 5th Edition, ISBN-13: 978-1105437557, lulu.com, 2012

Course Name	IT Auditing and Control	Course Code	English	Arabic
			IS 462	نظم 462
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			4	0	0
Category	☐ University	☐ College	☒ Department		
Type	☐ Required	☒ Elective			
Level	11th	Prerequisite	Pass 90 Credit Hours		

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.

Text Book:

1. Moeller, Robert R. "IT audit, control, and security". Vol. 13. John Wiley & Sons, 2010.
2. Senft, Sandra, and Frederick Gallegos." Information technology control and audit". CRC Press, 2008

Course Name	E-Government Concepts	Course Code	English	Arabic
			IS 408	408 نظم
Credit Hours	3	Contact Hours	Lec	Lab	Tut
			4	0	0
Category	☐ University	☐ College	☒ Department	
Type	☐ Required	☒ Elective		
Level	11th or 12th	Prerequisite	CIS 428	

Course Description:

This course introduces the ways in which internet technologies are affecting how people interact with government, and how governments, in turn, are using and managing these technologies to better provide information and services to the public. It also emphasizes the benefits of adopting IT in e-government for all stockholders. It introduces the technology of e-government with an in-depth examination of current government development models and management challenges in the delivery of services and information, electronically. Furthermore, it will explore the skills and concepts needed to effectively manage e-government projects. Lastly, some successful practices of e-government projects will be addressed to emphasize the importance of implementing e-government.

Text Book:

1. S. Bhatnagar, Unlocking e-government potential: Concepts, Cases and Practical Insights. 1st Edition, ISBN-13: 978-8178299280, SAGE Publications, 2009

Course Description

FOUNDATIONS OF INFORMATION SYSTEMS (IS 211)

This course provides students with an overall understanding of the main concepts of information systems and highlights 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.

SYSTEMS ANALYSIS AND DESIGN I (IS 251)

Students survey and apply techniques in analyzing and modeling information systems. Requirements are derived in various domains and abstracted at conceptual, logical, and physical levels. Process, data, and state modeling are applied through a project that follows a systems development lifecycle. Object modeling is explored and contrasted. A user centered design approach is adopted.

DATABASE MANAGEMENT SYSTEMS (IS 323)

This course provides students with the theoretical background and practical experience relating to the database Management systems. The following items will be covered DBMS architecture, transaction management, query processing and optimization, 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. Management issues of the DBA activity.

SYSTEMS ANALYSIS AND DESIGN II (IS 352)

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 modeling, system structure modeling, system behavior modeling, system architecture design, user-interface design, classes design, system documentation, testing, installation and conversion. This course also discusses some advanced topics as enhancing the qualities of design of an information system, which may include: coupling, and cohesion. In addition to how to evaluate an existing IS. Students should work as teams on a project to build a real system.

E-BUSUINESS (IS 406)

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.

MODERN WEB DESIGN AND DEVELOPMENT (IS 407)

The course introduces modern concepts and skills to design and develop web applications. Topics covered include responsive and interactive pages (e.g. Bootstrap, jQuery and Angular JS), server-side stacks and packages (e.g. LAMP, WISA, Ruby on Rails, Node.js), and a focus on a selected back end framework. Other topics include modern web development technologies (e.g. state and profile management, Version Control Systems such as GitHub) and modern techniques (e.g. MVC). The course also covers the database access technologies that can be used for data access and manipulation. The course also includes the use RSS and integration of Web Services and APIs in webapps and use of data interchange formats such as XML or JSON.

E-GOVERNMENT CONCEPTS (IS 408)

This course introduces the ways in which internet technologies are affecting how people interact with government, and how governments, in turn, are using and managing these technologies to better provide information and services to the public. It also emphasizes the benefits of adopting IT in e-government for all stockholders. It introduces the technology of e-government with an in-depth examination of current government development models and management challenges in the delivery of services and information, electronically. Furthermore, it will explore the skills and concepts needed to effectively manage e-government projects. Lastly, some successful practices of e-government projects will be addressed to emphasize the importance of implementing e-government.

