

**Kingdom of Saudi Arabia**  
**Ministry of High Education**  
**King Saud University**  
**College of Computer & Information Sciences**



***Undergraduate Directory***  
***Of the***  
***College of Computer & Information Sciences***

**1426/1427H**



## About the college

The increased demand for the computer in modern development and technology results in a huge need for specials in this field. Because of this need for national human resources in computer science, the king Saud University has approved on 1402/1403 H. to start two study programs in this field which are; computer science program under the college of science and computer engineering under college of engineering.

The two programs started and soon they become too popular with the increase of students enrolling in them, in which requires the two programs to get bigger and grow bigger. Hence, a special college's staff committee has been formed. The committee had done a lot of studies to seek the best ways for delivering a high tech curriculum in computer science and engineering for the college, and it concluded the importance of establishing a college of computer science and technology and this conclusion to be revised by concerning committees. The committee also has researched and studied the right procedures to set curriculums and syllabuses for different department for the new college.

The Royal Decree under the number 7/1558/m in 19.5/1404 H was issued to establish the college of computer science for the King Saud University so that the college will be supported financially, administratively and academically like the other colleges in the university; an approval is issued to the college to start enrolling student on 1404/1405 H.

## College's Departments

The college has the following scientific departments:

1. Computer Science Department.
2. Computer Engineering Department.
3. Information Systems Departments.
4. Computer Technology Department.
5. Information technology (for females).

Scientific Degrees donated by the college

1. Bachelor Degree in Computer Science.
2. Bachelor Degree in Computer Engineering.
3. Bachelor Degree in Information Systems.
4. Bachelor Degree in Information Technology (for females).
5. Diploma Degree in Information Technology (for females).
6. Masters Degree in Computer Science, Computer Engineering and Information Systems.

# 1- Computer Science Department

## Bachelor's Program Goals

The major aim of this curriculum is to impart scientific knowledge in the field of Computer Science (CS) and to keep students up to date with recent advances in this blooming discipline. The students will study the fundamentals of Computer Science and will gain hands-on experience and skills of understanding and analyzing complex problems and preparing automated solutions to them. Besides, the laboratory assignments and carefully designed projects that our students are exposed to, simulate industry conditions, which will enable them - on graduation - to work competently in scientific, business, and industrial environments. In light of recommendations by various international organizations, and the needs of our local and regional communities, as well as a careful scrutiny of the CS programs of major world universities, this CS program has been designed to strike a balance between CS and non-CS courses, theoretical and practical aspects, and solid bases and digested developments in the field of Computer science.

To acquire a BS degree in Computer Science the student needs to complete 138 credit hours. The objectives of this program can be summarized as follows:

1. Provide both breadth and depth in the principles of the Computer Science field.
2. Prepare students for higher studies and research in the Computer Science field.
3. Prepare students for the information technology market.
4. Provide an environment in which students can apply their knowledge and acquired skills to identify and tackle the needs and problems of our society in terms of computerization.
5. Expose the students to the latest state of the art developments in the Computer Science field.

## Department Staff

Dr. Ghazy Mohamed Rateb Assassa	Professor
Dr. Abdel Wahab Mohammed Nourein	Associated Professor
Dr. Abdullah Mohammed Al-Dhelaan	=
Dr. Abdulmalik Salman Al-Salman	=
Dr. Hasan Ismail Mathkour	=
Dr. Hatim abdulrahman Abu Samh	=
Dr. Jacob O. Adeniyi	=

Dr. Abdulkader Al-Fantookh	Assistant Professor
Dr. Ali El-Zaart	=
Dr. Ameer Touir	=
Dr. Aqil Mohammed Azami	=
Dr. Inayatullah Shah	=
Dr. Khaled Abdullah Al-Sabti	=
Dr. Mohammed Abdulrahman Al-Abdulkareem	=
Dr. Mohsin Denguar	=
Dr. Saleh Hammami	=
Dr. Salim Ghanemi	=
Dr. Sofien Gannouni	=
Dr. Yousef Al-Ohali	=
Mr. Chaker Bechir Jebari	Lecturer
Mr. Irshad Ahmed Buchh	=
Mr. Jamal Shorbagy	=
Mr. Kemeldine Haouam	=
Mr. Mohammed Jawed Yousef	=
Mr. Murad Bouchenak	=
Mr. Najib Khawaja	=
Mr. Saad Al-Ahmade	=
Mr. Abdulaziz Al-Sadhan	Teaching Assistant
Mr. Abdullatif Al-Abdullatif	=
Mr. Bander Al-Fayyadh	=
Mr. Fawaz Al-Sulaiman	=
Mr. Isam Al-Wagait	=
Mr. Jalah Al-Muhtadi	=
Mr. Maher A. Al-Hossaini	=
Mr. Mishari Al-Mishari	=
Mr. Mohammed Sulaiman Al-Saeed	=
Mr. Raid Abdullah Al-Saghir	=
Mr. Saleh Al Furaih	=
Mr. Waleed M. Al-Salih	=

## Bachelor's Curriculum

### Level -1

Code	Course Name	Credit
CSC 107	Introduction to Computing	3
CSC 112	Computer Programming -1	3
Eng 102	English for Computer & Engineering Students	6
IC 101	Introduction to Islamic Culture	2
Math 101	Introduction to Differential Calculus	3
<b>Total</b>		<b>17</b>

### Level -2

Code	Course Name	Credit
Arab 101	Arabic Language Skills	2
CSC 113	Computer Programming -2	4
Eng 104	English for Computer & Engineering Students	3
Math 102	Introduction to Integral Calculus	3
Phys 104	General Physics	4
<b>Total</b>		<b>16</b>

### Level -3

Code	Course Name	Credit
CSC 212	Data Structures	3
CSC 222	Computer Organization & Assembly Language	3
Eng 110	Report Writing	2
IC 102	Islam and Society	2
Math 151	Discrete Mathematics	3
PhE 380	Physical Education	1
Stat 324	Engineering Probability & Statistics	3
<b>Total</b>		<b>17</b>

**Level -4**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
CEN 333	Computer Architecture for CS	3
CSC 227	Operating Systems	3
CSC 235	Programming Languages	3
CSC 281	Discrete Mathematics for CS	3
IC 103	Economic System in Islam	2
Math 244	Linear Algebra	3
Eng 318	Translation of Technical Terminology	2
<b>Total</b>		<b>19</b>

**Level -5**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
CSC 311	Design & Analysis of Algorithms	3
CSC 327	System & Visual Programming	3
CSC 342	Software Engineering	3
CSC 380	Fundamentals of Database Systems	3
Eco 103	Principles of Economics	3
IC 104	Fundamentals of Islamic Policies system	2
<b>Total</b>		<b>17</b>

**Level -6**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
CSC 305	Ethical and Social Issues in Computing	3
CSC 329	Computer Networks	3
CSC 336	Compiler Construction	3
CSC 361	Artificial Intelligence	3
CSC 383	Database Management Systems	3
Media205	Communication Skills	3
<b>Total</b>		<b>18</b>

**Level -7**

Code	Course Name	Credit
Arab 103	Arabic Writing	2
CSC 428	Computer Arabization	3
CSC 457	Internet Technologies	3
CSC 458	Distributed Systems and Parallel Processing	3
CSC 477	Graphics and HCI	3
CSC 496	Graduation Project -1	2
PHE 400	Health and Physical Fitness	2
<b>Total</b>		<b>18</b>

**Level -8**

Code	Course Name	Credit
CSC 429	Computer Security	3
CSC 483	Information Retrieval and Web Databases	3
CSC 493	Selected Topics in CS	3
CSC 497	Graduation Project -2	4
CSC 999	Training	1
Psy 101	Intro. to Psychology	2
<b>Total</b>		<b>16</b>

**Courses Description****Course Code & Course Title - CSC 107: Introduction to Computing**

- Credit hours (Lectures, Lab, Tutorial): 3 (2 + 2 + 0).
- Prerequisites: None.

**Course content:** Computer generations (components, classifications, and capabilities); Computer processing (Data representation: binary system. Bit, byte, ASCII coding); Data processing (Flow of control, batch and interactive Processing types); Generations of programming languages; The Computing Disciplines (Computer Science, Computer Engineering, and information systems); Systems software (DOS, MS-Windows, and Unix/Linux +X-Windows); Software packages (MS-Word, MS-Excel, Netscape/Explorer, Email packages, telnet, FTP, and the Emacs Text Processor; Tools for web page construction.

---

**CSC 112: Computer Programming -1**

- Credit Hours (Lectures, Lab, Tutorial): 3 (2 + 2 + 1).
- Prerequisites: None.

**Course content:** Problem solution techniques and algorithm design: Simple data types, variables and statements; Input output statements; Conditional statements; Iteration statements; Functions and procedures; Recursion; One-dimensional array problems; Two-dimensional arrays.

**CSC 113: Computer Programming -2**

- Credit Hours (Lectures, Lab, Tutorial): 4 (3 + 2 + 1).
- Prerequisites: CSC 112.

**Course content:** Introduction to OO (Procedural programming, OO programming, Differences between Procedural programming and OO programming, OO Program Structure and design methodology); Classes (ADT, Constructors, Destructors, attributes, methods); Objects, Overloading, Inheritance, polymorphism, I/O System and built-in classes (I/O basics, Formatted I/O, I/O manipulators, File I/O basics, binary, random access, Built-in classes); Applications and Examples (Arrays, Linked list, Stack, Queue); Program Style (definition/ declaration/ specification/ implementation/ comment/ Naming).

**CSC 212 : Data Structures**

- Credit hours (Lectures, Lab, Tutorial): 3 (3 + 0 + 1).
- Prerequisites: CSC 113.

