College	College of Computer Science and Engineering
Genders	Male and Female
Language	English
Study Type	Free
Study Mode	Regular
Study Duration (Years)	5
Total Units	150
Free Course Units	4
Program Elective Units	9
University Elective Units	6
Saudi Unified Classification	06130401

Program Mission:

To provide a high-quality undergraduate program in the field of information systems that develops the student technical knowledge, research and practical skills to contribute to the national development and serving the society.

Program Objectives:

1. To provide students with a solid foundation in the theory and practice of information systems and its applications in various domains. (Knowledge, Skills)
2. To develop students' communication and research skills that prepare them for lifelong learning. (lifelong learning)
3. To foster students with a sense of social responsibility, teamwork, leadership and ethical awareness to contribute towards the national development. (Responsibility, Professional Ethics, leadership, Communication, and Collaboration.

Program Learning Outcomes:

Knowledge and Understanding	
K1	Attain the ability to analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
K2	Attain the ability to support the delivery, use, and management of information systems within an information systems environment.
Skills	
S1	Attain the ability to design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
S2	Attain the ability to communicate effectively in a variety of professional contexts.
Values, Autonomy, and Responsibility	
V1	Attain the ability to recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
V2	Attain the ability to function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

Program Courses

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
Level 1	GS101	Islamic Studies: Belief & Worship	Required	--	2	Institution
	ENG101	English Language Skills I	Required	--	4	Program
	MATH105	Calculus I	Required	--	3	College
	PHYS103	Physics I	Required	--	3	Program
	CS111	Fundamentals of Programming	Required	--	4	Program
Level 2	GS104	Islamic Studies: Islamic Values and Ethics	Required	--	2	Institution
	CS163	Discrete Structures	Required	--	3	College
	CS112	Programming I	Required	CS111	4	College
	STAT103	Principles of Probability & Statistics	Required	--	3	Program
	ENG102	English Language Skills II	Required	ENG101	4	Program
Level 3	ENG103	English Composition	Required	ENG102	3	Program
	MATH106	Selected Topics in Mathematics	Required	MATH105	3	Program

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
	MGT201	Principles of Management	Required	--	3	Program
	CS113	Programming II	Required	CS112	4	College
	IS113	Foundation of Information Systems	Required	--	3	Program
	GS111	Arabic Language Skills I	Required	--	2	Institution
Level 4	ENG104	Technical Communication	Required	ENG103	3	Program
	IS124	Database Management Systems I	Required	CS113, CS163	4	Program
	GS112	Arabic Language Skills II	Required	GS111	2	Institution
	CS114	Algorithms and Data Structures	Required	CS113	4	College
	IS144	Information Technology Infrastructure	Required	IS113	3	Program
	FE1	Free Elective Course I	Required	--	2	College
Level 5	COE235	Business Data Networking	Required	IS144	3	Program
	IS275	Computing, Ethics and Society	Required	--	2	College
	GSE1	University Elective Course I	Elective	--	2	Institution
	IS215	Web Application Development I	Required	IS144	4	Program
	IS235	Database Management Systems II	Required	IS124	4	Program
	IS255	Operating Systems Configuration and Use	Required	IS113, IS144	3	Program
Level 6	ENG214	Technical Writing	Required	ENG104	3	Program
	IS226	Web Application Development II	Required	IS124, IS215	4	Program
	IS246	Information Systems Analysis and Design	Required	CS113	4	Program
	GSE2	University Elective Course II	Elective	--	2	Institution
	STAT307	Applied Probability and Statistics	Required	STAT103, MATH106	3	Program
Level 7	GSE3	University Electives Course III	Elective	--	2	Institution
	IS377	Innovation, Entrepreneurship for Computing	Required	--	2	Program
	IS317	Data Warehouse and Data Mining	Required	STAT307	4	Program
	IS357	Information Systems Project Management	Required	IS246	3	Program
	IS337	Information Security	Required	COE235, IS255	4	Program
Level 8	IS368	Enterprise Architecture and Strategy	Required	IS246	3	Program
	IS328	E-commerce	Required	IS226	4	Program
	IS1	Program Elective Course I	Elective	--	3	Program
	IS2	Program Elective Course II	Elective	--	3	Program
	IS318	Graduation Project I	Required	IS235, IS226, IS357	2	Program
Level 9	ACC201	Principles of Financial Accounting	Required	MGT201	3	Program
	MGT324	Entrepreneurship and Small Businesses Management	Required	MGT201, IS368	3	Program
	IS429	Graduation Project II	Required	IS318	3	Program