DATA WAREHOUSING AND MINING (IS 424)

This course defines the basic concepts in data mining and warehousing. For data warehousing, it presents data preprocessing techniques for cleaning, integration, reduction and transformation of data. It describes the design techniques of a data warehouse schema using fact and dimension tables and also the OLAP operations on a data cube. For data mining, this course defines the basic concepts in frequent pattern analysis, in classification and prediction and finally in clustering.

DATABASE ADMINISTRATION (IS 425)

The aim of this course is to introduce students to the basic database management administration concepts and practice on the selected DBMS environment (ORACLE or MS SQL SERVER). This course covers the following topics: Selection of DBMS, Architecture of the chosen DBMS, Installation issues, DB creation, Indexing, Integrity Constraints triggers, DB Backups, Security management, Recovery issues, Performance management and tuning. Other features of the DBMS, Data distribution, fragmentation, and replication issues, Management issues of the DBA activity. This course also covers some aspects of Practical part that not covered in the first database system course such as triggers, functions and stored procedures.

INFORMATION RETRIEVAL AND VISUALIZATION (IS 426)

This course will introduce the student to the fundamentals of Information storage and retrieval systems. It focuses on the theory and core concepts of information retrieval systems; introduce the basic principles of information representation, storage formats and different processing, and retrieval techniques and query representation. The course also discusses social media and visualization retrieval techniques.

FUNDAMENTALS OF BIG DATA (IS 427)

The course covers Big Data Fundamentals, including the characteristics of Big Data, the sources Big Data (such as social media, sensor data, and geospatial data), as well as the challenges imposed around information management, data analytics, privacy and security, as well as platforms and architectures. Emphasis will be given to non-relational databases by examining techniques for storing and processing large volumes of structured and unstructured data as well as streaming data.

KNOWLEDGE MANAGEMENT (IS 428)

This course studies the basic concepts of Knowledge Management. It covers the characteristics of Knowledge Management and the practical models used in Knowledge Management. It discusses the methods of collecting, classifying, deploying knowledge to serve the overall goals of the organization.

INFORMATION SYSTEMS STRATEGY AND MANAGEMENT (IS 432)

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.

SOFTWARE QUALITY AND TESTING (IS 433)

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.

MATHEMATICAL MODELING FOR IS (IS 441)

This 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.

DECISION SUPPORT SYSTEMS (IS 442)

This course covers the various frameworks for decision support systems techniques, the elements and techniques of the basic components of decision support systems, and the scientific simulator models based on decision support multiple examples.

INFORMATION SECURITY (IS 461)

Information Security needs to ensure the confidentiality, integrity, and availability of information. This course introduces students the principles of network and operating system security through hands-on exploration. Students learn how to harden an operating system as well as secure the network by implementing technologies such as firewalls, Virtual Private Networks (VPN), and Intrusion Detection Systems (IDS)

INFORMATION TECHNOLOGY AUDIT AND CONTROLS (IS 462)

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.

ENTERPRISE ARCHITECTURE (IS 471)

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. Topics covered include: enterprise and enterprise architecture concepts, enterprise architecture constructs and methodologies, the enterprise architect, architectural frameworks (e.g. TOGAF, ZACHMAN, FEAF, DODAF).

ENTERPRISE RESOURCE PLANNING (IS 472)

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

FUNDAMENTALS OF MULTIMEDIA (IS 481)

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, and Extensive practices from multimedia capturing, processing, transmitting, content representing to retrieval.

GEOGRAPHIC INFORMATION SYSTEM (IS 482)

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.

INTELLIGENT SYSTEMS (IS 483)

This course aims to equip students with the required skills to be able to access information and be able to use it efficiently through using intelligent systems that lead to success and economic superiority.

The goals of this course are two-fold. First, as its name indicates, one of the purposes is for the student to explore the idea of intelligent systems in some depth. In this course, we will define intelligence as "the capacity to acquire and apply knowledge" thus intelligent systems are those which modify their actions based on prior interactions. The student will study the techniques and concepts common to this sub-discipline of AI by constructing a non-trivial intelligent system. The second goal of the course is to provide a capstone experience to the student undergraduate information systems curriculum. To this end, the course provides an opportunity for the student, as a part of a software development team in a studio format in conjunction with his instructor, to construct a large software system. The project will require the student to implement working software, produce a number of supporting documents, and present his results to the Program community.

