Brief course description- Course Plan Development and Updating Procedures\ Computer Information Systems Department	QF01/0409-3.0E

Faculty	Faculty of Science and Information Technology	**Academic Department**	Computer Information Systems	Number of The Course Plan (QF01/0407-3.0)
Number of Major Requirement Courses	32	**Date of Plan Approval**	30/8/2017	

This form is just for the major requirement courses

Course Number	Credit Hours	Title of the Course	Prerequisite-Co-Requisite
0113353	**3**	**Data Mining**	**Advanced Databases**
This course provides the following topics: Introduction to Data Mining, Classification, Clustering, Association Rule Discovery, Anomaly Detection, Web Mining, Collaborative Filtering, and various data mining topics.			
Course Number	**Credit Hours**	**Title of the Course**	**Prerequisite-Co-Requisite**
0113344	**3**	**Advanced Databases**	**Databases**
This course provides the following topics: Transaction, Failures, Inconsistency, Query Optimization, Indexing and Hashing, Distributed Databases, Special Data Types, Storage Units, RAID, and various advanced database topics.			
Course Number	**Credit Hours**	**Title of the Course**	**Prerequisite-Co-Requisite**
0113455	**3**	**Data Warehouses**	**Advanced Databases**
This course provides the following topics: Introduction to Data Warehousing, Data Warehouse Environment, Designing a Data Warehouse, Data Warehouse Granuality, Distributed Data Warehouse, Multidimensional Data Models, and Advanced Data Warehouse Topics.			
Course Number	**Credit Hours**	**Title of the Course**	**Prerequisite-Co-Requisite**
0113457	**3**	**Information Retrieval**	**Advanced Databases**
This course includes the following topics: Introduction to Information Retrieval, Basic Techniques of information retrieval, Tokens and Terms, Static Inverted Indices, Query Processing, Index Compression, Dynamic Inverted Indices, Probabilistic Retrieval, Measuring Effectiveness, Web Search, Advanced Information Retrieval Topics.			
Course Number	**Credit Hours**	**Title of the Course**	**Prerequisite-Co-Requisite**
0113459	**3**	**Big Data Management**	**Information Retrieval**
This course includes the following topics: Introduction to Big Data, Data Model for Big Data, Batch Layer, Serving Layer, and Real-time Views.			
Course Number	**Credit Hours**	**Title of the Course**	**Prerequisite-Co-Requisite**
0113428	**3**	**Advanced Database Management Systems**	**Database Management Systems**
This course includes the following topics: Revision of SQL, PL/SQL, and Forms Builder, Advanced Forms Builder topics, Report Builder, Case Study.			
Course Number	**Credit Hours**	**Title of the Course**	**Prerequisite-Co-Requisite**

0113446	3	Cloud Computing	Data mining

The course will introduce this domain and cover the topics of cloud infrastructures, virtualization, software defined networks and storage, cloud storage, and programming models. As an introduction, we will discuss the motivating factors, benefits and challenges of the cloud, as well as service models, service level agreements (SLAs), security, example cloud service providers and use cases. Modern data centers enable many of the economic and technological benefits of the cloud paradigm; hence, we will describe several concepts behind data center design and management and software deployment. Next, we will focus on virtualization as a key cloud technique for offering software, computation and storage services. We will study how CPU, memory and I/O resources are virtualized, with examples from Xen and VMWare, and present real use cases such as Amazon EC2. Within the same theme of virtualization, students will also be introduced to Software Defined Networks and Storage (SDN and SDS). Subsequently, students will learn about different cloud storage concepts including data distribution, durability, consistency and redundancy. We will discuss distributed file systems, NoSQL databases and object storage. HDFS, CephFS, HBASE, MongoDB, Cassandra, DynamoDB, S3, Swift and Ceph Object Gateway will be presented as case studies.