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, College, or Program)
	IS3	Program Elective Course III	Elective	--	3	Program
Level 10	IS400	COOP Training	Required	144 cr. Hrs, IS357	6	Program

Course Description:

Calculus I:

This course covers several techniques in calculus and how they can use to solve several problems by studying differentiability, applications of the derivative and mean value theorem. The course focuses also on definite and indefinite integrals and on the link between theory and practice.

Principles of Probability & Statistics:

This course covers the basic concepts of descriptive statistics and the fundamentals of probability theory. Key topics include data types and sources, data presentation in charts and tables, measures of location and variability, skewness, kurtosis and moments, correlation and regression, basic concepts of probabilities, and Bayes' rule.

Discrete Structures

This course aims at introducing the fundamental logical and mathematical concepts that are at the core of computer science. The main focus is on logical and mathematical topics that are used in designing, analyzing, solving and implementing computer science systems. Thereby the main topics presented in this course are logic and proofs, induction, counting, sets, relations, and discrete probability. The course also provides an introductory coverage of some discrete mathematical structures that are frequently used in computer science, such as graphs and trees.

Calculus II:

This course covers basics of calculus and how they can use to solve several problems by studying most known techniques of integration, Improper integrals, and applications of the definite integral. The course focus also on sequences, convergence and divergence of sequences, series, convergence, and divergence of series and on the link between theory and practice.

Foundation of Information Systems:

This course is designed to introduce students to contemporary information systems and demonstrate how these systems are used throughout global organizations. The focus of this course will be on the key components of Information Systems - people, software, hardware, data, and communication technologies, and how these components can be integrated and managed to create competitive advantage. Though the knowledge of how IS provides a competitive advantage students will gain an

understanding of how information is used in organizations and how IT enables improvement in quality, speed, and agility.

Programming II:

The CS 113 course, designed for students with some programming experience, is intended to teach Object-Oriented programming concepts, techniques, and applications using the Java programming language. It covers the advanced concepts of OO programming, concrete and abstract classes, interfaces, aggregation, composition, inheritance, polymorphism, exception handling, graphical user interfaces, and event-driven programming. Additionally, it demonstrates the difference between OOP and functional programming.

Database Management Systems I:

This course provides the students with an introduction to the basic concepts and design of the database. It focuses on the core skills of organizational information requirements by modelling data using conceptual data modelling techniques, converting the conceptual data models into relational data models (database schema) using relational mapping algorithm, verifying the structural characteristics using normalization techniques, converting the relational data model to physical data model by implementing and utilizing SQL to create and consolidate, alter, manipulate database by applying database integrity constraints and indexes on relational database management system (RDBMS) such as e Oracle ,and the student will use the query to retrieve the data and information.

Information Technology Infrastructure

This course provides an introduction of IT infrastructure issues to students. The course covers topics related to both computer and systems architecture and communication networks, with an overall focus on the services and capabilities that IT infrastructure solutions enable in an organizational context. It gives the students the knowledge and skills that they need for communicating effectively with professionals whose special focus is on hardware and systems software technology and for designing organizational processes and software solutions that require in-depth understanding of the IT infrastructure capabilities and limitations.

