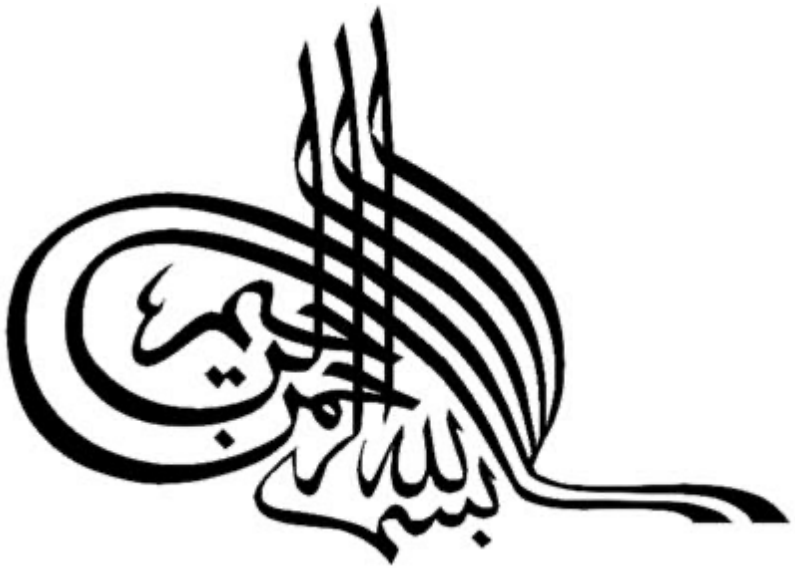
INFORMATION SYSTEMS PROGRAM BOOKLET

Information Systems Department

2022-2023


بسم الله الرحمن الرحيم

Chairman's Message

The Department of Information Systems at the College of Computer Engineering and Sciences is considered a pioneering department in the field of informatics. The Department of Information Systems obtained ABET academic accreditation and works diligently to obtain the best practices in the quality of education. The Information Systems Department also received an award from the American company DELL in the field of one of the most important professional certificates. Nevertheless, the department is taking confident steps to raise the efficiency of the graduate to facilitate seizing job opportunities in the Kingdom of Saudi Arabia. The department includes a selection of faculty members in various disciplines, which contribute to refining the students' scientific and personal talents.

With the continuous development in the field of technology, the department is also seeking to open a new program in the field of data science, which will be a new impetus for further development.

The Bachelor of Information Systems program offers 140 credit hours over twelve semesters after retting back from quarter system to the two-semester system. The Department of Information Systems also has a master's program in data science, which is considered the nucleus of the graduate studies program, looking forward to graduating cadres with scientific and practical excellence, bearing in mind the Kingdom's vision 2023.

Dr. Abdulrahman Alabduljabbar
Chairman of the Information Systems Department

Information Systems Department

The College of Computer Engineering and Sciences at Al-Kharj was established, under Royal Decree No. 8626/B dated 27/09/1428 H, and appended to King Saud University at that time. The study began in the college at the beginning of the academic year 1429/1430 H. In the middle of the 1st semester of the academic year 1430/1431 H a Royal Decree was issued to transfer all colleges in the provinces south of Riyadh city to independent university under the name of Al-Kharj University, and thus became the College of Computer Engineering and Sciences among the colleges of Al-Kharj University, and in 1433 H a Royal Decree was issued for amending its name to "Salman bin Abdulaziz University". Since the beginning of 1436H, its name has become Prince Sattam bin Abdulaziz University (PSAU). Since its establishment, the college experienced a major development in the number of students, alumni, faculties, staff, and reflected this development on all aspects of the college and its facilities in terms of the quality of teaching and application of quality standards.

Department Vision

The Information System department's vision is to focus on producing individuals, both staff and students, who can contribute academically to the global and scientific body of knowledge, as well as serve the local and regional communities.

Program Mission

Information Systems Program provides educational excellence for students and society, innovative research, and the ability to participate in building and developing the community and knowledge.

Program Vision

To be a distinct program at the regional level in the field of information system.

Program Educational Objectives

PEO1: Contribute significantly as technical contributors and lead in practicing their profession in industry, academics, or government institutions both individually and as team members.

PEO2: Research and discover new knowledge and methods in Information Systems to solve organizational and community problems as well as to create new opportunities.

PEO3: Have capabilities and self-motivations for lifelong learning to enhance their professional career or pursue further studies.

Student Outcomes

The program must enable students to attain, by the time of graduation:

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3. Communicate effectively in a variety of professional contexts.
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
6. Support the delivery, use, and management of information systems within an information systems environment.

Degree Awarded:

The Department awards a Bachelor of Science (B. Sc.) Degree in Information Systems.

Curriculum of the Bachelor of Science (B. Sc.) in Information Systems

The curriculum for the Bachelor of Science (B.Sc.) Degree in Information Systems consists of 140 credit hours distributed over a period of 8 levels. The program is focused successive levels of classes in order to better understand the constituent areas of knowledge among students in each level. The credits cover core courses in information systems domains environment, elective courses in advanced topics, field training and graduation projects.

Requirements of the Study Plan:

To pursue a B.Sc. in Information Systems, students are required to complete 195 credit hours distributed as follow:

No.	Category	Credit Hours	Percentage
1	Preparatory Year Requirements	31	22%
2	University Requirements	8	5%
3	College Requirements	16	11%
4	IS Department Requirements	79	56%
5	IS Department Electives	6	4%
Total		**140**	**100%**

Description of the Study Plan:

1. Preparatory Year Requirements (?? C.H.):

A student can be registered with the College of Engineering and Computer Science after successfully completing Preparatory Year Requirements of 31 credit hours in two levels (level 1 and Level 2) as preparatory year.

