

1. وصف المساقات والأهداف الخاصة بكل مساق وعلاقته بأهداف البرنامج:
أولاً: توصيف مقررات متطلبات الجامعة

(أ): مقررات متطلبات الجامعة الإجبارية

Course name: Computer (0102)

(Credit Hours: 3)

Prerequisite :---

Course description:

This course is an introduction to computer science. The course concentrates on the understanding of how the computer works. Topics studied in the course will include: the basic of information technology, Hardware & Software components, Computer Networks, Computer Ethics, Number Systems, Boolean Algebra, Students will be trained on the recent versions of basic computer, like Windows 7, word, excel, power point, browsers, Internet, e-mail. Search engine, software that make them ready in pass the International Computer Driving License (ICDL

0113 اللغة الانجليزية (1): 2 ساعة معتمدة (2 نظري)

English Language (1)

English 0113 is a general remedial course, intended to upgrade the student's overall proficiency in English, particularly in reading and in written communication, on the one hand, and in using library resources in English on the other.

Furthermore, English 0113 is instrumental in nature (a service course), in that it aims at developing the student's skills demanded in the other courses for which English is a requisite.

Course name: *Web Applications Security(1451)*
(**Credit hours:** 3)

Prerequisite : (1386)

Course description:

An overview of the fundamental problems of computer security, followed by an information

systems control and audit ,risk assessment and risk management ,protection policies ,documentation ,antivirus, firewalls , intrusion detection systems , Social Engineering, network security , protecting the information infrastructure, protecting web site , Web Security Vulnerabilities ,e-commerce security , Cryptography and Modern security Techniques of Cryptography ,Authentication ,cloud computing security ,mobile security, privacy concerns and ethical issue.

Objectives of the course :

This course aims to provide students with the basic concepts of systems control, protection and how to build secure Web applications, to provide him with basic web programming concepts and avoid the weaknesses in the design of Web pages, as well as to identify security vulnerabilities in Web applications and development of secure web applications.

Course Outcomes:

providing students with the necessary skills to build secure Web applications using the latest dedicated to information security techniques to develop controls for input and output, processing and building encryption systems through modern languages has been studied in previous Course of the plan for the program.

Course name: *Mobile Programming(1456)*

(**Credit hours:** 3)

Prerequisite : (1295)

Course description:

This course is designed to introduce and familiarize students with programming in the Android environment. It starts with the basic components and concepts that define the Android platform, installation, setup, XML-based layouts, basic widget types, window layout types. most important libraries and then moves on to cover the specific structure that comprises an Android application. An overview of the most common tools and techniques for writing Android applications is included, common user interface elements, Storage strategies.

Objectives of the course :

This course aims to acquaint students with the basics and how to prepare a suitable environment for building software and applications and how to be deployed and installed on devices that are running the Android.

Course Outcomes:

give students necessary for the preparation of programs and applications skills through the Android system.

Course name: *Distributed Systems (1452)*

(**Credit hours:** 3)

Prerequisite : (1383)

Course description:

This course introduces students to the principles, design, and implementation of distributed systems. The lectures focus primarily on the principles and design of distributed systems, and cover communication,

Course name: *Principles of statistics (0103)*

(Credit Hours: 3)

Prerequisite :---

Course description:

This course aims to introduce the students to the role of statistics in life and in research and investigation, and deals with the iterative and probability distributions and the normal curve. It also handles Multi-link in a simple regression

Course name: *Methods of Scientific Research*

(0204)

(Credit Hours: 3)

Prerequisite :(0103)

Course name: *Communication Skills in Information Technology(1150).*

(Credit Hours: 3)

Prerequisite: (0102)

Course Description :

This course covers the communication skills in information technology which includes: internet and e-mail, video conference, chatting programs, etc, preparing the presentations, the course also focuses on Report-Writing Skills. It is designed to introduce and familiarize students with the principles of Scientific Research Writing and mastered the process of Professional Report-Writing.

Objectives of the course:

This course aims to familiarize students in ways that documentation and preparation of scientific research and management surveys, reports and improves their communication and modern methods of communication and expression of the problems and solutions software skills.

Course Outcomes:

Providing students with the necessary skills to communicate and how to apply, presentation and writing scientific research and documented properly and survey design and analysis through the use of software WinWord, power point, excel, Google drive.