**Course content:** Introduction to Problem Solving (Problem solving, modular design, abstraction and information hiding, OO design. Key issues in programming: modularity, modifiability, ease of use, fail-safe programming, style, debugging.); Recursion; Abstract Data Types; Linked Lists; Stacks; Queues; Algorithm Efficiency (Measuring the efficiency of Algorithms: execution time of algorithms; algorithm growth rates, order-of-magnitude analysis (big O notation)); Sorting (Selection Sort, Bubble Sort, Insertion Sort, Merge Sort, Quick Sort); Trees (Terminology The ADT Binary Tree (traversals of a BT, representations of a BT); The ADT Binary Search Tree; The ADT Balanced Search Tree (2-3 Trees, 2-3-4.Trees); AVL Trees; Tables and Priority Queues (The ADT Table The ADT Priority Queue (a variation of the ADT Table, Heaps, a heap implementation of the ADT PQ); Hashing (Hash functions, resolving collisions, efficiency of hashing, designing a good hash function); Graphs (Terminology, Graphs as ADTs, implementing graphs, Graph Traversals: Depth-First Traversal, Breadth-First Traversal, Applications of Graphs).

**CSC 222: Computer Organization and Assembly Language**

- Credit Hours (Lectures, Lab, Tutorial): 3 (3 + 0 + 1).
- Prerequisite: CSC 113.

**Course content:** Introduction to basic computer organization and how the computer works; The Internal organization of the Intel x86-based PCs; Overview of Assembly

---

---

language programming; Data Representation: Machine representations of numbers, and Numbering Systems; Assembly Language Instruction set; Addressing concepts and addressing modes; Arrays and hardware stack; Procedure Definition, Parameter passing, and return instructions; Recursion; String definition and String manipulation instructions, and structured data definition; Macro Definition and Macro calls; Input/Output including interrupt handling; Interfacing Assembly code segment with higher-level languages such as Pascal or C; A semester project in real-life applications.

**CSC 227: Operating Systems**

- Credit Hours (Lectures, Lab, Tutorial): **3** (3 + 0 + 1).
- Prerequisites: CSC 212 and CSC 222.

**Course content:** Introduction; Operating System services; CPU Scheduling; Disk Scheduling; Memory Management; Process synchronization.

**CSC 235: Programming Languages**

- Credit Hours (Lectures, Lab, Tutorial): **3** (3 + 0 + 1).
- Prerequisites: CSC 212.

**Course content:** Study of programming Languages; Language Design Issues; Language Translation Issues (Syntax, Stages in translation, Formal Translation Models, Finite State Automata, Context-free grammars); Data Types; Abstraction and Inheritance; Sequence Control; Subprogram Control and Implementation; Advances in Language Design (Exceptions, co-routines, Parallel Programming, Concurrent execution, Tasks, Synchronisation); Overview of non-imperative Languages (Functional programming, Logic Programming, Object-Oriented Programming).

**CSC 281: Discrete Mathematics for Computer Science**

- Credit Hours (Lectures, Lab, Tutorial): **3** (3 + 0 + 1).
- Prerequisites: CSC 212, STAT 324, and MATH 151.

**Course content:** Foundations (logic, sets, and functions). Growth of functions. Algorithms, integers, and matrices. Mathematical reasoning (methods of proof, mathematical induction, recursive definitions and algorithms). Combinatorics (counting techniques, permutations and combinations), discrete probability and probability theory. Discrete structures (sets, relations, graphs and trees).

**CSC 305: Ethical and Social Issues in Computing**

- Credit hours (Lectures, Lab, Tutorial): **3** (3 + 0 +0).
- Prerequisites: CSC 107.

**Course content:** Proliferation of Computers in our World; Computers and the Human Imagination; Brief History and Criticism: From the Chip to the Internet; Computers and the Business World; Medicine and Computers; Computers and Education; Computers and the Government Machine; Computers and the Law; Privacy versus Freedom of Information; Employment and Unemployment; Computers in the Banking Industry: Electronic Transactions; The Information Society; Ethics and Professionalism.

---

**CSC 311: Design and Analysis of Algorithms**

- Credit Hours (Lectures, Lab, Tutorial): **3** (3 + 0 + 1).
- Prerequisites: CSC 281.

**Course content:** Models of Computations (includes a brief look at Turing machines). Mathematical foundations. Techniques for designing and analyzing algorithms. Sorting, order statistics, and hashing. Algorithm design paradigms, such as, greedy, divide-and-conquer, backtracking, dynamic programming, and randomization. Search Methods. Graph Algorithms. Time and space complexity classes. Introduction to NP-completeness.

**CSC327: Systems Programming**

- Credit hours (Lectures, Lab, Tutorial): **3** (3 + 0 + 1).
- Prerequisites: CSC 222.

**Course content:** C++ builder and the essentials of visual and Windows systems programming, introduction to windows API, Windows message processing functions, Windows system information functions, memory management functions, process and thread manipulation, handling dynamic link libraries, registry manipulation, clipboard manipulation, timer functions, handling modems and peripherals.

**CSC 329: Computer Networks**

- Credit Hours: (Lectures, Lab, Tutorial): **3** (3 + 0 + 1).
- Prerequisites: CSC 227.

Course content: Use of Computer networks; Network topologies; Layered network architectures, Study of all different layers (functions, services, protocols); Local area networks; Internetworking; Data security; Some applications.

**CEN 333: Computer Architecture for Computer Science**

- Credit hours (Lectures, Lab, Tutorial): **3** (3 + 0 + 1).
- Prerequisites: CSC 222.

**Course content:** Fundamentals of Computer Design (Introduction, definition of performance, quantitative principles). Performance and Cost (Introduction, performance, and cost), Instruction Set Design (Introduction, instruction set architectures, operand storage in memory, memory addressing, operations in the instruction set, and the role of high-level language and compilers. Instruction Set Examples. Basic Processor Implementation Techniques (Introduction, processor datapath, basic steps of execution, hardware control, microprogrammed control, interrupts). Pipelining (Definition, Basic pipeline, pipeline hazards, difficulties). Memory-Hierarchy Design (Principle of locality, general principles of memory hierarchy, caches, main memory, and virtual memory). Input/Output (Introduction, predicting system performance, I/O performance measures types of I/O devices, and Buses). Future Directions (SIMD, MIMD, special-purpose processors, future directions for compilers).

### **CSC 336: Compiler Construction**

- Credit hours (Lectures, Lab, Tutorial): **3** (3 + 0 + 1).
- Prerequisites: CSC 235.

**Course content:** The course introduces the main theories, algorithms and tools for compiler construction. It covers the topics: lexical analysis, (regular expressions and finite automata, Lex), syntax analysis (context-free grammar, Yacc), top-down and bottom-up parsing techniques, semantic analysis, intermediate code generation, run-time system, code generation, and introduction to code optimization. The students are expected to write a complete compiler for a very simple high level programming language.

### **CSC 342: Software Engineering**

- Credit hours (Lectures, Lab, & Tutorial): **3** (3 + 0 + 1).
- Prerequisites: CSC 212.

**Course content:** The software process, the software product, software process models: the waterfall model, the spiral model, etc., software methodologies: classical and object-oriented methodologies, applying software process models and methodologies (all phases) using a practical project, configuration management, software quality assurance, software testing, software reliability and software metrics.

### **CSC 361 : Artificial Intelligence**

- Credit hours (Lectures, Lab, Tutorial): **3** (3 + 0 + 1).
- Prerequisites: CSC 212.

**Course content:** Introduction to AI; Knowledge Representation (Semantic Networks, Frames, Propositional and Predicate Logic); Resolution and Basic Inference Rules; Problem Spaces and Search Techniques (Blind Search: Depth-First Search, Breadth-First Search, Depth-Limited Search, Iterative Deepening Search; Heuristic Search: Greedy Search, A\*-Search, Hill Climbing), Constraint Satisfaction Problems; (Some of the following) Applications: Game Playing, Machine Learning, Natural Language Processing, Expert Systems; Neural Networks; Genetic Algorithms.  
The programming language Prolog will be introduced in the Lab sessions.

### **CSC 380: Fundamentals of Database Systems**

- Credit Hours: (Lectures, Lab, Tutorial): **3** (3 + 0 + 1).
- Prerequisites: CSC 212.

**Course content:** File Organization, indexing techniques, Database Concepts and Architecture, ER model, Relational model and Algebra, SQL, Normalization, Functional dependencies, Introduction to EER, Introduction to OODBMS (Concepts, ODL, OQL).

---

**CSC 383: Advanced Database Management Systems**

- Credit Hours (Lectures, Lab, Tutorial): **3** (3 + 0 + 1).
- Prerequisites: CSC 380.

**Course content:** The System Catalog; Query processing and Query optimization techniques; Concurrency Control techniques; Back-up and Recovery techniques; Security, Development of Database Management Systems. Advanced Database Models.

**CSC 428: Computer Arabization**

- Credit hours (Lectures, Lab, Tutorial): **3** (3 + 0 +1).
- Prerequisites: CSC 327.

**Course content:** System Arabization level (screen Arabization, keyboard Arabization, printer Arabization, font and code page manipulation, creating visual Arabic interfaces, etc.); Introduction to Arabic natural language processing (Arabic morphological analysis, Arabic syntax and semantics, Classical models, Applications); Applying neural networks in Arabic natural language processing (neural networks for Arabic morphological analysis, neural networks for syntactic analysis); The phonetic properties of the Arabic language (Arabic allophones, isolating Arabic allophones, characterization of Arabic allophones, using Arabic allophones in some applications); Applications.

**CSC 429: Computer Security**

- Credit hours (Lectures, Lab, Tutorial): **3** (3 + 0 +1).
- Prerequisites: CSC 329.

**Course content:** Security principles, models, and attacks. Cryptography, public-key and secret-key cryptography. Authentication and digital signatures. Key management and cryptographic protocols. Building secure systems. Security in operating Systems. Security in computer networks. Management and analysis of security. Computer security policy. Intrusion detection and incident response.

**CSC 457: Internet Technologies**

- Credit hours (Lectures, Lab, and Tutorial): **3** (3 + 0 + 1).
- Prerequisites: CSC 329.

**Course content:** An overview of Internet technologies (definitions, evolutions, examples, and, applications). Publishing and browsing technologies. Internet tools. TCP/IP and Client/server architectures. WWW, HTTP and HTML for text, images, links and forms. Database connectivity and indexing. Web-based applications development: CGI scripting, Java, and PERL. WEB site development. Security, and privacy.

---

**CSC 458: Distributed Systems and Parallel Processing**

---

- Credit Hours (Lectures, Lab, Tutorial): **3** (3 + 0 + 1).
- Prerequisites: CSC 227.

