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**College of Computing and Informatics**

**STUDY PLAN PROJECT**

**BACHELOR OF INFORMATION TECHNOLOGY**

**September 2023**

**Introduction**

A royal decree was issued by the custodian of the Two Holy Mosques, King Abdullah Bin Abdulaziz – Allah bless his soul on 10/8/2011 to launch the Saudi Electronic University (SEU) as a government educational institution. Based on the University's vision to align outputs with the market needs, the college of Computing and Informatics was established as one of the first colleges that have three departments: Information Technology, Computer Science, and Computing and Informatics to give graduates the knowledge and skill requirements necessary for the market by providing optimal academic environment that aims to prepare national specialist cadres in the field of computers. There is no doubt that Information Technology has become the main nucleus in the development process inside public and private organizations in the era of technology and information.

**The Importance and Reasons for Creating the Program**

It is well known that information technology (IT) is the major driver and facilitator for modern economies and societies. The world is witnessing an unprecedented transformation into “Information Societies” and “Knowledge Economies”. Many countries have prepared and executed “Information Technology” plans to achieve a strong lead in the new era. KSA is no exception. The Kingdom recently prepared and approved an ambitious Information Technology Plan. One of the major components of this plan is Information Technology Education, which included detailed recommendations for establishing IT programs and colleges to feed the market with trained experts at all levels. Establishing an Information Technology program in SEU is well in line with the recommendations of the Kingdom plan and the urgent market needs.

Rationales of the program:

The rationales of the Bachelor program in Information Technology at SEU are summarized in the following points:

1. Contributing to the national strategic communication and IT plan.
2. The importance of information technology job for Saudi institutions and society.
3. The increasing job market needs in the Kingdom of Saudi Arabia for specialized workforce in IT.
4. The constant need in the labor market (public and private) to specialists in information technology.
5. Few numbers of Saudi universities offer BSc programs in IT.
6. The fulfilment of national high-quality projects, which aim to develop the IT in the Kingdom of Saudi Arabia.

**Program Objectives**

The main goals of the IT program are:

1. Develop a technically proficient workforce capable of carrying out IT solutions to the best practices. ​
2. Provide students with soft skills and values to effectively communicate and collaborate with others professionally, ethically and legally.​
3. Improve students' experience by empowering them with the necessary entrepreneurs’ skills to develop innovative IT solutions.​

In addition, the IT program aims at building cadres able to:

* Apply various and advanced IT solutions to contribute to the work development and assist establishment to realize their targets.
* Properly manage the enterprise IT resources, both physical and human, to the fullest.
* Cope with the rapid development in IT fields, evaluate and adopt useful methods in IT so as to contribute to the development of Saudi institutions.
* Build, manage, and organize digital contents of IT systems in various Saudi institutions.
* Apply problem-solving skills, and analyze problems to determine the necessary IT data to improve the quality.
* Communicate effectively with team members in the institution and contribute to the decision-making processes.
* Adhere by the rules and work standards, professional, ethical, and legal.
* The development of continuing professional education plans.
* Conducting the scientific and practical research with IT specialists.

**Duration of Study in the Program**

4 Years Program, 8 Semesters (130 credit hours)

**Program Learning Outcomes**

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| --- | --- |
| Knowledge and Understanding | |
| K1 | Explain the concepts and technologies related to information technology. |
| K2 | Recognize the evaluation and assessment of tasks performed as IT professionals. |
| K3 | Describe and analyze the user needs and computing requirements appropriate to problems’ solutions. |
| Skills | |
| S1 | Apply the concepts, methods, tools and technologies mastered during the academic program. |
| S2 | Apply theories in modelling and designing IT systems using cutting edge tools and technologies. |
| S3 | Apply analysis, design, implementation, testing and evaluation principles of IT solutions to fit industrial requirements. |
| S4 | Carry out the assigned tasks with quality of work in accordance with international standards. |
| S5 | Communicate effectively, both orally and in written form, using appropriate media. |
| Values | |
| V1 | Identify the needs for continuous development of professional, legal and ethical skills with the ability to engage all group members. |
| V2 | Function effectively on teamwork projects and activities to accomplish a common goal. |

Career Opportunities for Graduates of the Program

1. Software Developer
2. Database administrator
3. Network Administrator
4. Web Administrator and Developer
5. Technical support specialist
6. Site programmer and developer
7. Information system administrator
8. IT specialist

**Vision**

A pioneer college in education and academic research at local and regional levels in the areas of science and information technology and through offering locally and internationally accredited programs using modern learning methods.

# Mission

Prepare qualified and skilled students to meet the needs of the labor market in the field of Information Technology and to pursue advanced degrees; by providing outstanding education with the latest and most sufficient knowledge, best practices, and skills in Information Technology. ​

# Program Study Plan

The Bachelor of Information Technology program contains 41 courses, distributed over 8 semesters. The program is only offered in English.