Level One:

Course NO.		Course Title	Pre- requisite	Co-requisite	C.H.	Distribution		
Code	NO.					L	T	LB
ENGL	1210	Reading Skills	--------	--------	3	3	3	0
ENGL	1220	Writing Skills	--------	--------	3	3	3	0
MATH	1050	Differential Calculus	--------	--------	3	3	2	0
IC	101	Introduction to Islamic Culture	--------	--------	2	2	0	0
PHYS	1010	General Physics (I)	--------	--------	4	3	1	1
Total					**15**	**14**	**9**	**1**

Level Two:

Course NO.		Course Title	Pre- requisite	Co-requisite	C.H.	Distribution		
Code	NO.					L	T	LB
MATH	1060	Integral Calculus	MATH 1050	--------	3	3	2	0
ARAB	101	Language Skills	--------	--------	2	2	0	0
ENGL	1230	Listening/Speaking Skills	--------	--------	3	3	3	0
CT	1400	Computer Skills	--------	--------	3	2	0	1
MC	1400	Communication Skills	----------	----------	2	2	0	0

ENGL	1604	English for Technical Purposes	----------	----------	3	3	3	0
Total					**16**	**15**	**8**	**1**

Level Three:

Course NO.		**Course Title**	**Pre- requisite**	**Co-requisite**	**C.H.**	**Distribution**		
Code	**NO.**					**L**	**T**	**LB**
CE	1111	Logic Design	--------	--------	3	3	0	1
IC	102	The Islam and Society Building	--------	--------	2	2	0	0
CS	1112	Discrete Mathematics	--------	--------	4	4	0	0
CS	1301	Computer Programming (1)	--------	--------	4	3	2	0
MATH	2202	Linear Algebra for Computer Students	---------	---------	3	3	1	0
Total					**16**	**15**	**3**	**1**

Level Four:

Course NO.		**Course Title**	**Pre- requisite**	**Co-requisite**	**C.H.**	**Distribution**		
Code	**NO.**					**L**	**T**	**LB**
ARAB	103	Arabic Editing	--------	--------	2	2	0	0
STAT	1050	Probability and Statistics for Computer Students	--------	--------	3	3	1	0
IS	2121	Fundamentals of Information Systems	--------	--------	3	3	0	0
CS	2301	Computer Programming (2)	CS 1301	--------	4	3	2	0
IS	2511	Fundamentals of Database Systems	----------	----------	3	2	2	0
CE	3761	Computer Network Systems	----------	----------	3	3	0	0
Total					**18**	**16**	**5**	**0**

Fifth Level:

Course NO.		Course Title	Pre- requisite	Co-requisite	C.H.	Distribution		
Code	NO.					L	T	LB
IS	2010	Introduction to Business	--------	--------	2	2	0	0
CS	2321	Algorithms and Data Structures	CS 1301	--------	3	3	0	0
IS	3311	Quantitative Analysis	STAT 1050	--------	3	2	1	0
IC	103	The Foundation of the Economics System in Islam	--------	--------	2	2	0	0
IS	3511	Database Management Systems	IS 2511		4	2	2	0
IS	3611	System Analysis and Design	IS 2121		4	2	2	0
Total					**18**	**13**	**5**	**0**

Sixth Level:

Course NO.		Course Title	Pre- requisite	Co-requisite	C.H.	Distribution		
Code	NO.					L	T	LB
ACCT	103	Principle of Financial Accounting	--------	--------	3	3	0	0
IS	3641	IS Project Management	--------	--------	4	2	2	0
CS	3701	Operating Systems	CS 2321	--------	3	3	0	0
IS	4811	Data Science Basics	--------	--------	4	2	2	0
IS	4904	Web and Mobile Development	----------	----------	4	2	2	0
Total					**18**	**12**	**6**	**0**

Between Levels sixth and Seventh: Training Field

Course NO.		Course Title	Pre- requisite	Co-requisite	C.H.	Distribution		
Code	NO.					L	T	LB
IS	4901	Field Training	----------	----------	3	0	0	3
Total					**3**	**0**	**0**	**3**

Seventh Level:

Course NO.		Course Title	Pre- requisite	Co-requisite	C.H.	Distribution		
Code	NO.					L	T	LB
IS	3401	Supply Chain Management	IS 2010	--------	3	3	0	0
IS	4201	Enterprise Resource Planning Systems	IS 2121	--------	3	3	0	0
IS	4571	Data Mining	IS 2511	--------	4	2	2	0
IS	xxxx	Elective Course	--------	--------	3	3	0	0
ISLM	106	Prophetic Biography	---------	----------	2	2	0	0
IS	4911	Graduation Project (I)	----------	----------	3	3	0	0
Total					**18**	**16**	**2**	**0**

Eighth Level:

Course NO.		Course Title	Pre- requisite	Co-requisite	C.H.	Distribution		
Code	NO.					L	T	LB
CS	3801	Fundamentals of Cyber Security	--------	--------	3	3	0	0
IS	4241	Digital Business	--------	--------	3	3	0	0
IS	4601	IS Strategy and Management	IS 3611	--------	3	3	0	0

