Course Topics

Department: Computing	Program: Bachelor of Information Technology

First Year Courses

Course Code BUST01 **Course Name** Quran Recitation & Tajweed Skills	**Credit Hours: 1**
يعد هذا المقرر من المقررات المهمة؛ كونه متعلق بكلام الله تعالى ثم إنه من متطلبات الجامعة، وهو مقرر نظري وتطبيقي يقوم الطالب فيه بتلاوة وحفظ نصف جزء عم من سورة (الطارق-الناس)، ودراسة الآداب التي ينبغي أن يتحلى بها قارئ القرآن، وفهم وتطبيق هذه الأحكام عند قراءة القرآن الكريم، وتستخدم طريقتي الحوار والمناقشة في التدريس، ويتم تقييم الطالب من خلال تلاوته للقرآن أثناء اللقاءات التعليمية، والقيام بالتكليفات المصاحبة – الصفية واللا صفية – مع الامتحانين النصفي والنهائي.	
Course Code BUST01 **Course Name** English Language (1)	**Credit Hours:4**
The current course provides students with the language basics of everyday English to help them communicate in different real-life situations. The course focuses more on real life conversations and the basic grammars that will help each one in his/her major. Moreover, the course provides students with plenty of writing and speaking practices. The updates of the book allow students to be posted with the latest language uses and functions that are easy and useable in real life situations.	
Course Code BUST02 **Course Name** Arabic Language	**Credit Hours:3**
يهتم المقرر بتنمية المهارات اللغوية الأساسية للطالب كونه من متطلبات الجامعة ويتناول جملة من النشاطات الاتصالية والدروس اللغوية والإملائية والتركيبية ويحتوي على معارف ونصوص وتدريبات لغوية، ويتألف من كتابين: الأول يركز على مهارتي الاستماع والتحدث، والثاني يركز على مهارتي القراءة والكتابة، مع احتواء كل من الكتابين على أساسيات التركيب النحوي وبعض القواعد الإملائية ويعتمد المقرر أسلوب التدريبات والتطبيقات العملية لكل طالب، بالإضافة إلى النصوص التطبيقية في CD المرفق بالكتاب مع الامتحان النصفي والنهائي.	
Course Code BUST04 **Course Name** Computer Skills	**Credit Hours:3**
This course provides a student by basic skills for using computer at studying environment, library, and at home. It presents the knowledge of basic computer and information technology concepts. The course provides the knowledge needed to operate and utilize the operating system and office software package, and to use the computer for Internet access and electronic communication.	
Course Code BEC01 **Course Name** Mathematics	**Credit Hours:3**

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This course is designed to provide you with a solid foundation in the fundamentals of mathematics The topics included in Basics of Mathematics are: Fundamentals of Algebra (Powers and Roots) Arithmetic (the basic operations of addition, subtraction, multiplication, and division), Types of Functions, Algebra (the use of symbols and letters to represent numbers and solve equations), Trigonometry (the study of trigonometric ratios and relationships between side lengths and angles of triangles), Calculus (the study of rates of change and accumulation), Limits and Continuous.