### University Requirements: (34 Credits)

### CS001: Computer Essentials

1. **ENG001**: English Language Skills
2. **CI001**: Academic Skills
3. **MATH001**: Fundamentals of Mathematics
4. **COMM001**: Communication Skills
5. **ISLM101**: ISLAMIC FAITH
6. **ISLM102**: PROFESSIONAL CONDUCT & ETHICS IN ISLAM
7. **ISLM103**: ISLAMIC ECONOMIC SYSTEM
8. **ISLM104**: ISLAMIC SOCIAL SYSTEM

### College requirements: (36 Credits)

### IT232: Object Oriented Programming

### MATH150: Discrete Mathematics

### SCI101: General Physics 1

### IT241: Operating Systems

### IT244: Introduction to Database

### IT245: Data Structure

### ENG103: Technical Writing

### MATH251: Linear Algebra

### SCI201: General Physics 2

### IT351: Computer Networks

### STAT101: Statistics

### IT499: Practical Training

### Department requirements: (48 Credits)

### IT231 Introduction to IT and IS

### IT233 Computer Organization

### IT352 Human Computer Interaction

### IT353 System Analysis and Design

### IT354 Database Management Systems

### IT361 Web Technologies

### IT362 IT Project Management

### IT363 Network Management

### IT364 IT Entrepreneurship and Innovation

### IT365 Enterprise Systems

### IT475 Decision Support Systems

### IT476 IT Security & Policies

### IT485 Professional Ethics in IT

### IT487 Mobile Application Development

### IT479 Senior Project I

### IT489 Senior Project II

### Track Requirements: (12 Credits)

### Electives:

### *Cloud Computing:*

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| --- | --- | --- | --- |
| S. N. | Course Code | Course Title | Credit Hours |
| 1 | IT471 | Introduction to Cloud Computing | 3 |
| 2 | IT473 | Cloud Systems Architecture | 3 |
| 3 | IT481 | Cloud Security | 3 |
| 4 | IT483 | Cloud System Administration | 3 |

### *Cyber Security:*

|  |  |  |  |
| --- | --- | --- | --- |
| S. N. | Course Code | Course Title | Credit Hours |
| 1 | IT474 | Introduction to Cyber Security and Digital Crime | 3 |
| 2 | IT478 | Network Security | 3 |
| 3 | IT484 | Wireless Sensor Networks | 3 |
| 4 | IT488 | Cyber Forensics | 3 |

### *Internet of Things:*

|  |  |  |  |
| --- | --- | --- | --- |
| S. N. | Course Code | Course Title | Credit Hours |
| 1 | IT470 | Introduction to IoT | 3 |
| 2 | IT472 | IoT Network Design | 3 |
| 3 | IT480 | Enterprise Internet of Things | 3 |
| 4 | IT482 | IoT Security and Privacy | 3 |

# Program Structure

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| --- | --- | --- | --- | --- |
| # | Course Code | Course Title | Credit hours | Pre-requisites |
| 1 | CS001 | Computer Essentials | 3 | - |
| 2 | ENG001 | English Language Skills | 16 | - |
| 3 | CI001 | Academic Skills | 2 | - |
| 4 | MATH001 | Fundamentals of Mathematics | 3 | - |
| 5 | COMM001 | Communication Skills | 2 | - |
| 6 | IT231 | Introduction to IT and IS | 3 | Pass First Common Year |
| 7 | IT232 | Object Oriented Programming | 3 |
| 8 | IT233 | Computer Organization | 3 |
| 9 | MATH150 | Discrete Mathematics | 3 |
| 10 | SCI101 | General Physics 1 | 3 |
| 11 | ISLM101 | ISLAMIC FAITH | 2 |
| 12 | IT241 | Operating Systems | 3 | IT233 |
| 13 | IT244 | Introduction to Database | 3 | IT232 |
| 14 | IT245 | Data Structure | 3 | IT232 |
| 15 | ENG103 | Technical Writing | 3 |  |
| 16 | MATH251 | Linear Algebra | 3 | MATH150 |
| 17 | SCI201 | General Physics 2 | 3 | SCI101 |
| 18 | IT351 | Computer Networks | 3 |  |
| 19 | IT352 | Human Computer Interaction | 3 | IT241 |
| 20 | IT353 | System Analysis and Design | 3 | IT231؛IT245 |
| 21 | IT354 | Database Management Systems | 3 | IT245 |
| 22 | STAT101 | Statistics | 3 | IT244 |
| 23 | ISLM102 | PROFESSIONAL CONDUCT & ETHICS IN ISLAM | 2 |  |
| 24 | IT361 | Web Technologies | 3 | IT352؛IT244 |
| 25 | IT362 | IT Project Management | 3 | IT353 |
| 26 | IT363 | Network Management | 3 | IT351 |
| 27 | IT364 | IT Entrepreneurship and Innovation | 3 | IT244 |
| 28 | IT365 | Enterprise Systems | 3 | IT352 |
| 29 | ISLM103 | ISLAMIC ECONOMIC SYSTEM | 2 |  |
| 30 | IT4XX | Elective Course in IT 1 | 3 | Elective Prereq |
| 31 | IT4XX | Elective Course in IT 2 | 3 | Elective Prereq |
| 32 | IT475 | Decision Support Systems | 3 | IT354 |
| 33 | IT476 | IT Security & Policies | 3 | IT351 |
| 34 | IT479 | Senior Project I | 3 | IT354؛ IT361 |
| 35 | ISLM104 | ISLAMIC SOCIAL SYSTEM | 2 |  |
| 36 | IT4XX | Elective Course in IT 3 | 3 | Elective Prereq |
| 37 | IT4XX | Elective Course in IT 4 | 3 | Elective Prereq |
| 38 | IT485 | Professional Ethics in IT | 3 | IT362 |
| 39 | IT487 | Mobile Application Development | 3 | IT361 |
| 40 | IT489 | Senior Project II | 3 | IT479 |
| 41 | IT499 | Practical Training | 3 | Pass 86 Credits |