IS	4905	IS Ethics and Sustainability	--------	--------	3	3	0	0
IS	4921	Graduation Project (II)	IS 4911	--------	3	0	0	3
IS	xxxx	Elective Course	-------	--------	3	3	0	0
Total					**18**	**15**	**0**	**3**

2. IS Department Electives

In IS 2010 ACM stated that "curriculum is structured so that it separates the core of the curriculum from electives with the intent of supporting the concept of career tracks. This can be done by offering a curriculum that does not specify a single career objective but will provide numerous career tracks. These career tracks will integrate a combination of the core courses and some set of career track electives. Career tracks, obviously, can be associated with one or several domains". While ABET declared that "The curriculum must combine technical and professional requirements with general education requirements and electives". A career in Information systems is so varied because the technology is fast-moving and continually changing hence the job names and descriptions. One promising career path (e-business) where jobs are expected to grow in Saudi Arabia was selected. Students can choose 2 courses from any combination of e-business career paths; however, we advise students to take 2 courses from this career path.

The following table describes the IS Department Elective courses:

Course NO.		Course Title	Pre- requisite	Co-requisite	C.H.	Distribution		
Code	NO.					L	T	LB
SE	1010	Emerging Digital Technologies	--------	--------	2	2	0	0
IS	2011	Principle of Marketing	--------	--------	3	3	0	0
CS	3101	Seminar in Undergraduate Advanced Research	--------	--------	2	2	0	0

IS	3101	Enterprise Architecture	IS 2121	--------	3	3	0	0
IS	4211	Knowledge Based Systems	IS 2121	--------	3	2	2	0
IS	4221	Knowledge Management	IS 2121	--------	3	2	2	0
IS	4251	Decision Support Systems	IS 3401	-------	3	2	2	0
IS	4501	Introduction to Data Center	--------	----------	3	3	0	0
IS	4511	Database Administration	IS 3511	------	3	2	2	0
IS	4591	Data Warehouse	IS 3511	---------	3	2	2	0
IS	4631	IT Audit and Controls	----------	---------	3	3	0	0
IS	4701	Business Process Management	----------	---------	3	3	0	0
IS	4711	Innovation and Entrepreneurship in IS	IS 2121	---------	3	3	0	0
IS	4731	IoT Application and Systems	---------	---------	3	2	2	0
IS	4801	Health Informatics	---------	---------	3	2	2	0
CS	4881	Computer Forensics and Investigations	CS 3801	---------	3	2	0	1
CS	4891	Disaster Recovery Planning	CS 3801	---------	3	3	0	0
IS	4981	Special Topics in Information Systems	----------	---------	4	2	2	0
Total					**53**	**43**	**16**	**1**

Courses Description:

IS 2121 Foundations of Information Systems
This course aims to introduce the basic concepts of Information systems and Information technology that are necessary to improve overall quality of organizations to achieve their goals. Advanced topics will be covered in the course such as IS career path, ethical issues, and responsibilities of IS practitioner.

IS 3101 Enterprise Architecture
Enterprise architecture principles and purpose; modeling approaches for enterprise architecture definition and communication; key enterprise architecture approaches, standards, and frameworks; best practice processes of development of enterprise architecture, including key success factors; analysis of alternative models for enterprise architectures components of enterprise architecture processes and the implications of inadequate implementation; best practice approaches and models for documenting enterprise architectures; appropriate interaction with stakeholders when developing and communicating enterprise architectures; team formulation, dynamics & diagnostics.

IS 3311 Quantitative Analysis
The main purpose of this course is to introduce the main concepts of quantitative analysis models. The course covered topics related to decision making models under uncertainty and risk environment, decision trees, inventory models, linear programming, network planning models, transportation models, waiting for lines, and simulation.

IS 2511 Fundamentals of Database Systems
This course aims to introduce the basic concepts of databases and database management systems (DBMS). Special attention is given to the theoretical part lies behind relational database design, where both conceptual and relational models are explained. The course introduces Structured Query Language (SQL) as a programming language for DBMS. Optimizing Queries is also explained in the course.

IS 3611 Systems Analysis and Design

This course aims to introduce the concepts and theory behind the analysis and design activities of large-scale Business. Different methods for system analysis and design will be introduced to students. Students will carry out small projects to utilize the concepts of system development life cycle. The students will be able to use specific tools that help in carrying out system analysis and design.

IS 3641 IS Projects Management

This course discusses the processes, 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 project management in the modern organization is a complex team-based activity, where various types of technologies (including project management software as well as software to support group collaboration) are an inherent part of the project management process. This course also acknowledges that project management involves both the use of resources from within the firm, as well as contracted from outside the organization. Focus topic will be managing the system life cycle: requirements determination, design, implementation; system and database integration issues; network management; project tracking, metrics, and system performance evaluation; managing expectations of managers, clients, team members, and others; determining skill requirements and staffing; cost-effectiveness analysis; reporting and presentation techniques; management of behavioral and technical aspects of the project; change management. Software tools for project tracking and monitoring. Team collaboration techniques and tools.

IS 3511 Database Management Systems

This course aims to introduce advanced topics in databases and database management systems (DBMS) to the students. It covers theoretical as well as practical topics. The theoretical topics will make student aware of many operations occur behind the scenes such as: Transactions, Transaction processing, concurrency control, database recovery techniques Also students will be aware with advanced data models such as Object and Object-Relational Database models, Database Security and Authorization, Data Mining and data warehouse Concepts, distributed databases. The student will be able to design practice oracle PL/SQL statements.