Course Code BCO01 Course Name Computer Fundamentals	**Credit Hours:3**
This course will introduce: 1) fundamental electronic data processing concepts and associated terminologies. 2) the development of computers and computer application. 3) the impact of computer on society. Furthermore, peripherals of an actual computing system CPU configuration. Device interfaces. Binary number systems, and professional ethical issues in computing will be discussed.	
Course Code BCO02 Course Name Computer Programming I	**Credit Hours: 3**
This course will cover the abstract and structure of programming, problem-solving techniques and tools, flowcharts and algorithms. Abstract data types and their list, variables declarations and memory locations. Arithmetic operators, operator's precedence, equality and relational operators, cohesion and coupling. Abstract programming structure types: sequences, selection (decision making), iteration, multiple iteration, and errors types and Program structure correctness and verification, one and multi-Dimensions arrays (basics using and operations).	
Course Code BUST05 Course Name Islamic Culture	**Credit Hours:3**
يعد مقرر الثقافة الإسلامية من أهم المقررات الدراسية وذلك للدور الذي يساهم فيه هذا المقرر في تكوين الشخصية المسلمة القادرة على قراءة ماضيها وفهم واقعها والإسهام الإيجابي في بناء المستقبل بناءً يوافق شرع الله ويلبي احتياجات العصر من غير إفراط ولا تفريط (بوسطية). ويتم أخذ هذا المقرر بطريقة الحوار والمناقشة، كما يكلف فيه الطلبة بالبحوث التي تخدم أهداف المقرر. ويتم تقييم الطلبة عن طريق المشاركة الصفية واللاصفية والأعمال التي يكلف بها الطلبة والاختبارات النصفية والنهائية.	
Course Code BEC03 Course Name Technical English	**Credit Hours: 4**
The current course provides students with the language basics of everyday English to help them communicate in different real-life situations. The course focuses more on real life conversations and the basic grammars that will help each one in his major. Moreover, the course provides students with plenty of writing and speaking practices. The updates of the book allow students to be posted with the latest language uses and functions that are easy and useable in real life situations.	
Course Code BUST03 Course Name Life Skills	**Credit Hours: 2**
يهدف مهارات الاتصال إلى إلمام الطالب بالنظريات والمفاهيم الأساسية في مجال الاتصال الإنساني وتنمية المهارات الأساسية في مجال التواصل الجيد مع الذات ومع الآخرين، وتعزيز ممارستها في حياته اليومية والعملية باستخدام أساليب جدية تعتمد على التدريب والتقويم المتنوع والفعال، بما يسهم في إنجاح حياته الخاصة والعملية على حد سواء .	

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Course Code BCO03 Course Name Computer Programming II	**Credit Hours:3**
This course will cover the rest of structure programming concepts and advance topics such as arrays, functions, pointers, strings, structures, files, and introduction to object-oriented programming.	
Course Code BIT202 Course Name Calculus	**Credit Hours: 3**
This course is a semester course that includes the study of Derivatives and Integration. The topics included in derivatives are: Fundamentals of derivatives of Standard Functions, Successive Differentiation, Expansions of Functions, Indeterminate Forms and Applications of Differentiation. Topics included in integration are: Indefinite Integrals, Special Integration Techniques (Substitution, Parts and Partial fractions), Definite Integrals, and Applications on Definite integrals.	

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Second Year Courses

Course Code BIT205 Course Name Discrete Structures	Credit Hours: 3
This is an introductory course in discrete mathematics. The goal of this course is to introduce students to ideas and techniques from discrete mathematics that are widely used in science and engineering. This course teaches the students techniques in how to think logically and mathematically and apply these techniques in solving problems. To achieve this goal, students will learn logic and proof, sets, functions, as well as algorithms and mathematical reasoning. Key topics involving relations, graphs, trees, and formal languages and computability are covered in this course.	
Course Code BIT408 Course Name Database administration	**Credit Hours: 3**
This course provides the comprehensive knowledge about relational database management system in administrative approach to integrate in enterprise level of database in network environment which encompasses with oracle database instances Management, database installment in network environment, implementing user role and privileges, multitenant database management, back and recovery.	
Course Code BCO06 Course Name Database Systems and Design	**Credit Hours: 3**
This course covers the fundamental concepts of database systems. Topics include data models (ER, relational, and others); query languages (relational algebra, SQL, and others); implementation techniques of database management systems (index structures, concurrency control, recovery, and query processing); management of semi structured and complex data; distributed and NoSQL databases.	
Course Code BEL002 Course Name Linear Algebra	**Credit Hours: 3**
This course is designed to provide you with a solid foundation in the fundamentals of mathematics. It gives the students mathematical tools for solving engineering problems. This course includes the study of Determinants - Matrices - Systems of Linear Algebraic Equations. Complex Numbers and Functions of Complex Variables, Vector Calculus.	
Course Code BCO04 Course Name Data Structures and Algorithms	**Credit Hours: 3**
This course focuses on the design and implementation of computer programs in a high-level language, with emphasis on proper design principles and advanced programming concepts, including dynamic data structures and recursion. Efficient design, implementation and debugging techniques are stressed. Basic concepts of data structures such as strings, lists, arrays, stacks, queues, trees, graphs and analysis and design of efficient algorithms for searching, sorting and merging are examined	