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| --- | --- | --- | --- | --- | --- |
| Electives | Concentration | Course Code | Course Title | Credit Hours | Pre- Requisites |
| Cloud Computing | IT471 | Introduction to Cloud Computing | 3 | IT363 |
| IT473 | Cloud Systems Architecture | 3 | IT363 |
| IT481 | Cloud Security | 3 | IT471 |
| IT483 | Cloud System Administration | 3 | IT471 |
| Cyber Security | IT474 | Introduction to Cyber Security and Digital Crime | 3 | IT363 |
| IT478 | Network Security | 3 | IT363 |
| IT484 | Wireless Sensor Networks | 3 | IT474 |
| IT488 | Cyber Forensics | 3 | IT474 |
| Internet of Things | IT470 | Introduction to IoT | 3 | IT363 |
| IT472 | IoT Network Design | 3 | IT363 |
| IT480 | Enterprise Internet of Things | 3 | IT470 |
|  | IT482 | IoT Security and Privacy | 3 | IT470 |

**Program Structure by Levels**

### First Year

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| # | Course Code | Course Title | Credit Hours | Pre-Requisites |
| 1 | CS001 | Computer Essentials | 3 | - |
| 2 | ENG001 | English Language Skills | 16 | - |
| 3 | CI001 | Academic Skills | 2 | - |
| 4 | MATH001 | Fundamentals of Mathematics | 3 | - |
| 5 | COMM001 | Communication Skills | 2 | - |

**Level three**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| # | Course Code | Course Title | Credit Hours | Pre-Requisites |
| 1 | IT231 | Introduction to IT and IS | 3 | Pass First Common Year |
| 2 | IT232 | Object Oriented Programming | 3 |
| 3 | IT233 | Computer Organization | 3 |
| 4 | MATH150 | Discrete Mathematics | 3 |
| 5 | SCI101 | General Physics 1 | 3 |
| 6 | ISLM101 | ISLAMIC FAITH | 2 |

**Level Four**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| # | Course Code | Course Title | Credit Hours | Pre-Requisites |
| 1 | IT241 | Operating Systems | 3 | IT233 |
| 2 | IT244 | Introduction to Database | 3 | IT232 |
| 3 | IT245 | Data Structure | 3 | IT232 |
| 4 | ENG103 | Technical Writing | 3 |  |
| 5 | MATH251 | Linear Algebra | 3 | MATH150 |
| 6 | SCI201 | General Physics 2 | 3 | SCI101 |

### Level Five

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| # | Course Code | Course Title | Credit Hours | Pre-Requisites |
| 1 | IT351 | Computer Networks | 3 |  |
| 2 | IT352 | Human Computer Interaction | 3 | IT241 |
| 3 | IT353 | System Analysis and Design | 3 | IT231؛IT245 |
| 4 | IT354 | Database Management Systems | 3 | IT245 |
| 5 | STAT101 | Statistics | 3 | IT244 |
| 6 | ISLM102 | PROFESSIONAL CONDUCT & ETHICS IN ISLAM | 2 |  |

**Level Six**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| # | Course Code | Course Title | Credit Hours | Pre-Requisites |
| 1 | IT361 | Web Technologies | 3 | IT352؛IT244 |
| 2 | IT362 | IT Project Management | 3 | IT353 |
| 3 | IT363 | Network Management | 3 | IT351 |
| 4 | IT364 | IT Entrepreneurship and Innovation | 3 | IT244 |
| 5 | IT365 | Enterprise Systems | 3 | IT352 |
| 6 | ISLM103 | ISLAMIC ECONOMIC SYSTEM | 2 |  |