**Course content:** Introduction to parallel systems; Processes and processors; Parallel architectures (multi-computer, multi-processor); Interconnection networks; Communication in parallel systems; Parallel programming paradigms; Performance of Parallel systems (speedup, efficiency, etc.); Examples of parallel programming; Introduction to distributed systems; Distributed algorithms; Distributed systems.

#### **CSC 477: Graphics and Human Computer Interaction**

- Credit Hours: (Lectures, Lab, Tutorial): **3** (3 + 0 + 1).
- Prerequisites: CSC 212.

**Course content:** 2-D Computer Graphic Algorithms; Geometric Transformations; Representation of Curves and Surfaces in form, Shade and Design. Cartoons, Human Factory and Relevant Technology effecting Man-machine relation types and shapes of such interaction. Utility Principles and the Dialogue Principle and its Design Supporting Applications.

#### **CSC 483: Information Retrieval and Web Databases**

- Credit Hours (Lectures, Lab, Tutorial): **3** (3 + 0 + 1).
- Prerequisites: CSC 383.

**Course content:** Introduction to distributed databases and client server environment, databases on the web. mobile databases, multimedia databases, Geographical Information Systems (GIS), digital libraries. Querying and indexing the worldwide web. Information Retrieval: an overview, IR techniques, IR system, IR languages, documents indexing, accessing, IR measures, and IR applications to WWW.

#### **CSC 493: Selected Topics in Computer Science**

- Credit hours (Lectures, Lab, Tutorial): **3** (3 + 0 + 1).
- Prerequisites: Level 7.

**Course content:** This course aims at introducing the students to a different area of Computer Science. This will be achieved by exposing them to new tools, techniques, and research in Computer Science.

#### **CSC 496: Graduation Project -1**

- Credit hours (Lectures, Lab, Tutorial): **2** (2 + 0 + 0).
- Prerequisites: Advisor Consent.

**Course content:** The graduation project consists of a sequence of two courses: CSC 496 and CSC 497. In this project, the student is expected to develop software for a specific problem by applying previously learned concepts and methods during the course of the project. In CSC 496, the student is typically expected to study the problem, perform the analysis, determine the requirements, and design the solution. The student will deliver a report at the end of the semester. The project topic may be provided by the department or by the student, subject to the department approval.

**CSC 497: Graduation Project -2**

- Credit hours (Lectures, Lab, Tutorial): 4 (4 + 0 + 0).
- Prerequisites: CSC 496.

**Course content:** The student will continue the software development of his project problem of CSC 496. In this course, the student is expected to deliver a detailed report including all the software development phases.

## 2- Computer Engineering Department

### Bachelor's Program Goals

The Department of Computer Engineering aims to graduate engineers specialized in various areas of computer engineering, who are capable of enhancing the Kingdom's fast-paced development. For that reason, the Bachelor's degree in computer engineering was laid down to qualify the student with the essential technical and scientific knowledge necessary to the computer engineer in the areas of mathematics, physics, electrical engineering, and computer science. In addition, the student gains a great deal of concentrated knowledge in computer architecture, logic design, microprocessor technologies, microcomputers, and also in digital communications, computer networks and control systems. The student applies his academic knowledge in his laboratory experiences in the different labs involving the department's various specialties. The program takes into consideration and keeps up with the field's fast-paced development, one of the most important characteristics of computer engineering. A minimum of 163 credit hours is required for obtaining a Bachelor's degree in computer engineering.

### Department Staff

Dr. Mansour M. Al-Sulaiman	Associate Professor
Dr. Mejahid Mukhallalati	=
Dr. Mohammad A. Al-Oqueely	=
Dr. Naseer E. Rikli	=
Dr. Sami Al-Wakeel	=
Dr. Abdulaziz S. Al-Mazyad	Assistant Prof.
Dr. Badr Al Badr	=
Dr. Hedja'ar Ramadan	=
Dr. Hesham A. Al-Twaijri	=
Dr. Khaled A. Al-Ghoneim	=
Dr. Mansour A. Al-Zuair	=
Dr. Mohammad Aamer Arafah	=
Dr. Mohammad A. Al- Mohimeed	=
Dr. Musa'ad Al-Hussain	=
Dr. Saad Al-Kasabi	=
Dr. Yousef Al Otaibi	=

Engr. Adel Al Hezmi	Lecturer
Engr. Essam Saanah	=
Engr. Isa Al-Ghoneim	=
Engr. Hesham Tolaba	=
Engr. Mohammad Ezzat	=
Engr. Mohammad Siraj	=
Engr. Abdulrahman Al Mutairi	Teaching Assistant
Engr. Majed Al Resaini	=
Engr. Waleed Al Ghanim	=

## Bachelor's Curriculum

### Level - 1

Code	Course Name	Credit
CSC 107	Introduction to Computing	3
CSC 112	Computer Programming -1	3
Eng 102	English for Computer & Engineering Students	6
IC 101	Introduction to Islamic Culture	2
Math 101	Introduction to Differential Calculus	3
<b>Total</b>		<b>17</b>

### Level - 2

Code	Course Name	Credit
Arab 101	Arabic Language Skills	2
CSC 113	Computer Programming -2	4
Eng 104	English for Computer & Engineering Students	3
Math 102	Introduction to Integral Calculus	3
Phys 104	General Physics	4
<b>Total</b>		<b>16</b>

**Level - 3**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
CEN 200	Introduction to CEN	3
CSC 212	Data Structures	3
EE 201	Basics of Electric Circuits	3
Eng 110	Report Writing	2
Math 151	Discrete Math	3
Math 201	Differential & Integral Calculus	4
<b>Total</b>		<b>18</b>

**Level - 4**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
CEN 213	Logic Design	4
EE 202	Electric Circuits Analysis	3
Math 204	Differential Equations	3
Math 244	Linear Algebra	3
Stat 324	Engineering Probability & Statistics	3
<b>Total</b>		<b>16</b>

**Level - 5**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
CEN 313	Logic Design and HDLs	3
CEN 340	Signals and Systems	3
CSC 281	Discrete Math for CSC	3
EE 311	Basics of Electronic Devices	3
IC 102	Islam and Society	2
EE 314	Electronic Devices Laboratory	1
IE 311	Engineering Cost Analysis	2
<b>Total</b>		<b>17</b>

**Level - 6**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
CEN 315	Logic Design Lab	2
CEN 316	Computer Arch. & Assembly Lang.	3
CEN 342	Introduction to Data Transmission	3
CEN 344	Data Communications Lab	1
EE 315	Analog & Dig. Electronic Circuits	3
EE 316	Analog and Digital Elec. Lab	1
Media 205	Communication Skills	3
<b>Total</b>		<b>16</b>

**Level - 7**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
Arab 103	Arabic Writing	2
CEN 433	Digital system design	3
CEN 444	Computer Networks	3
CEN 455	Introduction to Digital Control	3
CEN 456	Digital Control Lab	1
CSC 227	Operating Systems	3
IC 103	Economic system in Islam	2
<b>Total</b>		<b>17</b>

**Level - 8**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
CEN 415	Introduction to VLSI Design	3
CEN 434	Digital System Design Lab	2
CEN 445	Network Protocols & Algorithms	3
CEN 447	Network Lab	2
CSC 342	Software Engineering	3
IS 230	Introduction to Database Systems	3
<b>Total</b>		<b>16</b>

**Level - 9**

Code	Course Name	Credit
CEN 449	Broadband & High Speed Networks	3
CEN 457	Intelligent Systems	3
CEN 490	Seminar	1
CEN 496	Graduation Project -1	1
CSC327	System & Visual Programming	3
GE 402	Engineering Project Management	3
IC 104	Political System in Islam	2
<b>Total</b>		<b>16</b>

**Level - 10**

Code	Course Name	Credit
CEN 448	Security & Internet protocols	3
CEN 459	Robotics	3
CEN 491	Selected Topics in CEN	3
CEN 497	Graduation Project -2	4
CEN 999	Training	1
<b>Total</b>		<b>14</b>

**Courses description****Course Code & Course Title-CEN 200:Introduction to Computer Engineering**

- Credit Hours (Lectures, Lab, Tutorial): 3 (2 + 2 + 1).
- Prerequisites: None.

**Courses content:** The following concepts will be introduced: Electronic and digital system design: Basic circuit elements, circuit analysis, resistive networks, diode and transistor circuits, binary logic gates and circuits, combinatorial and sequential logic circuits, flip-flops, registers, counters, RAM, micro-controllers.

The course includes also topics on data transmission, control and programming concepts at a very basic level, and introduces design concepts and some fundamentals of Web, Internet and artificial intelligence.

### **CEN 213: Logic Design**

- Credit Hours (Lectures, Lab, Tutorial): 4 (3 + 2 + 1).
- Prerequisites: Math 151

**Courses content:** Digital computer and information (numbering systems, arithmetic operations, decimal codes, etc), Combinational logic circuits (Boolean algebra, logic and gates, simplification), combinational logic design (design procedure, Decoders, multiplexers, binary adders and subtracters), Sequential circuits (Latches, Flip flops), analysis and design of synchronous sequential machines(Representation, state reduction and realization; Finite state machines).

The purpose of the lab is to complement the course. The student is supposed to have hands-on experience with the different logic devices that he studies. Furthermore, this hands-on experience should enable the student to better understand the material taught in class.

### **CEN 313: Logic Design and Hardware Description Languages**

- Credit Hours (Lectures, Lab, Tutorial): 3 (3 + 0 + 1).
- Prerequisites: CEN 213.

**Courses content:** Review of synchronous sequential circuit design. Finite state machines (Mealy, Moore). Algorithmic State Machine (ASM). Design and analysis of asynchronous sequential circuits. Selection of a design route, Introduction to programmable logic devices (PLA, PAL, FPGA, CPLDs, etc), Basic VHDL constructs, Simulation of VHDL codes, Different abstraction levels(structural, Data flow, Behavioral), sequential & concurrent structures in VHDL. VHDL models of finite state machine.

### **CEN 315: Logic Design Lab**

- Credit Hours (Lectures, Lab, Tutorial): 2 (0 + 4 + 0.)
- Prerequisites: CEN 313.

**Courses content:** This lab helps students realize and implement the designs covered CEN313. Students will have hands on experience with the implementation of digital systems with different complexities.