DISTRIBUTED INFORMATION SYSTEMS (IS 484)

This course explains a set of information systems physically distributed over multiple sites, which are connected with some kind of communication network. A system where, applications (cooperative among one another) stay on different elaborative nodes and the information property, unique, is hosted on different elaborative nodes.

CLOUD COMPUTING SOLUTIONS AND APPLICATIONS (IS 485)

This course provides a hands-on comprehensive study of Cloud concepts and capabilities across the various Cloud service models including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS), and Business Process as a Service (BPaaS). IaaS topics start with a detailed study the evolution of infrastructure migration approaches from VMWare/Xen/KVM virtualization, to

adaptive virtualization, and Cloud Computing / on-demand resources provisioning. Mainstream Cloud infrastructure services and related vendor solutions are also covered in detail.

HEALTH INFORMATION MANAGEMENT (IS 486)

This course introduces modern information systems for medical data in a clinical environment. It seeks to apply information and computing technologies to improve some aspects of healthcare, including patient care, research and education. Topics covered include: the nature of biomedical information and terminologies, clinical configuration, user interface design, the electronic medical records, the role of information and computing technologies to support clinical decision making, system analysis and technology assessment, and crucial issues of informatics in medical ethics, medical device integration, and community health information exchange.

GRADUATION PROJECT I (IS 492)

This course is the first part of a sequence of two courses that constitute the BSc graduation capstone project. In this part, the student is expected to propose, analyze, 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.

GRADUATION PROJECT II (IS 493)

This course is the second part of a sequence of two courses that constitute 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 implement the design and produce an executable system. He will also deliver oral presentations, progress reports, and a final report.

SELECTED TOPICS IN INFORMATION SYSTEMS (IS 494)

From time to time, new advanced courses will be designed and offered according to the interests of the college, industry and the students to explore those areas of information systems that are not part of the core of the curriculum. The intention is to provide a rapid response to current trends, with topic and content changing with each offering.

Laws and regulations

The regulations for study, tests, and implementing rules in force in the Program of Information Systems are the same as the regulations for study, tests and implementation rules in force at Jouf University. The student can view the details of these regulations through the portal of the Deanship of Admission and Registration by entering the following link:

http://dar.ju.edu.sa/forms/list_laws.pdf

Program Study Requirements

To obtain a bachelor's degree, the student must pass 135 academic hours divided as follows:

- University requirements (31 study units), which are the study units required of most students at Jouf University in various colleges.
- The requirements of the College of Computer and Information Sciences (43 study units) which are the academic units required of most college students.
- The specialization requirements of the Program are 61 (study units), including 5 study units dedicated to the graduation project, to be completed by a student under the supervision of a faculty member.

Courses Distribution of Information Systems Program

Required by	Category	Course Details	Number of courses	Credit hours	Sub-total Credit-hours
متطلبات الجامعة Credit-hours:31	**Islamic**	Fundamentals of Islamic Culture, Professional Ethics. **Two courses from** **A.** Studies in the Biography of the Prophet or **B.** Contemporary Issues or **C.** The Role of Women in Development	**4**	**8**	**31**
	General Education	Arabic Language Skills, Writing Skills, English 1, English 2, Computer Skills, University Life Skills.	**6**	**21**	
	Electives	Volunteer Work or Entrepreneurship	**1**	**2**	
متطلبات الكلية Credit-hours:43	**Basic Science (5 courses)**	Introductory Mathematics, Differential Calculus, Integral Calculus, Probability and Statistics, Chemistry	**5**	**15**	**43**
	Computer Science (8 courses)	Problem Solving and Programming, Programming 1, Programming 2 , Discrete Mathematics, Data Structures, Operating Systems, Concepts of Database systems, Software Project Management	**8**	**28**	
متطلبات القسم Credit-hours: 61	**IS Environment Elective Courses**	Organizational behavior, Principles of Financial Management, Human Resource Management , Health Information Management, E-Government Concepts	**2**	**6**	**61**
	Training	Field Training	**1**	**1**	
	Information Systems required courses	Foundations of Information Systems Systems Analysis and Design(I) Systems Analysis and Design(II) Database Management Systems Programming on the web Computer Networks Enterprise Architecture Data warehousing and Mining. E-business Information Security	**10**	**31**	
	Electives	IS Concentration Elective 1,2,3	**3**	**9**	
	Graduation Project	Graduation project (1), Graduation project (2)	**2**	**5**	
Total			**45 course**		**135 Hours**