Course Number	Credit Hours	Title of the Course	Prerequisite-Co-Requisite
0113231	3	Computer Network	Introduction to Information Technology

This course provides the following topics:
Instruction in networking technologies and their implementation topics include the OSI reference model, network protocols, transmission media, and networking hardware and software.
The purpose of this course is to identify and use network transmission media; explain the OSI model; recognize the primary network topologies/protocols, identify their characteristics, and determine which would be most appropriate for a proposed network; identify the functions of a network operating system and distinguish between centralized, client/server, and peer-to-peer systems; and distinguish between Local Area Networks (LANs) and Wide Area Networks (WANs) and identify the components used to expand a LAN into a WAN.

Course Number	Credit Hours	Title of the Course	Prerequisite-Co-Requisite
0113414	3	Artificial Intelligence and Expert Systems	Algorithms

The course aims to: presenting the basic concepts of AI; Describing how to represent knowledge used in AI in both theory and practice with careful attention to the underlying principles of logic, search, and probability; Describing concepts of state space search and its strategies; Presenting blind and heuristic search algorithms and how to use these algorithms for problem solving; Describing the main concepts of production systems; Presenting basic concepts and roles of AI programming (PROLOG); Defining concepts of expert systems; and Defining concepts of machine learning.

Course Number	Credit Hours	Title of the Course	Prerequisite-Co-Requisite
0113313	3	Algorithms	Data Structure

This course describing: concepts of algorithms and analyzing the efficiency of algorithms' time/memory; Efficiency levels of algorithms and definitions of Big-O, analysis of iterative/recursive algorithms; Searching unsorted/sorted lists, and understanding linear search, and binary search for unsorted/sorted lists; Hashing method, hash tables and functions, searching, reading and writing in hash tables; Sorting algorithms such as selection, insertion, recursive, quick and Heap; Concepts of Graphs and trees, and their static and dynamic representations; Graph traversal using depth-first and

breadth-first search of graphs and Dijkstra's shortest-path algorithm; Dynamic programming techniques and Fibonacci numbers; Computational complexity and classes of complexity: P, NP, NP-hard, NP-complete; and choosing appropriate data structures and algorithms for solving problems.

Course Number	Credit Hours	Title of the Course	Prerequisite-Co-Requisite
0113212	**3**	**Data Structure**	**Object Oriented Programming**

This course concerns with: the main concepts of data structures and algorithms; Concept of Abstract Data Type, design and implementation; Design and implement of many user defined data structures (lists, stacks, and queues) as Java class using both Array representation and Node representation; Principles of recursion; Principles of Analysis Tools and Analysis of Algorithms; Concepts of trees, tree traversal, tree search, binary tree search; Searching and sorting methods; and finally, the concepts of Text/String processing.

Course Number	Credit Hours	Title of the Course	Prerequisite-Co-Requisite
0113445	**3**	**Project Management**	**Analysis and Design of Object Systems**

This course give the concepts of project management and PM process groups. Develop a comprehensive project plan for a significant development effort. Managing project integration, strategic planning, project selection and project charter. Managing project scope and how to create scope management plan and work breakdown structure. Defining project activities, sequencing, timing, duration, activity resource estimating, activity duration estimating, schedule development/control using Microsoft Project 2010. Defining cost management and how to estimate cost, budget and control using Microsoft Project 2010. Manage project quality, quality planning, control, tools and techniques for quality control. Manage human resource and how to plan human resource and developing, managing project team. Manage project communication and how to build communication plan, performance report and how to manage stakeholders. And identify project risks, risk sources and how to manage, plan project risks and responses and finally how to analyze qualitative and quantitative risks.