### **CEN 316: Computer Architecture**

- Credit Hours (Lectures, Lab, Tutorial): 3 (3 + 0 + 1).
- Prerequisites: CEN 313.

**Courses content:** Review of logic design principles. History of computers. Basic computer organization. Data representation; Design of a hardwired-controlled basic computer; Processor organization; ALUs, Instruction sets and instruction formats; Machine and Assembly language programming. Assembler function and design. System software. Micro-programmed CPU. Comparison between CISC, RISC and VLIW processors. Introduction to memory organization; I/O operations; Introduction to parallel processing techniques.

**CEN 340: Signals & Systems**

- Credit Hours (Lectures, Lab, Tutorial): 3 (3 + 0 + 1).
- Prerequisites: Math 204

**Courses content:** Mathematical Description and classification of continuous time and discrete time Linear Time Invariant Systems, Convolution, Fourier Series and Fourier Transforms, Laplace Transform, Sampling and Reconstruction, Discrete Linear Time Invariant Systems, Z-transform and Applications, Digital System Response and Transfer Functions.

**CEN 342: Introduction to Data Transmission**

- Credit Hours (Lectures, Lab, Tutorial): 3 (3 + 0 + 1).
- Prerequisites: CEN 340.

**Courses content:** Introduction to communication systems: wired & wireless, coaxial cables, optical fiber, microwave and satellite channel. Transmission Impairments: Noise, attenuation, phase and envelope distortion, non-linearity; Data encoding: AM, PM and FM modulations, NRZ, Biphase and differential codes, PCM, DPCM and DM, ASK, FSK, PSK and M-ary signal; Data Multiplexing: FDM and TDM, Statistical TDM, spread spectrum, T1 & E1, SONET/SDH; Data Communication Techniques: HDX, FDX, Asynchronous and synchronous transmission; Interfacing techniques and protocols: EIA 232, V.24, X.21 standards; Data transmission over telephone lines: Modems, basic modem design; Error detecting techniques: CRC; Switching techniques: circuit switching (space & Time), Packet switching (datagrams, virtual circuits); Communication Systems: Telephone Network, Basics of ISDN.

**CEN 344: Data Communication Lab**

- Credit Hours (Lectures, Lab, Tutorial): 1 (0 + 2 + 0).
- Prerequisites: CEN 340, corequisite: CEN 342.

**Courses content:** Demonstration of physical layer and communication techniques (modulation and coding, multiplexing, CRC, interfacing, switching), transmission media.

**CEN 415: Introduction to VLSI Design**

- Credit Hours (Lectures, Lab, Tutorial): 3 (3 + 0 + 1).
- Prerequisites: CEN 313, EE 311.

**Courses content:** Large-scale MOS design: MOS transistors, static and dynamic MOS gates, stick diagrams, programmable logic array design, MOS circuit fabrication, design rules, resistance and capacitance extraction, power and delay estimates, scaling, MOS combinational and sequential logic design, register and clocking schemes, memory, data-path, and control unit design. Elements of computer-aided circuit analysis and layout techniques.

**CEN 433: Digital Systems Design (Micro)**

- Credit Hours (Lectures, Lab, Tutorial): 3 (3 + 0 + 1).
- Prerequisites: CEN 316.

**Courses content:** Architecture and Instruction set of different 16 bit microprocessors; Microprocessor chips and LSI technology; Supporting chips (Buffers, decoders, system clock generator, reset system); Memory chips and subsystems Interfacing 16-bit Microcomputers. Architecture of Microprocessor based systems, design technique, memory and I/O devices interfacing to the microprocessor, interfacing technique, I/O techniques: Interrupts, Direct memory access; System development and design tools techniques: hardware, and software.

**CEN 434: Digital Systems Design Lab**

- Credit Hours (Lectures, Lab, Tutorial): 2 (0 + 4 + 0).
- Prerequisites: CEN 433.

**Courses content:** Design of 16-bit Microprocessor-based systems including RAM and EPROM interfacing, Parallel and serial port interfacing, timer, interrupt controller interfacing, project. Micro-controllers: programming and interface.

**CEN 444: Computer Networks**

- Credit Hours (Lectures, Lab, Tutorial): 3 (3 + 0 + 1).
- Prerequisites: CEN 342

**Courses content:** Introduction to computer networks: Network topologies; Network architecture and the OSI reference model; Data Link Control: flow control and error control, ARQ Stop/wait , Sliding window protocols, DLC standards : HDLC , PPP and SLIP; Medium Access control Protocols and standards; ALOHA, CSMA, CSMA/CD, Token Ring , Wireless; LAN standards & Devices: Ethernet and IEEE standards for LANs; LAN devices: Bridges, HUBs, Ethernet Switches; Network Layer Services: Datagram and Virtual Circuits; WAN Standards and techniques: X.25, Frame relay, ATM.

**CEN 445: Network Protocols & Algorithms**

- Credit Hours (Lectures, Lab, Tutorial): 3 (3 + 0 + 1).
- Prerequisites: CEN 444.

**Courses content:** Network Layer Protocols: Optimality principle, Routing Algorithms: Flow based, Distance Vector, Shortest Path, Broadcast; Congestion control Algorithms: Leaky Bucket, Traffic Shaping, congestion control in ATM; Internetworking Protocols: The Internet Network layer, IP Tunneling and Concatenated Virtual Circuits, IP datagram forwarding, encapsulation, fragmentation, and reassembly; Transport Layer Protocol: TCP and UDP, AAL layer in ATM.

---

**CEN 447: Network Lab**

- Credit Hours (Lectures, Lab, Tutorial): 2 (0 + 4 + 0).
- Prerequisites: CEN 444.

**Courses content:** This is a laboratory course in which students will build, install, configure, and administrate various Network Operating Systems (NOS). The students will also gain practical experience on: Characteristics of an NOS; Peer-to-Peer and Server-based networks; Physical Components of a LAN and their Interaction; Common Transport Protocols; Principles of Resource sharing; Remote Access; Communications between different NOSs; Mailing systems; Router configuration; Bridged networks.

**CEN 448: Security & Internet protocols**

- Credit Hours (Lectures, Lab, Tutorial): 3 (3 + 0 + 1).
- Prerequisites: CEN 445.

**Courses content:** Internet protocols: IP, ARP, RARP, BOOTAP, Error reporting mechanism (ICMP), OSPF routing, BGP, CDIR, IPv6; TCP and UDP; Addressing schemes; Network security: polices, responsibilities, access control, encryption and privacy, public key encryption, DES, RSA, packet filtering and firewall concepts, digital signature; Application Layer Protocols: WWW protocols, DNS, SMTP, the socket application program interface API, client server interaction, Simple Network management SNMP, Multimedia Protocols & standards MPEG , JPEG.

**CEN 449: Broadband & High speed Networks**

- Credit Hours (Lectures, Lab, Tutorial): 3 (3 + 0 + 1).
- Prerequisites: CEN 445

**Courses content:** MAN networks and standards: Fiber distributed data Interface (FDDI) architecture and protocols, Giga Ethernet architecture protocols and standards, DQDB, ATM; High-speed WAN: introduction to broadband Integrated service digital networks (B-ISDN) concepts, architecture, standards and services, ATM network protocols, services , layering and architecture, SONET/SDH layers , configuration , and frames, Frame relay operation, layers and frames; Broadband Wireless networks: wireless ATM, IEEE 802.11, HIPERLAN.

**CEN 455: Introduction to Digital Control**

- Credit Hours (Lectures, Lab, Tutorial): 3 (3 + 0 + 1).
- Prerequisites: CEN 340 and MATH 244.

**Courses content:**

Part I: Continuous Systems: Review of mathematical representation of systems, transfer functions, system analysis in frequency and time domains, system stability, compensator design.

Part II: Discrete Systems: System Modeling and representation; Difference equations; review of Z transform; Review of sampling and reconstruction; Stability analysis; Design of discrete-time control systems; State-space techniques.

---

**CEN 456: Digital Control Lab**

- Credit Hours (Lectures, Lab, Tutorial): 2 (0 + 4 + 0).
- Corequisites: CEN 455.

**Courses content:** Introducing the students to the practical aspects of digital control techniques; Identification of processes (water level system, DC motor, temperature system), design of analogue and digital controllers; process simulation by using MATLAB/SIMULINK; Implementation of digital control via PC (C++ language).

**CEN 457: Intelligent Systems and its Application in Computer Engineering**

- Credit Hours (Lectures, Lab, Tutorial): 3 (3 + 0 + 1).
- Prerequisites: Final year (less than 40 hours to graduate).

**Courses content:** AI Definitions, Knowledge representation, Search techniques, connectionist neural networks, learning and adaptation, self-organization, fuzzy set theory and fuzzy logic, intelligent agents, genetic algorithms, Internet applications.

**CEN 459: Robotics**

- Credit Hours (Lectures, Lab, Tutorial): 3 (3 + 0 + 1).
- Prerequisites: CEN 455, MATH 244.

**Courses content:** Introductory historical development of robotics, robot arm kinematics, inverse kinematics, dynamics and control, trajectory planning, use of software packages, sensors, image acquisition and processing, autonomous mobile robots, control architectures, LEGO Mindstorms and other robotic kits & devices for experimentation applications of mobile robots, Internet and Web Robotics, future trends.

**CEN 490: Seminar**

- Credit Hours (Lectures, Lab, Tutorial): 1 (1 + 0 + 0).
- Prerequisites: None.

**Courses content:** The course organizer delivers an introductory talk on how to deliver a seminar and how to prepare a report on the topic. Next a model seminar is offered by the course organizer, another staff member or any agreed upon person from the industrial or commercial sector in this field of specialization.

Each student of this course should then pick up a suitable topic, write a report and present a seminar on his chosen topic. The course organizer will arrange these weekly seminars, supervise and grade it along with the submitted reports.

**CEN 491: Selected Topics in CEN**

- Credit Hours (Lectures, Lab, Tutorial): 3 (3 + 0 + 1).
- Prerequisites: None.

**Courses content:** This course is designed to enable students to study variable special topics of interest, which are carefully selected from CEN-related topics. The contents of such a course are to be determined by the instructor and the department.