Course name: *Web Page Design(1151).*

(Credit Hours : 3)

Prerequisite: : (0102)

Course Description:

This course will provide a basic understanding of the methods and techniques of developing a simple to moderately complex web site, an introduction to Internet Applications, basic concepts of Web Programming, HTML, XHTML, JavaScript, Server-Side Programming and Scripting (PHP, XML) and case studies of website creation.

objectives of the course:

This course aims to provide students with structural concepts and services and the ways of connecting and regulating the Internet and its uses and to inform the students about the basic principles to design and deployment of Web sites through the most modern software and languages.

Course Outcomes:

acquiring necessary skills to design rich web content and interactive information systems ,advanced skills, as well as Internet sites and project management skills.

Course name: Data Processing(1187)

(Credit Hours: 4)

Prerequisite: (0102)

Course description :

This course covers the following concepts: Data and Information, data types, information types, information systems, system analysis by computer, algorithms and flow charts, introduction to programming by C and java, database concepts and techniques, object – oriented analysis, basic concept of : information retrieval systems, distributed systems, E-commerce, and operating systems.

Objectives of the course:

This course aims to identify student of the ways of organization and processing data, document life cycle of electronic and problem solving using computer tariff some advanced uses of computers.

Course Outcomes:

Acquiring the necessary resolve issues using a computer by writing flowchart processes and algorithms and writing programs through a C language scheme, and the Java language skills.

Course name: Calculus I (5161)

(Credit Hours: 3)

Prerequisite: ()

Course description:

Topics covered in this Course include: Analytic Geometry, continuity, limits, definite and indefinite integration and applications of integration and differentiation.

Course name: Calculus II (5261)

Credit Hours: 3

Prerequisite: (5161)

Course description:

This Course introduces students to: the integration and differentiation of Exponential and Logarithmic functions, Trigonometric and Partial Trigonometric functions and methods of integration, Polar Co-ordinates, Conic Sections, Extraordinary Integration and Indefinite Quantities.

Course name: Information Architecture (1250)

(Credit hours 3)

Prerequisite :(1151)

Course Description:

This course aims to equip students with the concepts of the theoretical and practical information architecture, the structures of the documents, data description, based on the information structure, tasks, tools, browsing, searching, and coding, control schemes. Information stores, classification and analysis of information.

The practical side: Practical Applications

Objectives of the course:

The students learn the definitions of the concept of students' concepts of the theoretical and practical information structures, the structures of the documents, data description.

Course Outcomes:

Providing students with the necessary skills: browsing, searching, coding, control schemes and information stores, classification and analysis of information.

Course name : *Multimedia(1265)*

(Credit hours 3)

Prerequisite :(0102)

Course Description:

This course aims to identify the multimedia concept and its applications, multimedia and data flow, dealing with audio files and characterization, converting sound waves written to a digital representation using sampling methods and quantitative

Fractionation and voice modification and identify errors that may result from the conversion process, the digital representation of the image and its components and different color spaces.

The practical side: Practical Applications.

Objectives of the course:

To acquaint student with multimedia concepts and uses, data flow, dealing with audio files and characterization, converting sound waves into digital linear representation of the sample using the methods of quantitative fractionation and voice modification and identify errors.

Course Outcomes:

The student should be able to apply the theories studied in picture, sound and motion processing.

Course name: *Discrete Mathematics(1280)*

(Credit Hours: 2)

Prerequisite: (5161)

Course Description:

Basic areas in discrete mathematics relevant to Computer Science. Uses of logic in programming, set theory. Functions and Relations. Mathematical Induction, Recursion. Introduction to Graph theory. Counting techniques.

Course name: *Data Structure and Algorithms Design(1287)*

(Credit hours 3)

Prerequisite :(1291)

Course Description:

This Course is an introduction to the various Data Structures which use an object-oriented language, such as Java. The Course covers: lists, stacks, queues, heaps, trees, search trees, hash tables, the analysis and implementation of data structures, recursion, sorting and searching.

Objectives of the course:

The student learn the foundations of algorithm writing and analysis, evaluation and effective principles and techniques in the design of algorithms, methods of analysis of algorithms and design and analysis of algorithms.