### Level Seven

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| # | Course Code | Course Title | Credit Hours | Pre-Requisites |
| 1 | IT4XX | Elective Course in IT 1 | 3 | Elective Prereq |
| 2 | IT4XX | Elective Course in IT 2 | 3 | Elective Prereq |
| 3 | IT475 | Decision Support Systems | 3 | IT354 |
| 4 | IT476 | IT Security & Policies | 3 | IT351 |
| 5 | IT479 | Senior Project I | 3 | IT354؛ IT361 |
| 6 | ISLM104 | ISLAMIC SOCIAL SYSTEM | 2 |  |

**Level Eight**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| # | Course Code | Course Title | Credit Hours | Pre-Requisites |
| 1 | IT4XX | Elective Course in IT 3 | 3 | Elective Prereq |
| 2 | IT4XX | Elective Course in IT 4 | 3 | Elective Prereq |
| 3 | IT485 | Professional Ethics in IT | 3 | IT362 |
| 4 | IT487 | Mobile Application Development | 3 | IT361 |
| 5 | IT489 | Senior Project II | 3 | IT479 |
| 6 | IT499 | Practical Training | 3 | Pass 86 Credits |

# Program Courses Descriptions

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| --- | --- |
| Course Title | Computer Essentials |
| Course Code | CS001 |
| Pre-requisite(s) | None |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This course is an essential guide to computing concepts and provides the learner with a complete learning solution focusing on the most important, essential, and current concepts of information technology. Students are given a streamlined, concise, relevant approach to the fundamental issues surrounding the world of computing through a balance between theory and applied learning of these important topics. |
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| --- | --- |
| Course Title | English Language Skills |
| Course Code | ENG001 |
| Pre-requisite(s) | None |
| Credit hours | 16 |
| Contact hours | 16 |
| Course Description | The 4 weekly hours of contact time with the English instructors aims to support, compliment and reinforce the student’s online learning. The contact hours serves as an essential support component such that students are guided throughout their English studies. In addition, a course textbook has been selected to support the students learning. The Q:Skills series from world famous Oxford University press has been chosen as the official textbook of the course which students purchase from a distributor. The textbook is an e-book which an adaptive book rather than the traditional textbook. The Q:Skills series is one of the leading EFL course textbooks available in the current marketplace. The Q:Skills series (Reading and Writing and Listening and Speaking). Clearly identiﬁed learning outcomes focus students on the goal of instruction, while thought-provoking unit questions provide a critical thinking framework. In this regard, the skills of reading, writing, are covered in the first two hours of face two while the listening and speaking book will be covered in the second portion of the face to face class. Therefore, all four skills are covered effectively. Thus, the overall goal of developing the students' ability to communicate as effectively as possible in the English language. |
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| --- | --- |
| Course Title | Academic Skills |
| Course Code | CI001 |
| Pre-requisite(s) | None |
| Credit hours | 2 |
| Contact hours | 2 |
| Course Description | يهدف هذا المقرر إلى مساعدة الطالب على إدارة ذاته وقدراته وإمكاناته بصورة تقوده إلى النجاح والتفوق والإبداع واكتساب عدد من الاستراتيجيات والأدوات البحثية وأدوات التعلم والتفكير بصورة إيجابية سليمة واستخدام سلسلة من الأدوات الحقيقية والاستراتيجية الفاعلة، التي تساعده على تحصيل المعرفة، وتنظيمها وسرعة استدعائها وإعداد البحوث العلمية وعرضها. كما يهدف المقرر إلى تعزيز أدوات واستراتيجيات التعلم الذاتي وأنماطه وطرقه وكذلك أدوات واستراتيجيات التعلم في بيئات التعلم الالكترونية. |
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| --- | --- |
| Course Title | Fundamentals of Mathematics |
| Course Code | MATH001 |
| Pre-requisite(s) | None |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This course will address the outcomes of introductory and intermediate algebra.  Topics include:  basic algebraic properties, integers, simplifying and factoring polynomials, solving and graphing linear equations and inequalities, solving systems of equations in two and three variables, functions, rational expressions, quadratic and rational equations and inequalities, absolute value, graphing systems of equations and inequalities, and other selected topics. Applications will be emphasized, and numeric, algebraic, and graphical modes will be used. |
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| --- | --- |
| Course Title | Communication Skills |
| Course Code | COMM001 |
| Pre-requisite(s) | None |
| Credit hours | 2 |
| Contact hours | 2 |
| Course Description | * تعريف طبيعة الاتصال وعناصره وأنواعه وخصائصه وأهدافه وكفاءة الاتصال ومعيقاته وأدواته, العلاقة بين الاتصال اللغوي والاتصال غير اللغوي. * مفهوم الذات, والإفصاح عن الذات. * مهارة الإقناع, المقابلات الشخصية, القدرات الشخصية التي تسعى إليها القطاعات. * مهارة كتابة السيرة الذاتية. * مهارة الإلقاء والعرض الفعال. |
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| --- | --- |
| Course Title | Introduction to IT and IS |
| Course Code | IT231 |
| Pre-requisite(s) | Pass First Common Year |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This course is an introductory course in information technology and information systems technology. Topics include basic hardware, software, data and an overview of the use of information technology in organizations. This course also provides an understanding of information systems and outlines the concepts of how information systems can provide a competitive advantage. The course will also discuss the management challenges facing organizations today and how they affect business and society. |
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| --- | --- |
| Course Title | Object Oriented Programming |
| Course Code | IT232 |
| Pre-requisite(s) | Pass First Common Year |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This course is to introduce the students to the principles of computer analysis of problems, design of algorithms, programming, and testing using the Java programming language. Topics include problem analysis basics of programming, data types, control structures, functions, arrays, object-oriented programming, inheritance, recursion and the mechanics of running, testing, and debugging. |