**CEN 496: Graduation Project -1**

- Credit Hours (Lectures, Lab, Tutorial): 1 (1 + 0 + 0).
- Prerequisites: Last year

**Courses content:** The student should take a B.Sc. project in related area to his specialization and with technical merit. This project is for two semesters, it is counted as one hour in the first semester. At the end of the semester the student submits a report describing his projects and the parts he completed in the first semester and proposed parts in the 2nd semester.

**CEN 497: Graduation Project -2**

- Credit Hours (Lectures, Lab, Tutorial): 4 (4 + 0 + 0).
- Prerequisites: CEN 496.

**Courses content:** In this semester the student continues his work in the project. This may require the student to present his progress monthly. At the end of the semester the student presents a detailed report of developed project and oral presentation. The report should indicate that the student understands the topic and his specific implementation. Any hardware or software should be documented in detail. The students grade is based on his work during the project and commitment to fulfill objectives, on the report, and on his oral presentation.

### 3- Information Systems Department

#### Bachelor's Program Goals

Department of Information Sciences is considered as the bridge that fills the gap between Computer Sciences study and management and organizational fields. Students who graduate from the department of information sciences should have the necessary knowledge and expertise that is needed for developing, designing, maintaining, and using information systems in such applications as financial and management applications. Graduates of the department are capable of handling many jobs and careers in both the general sector and the private sector. Such jobs and careers include system analysis and design, database management systems, and the development of applied financial and management systems.

Students of the department of information systems should fulfill the requirement of finishing 137 credit hours in courses. Students should not only have knowledge and experience in handling the different aspects of computer science but also have the necessary knowledge and experience in the management field and the commercial and accounting applications. Also, they should have a good command of demonstration, communication, analysis and design. This means, all courses offered should contribute to all of the above qualities needed.

#### Department Staff

Dr. Alaaeldin Mukhtar Hafez	Professor
Dr. Abdullah I. Assalamah	Associate Professor
Dr. Hussam M. Ramadan	=
Dr. Majed A. Almashari Al-Saud	=
Dr. Mehmet Aksoy	=
Dr. Abdullah S. Alghamdi	Assistant Professor
Dr. Abdullah S. Almudimigh	=
Dr. Abdulrahman A. Mirza	=
Dr. Khaled S. Alghathbar	=
Dr. Khaled M. Alhazmi	=
Dr. Khaled T. Wassef	=
Dr. Mohammed Lahkim	=
Dr. Murad A. Yekhlef	=
Dr. Rasheed M. Alzahrani	=
Dr. Yousry I. Taha	=
Mr. Ali M. Kora	Lecturer
Mr. Ashraf Yousif	=
Mr. Ibrahim F. Moawad	=

Mr. Murad Binsheikh	Lecturer
Mr. Najmuddin Malik	=
Dr. Yousif Shaher	=
Mr. Atif Alamri	Teaching Assistant
Mr. Mohammed Alnuaim	=
Mr. Sultan Alyahya	=
Mr. Yazeed Binhomoud	=

## Bachelor's Curriculum

### Level - 1

Code	Course Name	Credit
CSC 107	Introduction to Computing	3
CSC 112	Computer Programming -1	3
Eng 102	English for Computer & Engineering Students	6
IC 101	Introduction to Islamic Culture	2
Math 101	Introduction to Differential Calculus	3
<b>Total</b>		<b>17</b>

### Level - 2

Code	Course Name	Credit
Arab 101	Arabic Language Skills	2
CSC 113	Computer Programming -2	4
Eng 104	English for Computer & Engineering Students	3
Math 102	Introduction to Integral Calculus	3
Phys 104	General Physics	4
<b>Total</b>		<b>16</b>

**Level - 3**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
CSC 212	Data Structure	3
CSC 222	Computer Organization Engineering	3
IS 200	IS Foundations	2
IS 224	Visual Programming	3
Math 151	Discrete Mathematics	3
Stat 324	Engineering Probability & Statistics	3
<b>Total</b>		<b>17</b>

**Level - 4**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
ACCT 101	Principles of Accounting -1	3
CSC 227	Operating Systems	3
Eng 110	Report Writing	2
IS 230	Introduction to DB Systems	3
IS 240	IS Analysis & Design	3
Math 244	Linear Algebra	3
<b>Total</b>		<b>17</b>

**Level - 5**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
BUS 101	Principles of Business Administration	3
IC 102	Islam and Society	2
IS 335	Data Base Management Systems	3
IS 342	Information Systems Engineering	3
IS 370	Data Comm. & Comp. Networks	3
OR 10	Operations Research Foundations	4
<b>Total</b>		<b>18</b>

**Level - 6**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
BUS 24	Marketing Management	3
IC 103	Economic System in Islam	2
IS 324	Large Programming Projects	3
IS 337	DBMS Lab	3
IS 351	IS Project Management	3
Stat 111	Principles of Distribution Theory	3
<b>Total</b>		<b>17</b>

**Level - 7**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
Arab 103	Arabic Writing	2
CSC 361	Artificial Intelligence	3
IS 444	CASE-Based Applications Development	3
IS 473	Net-Centric Computing	3
IS 491	Selected Topics	3
IS 496	Graduation Project -1	2
<b>Total</b>		<b>16</b>

**Level - 8**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
CEN 448	Security & Internet Protocols	3
IC 104	Political System in Islam	2
IS 452	Information Strategic Planning & Resources Management	3
IS 465	Decision Support Systems	3
IS 480	Electronic Commerce	3
IS 497	Graduation Project -2	4
IS 999	Training	1
<b>Total</b>		<b>19</b>

---

## Courses description

### Course Code & Course Title - IS200: Information Systems Foundations

- Credit Hours (lecture, lab, tutorial): 2 (2 + 0 + 0)
- Prerequisites: CSC107, CSC112.

**Course content:** Definition of information systems: information and systems, the philosophy of IS department, IS courses and their interrelationships, information systems technology, the strategic role of information and information systems, organization structure and information systems, organization modeling, computing and networking in international enterprises, the process of decision making, strategic planning of information systems, information systems needs, the architecture design of information organizations, services and products of information systems, and management of information systems.

Students of this course are introduced to the main components of information systems and their strategic roles. This includes all aspects of electronic commerce (e-commerce), electronic management (e-management), and the future needs of fully automated organizations (e-organizations). Students should be aware of the current classes of information systems, and their usage in all organization units specially the management function. Students who finish this course should have enough knowledge in: the influence of information systems on management, the use of information systems in knowledge distribution, collaborative work, the use of information systems in decision making, and the use of the Internet and information technology in web applications and their utilization in reengineering and total quality. The course professor should try to link students to the actual practice of ISs through assignments and demos of real-life systems within and outside the university.

### IS224: Visual Programming

- Credit Hours (lecture, lab, tutorial): 3 (2 + 2 + 0)
- Prerequisites: CSC113.

**Course content:** This course consists of covering the main concepts and techniques used in visual programming languages. For a carefully selected visual programming language, the following topics are covered: the syntax and semantics of the language, data types, conditional statements, loops, data structures, modular programming, review of relevant Object Oriented concepts and methodologies, user interface design rules, materializing an interface as a set of visual objects, file types and structures, file applications, publishing an interface on the web, basic concepts of HCI (human computer interface), comparison between the selected language and other visual programming languages.

### IS230: Introduction to Database Systems

- Credit Hours (lecture, lab, tutorial): 3 (3 + 0 + 1)
- Prerequisites: IS200, CSC212.

**Course content:** Characteristics and advantages of the database systems, database concepts and architecture; data models, database schemes and instances, Database

---

---

Management Systems (DBMS) and the concept of program-data independence, database languages and interfaces. Relational data model and relational algebra, relational model constraints; domains, keys, and integrity constraints. Structured query language (SQL); data definition, queries, update, manipulation statements, and views in SQL. Database design; functional dependencies, normal forms. Design by using Entity relationship mapping. Introduction to object oriented databases (OODB).

**IS240: Information Systems Analysis & Design**

- Credit Hours (lecture, lab, tutorial): **3** (3 + 0 + 1)
- Prerequisites: IS200, CSC212.

**Course content:** This course is concerned with the fundamental subjects, methods and skills needed to analyze, design and implement computer-based systems. It addresses the role of the systems analyst, and the techniques and technologies used. The structured software development life cycle approach, modeling techniques and development phases are comprehensively discussed. In modeling techniques we thoroughly describe, process modeling, information modeling, system architecture modeling, and object oriented modeling. A project is given to students that should cover all analysis and design phases, and should be done in groups. This course should emphasize the student communication, documentation and modeling skills.

**IS324: Modern ways to Application Programming**

- Credit Hours (lecture, lab, tutorial): **3** (2 + 2 + 0)
- Prerequisites: IS224, IS240.

**Course content:** The modern programming trends and their usage in developing real applications that is needed for society organizations. Understanding and specifying the nature of problem that is processed, analyzing it, providing a technical conception to solve it, implementing the solution by using the specified programming tools, documenting and presenting it. The selected project varies from real live fields and especially the contemporary ones such as: Medical Information Systems field, E-Commerce field, Academic field...etc. The student is free to choose the programming language from the languages that have been studied (learning new language is not the goal of this course), but restraint him with the suitable style that is concurrent with the agreed upon theoretical boundary. During the course the students talent is developed and the spirit of competition, creativity, the quality of work, good presentation is encouraged, that requires low number of student in each section. This course contains two or three large programming projects during the academic semester.

**IS335: Database Management Systems**

- Credit Hours (lecture, lab, tutorial): **3** (3 + 0 + 1)
- Prerequisites: IS230.

**Course content:** DBMS architecture and administration; centralized and client-server approaches, system catalog, and data dictionary. Transaction management; concepts, characteristics, and processing, recovery techniques, concurrency control techniques: serializability, deadlock, locking schemes, time-stamp ordering, multi-version, and

---

---

optimistic techniques. DB security. Distributed databases, distributed DBMS, data fragmentation and replication, distributed transactions management. Object-oriented databases. Introducing new emerging DB technologies and applications; Web DBs, multimedia DBs, data warehousing, data Mining, ... etc.

**IS337: DBMS Lab**

- Credit Hours (lecture, lab, tutorial): **3** (2 + 2 + 0)
- Prerequisites: IS335.