Course Outcomes:

The student should be able to choose the appropriate algorithm for the problem and writing programs for these algorithms.

Course name:

(Credit hours 3)

Prerequisite :(0102)· (1280)

Course Description:

This Course is an introduction to the various Data Structures which use an object-oriented language, such as Java. The Course covers: lists, stacks, queues, heaps, trees, search trees, hash tables, the analysis and implementation of data structures, recursion, sorting and searching.

Course name: Object Oriented Programming(1291)

(Credit hours: 4)

Prerequisite :(1187)

Course Description:

This course aims to identify the basic concepts of object-oriented programming development, and how to analysis and design the object-oriented programming, structures and classes, arrays and linked lists, friendly functions and processes, derived classes and templates and processed, using standard libraries of C++ language, file processing C++ language, Identify different types of inheritance.

The practical side: Practical Applications.

Course objectives:

To introduce students to the basic concepts of object-oriented programming development, and how the object-oriented analysis and design and object-oriented programming.

Course Outcomes:

The student should be able to write programs in C ++ language and implementation.

Course name: Programming Using Java (1295)

(Credit hours 4)

Prerequisite : (1291)

Course Description:

This course aims to identify the emergence of Java language advantages and uses, the basic concepts object-oriented of programming, and their advantages and variables, writing software applications, arithmetic and logical and relational expressions, conditional control and repetitive sentences, dealing with exceptions, symbols, numbers and strings, varieties and methods characteristics and tools and their uses, and a mechanism to deal with, interfaces and packages of different characteristics how declaration, implementation and management, exceptions thrown and picked up and processed and the mechanism to create and use, programmable multi-channel

establishment and implementation, input and output basics and file reading and writing, graphics, images basics and a mechanisms and to process them.
The practical side: Practical Applications.

Objectives of the course:

To acquaint students with the emergence of Java language advantages and uses, the basic concepts of object-oriented programming and the advantages and variables, writing application software includes the basics of the Java language.

Course Outcomes:

The student should be able to write a variety of programs using language Java and applications.

Course name: *Patterns Design (1353)*
(Credit Hours: 3)

Prerequisite: (1295)

Course description :

This course introduces the principles of patterns design for Object-Oriented software systems and its roles in designing complex software systems. A catalog of patterns design is shown to provide reference to a well-engineered set of existing patterns. The course shows also the impact of post-object-oriented software development on design patterns.

Course objectives:

This course aims to introduce students to restrictions on traditional object-oriented designs and ways of solving them, and to identify design patterns, catalog of design patterns, and the ability to design and build patterns, and how to find solutions for recurring problems in the system structures, solve CAD / CAM problems through design patterns and identify the strategies used to apply the suitable design patterns.

Course outcomes:

Acquire the necessary skills to resolve the limitations of the traditional object-oriented design through patterns design. And the acquisition of skills necessary to solve recurring problems in the system design and solving the problem of CAD / CAM through design patterns and identify the strategies used to apply the suitable design patterns.

Course name: *Web Applications Design(1355)*
(Credit Hours: 3)

Prerequisite: (1265)

Course description :

This course covers the following concepts: design, evaluation, implementation of interactive computing systems for human use, principles of computer systems and user interface design

Using 3DMax, Adobe Photoshop, JavaScript, WebGL or Flash, XML5, CSS3, JQuery.

Course objectives:

Objectives of the course :

This course aims to acquaint students with different user interface types and requirements, graphical user interface and its elements, and interacting with graphical user interface, and the models and methods used to design and test user interfaces.

Course outcomes:

Identify the concepts and types of user interfaces and user requirements, and graphical user interfaces, and elements of graphical user interfaces, and interacting with the user interface, and the models and methods of designing and testing user interfaces.

Course name: *Graphic and Interactive Design (1356)*

(Credit hours 3)

Prerequisite: (1265)

Course description:

This course aims to introduce interactive design, its uses, and how to interact with users (graphics, sound, etc.). The course explains the standards of interactive site design so that the user can interact with the website and be affected by it. The course explains interactive design software's.

Course objectives:

This course aims to acquaint students with the skills and fundamentals of interactive design, as well as be proficient in the use of software in this area.

Course outcomes:

The student's ability to build interactive sections of websites using software like Adobe Premier.