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| --- | --- |
| Course Title | Computer Organization |
| Course Code | IT233 |
| Pre-requisite(s) | Pass First Common Year |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This course offers a comprehensive understanding of the structure of computational systems. This course deals with the nature of computer hardware. The course will cover the structure of current computer systems at the level of functional organization, the representation of data and programs, the design of the memory hierarchy, and the design of the I/O system. This course also will introduce basic assembly language. |
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| --- | --- |
| Course Title | Discrete Mathematics |
| Course Code | MATH150 |
| Pre-requisite(s) | Pass First Common Year |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This course introduces students to fundamental algebraic, logical and combinatorial concepts in mathematics. Topics include Boolean Logic, Predicate Logic, sets, mapping, relations, elementary counting principles, algorithm & proof techniques, graphs, and recursions. |
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| --- | --- |
| Course Title | General Physics 1 |
| Course Code | SCI101 |
| Pre-requisite(s) | Pass First Common Year |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This course introduces students to fundamental concepts in physics. Topics include Motion in one dimension; Vectors; Motion in two dimensions; Laws of motion; Circular motion; Potential energy and conservation of energy, Linear momentum; collision; Rotation of a rigid body; Rolling motion; Law of gravity and various types Waves. |
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| --- | --- |
| Course Title | ISLAMIC FAITH |
| Course Code | ISLM-101 |
| Pre-requisite(s) | Pass First Common Year |
| Credit hours | 2 |
| Contact hours | 2 |
| Course Description | التعريف بالعقيدة الإسلامية وأهم مصطلحاتها، ومصادرها، وأركان الإيمان ، وأهم التحديات التي تواجه العقيدة الإسلامية. |
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| Course Title | Operating Systems |
| Course Code | IT241 |
| Pre-requisite(s) | IT233 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This is an introductory and core course in Bachelor of Science in Information Technology program which familiarizes students with the principles and underlying concepts of operating systems. The focus of this course is to understand the underlying technologies that make contemporary operating systems work efficiently. System Architecture, Processes, threads, synchronization, I/O, file systems, memory and storage management, Protection and Security techniques will be explored in depth. |
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| --- | --- |
| Course Title | Introduction to Database |
| Course Code | IT244 |
| Pre-requisite(s) | IT232 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | In this course, students will be introduced to the following topics: basic concepts of database systems and architectures including Database Management Systems (DBMS) Types (Relational, Hierarchical, NoSQL Databases, Object-Based, Object-Oriented and Distributed), Entity-Relationship model, Data models (Relational model & SQL), Database design (Database dependencies and normalization), Database implementation, and Database Security Models. Students will learn about Database implementation using modern Database Management System tools. This course will provide knowledge, skills and abilities to manage, use and protect database systems. |
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| --- | --- |
| Course Title | Data Structure |
| Course Code | IT245 |
| Pre-requisite(s) | IT232 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | In this course, students will be taught to work on complex data structures and algorithms. It includes key data structures including stacks, queues, linked lists, binary trees, recursion and examples using some fundamental algorithms of computer science. Java programming languages will be used. Course is designed keeping in mind the need to make students understand concepts related to data representation and organization in development of software products and services. The students are taught advanced algorithmic concepts such as time and space complexity, searching algorithms and sorting algorithms etc. |
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| Course Title | Technical Writing |
| Course Code | ENG103 |
| Pre-requisite(s) | Pass First Common Year |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This course offers a general overview on principles and procedure of technical writing; attention to analyzing audience and purpose, organizing information, designing graphic aids, and writing such specialized forms as abstracts, instructions, and proposals. Students systematize and organize knowledge in ways that will help them in all of their courses. The course also emphasizes the elements of good writing style, appropriate grammar and mechanics, clarify of language and logical and cohesive development. |
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| --- | --- |
| Course Title | Linear Algebra |
| Course Code | MATH251 |
| Pre-requisite(s) | MATH150 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | Topics include systems of linear equations, their applications, and solutions. Matrices, vectors, elementary operations on vectors, linear independence, spanning sets, and bases. Eigenvalues, eigen-vectors, and eigenspaces will be discussed. Example applications will be given, especially, in IT systems. |
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| --- | --- |
| Course Title | General Physics 2 |
| Course Code | SCI201 |
| Pre-requisite(s) | SCI101 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This course is the logical extension of General Physics 1. It introduces students Interference, diffraction, and polarization, magnetic fields; electromagnetic waves; The four Maxwell’s equations; modern Physics and applications, Molecules and solids; Semiconductors and semiconductors devices. |