Algorithms and Data Structures:

Data structures and algorithms lie at the heart of Computer Science as they are the basis for the efficient solution of programming tasks. In this course, students will study core algorithms and data structures, as well as being given an introduction to algorithm analysis and basic computability. After completing this course, students can efficiently implement different data structures for a given problem while experimenting with various algorithm design techniques. Moreover, students will understand the concept of abstract data types (ADT) and the tradeoffs between different implementations of ADTs. Besides, students will learn the main classes of complexities and the techniques used for measuring the time performance of different algorithms. The course is taught using the Java programming language.

Database Management Systems II:

This course provides students with the necessary knowledge and skills required to work with database stored procedures and functions, database packages, and database triggers. Students will learn about database structure related to specific DBMS which include memory management, storage management and process management. In addition to dealing with different file systems (data file, control file, redo log file) type which control the database. The course also covers topics related to database instance, backup and recovery technique, transaction and concurrency control. Students will be able to design a secure database through creating and managing database users with a set of privileges.

Operating Systems Configuration and Use:

This course will discuss advanced topics and research issues in operating systems. Topics will be drawn from a variety of operating systems areas such as distributed systems and languages, networking, security, and protection, real-time and embedded systems, modeling and analysis. The course will focus on the common issues that emerge across operating systems, database systems, networked systems, distributed systems, mobile systems, and embedded systems. The goal is to gain practical experience in applying the theory of operating systems to the design and implementation of a consistent and functional set of operating system services that manage and abstract the hardware resources and provide a base system on which a robust user environment can be developed.

Computing, Ethics and Society:

Electronic systems now reach into all levels of government, into the workplace, and into private lives to such an extent that even people without access to these systems are affected in significant ways by them. Information is a source of power and, increasingly, the key to prosperity among those with access to it. Consequently, communication developments in also involve social, economic and political relationships - and so make ethical considerations in how information is used all the more important.

Web Application Development I:

This course provides students with an insight and the basics of web application development and programming. It focuses on the main web technologies on HTML5 and the related technologies in its ecosystem, diving into the exciting new features of HTML5, CSS3 style sheets, JavaScript, JSON, web API, Java Script Frameworks.

Applied Probability and Statistics:

This course explores the principles of probability theory and statistical analysis applied to real-world data. Students learn to analyze uncertainty, variability, and make informed decisions through the study of random variables, probability distributions, estimation, hypothesis testing, and sampling distributions. Practical applications across various fields are emphasized, providing students with essential analytical skills for decision-making.

Information Systems Analysis and Design:

This course examines the processes, methods, techniques and tools that organizations use to determine how they should conduct the organizational business by focusing on how computer based technologies can help the way business is organized. The course is designed to systematize to analyze a business

problem by determining how technologies are used to address the business need by articulating business requirements for the technology solution, specifying alternative approaches to acquiring the technology capabilities needed to address the business requirements, and specifying the requirements for the information systems solution.

Web Application Development II:

This course aims to develop student skills and knowledge in web development using the .NET Framework. It aims to develop Client and Server-side programming using C#. The course also covers the recent developments in Database Entity Framework, Web APIs, Automated Testing, cloud deployment, and .NET Muli platform.

Information Systems Project 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. One main theme of this course student to work as team to solve real life problem.

Information Security:

This course provides the foundation for understanding the key issues associated with protecting information assets, determining the levels of protection and response to security incidents, and designing a consistent, reasonable information security system, with appropriate intrusion detection and reporting features. The purpose of the course is to provide the student with an overview of the field of information security and assurance. Students will be exposed to the spectrum of security activities, methods, methodologies, and procedures. Coverage will include inspection and protection of information assets, detection of and reaction to threats to information assets, and examination of pre- and post-incident procedures, technical and managerial responses, and an overview of the information security planning and staffing functions.

Innovation, Entrepreneurship for Computing:

This course is designed to encourage students to develop skills related to entrepreneurship. The course familiarizes students with the role of entrepreneur, technology and innovation in entrepreneurial process with focus on growth-oriented and innovative ventures. Students will be able to understand the dynamic landscape of entrepreneurship, digital technologies and their role to drive economy growth and innovation. The course provides comprehensive knowledge of ideation, new venture opportunities, funding, business models, strategies and frameworks to thrive in Saudi entrepreneurship landscape. The course also exposes students to the digital technologies such as e-commerce, mobile applications, artificial intelligence and blockchain etc.