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Course Code BCO07 Course Name Object-Oriented Programming	Credit Hours: 3
This course let students practice writing programs for Object Oriented programming (OOP) using Java Programming language. It offers students opportunity to learn how to solve problems and build applications using object-oriented techniques. It includes an introduction to object-oriented design, history and advantages of object-oriented design, introduction to object-oriented programming concepts, classes, objects, data encapsulation, constructors, access modifiers, const vs non-const functions, static data members & functions, function overloading, composition, aggregation, inheritance, polymorphism, abstract classes and interfaces, and exception handling.	
Course Code BCO05 Course Name Introduction to Web Design	**Credit Hours: 3**
Discover the basics of web design using HTML and CSS. No prior knowledge of HTML or web design is required. Throughout the course you will get the info you need to plan and design effective web pages. Come away knowing how to implement web pages by writing HTML and CSS code. And discover ways to enhance web pages with the use of page layout techniques, text formatting, graphics, and images	
Course Code ITB231 Course Name Software Engineering	**Credit Hours: 3**
The Software Engineering course provides an in-depth exploration of the principles, methodologies, and practices involved in software development. This course covers the entire software development life cycle (SDLC), including requirements gathering, design, implementation, testing, deployment, and maintenance. Students will engage in hands-on projects that utilize modern development tools and techniques, fostering collaboration and problem-solving skills. By the end of the course, participants will have the knowledge and experience necessary to design, develop, and manage software projects effectively.	
Course Code BCO03 Course Name Probability and Statistics	**Credit Hours: 2**
This course in statistics will provide students with the knowledge of how to display data, how to calculate central tendency and scattering measurement. The course presents an introduction to probability, an explanation of the concept of random variables and the probability distributions (discrete and continuous), and kinds of correlation and regression. It also explains how to use SPSS to deal with statistical subjects.	
Course Code BIT415 Course Name System Analysis and Design	**Credit Hours: 3**
To introduce students to the relative complexity of information requirements, systems analysis and design within a business organization, and to introduce students to the concepts, formal techniques, tools and methods used in the analysis, design and implementation of information systems. The course approaches the development of information systems from a problem-solving perspective. This course builds upon concepts to which the student has been exposed to in previous classes.	
Course Code BIT401 Course Name Web Application Development	**Credit Hours: 3**
This course reviews basic concepts and techniques for developing applications within computer network environment. Emphasis is placed upon the knowledge and skills to develop web-based	

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applications on both client and server side especially in Internet environment. It also includes the design and creation of interactive web sites that provide access to databases. Other topics including Cascading Style Sheets, XML, AJAX and Web Services are also introduced. This course requires Introduction of Web Design, Introduction of Database as a pre-requisite. The lectures of this course will be taught through lectures, projects, exams, presentations and assignments.

Course Code BC08 Course Name Operating Systems	**Credit Hours: 3**
Introduction to the fundamental principles of operating system design. The concepts and algorithms covered in the course are based on those used in both commercial and open-source operating systems. We present a large number of examples that pertain to the most popular and the most innovative operating systems. We also assign some simple coding labs to help students understand important knowledge and representative algorithms used in operating systems, such as CPU scheduling, synchronization and virtual memory.	