IS 4201 Enterprise Resources Planning Systems

We will begin our study of Enterprise Resource Planning (ERP) with a review of business functional areas and processes. We will continue with a study of ERP systems, their benefits, costs, and their evolution. Finally, we will study how we can use ERP systems to support each of the major business functional areas. Throughout the semester, we will combine lecture material with hands-on computer work.

IS 4902 Field Training

In this course students will obtain knowledge, skills and attitude of practical nature which can be learned only in the 'real' working environment. Students are required join an IT department in any government or private sector as a full time for at least 8 weeks in summer. Only Organizations approved by the department are accepted, at the end of training, report with details of activities and outcomes will be submitted. The field training will be jointly structured, monitored and assessed program by the faculty and their industrial counterparts.

IS 4912Graduation Project 1
The first graduation project at the first semester of the final year, where student will present a proposal, literature review, and theoretical issues. Also, he will determine the methodology, hardware and software tools, benchmarks and criteria for evaluation and testing process, and provide a detailed technical report.

IS 4921 Graduation Project 2
The second graduation project will be at the last semester, where the student will perform activities, provide a complete design of the proposed solution, and present the implementation results. This guide is provided to manage the process and ensure completion of the GP with quality and desired goals.

IS 4601 IS Strategy and Management
This course considers the role of information in business strategy. It focuses on how some businesses are more successful than others in building information systems that lead to organizational and individual efficiencies and which kind of decisions can make company more competitive than others. We look at how information impacts industries, markets, and countries, and leads to technology development. This course takes appropriately a senior management practical way by exploring the acquisition, development and implementation of IS/IT plans and policies to achieve efficient and effective information systems.

IS 4251 Decision Support Systems
Decision making process is used by company to counter environment pressure. Top management is concerned with providing computerized support system in order to support a decision process which should follow some decision models like as Simon's decision model to better understand and solve business problems and/or opportunities.
Many kinds of decision problem modeling should be presented, starting by categorization of problem-solving techniques, and passing by modeling of management problems as linear programming models, simulation models, and heuristics and forecasting models, model-base management systems, and finishing by data warehousing as data driven decision support and group decision system as collaborative decision support.

IS 4511 Database Administration
The course database administration, in sequence with Database 1(the primary introductory course) and database 2(advance database concepts) thrives to introduce database administration concepts to the graduate students. Student learns about Oracle's physical memory structures and storage structures. They learn to handle different administrative task viz. user creation, memory management, making backups, performing recovery tasks, ensuring security of databases and performance optimizations etc.

IS 4571 Data Mining

In this course, preliminary data mining concepts and techniques are introduced. Topics covered are Data mining algorithms and methods including association analysis, classification, cluster analysis, as well as emerging applications and trends in data mining (such as Web data mining, biomedical data mining and security).

IS 4591 Data Warehouse
This course introduces data warehousing to the students. It covers the fundamentals of developing and using a data warehouse, developing requirements, designing models, creating a dimensional model, generating population and maintenance plans for a warehouse. Also, the course includes, manipulating the data in the warehouse for update, maintenance, and data extraction. If possible, various industry partners will demonstrate some of the other major warehouse products used.

IS 4211 Knowledge Based Systems
This course covers essential topics concerning Knowledge-based systems (KBSs). The course introduces fundamental concepts associated with KBSs and some of the recognized types of KBSs. The course presents the major phases of the knowledge engineering process including knowledge acquisition, knowledge representation and reasoning. The course looks at methodologies designed to support the development of KBSs. The course also introduces a topic on challenges for KBSs. Students will be trained on development and application of KBSs.

IS 4221 Knowledge Management
This course will develop your knowledge and understanding of contemporary theories and practices of knowledge management (KM) by examining the relationship between a theoretical understanding of knowledge management and real-life situations and by integrating different dimensions of knowledge management arising from human resource management, information systems and strategic management. The course will explain the concept of `intellectual capital' and how it is managed and exploited in organizations. The course will demonstrate a critical understanding of knowledge management policies and strategies in organizations that enhance effectiveness. You will be able to apply a range of transferable skills including literature search, analytical skills, application of theory to real-life situations, teamwork, motivation, and interpersonal skills.

IS 4501 Introduction to Data Centers
This course introduces important aspects of a data center. Students learn about principles of data centers design, support, and management. The course topics include data centers environmental controls, site analysis and selection, security, and operations management.

IS 4631 IT Audit and Controls
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. Students will learn the process of creating a control structure with goals and objectives; audit an information

technology infrastructure against it. The challenge of dealing with best practices, standards, and regulatory requirements governing information and controls is addressed.

IS 4651 Computer Forensics and Investigations
Computer Forensics and Investigation presents methods to properly conduct a computer forensics investigation beginning with a discussion of ethics, while mapping to the defined objectives. This course will provide overview of methods and tools utilized for collecting and preserving electronic digital evidence for computer forensic process. Topics include the forensic examination, analysis and report writing, and preparing for courtroom testimony about the forensic results. Course includes significant hands-on-exercises, case studies and culminates with a mock trial exercise in which each student will present testimony as an expert witness.

IS 4640 Disaster Recovery Planning
The goal of this course is to expose students to the essentials of disaster recovery planning. Coverage includes disaster recovery process containing the process of assessing risks that an organization faces, and then developing, documenting, implementing, testing, and maintaining procedures that help the organization quickly return to normal operations and minimize losses after a disaster. With focusing on information services systems.