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| --- | --- |
| Course Title | Computer Networks |
| Course Code | IT351 |
| Pre-requisite(s) |  |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This course explores fundamental concepts in the design and implementation of computer communication networks and their protocols. This includes layered network architectures, applications, transport, congestion, routing, data link protocols, local area networks. An emphasis will be placed on the protocols used in the Internet. Face to Face (F2F) and Virtual (online) classes will each be held once per week. Please refer to your class schedule for the days and times of these classes. Your teacher will give you instructions on how to join a virtual classroom. Attendance to these classes is mandatory and to pass this course you must attend all the sessions. |
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| Course Title | Human Computer Interaction |
| Course Code | IT352 |
| Pre-requisite(s) | IT241 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This course introduces the basics of Human Computer Interaction (HCI). It investigates the process of interaction design by highlighting the cognitive, social, and emotional aspects of human computer interaction. The course also explores data gathering, analysis, and interpretation techniques along with discovering requirements for user interfaces. It also covers user interaction design, construction, and evaluation techniques and models. The contents of course encourage the students for application of the acquired knowledge in assignments and projects thus enabling them for successful delivery of usable user interfaces. |
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| --- | --- |
| Course Title | System Analysis and Design |
| Course Code | IT353 |
| Pre-requisite(s) | IT231؛IT245 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This course introduces the modeling techniques and the fundamental principles of problem analysis and software design as core concepts in software engineering discipline. The course concentrates on object oriented approaches for modelling software requirements and leading to software design. The course is designed to integrate theoretical concepts of system analysis and design with practical examples and case studies. Students will be enabled to understand the practical techniques of software analysis, design, implementation, and maintenance. The course also elaborates different related concepts such as requirements determination, database design, characteristics of analyze and design internet-based systems, and factors affecting maintenance process. |
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| --- | --- |
| Course Title | Database Management Systems |
| Course Code | IT354 |
| Pre-requisite(s) | IT245 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This course is intended to make the students practically proficient in using standard state-of-the-art database management systems for the development of organizational databases. In this course, students would study the following topics: DBMS architecture and administration; centralized and client-server approaches, system catalogue and data dictionary, transaction management; concepts, characteristics, processing, recovery techniques, concurrency control techniques, DB security, and object-oriented databases. |
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| --- | --- |
| Course Title | Statistics |
| Course Code | STAT101 |
| Pre-requisite(s) | IT244 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This course introduces the student to statistics with business applications. The course covers both descriptive and inferential statistics. Topics included are: measures of central tendency; measures of dispersion; graphical displays of data; linear regression; basic probability concepts; binomial and normal probability distributions; confidence intervals; and hypothesis testing of mean, proportion for one or two populations. The course also covers ANOVA and hypothesis tests for Goodness of Fit. These topics will be covered using a basic knowledge of algebra and Microsoft Excel. |
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| Course Title | PROFESSIONAL CONDUCT & ETHICS IN ISLAM |
| Course Code | ISLM-102 |
| Pre-requisite(s) | None |
| Credit hours | 2 |
| Contact hours | 2 |
| Course Description | ويهدف المقرر إلى ترسيخ الأخلاق الإسلامية وأخلاق المهنة في سلوك الطلاب لا سيما في الجوانب الاجتماعية والمهنية. |
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| Course Title | Web Technologies |
| Course Code | IT361 |
| Pre-requisite(s) | IT352؛IT244 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This course is an overview of the modern Web technologies used for Web development. The topics include HTML5, CSS3, JavaScript, DOM, XML, Rich Internet Applications (RIAs) with AJAX, serverside programming using PHP, and designing and manipulating web databases. Upon completion, students should be able to: 1. Describe methods and tools in web development. 2. Create web pages using HTML5 and CSS3. 3. Develop dynamic web pages using JavaScript. 4. Design XML Schemas and documents. 5. Create Rich Internet Applications. 6. Build web applications using PHP and MySQL. |
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| Course Title | IT Project Management |
| Course Code | IT362 |
| Pre-requisite(s) | IT353 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This course is developed to provide the students with the needed knowledge, and skills for perform as project managers in the field of computing. This course covers detailed topics of the basic concepts of project management in computing, including initiating, planning, controlling, executing, and closing projects. The course also shows how that type of projects should be managed, from inception to post implementation review. This course will help improve management skills and abilities to define the project scope, create a workable project plan, and manage within the budget and schedule. |