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Third Year Courses

Course Code BIT402 Course Name Principles of Data Communication and Networks	**Credit Hours: 3**
Technologies related to data communication and networking may be the fastest growing in our culture today. People use the Internet more and more every day. They use the Internet for research, shopping, airline reservations, checking the latest news and weather, and so on. This course is given to provide students with fundamentals of computer networking, the OSI model, and the TCP/IP model. A discussion of the physical layer of the Internet model and the transmission media is given. Students will learn switching techniques which can be used in several layers. A discussion of the data-link layer and network layer of the Internet model will also be given.	
Course Code BIT406 Course Name Fundamentals of Cybersecurity	**Credit Hours: 3**
This course provides an introduction to cybersecurity. Topics include hacking, social networks, privacy, cryptography, legal aspects, social implications, password management, digital forensics, computer networking, wireless security, and ethical issues. The course focuses on individual users and their role in protecting themselves from various cybersecurity threats. No technical experience needed.	
Course Code BIT409 Course Name Ethics of IT	**Credit Hours: 2**
This course considers the ethical issues that arise as a result of the increasing use of computers, and explores and discusses key ethical, legal and professional issues and responsibilities in computing and other related fields. It examines emergent technologies within frameworks that highlight their ethical, legal and social implications. Topics include privacy, confidentiality, security, intellectual property, software piracy, cybercrime, digital identity, software reliability, risk, safety, and professional standards of conduct and codes of ethics.	
Course Code BIT407 Course Name Project Management in IT	**Credit Hours: 3**
An IT Project Management course syllabus typically covers foundational project management concepts, IT-specific project management methodologies, and tools for managing IT projects effectively. Key topics include project initiation, planning, execution, monitoring & controlling, and closure, along with an introduction to agile and traditional project management approaches. Students will learn to manage project scope, time, cost, quality, resources, communications, and risks, often culminating in a project where these concepts are applied	
Course Code BIT405 Course Name Human Computer Interaction and Visual Programming	**Credit Hours: 3**
This Course will be exploring the creative design environment, Processing. Providing students with the foundation to create visual imagery, interactive content, and programming foundations to expand their possibilities in the visual, audio, and interactive realms at large. It is an expository of the object-oriented programming methodology with emphasis on software	

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design and code reuse as its core objectives with use to GUI components. The main concepts discuss are: window-based, event-driven application design and implementation, data types, operators, properties, menus, file streaming, database file processing, and building visual components (windows, menus, message-boxes, buttons, lists, etc.), managing containers and layout, event-handlers, exceptions, and employing GUI class libraries.	
Course Code BIT416 Course Name IT Innovation and Entrepreneurship	**Credit Hours: 3**
This course aims to equip students with the skills and knowledge required to innovate, create, and manage technology-based startups. Students will learn the principles of entrepreneurship, the process of turning technological innovations into marketable products, and the management skills necessary to lead a tech startup.	
Course Code BIT411 Course Name Data Mining	**Credit Hours: 3**
This course is focus on letting the students gain the necessary knowledge in discovering knowledge field as one of the knowledge discoveries phases. The syllabus clarifies the general aim from the data mining and the way to use that in practical cases. Also, it focuses on the ways that is capable of data preprocessing. Furthermore, this syllabus provides practical examples on data mining and on the common algorithms and techniques that are used in this field.	
Course Code CYS364 Course Name Machine Learning	**Credit Hours: 3**
This course provides an introduction to machine learning. Topics include: supervised learning; unsupervised learning; learning theory; reinforcement learning and adaptive control. The course will also discuss recent applications of machine learning, such as to robotic control, data mining, autonomous navigation, bioinformatics, speech recognition, and text and web data processing.	
Course Code BEC04 Course Name Research Methodologies	**Credit Hours: 2**
يعد هذا المقرر من أهم المقررات الدراسية كونه يمكن الطالب الجامعي من المهارات التي تساعده على إنجاز بحث التخرج وهو يعمل على إكسابه مجموعه من المعلومات والمعارف حول العلم والمعرفة والبحث العلمي ومناهجه وينمي الاتجاهات الإيجابية لدى المتعلم تجاه البحث العلمي ويتحقق ذلك من خلال مجموعه من الأنشطة الفاعلة(طرائق وأساليب تدريس، ووسائل) كطريقة الحوار والمناقشة والتعلم الذاتي والبحث والتطبيقات مع استخدام الباوربوينت عن العرض وتقييم الطالب من خلال المشاركة الصفية والتكليفات المصاحبة ، الصفية واللاصفية ، والاختبار النصفي والنهائي.	
Course Code BIT501 Course Name Artificial Intelligence	**Credit Hours: 3**

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This course introduces the basic principles in artificial intelligence. It covers simple representation schemes, problem solving paradigms, constraint propagation, and search strategies. Areas of application such as knowledge representation, natural language processing, expert systems, vision and robotics are explored. The Python programming language is also introduced.