Course Number	Credit Hours	Title of the Course	Prerequisite-Co-Requisite
0113358	**3**	**Information Economy and Knowledge Management**	**Business Information Systems**

This course concerns with: Concepts of digital economy, IT and e-business, business pressures, and organizational responses; Roles of IT in supporting functional areas, information infrastructure and architecture; Aspects of economics of IT, and approaches for evaluating IT investment; Economic impact of EC and economic issues related to Web-based technologies; Causes of systems development failures, theory of increasing returns, and market transformation through new technologies; Concepts of knowledge management, types of knowledge, and brief history of knowledge management; Elements of KM, knowledge creation and capture, knowledge sharing, information storage and retrieval, and knowledge dissemination; and finally, Concepts of KM tools and implementation of KM.

Course Number	Credit Hours	Title of the Course	Prerequisite-Co-Requisite
0113353	**3**	**Information Security**	**Algorithms**

This course provides the following topics:
Introduction to information security and its importance, threats and vulnerabilities of computing system,

understanding of classical encryption techniques: Substitution, Transposition and Product Ciphers. Examination of conventional encryption algorithms and design principles including transposition and substitution techniques such as DES. Understanding of the modern cryptographic techniques such as RSA, Key distribution, digital signature, identification and authentication, and sharing keys. Provide basic understanding of attack types, Network security Access control methods, Firewalls, Malware, and Digital watermarking/Steganography

Course Number	Credit Hours	Title of the Course	Prerequisite-Co-Requisite
0113251	**3**	**Management of Electronic Information Systems**	**Introduction to Information Technology**

This course provides comprehensive concepts of information systems and how to implement them in organizations. It emphasis on management of electronic information systems, e-commerce, m-commerce, management information systems (MIS), decision support systems (DSS), group support systems (GSS), executive support systems (ESS/EIS), and enterprise systems such as transaction processing systems (TPS).

Course Number	Credit Hours	Title of the Course	Prerequisite-Co-Requisite
0113325	**3**	**Database Management Systems**	**Databases**

This course provides the following topics:
SQL, data definition language DDL, data manipulation languages DML, and data control language DCL, PL/SQL, Control Structure statements, Functions, Procedures, Packages and Triggers. Records and tables, Oracle developer Forms include Triggers and LOVs, property palette, Writing PL/SQL in trigger, Item types, canvas types. Different Style of Reports. Practical applications and Projects.

Course Number	Credit Hours	Title of the Course	Prerequisite-Co-Requisite
0113241	**3**	**Databases**	**Object Oriented Programming**

This course provides the following topics:
Introduction to database: characteristics of DB approach, components of DB systems, DB architecture, data modeling, database users and administrators. Relational model, SQL programming, Relational-Algebra, Entity-Relationship model, introduction to object oriented database and UML, relational database design, functional dependency and normalization, , practical applications using a standard relational DB system .

Course Number	Credit Hours	Title of the Course	Prerequisite-Co-Requisite
0113222	**3**	**Object Oriented Programming**	**Principles of Programming**

This course introduces the fundamentals of object oriented programming (OOP) using JAVA programming language. The course presents declaration statements, I/O statements, control statements, methods, arrays, classes and objects and their relations (association, aggregation, and composition), abstract classes, inheritance, polymorphism, and interface, introduction to exception handling.

Course Number	Credit Hours	Title of the Course	Prerequisite-Co-Requisite
0113323	**3**	**Visual Programming**	**Object Oriented Programming**

This course focuses on advance topics in Java programming language such as: designing GUI, advance GUI, different components, Menus, layout, event-driven programs. Java Graphics, Java Applet, Exception Handling, files in Java, connection with database using JDBC.

Course Number	Credit Hours	Title of the Course	Prerequisite-Co-Requisite
0113326	3	Ready Packages	Introduction to Information Technology

This course introduces the tools and techniques for building Multimedia applications. Students will be taught how use Flash in developing interactive application in the aspect of animation cop concepts and how to use Cinema 4D tools to develop three dimension movie.

Course Number	Credit Hours	Title of the Course	Prerequisite-Co-Requisite
0113424	3	Internet Applications Programming	Web Design

This course introduces the tools and techniques for building and using advanced programming techniques to design websites. Combining scripting languages with object-oriented languages and database systems, such as HTML, JavaScript, PHP, MySQL, etc.