Compulsory university requirements (29 Hours)

SN	Course Code	Course Number	Course Name	Hours				Prior requirements
				Theoretical	Practical	Training / Exercises	Accredited	
1.	ENGL	001	English language (1)	5	5	10	6	
2.	ENGL	002	English language (2)	5	5	10	6	ENGL 001
3.	EDU	101	University Life Skills	2	0	0	2	
4.	CIS	101	Computer skills	2	2	0	3	
5.	ARB	100	Arabic Language Skills	2	0	0	2	
6.	ARB	102	Editing Skills	2	0	0	2	ARB 100
7.	ISL	101	Fundamentals of Islamic Culture	2	0	0	2	
8.	ISL	107	Professional Ethics	2	0	0	2	
The student select two courses from Those Three Islamic courses								
9.	ISL	100	Studies in the Biography of the Prophet	2	0	0	2	--------
10.	ISL	108	Contemporary Issues	2	0	0	2	--------
11.	ISL	109	The Role of Women in Development	2	0	0	2	--------

Elective University Requirements (2 Hours)

SN	Course Code	Course Number	Course Name	Hours				Prior requirements
				Theoretical	Practical	Training / Exercises	Accredited	
1.	BUS	101	Entrepreneurship	2	0	0	2	-------
2.	EDU	102	volunteer work	2	0	0	2	-------

College requirements (43Hours)

SN	Course Code	Course Number	Course Name	Hours				Prior requirements
				Theoretical	Practical	Training / Exercises	Accredited	
1	CHM	101	Chemistry	2	0	2	3	---
2	MTH	101	Introductory Mathematics	2	0	2	3	------
3	MTH	102	Differential Calculus	2	0	2	3	MTH 101
4	MTH	203	Integral Calculus	2	0	2	3	MTH 102
5	MTH	281	Statistics and Probabilities	2	0	2	3	MTH 203
6	CIS	211	Discrete Mathematics	3	0	1	3	MTH 102
7	CIS	102	Problem Solving and Programming	2	2	0	3	CIS 101
8	CIS	203	Computer Programing 1	3	2	0	4	CIS102
9	CIS	204	Computer Programming 2	3	2	0	4	CIS 203
10	CIS	205	Data Structures	3	2	0	4	CIS 203
11	CIS	342	Operating Systems	3	0	1	3	CIS 205
12	CIS	322	Concepts of Database Systems	3	2	0	4	CIS 205
13	CIS	323	Software Project Management	3	0	1	3	CIS 322

Mandatory Program Requirements (46 Hours)

SN	Course Code	Course Number	Course Name	Hours				Prior requirements
				Theoretical	Practical	Training / Exercises	Accredited	
1	IS	211	Foundations of Information Systems	3	0	0	3	-----
2	IS	251	Systems Analysis and Design(I)	3	0	1	3	IS 211
3	IS	352	Systems Analysis and Design(II)	2	2	0	3	IS 251
4	CIS	428	Programming on the web	2	2	0	3	CIS 204, CIS 322
5	IS	323	Database Management systems	3	0	0	3	CIS 322
6	IS	471	Enterprise Architecture	3	0	1	3	IS 352
7	IS	406	E-Business	3	0	0	3	CIS 428
8	CNE	463	Computer Networks	3	0	1	3	CIS 342
9	IS	424	Data warehousing and Mining	3	2	0	4	IS 323, MTH 281
10	IS	461	Information Security	2	2	0	3	CNE 463
11	IS	391	Field Training				1	Pass 90 Hours
12	IS	492	Graduation Project (1)	2	0	0	2	IS 352 , CIS 323
13	IS	493	Graduation Project (2)	3	0	0	3	IS 492
14	BUS	111	Principles of Business Administration	3	0	0	3	----
15	ACCT	111	Principles of Accounting and Financial Reporting	3	0	0	3	-----
16	BUS	231	Principles of Marketing	3	0	0	3	BUS 111