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| Course Title | Network Management |
| Course Code | IT363 |
| Pre-requisite(s) | IT351 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This course prepares the graduating students to assume positions of network administrators in medium to large organizations. We study performance-tuning options and monitoring techniques. The course covers both large local-area networks and broadband networks. Special focus will be on network management applications with focus on performance optimization, fault management, and security management. Also, hardware-oriented management protocols such as the three versions of the SNMP protocol and tools for managing software applications will be covered. This course will also cover the management of broadband network services and technologies. We interest in describing and managing the Wide Area Network technologies such as ATM and MPLS. Then, we manage the wired broadband network access technologies including cable, ADSL, and PON. Finally, we focus on the management of the wireless broadband network access technologies. |
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| Course Title | IT Entrepreneurship and Innovation |
| Course Code | IT364 |
| Pre-requisite(s) | IT244 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This course assists students to develop necessary entrepreneurial skills to start and operate a business, by increasing the knowledge about opportunities for business ownership and the ability of planning effectively to start and grow a business. Students will explore the traits and characteristics of successful entrepreneurs and develop essential skills in research, planning, operations, and regulations affecting business. In addition, this course highlights the innovation practices in IT and its relevant patents and Intellectual Property Rights (IPR’s). The capstone event for this course is the development and presentation of a formal business plan suitable for submission to potential backers. |
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| Course Title | Enterprise Systems |
| Course Code | IT365 |
| Pre-requisite(s) | IT352 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This course introduces various Enterprise Systems (ES) for effective and efficient organizational business processes. This course deals with both the theoretical and practical aspects of Enterprise Systems. Students will be familiarized with the development life cycle of ES and the critical challenges associated with them. They will gain experience in the success factors, strategies, and policies leading to the successful integration of ES and the decision-making process associated with these systems. Students will learn ES reengineering best practices to analyze organizational real-world work systems and identify ways for improving them. |
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| Course Title | ISLAMIC ECONOMIC SYSTEM |
| Course Code | ISLM103 |
| Pre-requisite(s) | None |
| Credit hours | 2 |
| Contact hours | 2 |
| Course Description | يتمثل الهدف الرئيسي للمقرر بتعريف الطالب بمفهوم القضايا الاقتصادية واهمية دراستها كمدخل للمقرر وبتعريف التامين واركانه وخصائصه وبورصة الأوراق المالية وانواعها واحكامها وغسيل الأموال ومفهومه واثاره والخصخصة واشكالها وضوابطها والعولمة الاقتصادية واثارها الإيجابية والضارة ومفهوم التكامل الاقتصادي ومراحله وعوامل التكامل ومفهوم التضخم الاقتصادي وسبل التغلب على التضخم الاقتصادي . |
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| Course Title | Decision Support Systems |
| Course Code | IT475 |
| Pre-requisite(s) | IT354 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | Decision support systems play a key role in today’s organizations. These systems not only help organizations to take effective and useful decisions but also insulates them from the effects of wrong decisions. This course is devoted to introducing decision support systems, showcasing their relationship to other computer-based information systems, demonstrating DSS development approaches, and demonstrating how to utilize DSS capacities to support different types of decisions. The topics covered in this course include and are not limited to, introduction to decision support systems, DSS components, developing DSS, DSS models, emerging technologies in DSS, business intelligence, data analytics, data visualization big data, deep learning, and AI-based DSS. |
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| Course Title | IT Security & Policies |
| Course Code | IT476 |
| Pre-requisite(s) | IT351 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This course introduces the concepts and issues related to securing information systems and the development of policies to implement information security controls. Topics include the historical view of networking and security, security issues, trends, security resources, and the role of policy, people, and processes in information security. Upon completion, students should be able to identify information security risks, create an information security policy, and identify processes to implement and enforce policy. |
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| Course Title | Senior Project I |
| Course Code | IT479 |
| Pre-requisite(s) | IT354؛ IT361 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This course will equip undergraduate Information Technologies students with the basic skills to conduct researches in the field of Information Technologies. The course aims to introduce the required techniques for conducting a research, implementing systems, writing technical reports and the skills for presenting the work for audiences. This course will particularly focus on topics which are related to the field of information technologies. The course will also provide guidance to the students in selecting their projects, understanding the research process as well as the tools needed to support implementing the system and writing its documentation. The course discusses other issues including research methods that are normally used in researches such as experiments, survey, interview and simulations, understanding the importance of literature review, preparing visual presentations and other ethical issues such as plagiarism |