**Course content:** Selection of DBMSs, database languages, architecture of the selected DBMS, DBMS installation. Practical DB design issues and design tuning, indexing, integrity constraints and its related issues. Security management, database recovery. Interfacing with web applications, drivers to programming languages, DB connectivity tools, data distribution and replication issues, DBMS tools and its environment.

**IS 342: Information Systems Engineering**

- Credit Hours (lecture, lab, tutorial): **3** (3 + 0 + 1)
- Prerequisites: IS240.

**Course content:** The advanced steps to system developing, such as types of software testing, and user acceptance system testing. Different strategies used in installing application systems. Types of systems maintenance, and how to measure and control their effectiveness. Introduction to quality assurance, in general, and software quality assurance, as a special case, and the ISO 9000 and ISO 9125 quality factors, in addition to the different methods used in measuring software sizing specially those depend on object programming functions. Information systems development methodologies, requirement engineering, and software version management.

**IS351: Information Systems Project Management**

- Credit Hours (lecture, lab, tutorial): **3** (3 + 0 + 1)
- Prerequisites: IS240.

**Course content:** This course provides an introduction to management concepts, principles, techniques and terminology with particular reference to IS project management. Project definition, responsibilities of project manager and project members, and project risk evaluation. It also addresses issues such as planning, organization, resources, scheduling, control, quality, cost estimation and tools for project management. Strategies used in writing proposals, and, technical and managerial documents related to costs, components of project management tools; and technical comparison between some of the most important project management software tools.

**IS 370: Data Communications and Computer Networks**

- Credit Hours (lecture, lab, tutorial): **3** (3 + 0 + 1)
- Prerequisites: IS200.

**Course content:** Definition of computer networks and their objectives and applications, computer network type, computer network architecture: layering,

---

protocols and standard models, physical layer of computer network: the transmission media; signal types, signal characteristics and impairments, modulation techniques and modems, digital signal encoding schemes, physical interface, data transmission basics: synchronous and asynchronous transmission, synchronization levels; bit, character and frame, transmission modes; full , half duplex, simplex , parallel and serial, data link layer: data link layer functions and standards, protocols, local area networks: topology and media access methods, local area networks, Ethernet networks, ...etc., wireless networks, wide area networks, and data transport networks; cellular networks, satellite networks, ATM & ISDN networks.

**IS444: The Modern Tools for Applications Development**

- Credit Hours (lecture, lab, tutorial): **3** (2 + 2 + 0)
- Prerequisites: IS342.

**Course content:** The main objective of this course is to command the perfection of one of the modern development tools by developing an integral information system using one of the systems development methodologies supported by those tools. The system is developed through three main stages: Requirement engineering with what is it contains of data and processes models and system logic and prototyping, implementation, and documentation phases. Also, the course covers various used tools and its features, architecture, detailed components, the supported methodologies, usage ways and administration, its impact on administering information systems project, organization productivity and its ability to fulfill the fast changes in modern business environments, and the appraisalment of its strength and weakness.

**IS452: Information Strategic Planning and Resource Management**

- Credit Hours (lecture, lab, tutorial): **3** (3 + 0 + 1)
- Prerequisites: IS370.

**Course content:** This course covers the following topics: definition of IT infrastructure and resources, information strategy planning components (business planning, systems planning, and technical planning), strategic planning (strategic management, steps and tools of formal strategic planning, strategic planning feedback, developing strategic statements, and strategic planning rules), organizing and leading the information technology department, managing the development of information resources, cost analysis, charging of information services, IT outsourcing management, IT operations management, IT management processes, IT architecture evolution and alternatives, IT contingency planning, IT resources safety, issues of managing business-wide shared IT resources, personal issues; recruitment, orientation, training, career planning, human factors and performance measurement. Facility management, security issues, internal auditing, standard and procedures of the information center, and continuous improvement of IT resources. Standard measurement of IT network, network planning, network development life cycle (NDLC), Network factors and performance measurement, network management, network management tools.

---

**IS465: Decisions Support Systems**

- Credit Hours (lecture, lab, tutorial): **3** (3 + 0 + 1)
- Prerequisites: IS335, OR101.

**Course content:** This course covers the following topics: the decision making process, decision making and support systems (DSS), categorization of problem-solving techniques, data management and concepts of the data warehousing, modeling of management problems; linear programming models, simulation models, and forecasting models, model-based management systems, decision support system construction methods, DSS user interface design and management, DSS hardware, software, and technology Levels, knowledge-based systems and expert systems, expert system architecture, knowledge representation, forward and backward chaining, inference, applications of expert systems in decision making, group, distributed, and executive decision support systems.

**IS473: Net-Centric Computing**

- Credit Hours (lecture, lab, tutorial): **3** (3 + 0 + 1)
- Prerequisites: IS370 + CSC227.

**Course content:** In this course the following topics are covered: principles of distributed computing, the Internet as a huge computer system, distributed computing models: client-server model, multiple-server model, mobile agents model, and computer networks, TCP applications, IP layer applications, socket management, inter-process communication, UNIX case study, distributed object oriented architectures; design issues, building applications in client-server architecture, introduction to distributed file systems, name servers, modern trends in distributed computing.

**IS480: Electronic Commerce**

- Credit Hours (lecture, lab, tutorial): **3** (3 + 0 + 1)
- Prerequisites: IS230, IS240, IS370.

**Course content:** In this course the following topics are covered: corporate strategic planning for e-commerce, business design and architecture for e-commerce application, Web-based marketing strategies and models, e-commerce project management; public policies and legal issues of privacy, socio-technical infrastructure for e-commerce, risk management in e-commerce projects; e-transformation, measuring effectiveness of e-commerce projects, e-commerce and organizational change management, e-commerce and competitiveness, success and failure in e-commerce applications, retailing in e-commerce, banks and e-commerce, techniques of consumer behavior analysis in e-commerce context, advertisement in e-commerce, e-commerce and online publishing, e-commerce in manufacturing, e-commerce and supply chain management, e-commerce and customer asset management, business to business (B2B) e-commerce, business to customer (B2C) e-commerce, e-payment systems, mobile commerce (m-commerce), modern trends in developing e-commerce systems, available packages and software tools, and technical evaluation.

---

**IS491: Selected Topics in Information Systems**

- Credit Hours (lecture, lab, tutorial): **3** (3 + 0 + 1)
- Prerequisites: IS335, IS342, IS370.

**Course content:** Current topics in information systems and technology. Requirement engineering tools and methods, simulation, virtual reality, internet security, data warehousing and mining, geographic information systems, telemedicine and medical informatics, workflow management, quantitative and qualitative methods in information systems, global information technology management, intelligent agent technology and applications, human computer interaction, computer-based learning and training, philosophical foundations of information systems, absorbing continuous IT developments in organizations, IT professional and organizational needs, organizational learning and collaborative technologies, understanding and managing information users behavior, policy, legal and security issues in IT, and virtual organizations.

**IS496: Graduation Project -1**

- Credit Hours: **2**
- Prerequisites: IS230, IS351.

**Course content:** The previous courses have provided the IS students with strong and sufficient knowledge to develop information systems. The next logical stage is that the IS student must acquire hands-on experiences on developing real world information systems. In addition, the students should be familiarized with real world problems encounter during the development of real world information systems. Furthermore, the students should be trained to work in teams. In this course, the students will be organized into groups. The number of students in each group should not exceed three students. For each group, a supervisor will be allocated to guide the group in developing a particular information system. In developing an information system, a particular information system development methodology should be used in two stages: The first stage will be carried out in IS 496 and the second stage will be carried out in IS 497. In IS496, the students of each group must identify a problem domain, define a problem, identify the requirements in details, analyze and document the current system, proposed alternative systems, and design a particular system in details which includes the definitions of all the required system models such as the data model and the functional model. At the end of the course, each group must submit a formal report documenting the problem domain, the requirements, the specifications, and the system models.

**IS497: Graduation Project -2**

- Credit Hours: **4**
- Prerequisites: IS496.

**Course content:** In this course, each group will continue developing the information system they started in IS 496. Groups must use appropriate tools to implement the system. These tools must be new - not taken in previous courses- if this is possible. Furthermore, students must prepare a user manual for the systems in an appropriate

---

format. At the end of the term, each group must submit a final report that documents completely the information system, from the problem definition phase to the final implementation and operation phase.

## 4- Computer Technology Department

The objectives of the department were to qualify its graduates with applied and technical information to assist other department's graduates in the college, and to cover the need of computer technicians in computer technology and computer systems. The department had offered a "Diploma" in three branches: Programming Technology, Machinery Technology, and Field Engineering. Due to students enrolling in bachelor degree number increase, the college decided to stop the enrollment in the "Diploma" program mentioned above.

Currently the department is teaching courses related to computer technology in the college and in the other colleges of the university. The college is developing plans for the department to contribute with other college's departments for filling the growing demands in computer science.

### Department Staff

Dr. Khalid Naser Almuteb	Assistant Professor
Dr. Salah Mohamad Rahal	=
Dr. Samir Al dardery	Assistant Professor
Dr. Gassem Amin	Lecturer
Dr. Obaid Saad Fares	=
Eng. Ahmed Abdel Razek Hussein	=
Eng. Fetouh Kallel	=
Eng. Mohamed Wakeel Ahmad	=
Eng. Ibrahim Shahwan	Technician

## 5- Information Technology Department

### Bachelor's Program Goals

Since women play such an important role in the Saudi society, the bachelor program found it essential to reinforce their abilities in becoming excellent mothers, housewives and employees. It also was set to help them understand and use new technologies and computer systems in their family and social environment. Graduates will also be able to take part in the functional and administrative tasks of women sectors that use computers in information system and database applications. Another goal of the program is to prepare graduates to teach the future generations of computer technology and computer science students.

The department offers a Bachelor of Science degree in computer applications after completing 136 hours of the curriculum. It also offers a diploma after completing 80 hours of the curriculum.

There is an educational pathway for those who wish to become computer science teachers for the different educational levels.

The department helps in offering a Master of Science degree in computer information systems or in computer science in association with other college departments for those who have wish to continue their graduate education.