IS 3401 Supply Chain Management
This course is designed to provide students an overview of the basic functions of a supply chain. Topics covered are supply chain performance and drivers, designing distribution networks, demand forecasting, managing inventory levels, transportation, sourcing decisions, and information technology in a supply chain.

IS 4411 Electronic Marketing
The Internet and other information technologies have created many interesting and innovative ways to provide customer value since its inception in 1969. Web sites for marketing communication and customer support; one-to-one communication to many different receiving devices; consumer behavior insights based on offline and online data combination; inventory optimization through CRM-SCM integration; a single-minded focus on ROI and associated performance metrics are all important strategies. The social media provide perfect platforms for connecting with today's consumer: High readership blogs, social networks (such as Facebook and LinkedIn), and online communities (such as YouTube, Twitter, and Second Life), gave consumers the opportunity to be heard in large numbers, and smart marketers have learned how to tap into these "citizen journalists" for improving products and marketing communication. You will learn all about these strategies and more in this course. The course uses a mix of lecture/discussion, interesting individual, and group projects, outside speakers, and exams. Prepare for an exciting and dynamic learning experience.

IS 2121 Foundations of Information Systems
This course aims to introduce the basic concepts of Information systems and Information technology that are necessary to improve overall quality of organizations to achieve their goals. Advanced topics will be covered in the course such as IS career path, ethical issues, and responsibilities of IS practitioner.

IS 2511 Fundamentals of Database Systems
This course provides the students with an introduction to the core concepts in data and information management. It is centered around the core skills of identifying organizational information requirements, modeling them using conceptual data modeling techniques, converting the conceptual data models into relational data models and verifying its structural characteristics with normalization techniques, and implementing and utilizing a relational database using an industrial-strength database management system.

IS 4981 Special Topics in Information Systems
Hot topics in the field of information systems. The topic can be chosen based on either research or market needs.
Pre-requisite: Department Approval

IS 4701 Business process management
This course focus on analyzing, redesigning, and improving business processes in a way to ensure that they are meeting the needs of customers and the enterprise. This course introduces the concepts, methods, and techniques that support the design, improvement, management, and analysis of business processes that deliver lean and customer-focused business processes
After finishing this course student will be able to understand business process from a management and process analyst perspective, learn skills, analytical frameworks, and general principles for managing business processes. The course will incorporate a laboratory component using BPM software.

IS 4711 Innovation and entrepreneurship in IS
This course will introduce you to the fundamentals of innovation and entrepreneurship, providing you a blueprint for the ideas and strategies to build a successful venture. The aim of the course is to motivate students to innovate in information systems. Topics of the course include entrepreneurial thinking; innovation management; opportunity spotting and evaluation; IT industry and market research; business strategy; business models and business plans; financial forecasting and entrepreneurial finance; pitching to resource providers and negotiating deals; and launching new ventures in IS.

IS 4731 IoT Applications and Systems
Internet of Things (IoT) is currently a novel technology worldwide. Government, academia, and industry are involved in different aspects of research, implementation, and business with IoT. IoT cuts across different application domain verticals ranging from civilian to defense sectors. These domains include agriculture, space, healthcare, manufacturing, construction, water, and

mining, which are presently transitioning their legacy infrastructure to support IoT. Today it is possible to envision pervasive connectivity, storage, and computation, which, in turn, gives rise to building different IoT solutions. IoT-based applications such as innovative shopping systems, infrastructure management in both urban and rural areas, remote health monitoring and emergency notification systems, are gradually relying on IoT based systems.

IS 4801 Health Informatics
This course explores the topic of health informatics. In healthcare, enormous volumes of diverse health data have become accessible in numerous healthcare establishments (providers, financiers, suppliers, pharmaceuticals). The general aims of the course are to provide students with the fundamental knowledge of the concepts of health informatics and how technology can be used in the delivery of healthcare. Health informatics is the study of how computational methods can be used to improve solutions and outcomes in the healthcare industry. This course covers recent development, analytical approaches, and potential opportunities in the healthcare industry.

IS 4802 Foundations of Data Science
This course explores the topic of Data Science. Data science is an interdisciplinary filed concerned with how to extract, process, clean, analyze, operationalize, and leverage data to generate insights and improve decision making in a domain specific environment. This course covers the basics of data science, and details how datasets can be collected, processed, and subsequently cleaned. The course covers exploratory data analysis, data visualization techniques, and hypothesis testing. The course also explores advanced analytics methods such as clustering & classification and explain the differences between supervised and unsupervised methods.

CS 1112 Discrete Mathematics
Introduces the foundations of discrete mathematics as they apply to computer science, focusing on providing a solid theoretical foundation for further work. Topics include introduction to: Basic logic: logic and proof techniques. Fundamental discrete structures: sets, relations, functions, Sequences and Summations. Growth of functions. Integers and Division, Rings & Fields, Applications of Number Theory. Basics of counting: Counting arguments, the pigeonhole principle, Permutations and combinations, Recurrence relations, Graphs and Trees and Discrete Probability.

CS 1301 Computer Programming I
Introduction to concepts, principles, and skills of programming including compilers, compiling process, algorithms, and introduction to problem-solving. Implementation of algorithms in a programming language. Fundamentals of programming concepts including data type assignment statements, standard input/output, selection, repetition, functions/methods, parameters, scope of identifiers, debugging. Data structures and algorithms include arrays (1D and 2D), characters strings, Linear search, binary search and simple sorting algorithm.