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| Course Title | ISLAMIC SOCIAL SYSTEM |
| Course Code | ISLM-104 |
| Pre-requisite(s) | None |
| Credit hours | 2 |
| Contact hours | 2 |
| Course Description | يتعرف الطالب على المجتمع المسلم , وأسس بناء المجتمع وعناية الاسلام به , ومعرفة طرق تقوية الروابط الاجتماعية , وسمات المجتمع الاسلامي وحقوق الانسان , واسس بناء الاسرة المسلمة ومكانتها . |
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| Course Title | Professional Ethics in IT |
| Course Code | IT485 |
| Pre-requisite(s) | IT362 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | Professional Issues in IT is the basic course to understand moral values in practical life activities. This course will be helpful to understand the ethics of computing, licensing, and certification. This course covers the impact of intellectual property on computing technology. Government and network communication privacy is also covered by this course. |
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| Course Title | Mobile Application Development |
| Course Code | IT487 |
| Pre-requisite(s) | IT361 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | The evolution of computing and IT technologies in the domain of wireless computing has spawned a new horizon of opportunities in the form of mobile smartphone applications. These applications provide users with flexibility, mobility, and enhanced usability features. The future of IT applications can only be secured by developing their mobile and smartphone versions. This course aims to provide students with basic and fundamental knowledge of mobile computing. This includes the effective techniques involved and networks & systems issues for designing and implementing mobile computing systems and applications. This course also provides an opportunity for students to understand the key components and technologies involved and to gain hands-on experience in building mobile applications. Students will gain knowledge about mobility management, location estimation, location-aware computing, user experience, and other topics. |
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| Course Title | Senior Project II |
| Course Code | IT489 |
| Pre-requisite(s) | IT479 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This a continuation of the graduation project started in IT490. The focus will be in this part on low-level design, implementation, testing and quality assurance as well as management of the project. The outcome of this project must be a significant information system, employing knowledge gained from courses through the curriculum. Students must deliver the code, a final report and must do a presentation of their work as well as a demo. |
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| Course Title | Practical Training |
| Course Code | IT499 |
| Pre-requisite(s) | Pass 86 Credits |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | A summer period of 8 weeks spent as a trainee in industry, business, or government agencies for the purpose of familiarizing the student with the real job world and enabling him to apply and relate his academic knowledge to a real work environment. |
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| Course Title | Introduction to Cyber Security and Digital Crime |
| Course Code | IT474 |
| Pre-requisite(s) | IT363 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This is an introductory course that explains the fundamentals of cybersecurity on how to ensure the secrecy of information and how to provide protection against major security threats. Topics include information security principles, overview of computer security, assessing risk and vulnerability, applying proper access controls, and discussion of the importance of cryptography. |
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| Course Title | Network Security |
| Course Code | IT478 |
| Pre-requisite(s) | IT363 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | This course will provide a practical survey of network security applications and standards. The emphasis is on applications that are widely used on the Internet and for corporate networks, and on standards (especially Internet standards) that have been widely deployed. In addition, this course will provide a deep  understanding of how modern networks are designed, their weak points, and both traditional and future approaches to make them resilient. The topics include amongst others physical network security, router mechanisms for security, enterprise network security, IP security, data center operations protection and  relevant protocols. |
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| Course Title | Wireless Sensor Networks |
| Course Code | IT484 |
| Pre-requisite(s) | IT474 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | A wireless sensor network (WSN) generally consists of compact low power sensors, which collect information and pass the information via wireless networks to achieve a high level of desired monitoring and control in coordinated manners. With increased mobility comes greater danger of system malfunctions which can expose several vulnerabilities and dangers to our safety and wellbeing. This course exposes the students with fundamental concepts of wireless sensor networks and their applications. This course covers fundamentals of wireless network technology and distributed sensor networks. |
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| Course Title | Cyber Forensics |
| Course Code | IT488 |
| Pre-requisite(s) | IT474 |
| Credit hours | 3 |
| Contact hours | 3 |
| Course Description | The main objective of the course "Cyber Forensics" is to equip students with the knowledge and skills necessary to effectively contain and combat different forms of cybercrime. The course focuses on providing students with tools and techniques to protect the security of an organization's IT assets, considering the critical importance of data protection and security in today's business world. Major topics covered in the course include defining cyber forensics, understanding privileged communication, utilizing computer forensics tools, and managing file systems. |
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