Course name: *Visual Programming(1377)*

(Credit hours: 3)

Prerequisite :(1291)

Course Description:

This course aims to identify the construction of executive programs, building interfaces easy-to-use, connecting Visual with Office software applications, storing files and records to be reviewed and modified, dealing with databases.

The practical side: Practical Applications.

Objectives of the course:

introducing students to build executive programs interface, construction and application, connecting Visual programs with offices software applications, storing files and records to be reviewed and modified, dealing with databases.

Course Outcomes:

The student should be able to write a visual programs and applications.

Course name: *Computer Simulation (1378)*

Credit Hours: 3

Prerequisite :(1295)

Course description:

This Course examines Simulation and Queuing Models, random numbers generation, statistical sampling and the analysis of data, simulation languages and selected applications

Course objectives:

This course is an introduction to the modeling, analysis, and computer simulation of complex systems. Topics include analytic modeling, discrete event simulation, experimental design, random number generation, and statistical analysis.

Course outcomes:

Preparation and Acquisition of students with the basic knowledge to the modeling and computer simulation of complex systems.

Course name: *System Design and Analysis(1380)*

(Credit Hours: 3)

Prerequisite: (1150)

Course description:

This course shows the definition of information systems, information system life cycle, methodologies of building the information systems such as: classical approach, structured approach, object oriented approach, system structure models, and system behavior modeling with UML applications, system architectures, and user-Interface Design.

Course name: *Computer Architecture & Assembly Language*

Credit Hours: 3

Prerequisite :(1290)

Course description:

Introduces students to the fundamental of computer architecture describe the organization of integer and floating-point arithmetic units. Its includes Assembly languages, instruction sets, Memory, storage, I/O and peripherals, cache and virtual memory, computer Arithmetic, data path, Memory hierarchy, input and output operation and interrupts.

Course name: *Database Systems (1383)*

(Credit Hours: 3)

Prerequisite : (1380)

Course description:

Students, in this Course, are introduced to Database System Concepts and Architecture, Data-Modeling using the E-R Model, the Relational Model, Normalization, the operations on the Relational Model, Relational Constraints and Relational Algebra, SQL-the Relational Database Standard, Security in SQL and a PL/SQL overview. Furthermore, an overview will be provided of the Oracle system, Distributed Databases and Client-Server Architecture.

Course objectives:

This course aims to acquaint students with different types of databases and management concepts and applying artificial intelligence and data mining and knowledge management on data.

Course outcomes:

The student will acquire the necessary skills for information gathering, organizing, modeling and the creation of a relational database and the ability to conduct operations such query, insert,

delete and update using structural query language such as SQL and explain the concept of data security and backup and recovery and understanding of database management and the ability to describe a server-client database and distributed database structures.

Course name: *Operating Systems (1385)*
(Credit hours 3)

Prerequisite :(1381)

Course description:

This is a hands-on introduction to the different Operating Systems and Tools. Students will gain an understanding and will use the basic concepts of Operating Systems that are common to most Computer Systems, such as Processor Management and Scheduling, Memory Management, File Systems, Virtual Memory and Kernel Systems.

Course objectives:

This course aims to identify students to different operating systems; file systems, virtual memory and kernel systems and its management, scheduling etc.

Course outcomes:

The student should be able to understand different operating systems and file systems; how it works and how it manages computer resources such as processor, memory, input/output devices, how scheduling is managed in addition to virtual memory and kernel systems.

Course name: Data Communication and Networking (1386)
(Credit hours 3)

Prerequisite : (1381)

Course description:

This Course begins with an introduction to the basic notations of communications, protocols, network topologies and 802.xx IEEE standards. It will offer detailed descriptions of Network Layer Models (IOS and TCP/IP), including: Application, Transport, Network, Data link and physical. It will then present a case study of the settings and configurations of Local Area Networks and introduce students to NW security.

Course name : Advanced Web Programming (1390)
(Credit Hours: 3)

Prerequisite: (1151),(1383).

Course description:

This course aims to address the development of Web applications, CGI,Java Server, Java Server Pages (JSP), Java Server Faces (JSF), Java Servlets, Scripting Languages, as well as installing and managing the web server and use the tools needed to create client side

applications. At the end of this course, the student is expected to be able to handle and develop interactive applications and transactions, as well as the use of databases and dynamic Web application content and management.

Course objectives:

This course aims to address the development of Web applications, CGI, Java Server, Java Server Pages (JSP), Java Server Faces (JSF), Java Servlets, Scripting Languages, as well as installing and managing the web server and use the tools needed to create client side applications.

Course outcomes:

At the end of this course, the student is expected to be able to handle and develop interactive applications and transactions, as well as the use of databases and dynamic Web application content and management.

Course name: *Special Topics(139).*

(Credit hours: 3)

Prerequisite: (1383)

Course description:

In this Course, students are introduced to advanced selected topics in different areas of Computing.

Course name: *Introduction to Service-Oriented Architecture (SOA) and Web Services (1392)*

(Credit hours: 3)

Prerequisite:(1250)

Course description:

This course covers the following concepts: Introduction to XML, DTD, XML Schema, XPath XSLT and how to use it to turn XML pages to different file types. Importance of XML in Web Services applications and enabling interoperability between software systems, XML language, databases, relational databases, APIs (DOM and SAX), the role of XML in data distribution through Web services (SOAP and REST).

Course objectives:

Introduce students to the basic concepts of service-oriented architecture and web services in addition to the study and use of XML as a means of standardization of data formats and data exchange, and the study of different web services protocols such as SOAP, REST.

Course outcomes:

Providing students with the necessary skills to deal with service-oriented architecture (SOA) and web services, as well as enabling the students to develop applications.

Course name: *Web Programming Using PHP (1393)*

(Credit hours 3)

Prerequisite :(1383)

Course Description:

This course covers the following concepts: introduction of web programming languages, the role of Scripting Languages in building Web applications, Introduction to PHP and MySQL language. Explain about the PHP language, functions, data types, array ... the importance of building and developing web applications using PHP and MySQL. The installation of PHP and MySQL, the ability of PHP in working with files and folders. Connecting PHP with different databases.

Course objectives:

This course aims to acquaint students with the basics of web programming, preparing the suitable environment to build web applications, and use of PHP language to build these applications.

Course outcomes:

Preparation and Acquisition of students with the necessary skills to build Web applications using PHP language.

Course name: *Web Portals(1450)*

(credit hours : 3)

Prerequisite: :(1386)

Course Description:

The objective of this course is to give the students a practical & conceptual introduction to build Web portals and applications according to user needs, types of services offered by Web portals such as: mail services, news, stock prices and financial markets, information services, data and entertainment services rules, How to provide services portal through a consistent application, different types of web portals: personal portals, news portals, stock exchanges and financial markets portals, government portals, educational portals, social portals, search engines portals, business portals, and to identify some open source software

Objectives of the course:

defining the concept of web portals and applications for the students and how to design, build and define students of various portals and services and identify students with some open source software.

Course Outcomes:

providing students with the necessary design skills and create a Web portal by the user's needs.

To define the concept of distributed systems for the students, types, benefits, Architecture, structure, design, management and methods of use , programming and the types of software used.

Course Outcomes:

Providing students with outdated work distributed systems and methods of programming, ways to maintain data consistency in distributed systems ,to enable students to write programs that run on Instant between two tasks in therapists through the Java language Memory.

Course name: *Advanced Databases(1476)*

(Credit Hours: 3)

Prerequisite: (1383)

Course Description:

Basic and advanced concepts in databases and applications related to advanced data forms, time-dependant databases, database technology for decision support applications, smart databases, object-oriented databases, central databases, distributed databases, client/server architecture, applications of state-of-the-art database technologies.

Course Objectives:

Student will Gain an advanced concepts in databases and applications related to advanced data forms and applications of state-of-the-art database technologies.

Course Outcomes:

Upon successful completion of this course, the student will be able to design queries against a distributed database management system,

perform queries against database designed with object-relational extensions.

Course name: E-Commerce(1477)

Credit Hours: 3

Prerequisite: (1151)

Course description:

This Course covers the various categories of E-Commerce, the various E-Commerce Markets, their limitations and their benefits. The various Models and Infrastructures that enable E-Commerce and its challenges- such as legal issues, fraud and security regarding Electronic Payments- will also be discussed. Finally, the Course will explore the various supplier-buyers models, such as B2B & B2C.

Course Objectives:

The objectives of the course are to introduce the concept of electronic commerce, and to understand how electronic commerce is affecting business enterprises ,governments, consumers and people in general. In addition, we will study the development of websites using relevant software tools.

Course Outcomes:

At the end of the course, the students is expected to realize the problems involved in designing and building e-commerce systems; understand the need to design EC systems that fully meet the requirements of the intended users; appreciate the need to ensure that the implementation of a design is adequately tested to ensure that the completed EC system meets the specifications; be fully aware of the principles and practice of an O-O approach to the design and development of EC systems; be able to apply these principles in practice.

Course name:

(Credit Hours: 3)

Prerequisite: (1383)

Course description :

This Course is an introduction to Management Information Systems. It provides a foundation for the intelligent use of computers as Management Tools. This Course will assist Business Students in learning how to use and manage Information Technology to support business operations and objectives, to improve managerial decision-making and to gain competitive advantage.

Course name: Artificial Intelligence and Expert Systems(1484)

(Credit Hours: 3)

Prerequisite: (1380)

Course description:

In this Course, students receive instruction on the basic concepts and techniques of Artificial Intelligence. Emphasis is placed on Problem-Solving Methods: blind and informed search, game-playing, Minimax and Alpha Beta Pruning Algorithms, the representation of knowledge using Predicate Logic, resolution, backward-chining and Prolog, Forward-Chaining Systems, inductive learning, decision trees, Neural Networks and planning and reasoning under uncertainty.

Course Objectives:

The objective of this course is to provide the student with an overview of topics in the field of artificial intelligence (AI.)

Course Outcomes:

Upon successful completion of this course, the student will be able to represent knowledge using propositional calculus and predicate calculus, use inference rules to produce predicate calculus expression, Analyze and design a fuzzy logic system using fuzzy logic tool box.

Course name: *Software Engineering(1494)*
(Credit hours: 3)

Prerequisite: (1380)

Course Description:

This Course gives broad coverage of the most important terminology and concepts in the software engineering; basic understanding of software life cycle, software processes, requirements engineering processes; introduction to agile and extreme programming, basic modeling and design; basic of project management, software cost estimation, configuration management, and testing .It covers also : the systematic development of Web applications, requirement engineering for Web applications, modeling, interactivity and multimedia, interfaces and human-computer interaction ,Architectures of Web Applications; technology driven design; testing, operation and maintenance of Web applications. Special emphases should be given to: Web project management, development processes, usability, performance and security of Web applications.

Objectives of the course:

This course aims to familiarize students life cycle of software systems and various Web applications through the latest methodologies to create, develop and re-engineering the various web sites using the latest methods and software for the development of Web applications systems.

Course Outcomes:

Waiting from the students after completing the course to be able to analyze, design, testing and programming Web sites and maintenance ,and to use Unified Modeling Language UML (Unified Modeling Language).

Course name: Computer Graphics
(Credit hours: 3)

Prerequisite: (1280), (5361), (1291)

Course Description:

This Course covers basic graphics operations and their implementations in 2 dimensions. It introduces students to OpenGL, devices for the construction and display of computer-generated images, windowing and clipping, 2D geometric, transformation and viewing, 3D object representation, transformation and viewing.

Course name: Graduate Project(1499)
(Credit hours: 4)
Prerequisite: (1383)

Course description:

This course offers students an opportunity to assemble their knowledge acquired throughout their BS curriculum to realize a final project. This would require them to gather information about the proposed subject and realize a final report as well as to develop a system practically. At this stage, students must carry on all phases system development of the subject already defined in the precedent courses(specially software engineering), and under the supervision of a faculty member. At the end of the semester, students are asked to make an oral presentation with the presence of faculty members as referees. Students will be allowed to work individually or in groups.

Course name: Linear Algebra(5361)
(Credit Hours: 3)

Prerequisite: (5161), (0102)

Course Description:

Systems of linear equations, matrices: matrix algebra, determinants, vector spaces and subspaces, basis, change of basis and dimension, linear transformations, matrices of linear transformations, inner products, norms, the Gram-Schmidt Process, eigenvalues and eigenvectors, diagonalization, selected application.