CS 2301 Computer Programming II
Introduces the concepts of object-oriented programming to students with a background in the procedural paradigm. Topics include classes and objects, data members and member functions, constructors, garbage collector and finalize, overloading, inheritance, polymorphism, and templates and exceptions handling. Data structures such as linked lists, stacks and queues, and graphical user interface.

CS3701 Operating Systems
This course aims to introduce the fundamentals of operating systems design and implementation. Topics include an overview of the modern operating systems, Types of operating systems, operating system structures, process management and thread (concepts of, communication, synchronization and deadlock), CPU scheduling, memory management and virtual memory, File systems; I/O systems; Security and protection.

CS 2321 Data Structure and algorithms
This course concerns non computer science students and introduce to them the basic data structures and algorithm analysis which are to be used as tools in designing solutions to problems. Topics include algorithm analysis using both asymptotic notations and empirical measurements of performance and applying them to functions involved in complexity analysis, pointers and recursion, abstract data type concepts. Data structures include lists and linked-lists, stacks, queues, priority queues, trees and its traversal, binary search trees, heaps, hash tables and graphs and graphs' algorithms. Also, important sorting and searching algorithms will be discussed including bubble sort, insertion sort, selection sort, merge sort, heap sort and radix sort, sequential search and binary search.

CS 3001 Ethical & Professional Practices
This course introduces students to the social and professional issues that arise in the context of computing. Topics include history of computing, social context, impact of computing on society, analytical tools, professional ethics, Governance and regulation, risks, security operations, intellectual property, privacy and civil liberties, computer crime, economics of computing, Professional responsibility and philosophical frameworks.

CS 3801 Computer Security
This course introduces the computer security principles and the basic threats and countermeasures of security problems in computing environments. This module include: Model and attacks, security services (confidentiality, integrity, non-repudiation, availability, accountability), Cryptography: symmetric-key and Asymmetric-key cryptography, authentication and digital signature, key management and cryptographic protocol, access control and authentication, building secure system, security in operating systems, security in computer networks, risk management and analysis, security administration, international information security standards, intrusion detection, viruses and other forms of malicious code.

CS 3821 Web Applications Programming
This is an introductory course for web page design using client-side programming with HTML, CSS and JavaScript. JavaScript events are studied and used for HTML form validation. The xml is also introduced as a data representation language. Students will learn how client-server programming works in the internet environment and will be able to design web pages with dynamic effects. This course also is for teaching the concepts and programming techniques using a server-side programming language, a web server and a database server. Students will learn a new server-side programming language (e.g., JSP, PHP or ASP.NET) and a database design tool, and will be able to deal with the database and web server to deploy applications including several web pages, a relational database as well as data represented by XML documents.

CS 4831 Mobile Application Development
The objective of this course is to learn about mobile computing and mobile application development. Mobile computing will be discussed from several perspectives: mobile technology, application development, and user interaction. Topics include quick view for the Mobile Technology-Mobile network architecture, Generations of mobile networks (GSM, UMTS, and LTE). Application development for mobile devices differs significantly from desktop development and in this course, you will learn hands-on about mobile development environments, different mobile platforms and operating systems (iPhone, Android, Symbian/S60, Web OS, Windows Mobile, BlackBerry OS, BREW, JavaME/JavaFX, Flash Light), and the specific constraints and requirements of user interface design for limited devices and mobile application development. The course combines a conceptual overview, design issues, and practical development issues.

CS 4851 Computer Networks Management
This course provides overview of network design and management; Design methodologies; Network management strategies; Network configuration management; Network management protocols: SNMP, SMIC, RMON, etc.; Network management tools and systems; Network management applications; Desktop and web-based network management; Network troubleshooting.

CE 4741 Cloud Computing
Principles of Cloud Computing; Cloud Computing Architecture; Cloud Computing Characteristics; Different Cloud Computing Layers; Cloud Computing Service Layers; Virtualization; Cloud Computing Sourcing; Cloud Computing Storage; Utility Computing; Opportunities and Challenges; Advantages of Cloud Computing; Problems of Cloud Computing.

CE 4761 Mobile & Wireless Networks
Principles, technologies, protocols and standards of wireless RF communication, with emphasis on wireless LAN (WLAN), WAN (WWAN) and personal area network (WPAN). The course contents include physical layer standards, medium access control, building and securing WLAN, Wide Area Networks including cellular networks and cellular data networks. Topics include Wireless technologies and protocols Ad-Hoc versus structured networks, Bluetooth and Wi-Fi networks, wireless LAN standards;

IEEE 802.11/a,b,g,n standard, broadband wireless networks, IP Mobile networks, WiMAX, GSM, GPRS, UMTS, LTE, Quality of service guarantees-reliability and security in mobile computing environment, and mobility management.

CE 1111 Logic Design
History and overview, Numbers and conversions, Switching theory, Boolean Algebra, Combinational logic circuits, Function Optimization, Modular design of combinational circuits, Memory elements, Sequential logic circuits, Finite State Machines (FSMs) models, state diagrams, state tables, state reduction and state assignment.

ACCT 103 Principles of Financial Accounting
This course is designed to provide the student with an introduction to financial accounting basics and procedures, and emphases is placed on the study of the accounting system and the financial accounting cycles of service organizations and merchandising.