Program elective courses (15) hours

Students should choose five courses from among them as follows:

- **Three courses must be chosen from the elective courses in information systems (List 1)**

- **Two elective courses must be selected from the information systems environment (List 2)**

(9 hours) IS Elective Courses : List 1

SN	Course Code	Course Number	Course Name	Hours				Prior requirements
				Theoretical	Practical	Training / Exercises	Accredited	
1	CIS	424	Mobile applications design and development	2	2	0	3	CIS 204,CIS 322
2	IS	442	Decision Support Systems	3	0	0	3	Pass 90 Credit Hours
3	IS	407	Modern web design and development	2	2	0	3	CIS 428
4	IS	481	Fundamentals of Multimedia	2	2	0	3	Pass 90 Credit Hours
5	IS	482	Geographic information system	2	2	0	3	Pass 90 Credit Hours
6	IS	426	Information Retrieval & Visualization	2	2	0	3	Pass 90 Credit Hours
7	IS	472	Enterprise Resources Planning	2	2	0	3	Pass 90 Credit Hours
8	IS	462	IT auditing and control	3	0	0	3	Pass 90 Credit Hours
9	IS	432	Information systems strategies and management	3	0	0	3	Pass 90 Credit Hours
10	IS	433	Software Quality and testing	3	0	0	3	Pass 90 Credit Hours
11	CIS	466	Human Computer Interaction	3	0	1	3	Pass 90 Credit Hours
12	IS	441	Mathematical Modeling for IS	3	0	1	3	MTH 281
13	IS	493	Selected topics in Information systems	3	-	-	3	Pass 90 Credit Hours
14	IS	483	Intelligent systems	3	0	1	3	Pass 90 Credit Hours
15	IS	428	Knowledge Management	3	0	1	3	Pass 90 Credit Hours
16	IS	484	Distributed Information systems	2	2	0	3	CNE 463
17	IS	425	Database Administration	2	2	0	3	IS 323
18	IS	427	Fundamentals of Big Data	2	2	0	3	Pass 90 Credit Hours
19	IS	485	Cloud computing solutions and applications	2	2	0	3	Pass 90 Credit Hours

(9 hours) IS Environment Elective Courses ：List 2

SN	Course Code	Course Number	Course Name	Hours				Prior requirements
				Theoretical	Practical	Training / Exercises	Accredited	
1	BUS	461	Principles of Economic	3	0	0	3	----------
2	BUS	241	Principles of Financial Management	3	0	0	3	BUS 111
3	BUS	211	Human Resource Management	3	0	0	3	BUS 111
4	IS	486	Health Information Management	3	0	0	3	Pass 90 Credit Hours
5	IS	408	E- Government Concepts	3	0	0	3	CIS 428

Program Students Activities

Student activities aim to advance the cultural, sports, social and scientific activity of students to achieve the following goals:

1. Preparing the university student properly from the intellectual, physical and social aspects.
2. Raise the university student's ability to read and comprehend and open up horizons of knowledge before him.
3. Refining students' talents and developing their abilities.
4. Work to help the university student adapt to the group.
5. Spreading sports awareness, sports culture and health education among university students.
6. Contribute to building an integrated university student personality and work to prepare him to take responsibility.
7. Connecting students to their community and affirming their belonging to their country and nation.

Research and Projects

The student must submit a graduation project that consists of two courses, which is a prerequisite for the student's graduation, through which he sets a summary of the sciences and skills he acquired during his studies and also develops his skills in the field of information systems and also in the working life after graduation.

A general guide for graduation projects has been prepared by the Projects Committee of the College of Computer and Information Sciences as a guide for the student in everything related to the graduation project decisions, which includes the following:

1. **General conditions for the graduation project.**
2. **Dates for discussing graduation projects.**
3. **The basic elements of the project.**
4. **Specifications and report format.**
5. **Success, failure and delay.**
6. **Methods for discussing projects.**
7. **Project evaluation methods.**

Program Handbook