Data Warehouse and Data Mining

This course covers the concepts of building a data-warehouse to be used through applying the main data mining algorithms. The Knowledge Discovery in Large Database techniques will be explained. Then the computational techniques and algorithms for analyzing and mining patterns in large-scale datasets it will be covered. The considerable amount of effort will also be put on computational aspects of algorithm implementation. The importance of data mining is explored by introducing principal ideas in statistical learning. This course focuses on mining process which includes data selection and cleaning, machine learning techniques to learn knowledge that is hidden in data, and the reporting and visualization of the resulting knowledge.

Enterprise Architecture and Strategy:

Enterprise architecture has become an integral part of business organizations, which helps to translate business strategy and vision into actions. This course introduces concepts of enterprise architecture and describes how enterprise architecture helps organizations to accomplish business objectives by integration of business processes and information technologies. Students will explore different ways to align business strategy with IT in order to sustain business growth, and identify interrelationship among business processes, enterprise architecture methodologies, technologies and security. The course provides governance skills that follow key frameworks used in the industry such as TOGAF and Zachman frameworks.

E-commerce

The course explores what an e-business is and how it is managed. As an interdisciplinary topic encompassing both business and technology, e-business aspects and applications throughout the business world include commercial business, government, education, and health services. The major characteristics, opportunities, and limitations of this form of business are explored. Students study various issues and risks that exist in the rapidly changing world of e-business.

Graduation Project I:

This course is the practical aspect of the taught courses. Students are required to apply the skills gained in the taught courses to solve real life problems. Students are paired as groups to collaborate as teams using substantial domain knowledge of various applications and to investigate and solve real life problems. One helpful course in this domain is the information systems project management, which laid down how to professional approach problem solving. The student is required to investigate a specified problem, analysis different solutions to the problem, provide a cost analysis and build a prototype. Students are required to present their solution to a group of supervisors and examiners.

Graduation Project II:

This course is a continuation of IS491 course. It helps the student apply and integrate key concepts, skills and knowledge gained from IS491 in order to develop and implement a realistic solution to a

problem. This course is meant to be a collaborative course where groups of student work as a team. Teams of students are paired to undertake real-world projects. At the end of the semester, the project team is required to submit a comprehensive project report and participate in departmental oral presentations.

COOP Training:

This course provides the students with the opportunity to gain professional experience in the field of information systems applying knowledge and skills learned to their assigned responsibilities. The course may include seminars, workshops, group projects, and/or real-world tasks at an environment devoted to computer technology and its applications.

Graduate Attributes:

Proficient (Depth of Discipline Knowledge, and Professional and Digital Competence)

- Exhibits a deep understanding of discipline.
- Demonstrates advanced technical and professional skills relevant to discipline.
- Masters the use of technology and digital tools pertinent to discipline

Critical Thinker (Critical Thinking and Problem Solving)

- Examines ideas, information, and arguments logically and critically
- Makes data-driven and evidence-based decisions

Effective Communicator (Interpersonal and Communication Skills)

- Shows effective verbal communication skills
- Shows effective written communication skills
- Works effectively within a team to achieve common goals
- Manifests self-awareness, self-management, social awareness, and effective relationship management skills

Innovative (Creative and Innovative Thinking)

- Demonstrate the ability to think creatively and innovatively

Responsible (Ethical Behavior and Social Responsibility)

- Adheres to ethical and professional values
- Contributes to community service and promotes sustainable development

Culturally Competent (Cultural Competence)

- Understands the impact of global challenges and opportunities on the local context
- Demonstrates the ability to work in multicultural environments and shows respect for diversity
- Shows pride in national identity and culture

Lifelong Learner (Commitment to Lifelong Learning)

- Seeks opportunities for lifelong learning and remains up-to-date with both personal and professional growth