STAT 1050 Probability and Statistics for Computer Students 3(3,1,0)
Descriptive statistics, statistical data classification, measures of central tendency, measures of dispersion. Basic probability concepts, conditional probability, Bayes law, random variable and probability distribution. Some discrete distributions, some continuous distributions and its applications. Sampling distribution of the mean, central limit theorem, estimation of the population means and proportion, testing hypotheses about population mean and proportion. Course must focus on applications in the field of computer engineering and sciences.

MATH 1050 Differential Calculus
Real numbers, polynomials, Functions, Limits and Continuity: Algebraic Functions – Exponential Functions – Logarithmic Functions – Trigonometric Functions – Limits – Continuity. Derivatives: Techniques of Differentiation – Derivatives of Algebraic Functions – Derivatives of Exponential Functions – Derivatives of Logarithmic Functions – Derivatives of Trigonometric Functions – Equations of the Tangent and Normal – The Chain Rule – Inverse Trigonometric Functions – Hyperbolic Function and Inverse Hyperbolic Functions – Inverse Trigonometric Functions – Derivatives of Inverse Trigonometric Functions – Derivatives of Hyperbolic Functions – Inverse Hyperbolic Functions – Derivatives of Inverse Hyperbolic Functions- Calculation of the nth Derivatives – Differentiation of a composite Functions – Differentiation of Implicit Functions . Applications to Calculus: Function graph – Rolle's Theorem- mean value theorem - Differentials Hospital Theorem -maxima and minim- Related Rates - horizontal and vertical asymptotes.

MATH 1060 Integral Calculus
Integration: Indefinite Integrals – Techniques of Integration: Trigonometric Integrals – Integration by Inverse Substitution – Completing the Square – Partial Fractions – Integration by Parts – Reduction Formulas – Definite Integrals – Arc length – Surface

Area- Areas between Curves -Volumes of Revolution– Numerical Integration - Parametric Equations — Polar Coordinates – Area in Polar Coordinates - Indeterminate Forms – Improper Integrals

MATH 2220 Linear Algebra for Computer Students

Matrix Definition – Matrix Operations – Symmetric Matrices – Transpose and Inverse of a Matrix – Hermitian Matrices – Markov Matrices – Factorization – Positive Definite Matrix – Row Operations – Row Reduced Echelon Form – Linear system of Equations – Solving Equation of the form $Ax = 0$ and $Ax = b$. Vector Spaces and Subspaces – Basis and Dimension – Orthogonality – Similar Matrices – Singular Value Decomposition – Least Squares Approximations – Determinants – Properties of Determinants – Applications of Determinants – Cramer's Rule – Gauss Elimination Rule – Gauss Jordan Elimination – Eigenvalues and Eigenvectors – Diagonalization – Linear Transformation – Matrices with MATLAB.

IS2011 Principles of Marketing

It investigates the impact of the emerging technological innovations on the marketing of goods and services. Students will examine dissimilar and cohesive technologies and their impact on marketing strategy, consumer behavior, market segmentation, positioning, and communication strategies. An emphasis is placed on the utilization of traditional marketing concepts within the emerging smart environment. Students will be trained on relevant marketing applications

IS 2010 Introduction to Business

This course provides an overall picture of the business world; it discusses business functions such as production, marketing, finance, human resources, research and development, accounting, etc. methods of business operation, types of business ownership, management factions, and the role of business organizations in contemporary society. In addition, the roles of various institutions that operates in the business environment such as government agencies. Financial institutions and legislative bodies are studied.

IS4241 Digital Business

Applying and integrating knowledge of business management and digital technology to solve business problems and discover new knowledge for the digital business industry. Many organizations are becoming increasingly 'digital', in order to derive value from innovations, by enhancing performance and delivering new services.

This course provides insight into the emergence of digital business, key concepts, technologies, and strategic organization.

During this course, students will learn strategies for Digital Business and Marketing, Digital Technology, E-commerce, Strategic Management, and Digital and Information Economy. After finishing this course, students will be able to develop a strategic plan for a 'traditional' business adopting the new trends, digital technologies, and strategies.

IS4811 Fundamentals of Data Science

Data science is an interdisciplinary filed concerned with how to extract, process, clean, analyze, operationalize, and leverage data to generate insights and improve decision making in a domain specific environment. This course covers the basics of data science,

and details how datasets can be collected, processed and subsequently cleaned. The course covers exploratory data analysis, data visualization techniques, and hypothesis testing. The course also explores advanced analytics methods such as clustering & classification and explain the differences between supervised and unsupervised methods.

IS4905 IS Ethics & Sustainability

This course provides a comprehensive knowledge of ethics concept, ethical issues, and decision-making related to a Sustainable Information Systems. A Sustainable Information System contributes to healthy economic, environmental, and social development; hence, it is being viewed an important matter to learn by the future ICT professionals. The emphasis in this course is to study theories and practices and explore how to manage and maintain high ethical standards practiced by the IS professionals around the current and emerging technologies. This course will highlight how to deal with the ethical dilemmas that may arise in complex and critical situations, within various scenarios at micro and macro levels in an Information System.

IS4903 Artificial intelligence for business & community

This course, you'll learn the essentials of big data, Artificial intelligence, and Machine Learning, and how to send these advances to back your organization's methodology. This course assists you to understand the artificial intelligence; it also helps you to utilizing real-life cases. You'll learn around the diverse methods and strategies of Machine Learning, and how businesses have connected Machine Learning effectively. You'll moreover cover the ethics and dangers of AI in commerce administration, and how to plan administration systems for legitimate usage.