Course Code BEC07 Course Name Field Training	**Credit Hours: 3**
This course offers instruction on using computer tools and their applications in a variety of industries. training in institutions in the public or private sectors, under the direction of department faculty. that The students' acquisition of information and experience occurs through field training, which is supervised by real-world situations. exercising in the training program's academic component. Students benefit from field experience, which also contributes to on-the-job training. There should be opportunities for non-learning during field training. present in classrooms.	

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Fourth Year Courses

Course Code BIT511 Course Name Distributed Systems	**Credit Hours: 3**
The goals of this course are twofold: First, students will gain an understanding of the principles and techniques behind the design of distributed systems, such as locking, concurrency, scheduling, and communication across networks. Second, students will gain practical experience in designing, implementing, and debugging real distributed systems. The major themes this course will teach include process distribution and communication, data distribution, scheduling, concurrency, resource sharing, synchronization, naming, abstraction and modularity, failure handling, protection from accidental and malicious harm, distributed programming models, distributed file systems, virtualization, and the use of instrumentation, monitoring and debugging tools in problem solving. As the creation and management of software systems is a fundamental goal of any undergraduate systems course, students will design, implement, and debug large programming projects. Students will learn the design and implementation of today's popular distributed system paradigms, such as Google File System and MapReduce	
Course Code BIT 414 Course Name Cloud Computing	**Credit Hours: 3**
The course presents a top-down view of cloud computing, from applications and administration to programming and infrastructure. Its main focus is on parallel programming techniques for cloud computing and large-scale distributed systems which form the cloud infrastructure. The topics include: overview of cloud computing, cloud systems, parallel processing in the cloud, distributed storage systems, virtualization, security in the cloud, and multicore operating systems. Students will study state-of-the-art solutions for cloud computing developed by Google, Amazon, Microsoft, Yahoo, VMWare, etc. Students will also apply what they learn in one programming assignment and one project executed over Amazon Web Services.	
Course Code BCO05,06 Course Name Graduation Project I, II	**Credit Hours: 3**
This course focuses on the graduation project design stages. It provides students with the opportunity to engage in an activity that will allow them to demonstrate their ability to apply the knowledge and skills they have gained throughout their years in the educational system. At the end of this course, students must deliver a project with a major component that has passed through the design, analysis, implementation, testing, and evaluation stages.	

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Course Code BIT403 Course Name Network Security	Credit Hours: 3
This course provides an introduction to the field of network security. Specific topics to be examined include security attacks, mechanisms, and services, network security, access security models, network security practice, Email security, IP security, web security, Intrusion detection, prevention systems, firewalls and virtual private networks, cellular and wireless network security	
Course Code BIT403 Course Name Internet of Things	**Credit Hours: 3**
This course is designed to introduce learners to the use, benefits and impact of IoT not only in industry and business but in our day-to-day lives. Students will learn how data is communicated, collected, analyzed and abstracted, and delivered to the end user to make life safer, more efficient and to assist in achieving better data to make better decisions. The IoT Application Framework will be introduced as a practical application development and deployment roadmap to assist the end user in successfully implementing IoT solutions. Students will also learn some of the challenges inherent in setting up and using IoT effectively including cybersecurity concerns and privacy issues.	
Course Code BIT413 Course Name Data Analytics and Visualization	**Credit Hours: 3**
This course provides an overview of the statistical tools most commonly used to process, analyze, and visualize data. Topics include describing data, statistical inference, 1 and 2 sample tests of means and proportions, simple linear regression, multiple regression, logistic regression, analysis of variance, and regression diagnostics. These topics are explored using the statistical package R, with a focus on understanding how to use and interpret output from this software as well as how to visualize results. In each topic area, the methodology, including underlying assumptions and the mechanics of how it all works along with appropriate interpretation of the results, are discussed. Concepts are presented in context of real world examples.	

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