### Department Staff

Dr. Mona Fatma Mohamed Mursi Ahmad	Professor
Dr. Ehsan Mostafa Ahmed Abed	Associate Professor
Dr. Feryal Ismael Haj Hassan	Assistant Professor
Dr. Lailac Ahmed Al Safadi	=
Dr. Nadia Mohammed Saleh Al Ghreimil	Assistant Professor
Dr. Hanan Ahmed Hosni Mahmoud	=
Laila Al Sayed Khadr	Lecturer
Salwa Hamed Mohammed Al Jasser	=
Hend Rasheed Mohammed Al Belah	=
Afshan Enis Allah Shafih Allah Jaffari	=
Abeer Ibrahim Abdel Aziz Al-Shaya	=
Manar Ibrahim Fawzi Hosny	=

Heyam Hussein Al Baity	=
Maha Mohammed Saud Al Sayari	Lecturer
Kholoud Saad Saleh Al Saleh	=
Hend Suliman Al Khalifa	=
Nahla Ibrahim Mohammed Al Faris	=
Auhood Abdullah Ibramhim Al Faris	=
Sarah Faisal Bandar Al Saud	=
Samira Ali Sulaiman Aalahmar	Research Assistant
Maha Mohammed Abdul Aziz Al Yahyah	Teaching Assistant
Sreen Abdullah Mohammed Al Omran	=
Mzna Abdullah Mohammed Al Rodhaan	=
Kholoud Saleh Abdulrahman Al Mani	=
Nora Salama Al Twairesh	Teaching Assistant
Nora Abdulrahman Al Saud	=
Abeer Sulaiman Al Humaimeedy	=
Badour Mohammed Al Rayes	=
Dalal Saad Al Rajeh	=
Hessah Abdullah Al Salamah	=
Latifa Mohammed Al Abdulkhreem	=
Nourah Abdulmohsen Al Rossais	=

**Level - 1**

Code	Course Name	Credit
CSC 100	Introduction to Computers	3
Eng 102	English for Computer & Engineering Students	6
IC 101	Introduction to Islamic Culture	2
Math 101	Introduction to Differential Calculus	3
<b>Total</b>		<b>13</b>

**Level - 2**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
Arab 101	Arabic Language Skills	2
CSC 150	Introduction to Computer Programming	4
Eng 104	English Language for Computer Science Students	3
IC 102	Islam and Society	2
Math 102	Introduction to Integral Calculus	3
<b>Total</b>		<b>14</b>

**Level - 3**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
CSC 151	Structured Programming	4
ED 101	Fundamentals of Islamic Education	3
IC 103	Economic System in Islam	2
Math 151	Discrete Mathematics	3
Stat 101	Principles of Statistics & Probability	3
<b>Total</b>		<b>15</b>

**Level - 4**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
Arab 103	Arabic Writing	2
CAP 201	Object Oriented Programming	3
CAP 211	Data Structures	3
Eco 101	Basics of Partial Economics	3
IC 104	Fundamentals of Islamic Policies system	2
<b>Total</b>		<b>13</b>

**Level - 5**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
Acct 101	Accounting Principles -1	3
CAP 208	Database Design -1	3
CAP 241	Com. Org. & Assembly Language	3
CAP 251	Web Programming	3
CAP 362	Management Information Systems	3
<b>Total</b>		<b>15</b>

**Level - 6**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
CAP 371	Comp. Architecture & Op. Systems	3
Eng 110	Report Writing	2
Nutr 204	Nutrition	2
Math 201	Differential and Integral Calculus	4
Phys 104	General Physics	4
<b>Total</b>		<b>15</b>

**Level - 7**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
CAP 323	Database Design -2	3
CAP 473	Computer Communications Systems	3
ED 111	Principles of Pedagogic Research	2
Stat 111	Statistics and Probability	3
Trans 318	Translation in Engineering and Technology fields	2
<b>Total</b>		<b>13</b>

**Level - 8**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
Acct 231	Cost Accounting -1	3
CAP 331	Principles of Prog. Languages	3
CAP 351	Systems Analysis and Design	3
CAP 373	Computer Graphics	3
ED 352	School Administration	2
<b>Total</b>		<b>14</b>

**Level - 9**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
CAP 341	Comp. Environment & Peripherals	3
CAP 363	Computer Assisted Instruction	3
CAP 441	Microprocessors and Microcomputer Systems	3
ED 121	School and Society Administration	2
Phg 253	Pharmacognosy	2
<b>Total</b>		<b>13</b>

**Level - 10**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
CAP 499	Graduation Project	3
ED 242	Preparatory Education	2
EDT 241	Education and Communications Technology	2
EDT 250	Production and Usage of Educational Aids	1
Soc 466	Social Studies	2
<b>Total</b>		<b>10</b>

## Diploma's Curriculum

### Level - 1

Code	Course Name	Credit
CSC 100	Introduction to Computers	3
Eng 102	English Language for Computer Science Students	6
IC 101	Introduction to Islamic Culture	2
Math 101	Introduction to Differential Calculus	3
<b>Total</b>		<b>14</b>

### Level - 2

Code	Course Name	Credit
Arab 101	Arabic Language Skills	2
CSC 150	Introduction to Computer Programming	4
Eng 104	English Language for Computer Science Students	3
IC 102	Islam and Society	2
Math 102	Introduction to Integral Calculus	3
<b>Total</b>		<b>14</b>

### Level - 3

Code	Course Name	Credit
CSC 151	Structured Programming	4
ED 101	Fundamentals of Islamic Education	3
IC 103	Economic System in Islam	2
Math 151	Discrete Mathematics	3
Stat 101	Principles of Statistics & Probability	3
<b>Total</b>		<b>15</b>

**Level - 4**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
Arab 103	Arabic Writing	2
CAP 201	Object Oriented Programming	3
CAP 211	Data Structures	3
Eco 101	Basics of Partial Economics	3
IC 104	Fundamentals of Islamic Policies system	2
<b>Total</b>		<b>13</b>

**Level - 5**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
Acct 101	Accounting Principles -1	3
CAP 208	Database Design -1	3
CAP 241	Computer Organization & Assembly Language	3
CAP 251	Web Programming	3
CAP 362	Management Information Systems	3
<b>Total</b>		<b>15</b>

**Level - 6**

<b>Code</b>	<b>Course Name</b>	<b>Credit</b>
BUS 101	Principals of Business Administration	3
CAP 323	Database Design -2	3
CAP 371	Computer Architecture & Operating Systems	3
<b>Total</b>		<b>9</b>

## Courses Description (Bachelor – Diploma)

### Course Code & Course Title - CSC 100: Introduction to Computers

- Credit hours: (Lectures + Lab + Tutorial) = 3 (3 + 2 + 0).
- Prerequisite: None.

**Course content:** Introduction to computers: history, hardware components, system software, computer categories and microcomputer. Problem analysis and Algorithm development. Introduction to programming languages and files. Programming in Visual Basic.

Lab: Word, Excel and Visual Basic.

### CSC 150: Introduction to Computer Programming

- Credit hours: (Lectures + Lab + Tutorial) = 4 (3 + 2 + 1).
- Prerequisite: CSC 100.

**Course content:** Introduction to history of C and basics of the C environment. Introduction to C programming: fundamental data types, arithmetic in C, equality and relational operators. Structured program development: IF, IF/ELSE, short circuit evaluation). Program controls: while, for, do/while, break, continue, switch and nested loops. C standard library functions (math, character, strings). Function: definition and prototypes, calling functions (call by value) and scope rules. Arrays: declaring arrays, character arrays, passing arrays to function and multiple-subscript arrays.

### CSC 151: Structured Programming

- Credit hours: (Lectures + Lab + Tutorial) = 4 (3 + 2 + 1).
- Prerequisite: CSC 150.

**Course content:** Storage classes, pointers, strings and pointers, dynamic memory allocation, structures and enumerations, linked list, recursion, file processing (formatted and unformatted input/output), Introduction to C++ (classes, differences between C and C++).

### CSC 211: Data Structures

- Credit hours (Lectures + Lab + Tutorial) = 3 (3 + 0 + 1).
- Prerequisite: CSC 150.

**Course content:** Linear and non-linear data structures; their construction, implementation and application with reference to high-level languages. Searching and sorting techniques.

### Course Code & Course Title- CAP 201: Object Oriented Programming

- Credit hours (Lectures + Lab + Tutorial) = 3 (2 + 2 + 0).
- Prerequisite: CSC 151.

**Course content:** Fundamental concepts of Object-Oriented Programming. OOP languages. OOP in C++, native data types and statements, functions and pointers, function overloading, operator overloading, inlining, call by reference. The C++

classes, data hiding and member functions, class scope. Object creation and destruction. Class derivation and inheritance, virtual functions. Class templates. Object-Oriented Design.

**CAP 208: Database Design –1**

- Credit hours (Lectures + Lab + Tutorial) = **3** (3 + 2 +0).
- Prerequisite: CAP 201.

**Course content:** Survey of database system design and implementation, File systems and database systems, ER modeling, Relational Data Model, Relational Algebra, Functional Dependencies and Normalization, SQL, Storage Organization and Indexing.

**CAP 241: Computer Organization and Assembly Language**

- Credit hours (Lectures + Lab + Tutorial) = **3** (3 + 2 +0).
- Prerequisite: CSC151, MATH 151.

**Course content:** Digital Logic Circuit; Digital Components; Data Representation; Organization of the IBM Personal Computer; Assembly Language Syntax, Basic instructions; The Processor Status and the Flags register; Flow Control Instructions; Logic, Shift and Rotate instructions; Arrays and addressing modes.

**CAP 251: Web Programming**

- Credit hours (Lectures + Lab + Tutorial) = **3** (2 + 2 +0).
- Prerequisite: CSC 151.

**Course content:** The course teaches the students how to design and create a web page using current technologies that are used for internet programming.

**CAP 323: Database Design -2**

- Credit hours: (Lectures + Lab + Tutorial) = **3** (3 + 2 +0).
- Prerequisite: CAP 208>

**Course content:** Advanced Data Modeling, Object-Oriented database systems, Object relational database systems, XML, Transaction Processing, Concurrency Control, Professionalism and ethics; Distributed Databases, Databases and the Web (IDBC), (ODBC).