IS4904 Web and mobile applications development

This course introduces students to programming technologies, design and development related to mobile applications. It focuses on concepts and best practices for developing and managing "mobile-first" technology projects. It covers processes and requirements for developing mobile web applications and principles for effective interface and user experience design. Topics include accessing device capabilities, industry standards, operating systems, and programming for mobile applications. Students should be able to create basic applications for mobile devices. Students also examine different issues and concerns that may influence the widespread adoption and implementation of mobile web applications. Students develop a prototype of a mobile web app and prepare a proposal and other documentation for communicating contractual and functional specifications to clients

The IS department faculty research citation report 2022:

The faculties of information system department have published scientific research papers in different prestigious journals under the ISI database. The table below shows the faculties' citation report:

Faculty Names	Publications - 2022	Citations
Abdulkareem Alsudais	4	24
Abdulaziz Aldaej	11	64
Abubaker Elsidig Mohammed Yahia	1	50
Muneer Nusir	2	26
Ali Louati	10	99
Abdulrahman Alabduljabar	0	0
Mohammed Yousuf Uddin	7	19
Mohammed Dousoki	1	3
Elham Kariri	9	18
Sana Fakhfakh	0	3
Fatma Masmoudi	7	10
I. A. Saeed	1	21

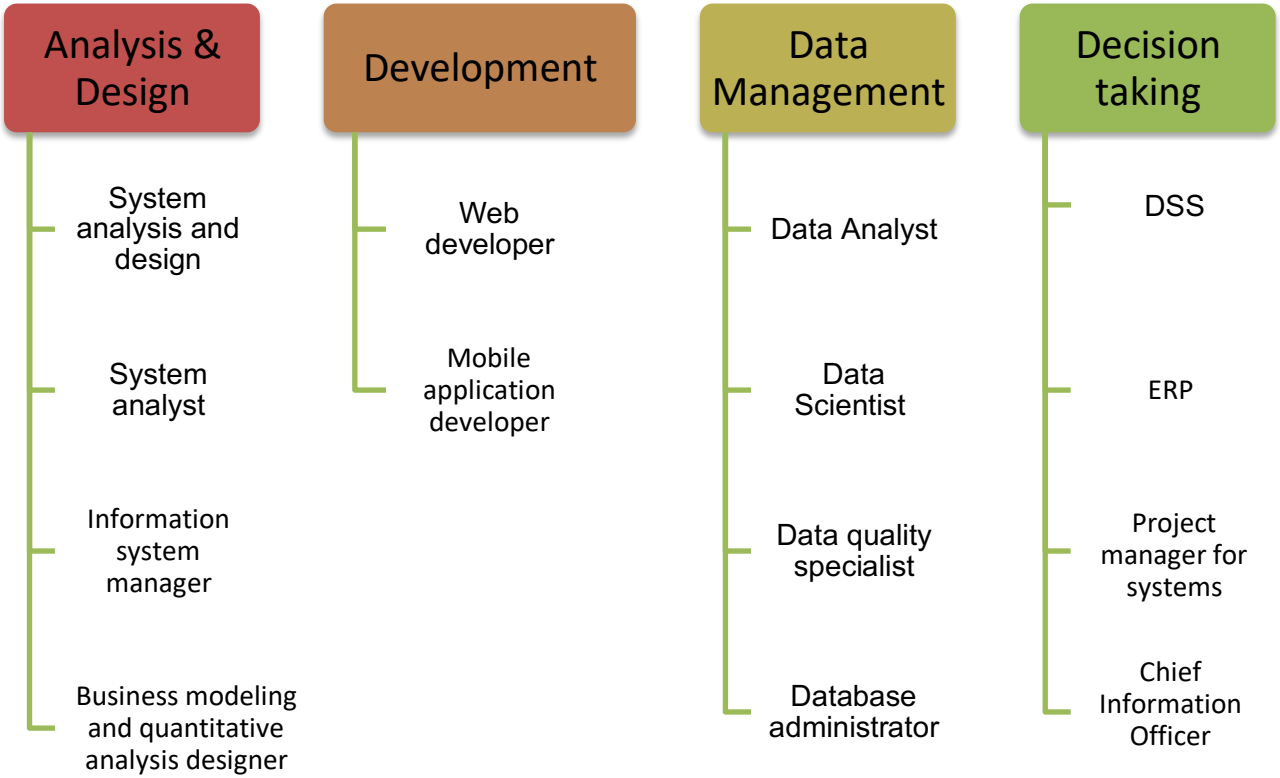
Degree requirements:

The Chair of the Information Systems Department and the Deanship of Admissions and Registration are jointly responsible to ensure that all graduating students have met all the Information Systems program graduation requirements. Fortunately, the registration system is more effective in preventing a student from registering for a course without passing its prerequisite courses, and well-presenting student records that can be tracked easily to make sure that graduating students follow their prescribed study plans and fulfilling all the graduation requirements.

The IS program curriculum consists of 140 credit hours. According to the University regulations, the student cumulative average should be 2.0 out of 5.0 or better at the time of graduation, and he has passed all the program requirements. The IS program credit hours' requirements are distributed as:

Upon successful completion of the IS program graduation requirements, and after being approved by the PSAU council, the student will be awarded the Bachelor of Science in Information Systems.

Information system job opportunities:



Faculty Members

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Female section location map: