

Brief course description- Course Plan Development and Updating Procedures\ Computer Science Department	QF01/0409-3.0E
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Faculty	Science and Information Technology	Academic Department	Computer Science / Computer Science	Number of the course plan ( 133 )
Number of Major requirement courses	02/20/2018-2019	Date of plan approval	06/05/2019	

This form is just for the major requirement courses

Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0113324	3	Web applications Programming	Internet technology

Brief description

This module is a reflection of web pages development techniques using ASP.Net which supported by C# programming language. In this module, a training on how to create web pages from scratch to reach a creation of full, integrated and synchronized with each other web pages. This course is led to teach the user most of the web pages programming techniques and how to link them with each other's and with the databases. As well as the fundamentals of security, where the user will be taught how to secure the created web pages from hacking.

Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0113130	3	Introduction to Information Technology	مهارات استدرائية

This course presents an introductory survey of computer science. It explores the breadth of the subject while including enough depth of the topics involved. The goal of this course is to introduce the student to key terminology and components of computer hardware, software, and operating systems. Discuss the functions and uses of computers in our society, Describe the information processing cycle, and Identify the major components of computer hardware and their functions. This course is an introduction to problem solving by using Pseudo code, and flowcharting

Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0101110	3	Principles of Mathematics and Statistics	---

Introduction to Statistics, populations and samples, Frequency distributions, Measures of central tendency, Measures of dispersion, Measures of skewness and kurtosis, correlation and regression, principles of probability, Rules of probability, Bayes, Theorem. The Random, Variables, discrete and continuous distributions expectation.

Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0112353	3	Information System Analysis and Design	0113241

This module presents fundamentals of systems development; Development life cycle; project management, Initiating and planning system; Methods for determining system requirements; Process modeling. Relational database models; databases: data integrity and security controls; forms and reports; Assessing usability; User interface and dialogue design; Implementation, Testing and installation documentation and training; Maintaining systems.

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Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0112456	3	Information system development	Information System Analysis and Design
This module is a reflection of the pragmatic philosophy of software development as an engineering discipline. It implements an object-oriented approach using UML methods to create software system. This module introduces the concepts of IBM Rational Rose tools to elaborate systems through software engineering diagrams.			
Course number	Credit hours	Title of the course	Prerequisite-co-requisite
<b>0112434</b>	3	<b>Embedded Systems</b>	0112313
This course discusses embedded systems. Identify how to use microcontroller board to design embedded systems. Develop applications for embedded systems. Explain serial and parallel communication. Explain interrupt capabilities. Explain timing systems. Design analog-to-digital converters. Describe how to control the speed and direction of a DC motor			
Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0112232	3	<b>Computer Organization and Design</b>	0112131
Computer organization and design is concerned with computer architecture, operating systems, networks, and many other materials. This course introduces the following topics: Introduction to PC architecture, Organization of computers based on 8086 family, Assembly language and instructions which affect memory, Introduction to keyboard and screen processing, Arithmetic flags and operations, Jumps and loops, Structured programming, The stack and its role in subroutine mechanism, Logical, shift, and rotate families.			
Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0112252	3	Data Communication and Security	0122141
This module is the second level module of curricula related to the computer networks field. It provides in depth coverage of some basic topics such as routing algorithms, addressing, and networks security.			
Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0112241	3	Computational Theory	0112110
This course introduces the concepts of computation theory through the study of formal languages and automata. The topics covered include language generators such as grammars and regular expressions and language recognizers such as the different types of automata. It also introduces some basic compiler design principles, and it provides insights into algorithm analysis			

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Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0112333	3	Operating systems	0112232
Introduction to Operating System and Machine Architecture. Operating system and its instruction, the services provided by the OS, process management and its scheduling to the processor, type of scheduling and its algorithms, scheduling criteria's, Ways of calculating the average waiting time AWT, the modern methods of design and implementation of OS, threads , thread models and its implementation, deadlock, type of algorithms for prevents the deadlock, manipulation with files, access to the files, the proper storage media for files, memory management, RAM, and VIRUAL memory, paging, paging swapping.			
Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0112415	3	Artificial Intelligence	Data Structure
Brief description 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 PROLOG programming language is also introduced.			
Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0112451	3	Image Processing	0112222
<b>Digital image processing</b> is the use of computer algorithms to perform image processing on digital images. As a subcategory or field of digital signal processing, digital image processing has many advantages over analog image processing. This course is an introduction to the fundamental concepts and techniques in basic digital image processing and their applications to solve real life problems. The topics covered include Digital Image Fundamentals, Image Transforms, Image Enhancement, Restoration and Compression, Morphological Image Processing, Nonlinear Image Processing, and Image Analysis. Application examples are also included. In this course we try to explore the algorithms and techniques involved in Digital Image Processing using computational tools. The course will comprise of comprehensive understanding of signals, signal processing, digital imagery and digital image processing. Upon completion of this course, students will be familiar with basic image processing techniques for solving real problems. Student will also have sufficient expertise in both the theory of two-dimensional signal processing and its wide range of applications, for example, image restoration, image compression, and image analysis.			
Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0122343	3	Network Programming	0122343
The aim of this course is to introduce advanced network programming tools and techniques. The course gives hands-on experience in writing distributed applications in Java. In particular, the course will learn students to be able to know and define architectures of distributed applications; to design GUI clients for network servers; to program concurrent threads in a Java application; to design, develop and implement a distributed application using different networking APIs and technologies in Java, such as,			

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the socket API, Java RMI, Java IDL (CORBA) and Java Database Connectivity (JDBC)			
Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0112223	3	Computer Graphics	0112220
This course aims to present basic principles for the design, use, and understanding of computer graphics systems and applications. Its topics cover 2D and 3D shapes, their representations, drawing algorithms, and transformations. Implementation of graphics algorithms is explained with examples using a high-level language (such as C++ or Java) and OpenGL library.			
Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0112221	3	Programming language	0112120
Brief description In this course, you will learn some of the concepts, fundamental syntax, and thought processes behind true object-oriented programming. Topics include the syntax of input, output, loop, conditions, and arrays statements in java. As well as, it provides in depth coverage some of the object oriented programming topics including class, object, encapsulation, inheritance, and polymorphism. Completion of this course will give you the tools and basic knowledge you need to learn more specific object-oriented programming techniques in Java language.			
Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0112212	3	Data Structures	0112220
Principles of data design. Data types and structures. Abstract data types (ADTs) and encapsulation. Unsorted List and Sorted List ADTs. Stack and Queue ADTs. Linked structures. Implementing Unsorted Lists, Sorted Lists, Stacks and Queues as linked structures. Programming with recursion. Binary Search Trees.			
Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0112222	3	Visual programming	0112220
This course focuses on providing the students the main skills for designing the GUI interface. In addition it focuses on teaching the students the programming skills by writing the necessary codes for designing the GUI interface. This course starts by defining the JFrames, and all controls which are placed on the frame such as JLabel, JTextField, JButtons, JoptionPane, JCheckBox, JRadioButton, JComboBox, JList, Events: Mouse events and Keyboard events, event Registration, Pixels, Color Class, Font Class, JTextArea, Java 2D and 3D Shapes, Exception Handling, Java			

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Course number	Credit hours	Title of the course	Prerequisite-co-requisite
<b>0142141</b>	<b>3</b>	<b>Principles of AI</b>	<b>0113130</b>
<p>This course introduces you to the basic concepts and techniques of Artificial Intelligence (AI). AI is devoted to creating software and hardware to get computers to do things that would be considered 'intelligent' as if people did them. Artificial intelligence has had an active and exciting history and is now a reasonably mature area of computer science. Many of the research discoveries have now reached the point of industrial application and many companies have made and saved millions of dollars by exploiting the results of AI research. This course will allow you to gain generic problem solving skills that have applicability to a wide range of real-world problems. Topics covered include search strategies for solving problems, knowledge representation, automated planning, and intelligent agents, and reasoning under uncertainty.</p>			
Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0112313	3	algorithms	0112212
<p>Brief description Solving summations and recurrences. Efficiency and complexity analysis. Tree terminology and algorithms. Binary trees. Hashing methods and solving collision in hashing. Heaps and heap sort. Insertion sort, merge sort and quicksort. Graph terminology, representation and algorithms. Algorithms of Prim, Kruskal, Dijkstra and Floyd. Breadth-first and depth-first search. The greedy, divide-and-conquer, and dynamic programming techniques.</p>			
Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0113241	3	<b>Database (1)</b>	<b>0112220</b>
<p>This course provides a comprehensive concepts of the relational database design and SQL (implemented in Oracle) used with relational databases. The presentation stresses at relational data model; relational algebra; SQL; database analysis and design; ER and enhanced modeling; data normalization</p>			
Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0112352	3	<b>Database (2)</b>	0113241
<p>Brief description This course provides an advanced concepts related to database; transactions and their ACID properties; concurrency control; recovery system; database-system architecture; parallel databases; distributed databases; data analysis, data warehousing, OLAP, and data mining.</p>			
Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0112351	3	برمجة نظم قواعد البيانات	<b>0113241</b>
<p>This course provides a comprehensive guide for developing database applications using the oracle 10g and the developer 10g application development utilities. The course emphasizes on SQL; creating PL/SQL programs using both SQL*Plus and forms builder ; using developer 10g forms builder and reports builder to create an integrated database application; custom forms.</p>			



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Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0112250	3	Operations research	0101221
The Operations Research (OR) refers to the science of decision making. The course is intended to provide the key aspects of operations research methodology. This course covers the linear programming models; graphical LP solution; simplex method and sensitivity analysis; duality; transportation and assignment model; network model and CPM.			
Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0112424	3	Mobile Applications Programming	0112222
This introductory course covers the basic principles of application development in Android environment. The course starts by introducing the Android system and its required software development tools. Basic interface design principles are presented followed by practical application development in Eclipse (i.e Tip Calculator App, Flag Quiz Game App, Cannon Game App, Doodlz App). Furthermore, the course covers database applications and 3D Graphical application supported by some basic examples.			
Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0122141	3	Computer Networks	0113130
An introduction to the design and analysis of computer communication networks. Topics include network architecture; application layer: HTTP, FTP, electronic mail, and DNS; transport layer: UDP, TCP, and congestion control; network layer: IP protocol; data link layer: errors detection techniques, and multi access link; as well as principles of physical layer.			
Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0112342	3	Data Communications and Security	Computer Networks
This module is the second level module of curricula related to the computer networks field. It provides in depth coverage of some basic topics such as routing algorithms, addressing, networks security, and multimedia networking.			
Course number	Credit hours	Title of the course	Prerequisite-co-requisite
Approved by department council		Date of approval	