**CAP 331: Principles of Programming Languages**

- Credit hours: (Lectures + Lab + Tutorial) = **3** (3 + 2 +0).
- Prerequisite: CSC 211.

**Course content:** Programming languages processor, syntax, semantics, compilation phases, data types and structures, control structures, run-time considerations, memory management, brief idea about some languages: PASCAL, ADA, LISP, SNOBOL.

**CAP 341: Computer Environment and Peripherals**

- Credit hours: (Lectures + Lab + Tutorial) = **3** (3 + 0 +1).
- Prerequisite: Phys 104 + CAP 371.

**Course content:** A comprehensive intermediate-level study of microcomputer hardware components and software/hardware interfaces. Fundamentals of motherboard, processor, power supply, memory, bus structure, disk drives, peripheral & I/O devices, adapter cards and expansion slots. Operating system function, structure and operation. Memory types, conflict resolution and optimization. File and disk management. Networking and multimedia technology. Installation, configuration, and upgrading, diagnosis and troubleshooting, safety and preventive maintenance.

**CAP 351: Systems Analysis and Design**

- Credit hours: (Lectures + Lab + Tutorial) = **3** (3 + 0 +1).
- Prerequisite: CAP 208.

**Course Content:** The course is designed to provide Computing and Information Systems students with a strong foundation in systems analysis and design concepts, methodologies, techniques, and tools in both structure-oriented and object-oriented approaches. It is intended to prepare the student for analyzing the information needs and processes of a business. The Systems Development Life Cycle (SDLC) as well as the Object-Oriented Development Life Cycle (ODLC) will form the conceptual basis for development. More timely development approaches such as the UML approaches, rapid application development (RAD), joint application development (JAD) and project management are also covered. The course includes the use of a Computer-aided Systems Engineering (CASE) tool.

**CAP 362: Management Information Systems**

- Credit hours: (Lectures + Lab + Tutorial) = **3** (3 + 0 +1).
- Prerequisite: 3-d Level.

**Course Content:** Managing the Digital Firm; Information System in the Enterprise; Information system Organization, Management and Strategy; Managing Data Resources; Redesigning the Organization with information Systems; Understanding the Business Value; Managing Knowledge; Information Systems Security and Control.

**CAP 363: Computer Assisted Instruction**

- Credit hours: (Lectures + Lab + Tutorial) = **3** (2 +2 + 0).
- Prerequisite: 3-d Level.

**Course Content:** The use of the computer in education, computer based educational programs, ideal model for creating educational programs, lesson design, lesson presentation methods, use of the computer for review and test generation.

---

**CAP 371: Computer Architecture & Operating Systems**

- Credit hours: (Lectures + Lab + Tutorial) = **3** (3 + 0 +1).
- Prerequisite: CAP 241.

**Course Content:** Computer Architecture: Introduction; Register Transfer and Microoperations; Basic Computer Organization and Design; Microprogrammed Control. Operating System: Introduction; Time management; Space management; Process synchronization; File management; File system implementation.

**CAP 373: Computer Graphics**

- Credit hours: (Lectures + Lab + Tutorial) = **3** (3 +2 +0).
- Prerequisite: CSC 211.

**Course Content:** Principles of computer graphics and its applications; Display device components, types and architecture; Output primitives: scan conversion; Filling and character generation; 2D and 3D Transformations, homogeneous coordinate and composite transformations; 2D and 3D Viewing concepts: mappings & projections; Advanced topics: representations of polyhedra, curves and surfaces and hidden surface removal methods.

**CAP 441: Microprocessor and Microcomputer Systems**

- Credit hours: (Lectures + Lab + Tutorial) = **3** (3 + 0 +1).
- Prerequisite: CAP 371

**Course Content:** Advanced computer architecture concepts; INTEL 80x86 Microprocessor Family; The 8086 internal organization & programming model; The real mode & protected mode; 8086/8088 hardware specifications; Memory organization; Input / Output; Interrupts.

**CAP 473: Computer Communications Systems**

- Credit hours: (Lectures + Lab + Tutorial) = **3** (3 + 0 +1).
- Prerequisite: CAP 371.

**Course Content:** Computer networks applications, standards basic concepts, network topologies, transmission media, the OSI model, communication types, communication equipment, standard protocols, local area networks, linking computer networks, information integrity and security, the TCP/IP protocol.

**CAP 499: Graduation Project**

- Credit hours: (Lectures + Lab + Tutorial) = **3** (3 + 0 +0).
- Prerequisite: Last year.

**Course Content:** The students are organized into groups. Each group develops a graduation project in related area of Information Technology specialization. During the project period, the students are trained to work in teams. At the end of the semester, each group submits a final report where project steps and achieved results are described in detail.

The student grade is based on her contribution in performing the project, final report, and presentation that is followed by discussion.

## **6- Research Center**

### **Research Center Establishment**

Due to the importance of research centers in developing the research activities and academic advancement in different areas, Research Center of the College of Computer and Information Sciences was established with the main purpose to encourage academic research work in the college, coordinate between such works and generate required possibilities for this purpose. The establishment of Research Center was based on the approval of The Council of the College in its fifth meeting held on 27/2/1405H. The Research Center fulfills its activities and duties according to the unified regulation regarding academic research in Saudi Universities issued in the memo of the Council of Higher Education no: 2/10/1419H in its tenth session held on 6/2/1419H. This was as per the Royal Decree (No: 7/B/4403, dated: 2/4/1419H) from the Custodian of two holy mosques and Chairman of Board of Higher Education.

### **Research Center's Goals**

The Research Center in the College of Computer and Information Sciences was established to achieve the following main objectives:

- Motivate the researchers and faculty members to carry on the researches in the field of information and computer Science.
- To originate the links between the College and governmental institutions and private sector to carry on the researches in respective fields on their interest on behalf of them.
- To cooperate and coordinate among the researchers and faculty members of the College on one hand and the researchers of other universities on other hand, to carry on the combined research in various fields of computer application.
- To coordinate with other local and international research centers and academic institutions, which are advanced and have valuable experience of research.
- To review all the research works done by the Research Center and to publish them after acquiring necessary permission for this purpose.

### **The Activities of Research Center**

The Research Center in the College of Computer and Information Sciences carries on the following activities and programs:

- To support the research proposals of faculty members of the College\*.
- To support the research works done by postgraduate students of the College.
- To organize academic lectures and seminars.

\* Supported research projects by the Center are, up to now, around 130 projects.

- To extend support to the KSU Academic Magazine (CCIS division).
- To issue periodical “CCIS News Letter”.
- To support the consultancy studies.

### **Research Center’s Board of Directors**

As per the universities’ unified regulation, A Board of Directors for the Research Center has been formed. All the Board members belong to various departments of the College of Computer & Information Sciences. All of them have their grounds in different fields of computing. The term of the Board’s functioning is two year renewable if deemed so. The Board of Directors includes:

- |                           |           |
|---------------------------|-----------|
| - Dr. Hassan Mathkour     | President |
| - Dr. Mansour Al-Sulaiman | Member    |
| - Dr. Yusuf Al-Otaibi     | =         |
| - Dr. Mohammad Ben Maiza  | =         |
| - Dr. Mohammad Eksoy      | =         |

### **Duty and Authority of the Board of Directors**

The Board of Research Center will take care of all related matters of Research Center. Some important are as follow:

- Propose annual plan of the Center and lay down a budget for it accordingly.
- Study all research projects of faculty members and follow them up to execute them.
- Perform the studies and research projects required by the organizations outside of the KSU, select the research members, follow up its execution and propose the payments of all participants as per the existing regulations in this regard.
- Recommend expending from the budget of the Center within the authority of the Board.
- Study the annual report, final account and budget of the Center and present them to higher authority.
- Study whatsoever may be referred to the Center by the “Deanship of Academic Research” of KSU.

### **News Bulletin for the Research Center**

Research Center will issue a news and research bulletin titled: “CCIS News Letter.”

The bulleting will serve the following goals:

- Publish articles (not refereed) in the field of computing to depict the latest research and development in the field of information and computing technology.

- Encompass all the latest news about the activities of Research Center, departments of the College and its administrative units.
- Open a channel for both graduates and undergraduate students to take active part in the Bulletin with their articles and news related to information and computing.
- Link the faculty members with their current and old students of the College interchanging the latest from both sides.
- Announce the conferences and academic events.
- Develop the computing and informatic awareness as a whole.

## 7- Computer Center

Computer Center Establishment - Administration Council On academic year 1424/1425 H, the Computer Center has been reorganized in the college as follows:

- The Center's General Supervisor.
- The Center's Manager.
- The Center's Units.
- The Center's Administration Council.

The Administration Council has been established as follows:

- Dr. Khalid N. Almuteb                      General Supervisor & CEO for the center
- Mr. Saleh Al-Roujayee                      Center's Manager
- Dr. Dr. Yousif Shaher                      Technical Manager
- Dr. Mohammed A. Al-Abdulkareem      Member
- Dr. Rasheed M. Al-zahrani                =
- Dr. Mohammad A. Arafah                 =
- Dr. Abdullah S. Al-ghamdi                =
- Dr. Mohammad Ben Maiza                 =

### Technical Staff

Name	Job
Hamoud Al-Ghamdy	Programmer
Mohammed Athar	Lecturer
Mohammed Feroun	Research Assistant
Saleh Al-Roujayee	Programmers Manager

### Computer Center's Services

The center provides its services for all colleges teaching staff, administrative staff and students. Hence, it was equipped with a local network as a part of the university's network; a network point is supplied to each office and lab. This network is connected to many servers and personal computers which operates using different operating systems along with different software, and it covers the following:

- More than 10 file servers.
- Personal computers distributed between colleges staff and labs.
- A set of printers.
- A set (more than 50) of laptops.
- Operating systems and software, which includes (Windows OS, Linux OS, And Solaris OS). Each OS deals with a set of programs.

## **8- College's Labs**

The main college's labs that carry out academic missions and researches involve the following:

- Logic Design Labs.
- Digital Systems Design Lab.
- Digital Control Lab.
- Digital Communication Lab.
- Personal Computers Lab.
- Networks Lab.
- Computer drawings lab.
- Application Development Lab.
- Lab Study Units.
- Systems Programming Lab.
- Arabic Systems Lab.
- Artificial Intelligence Lab.