Course Number	Credit Hours	Title of the Course	Prerequisite-Co-Requisite
0113111	3	Discrete Mathematics	Introduction to Information Technology

This course provides The following topics: Numbers and exponents, Errors (absolute and relative), Propositions, Predicates and Quantifiers, Quantifiers and logical operators, Logical Inference, Methods of Proof, Sets, Relations and Functions.

Course Number	Credit Hours	Title of the Course	Prerequisite-Co-Requisite
0113472	3	Graduation Project	Department Approval

This course gives the students the chance to demonstrate their intellectual, technical and creative abilities through developing a projects in one of information technology fields. The Graduation Project challenges students to go beyond the learning that occurs as the result of their prescribed educational program. Students shall complete their projects in areas of concentrated study under the direction and supervision of faculty members. The projects will demonstrate the students' ability to: apply, analyze, synthesize, evaluate information, and communicate significant knowledge and comprehension.

Course Number	Credit Hours	Title of the Course	Prerequisite-Co-Requisite
0113471	1	Methodology for Building Project	System Analysis and Design

In this course, students will study all the basic aspects of building a graduation project. They will need to prepare a proposal of the project idea, including: basic information about the project, project background, project objectives, implementation mechanisms and implementation plan, target, and the feasibility study. The student should also defense his/her idea by presenting his/her project proposal.

Course Number	Credit Hours	Title of the Course	Prerequisite-Co-Requisite
0113381	3	Selected Topics in CIS	Department Approval

Advanced topics in CIS prepared by faculty staff and with department approval.

Course	Credit	Title of the Course	Prerequisite-Co-

Number	Hours		Requisite
0113342	3	System Analysis and Design	0113241
This course presents the techniques and tools for computer information systems analysis and design. The focus will be on the phases of software development life cycle (SDLC). It also emphasizes problem definition, facts gathering techniques and sources, requirements analysis, specifications, design modeling, input and output design; program coding and system conversion. Throughout the development phases, different analyses/design techniques, modeling tools, structured methodologies and management skills are introduced.			
Course number	**Credit Hours**	**Title of the Course**	**Prerequisite-Co-Requisite**
0113343	3	Object Oriented Analysis and Design	0113342
Object Oriented Analysis using Unified Process methodology. Talking about agile methodology and how to deal with dynamic systems. Introducing UML modeling diagrams and notation. Creating UML use case and activity diagrams which model system functional requirements and work flow. Creating UML class diagrams which model aspects of the domain and the software architecture. Creating UML sequence diagrams and state machines that correctly model system behavior.			
Course Number	**Credit Hours**	**Title of the Course**	**Prerequisite-Co-Requisite**
0113415	3	Simulation and Modeling	0113342
The course gives an introduction to modeling/simulation/analysis, with an emphasis on the first two parts. The contents of the course include direct simulations of discrete-time models, event based simulations, and stochastic processes. There is a strong emphasis on applications and implementations, using Arena.			
Course Number	**Credit Hours**	**Title of the Course**	**Prerequisite-Co-Requisite**
0113427	3	Mobile Apps Development	Visual Programming
This course gives overview about: Categories of Mobile Apps based on iOS, Mobile Operation Systems, and Android Applications. This course covers some topics related to the interfaces design tools such as; Table View, Collection View, Split View, Popovers. As well as, this course is focusing on mobile apps programing based Android system, the web services, and XML files.			
Course Number	**Credit Hours**	**Title of the Course**	**Prerequisite-Co-Requisite**
0113432	3	Network Security	Information Security
In this course, student will learn the fundamental principle of network and mobile security by studying attacks on mobile, network, and web site. Students will learn how those attacks work and how to prevent and detect them. This course will cover the design and analyze secure networked systems, develop secure programs with basic cryptography, perform vulnerability scanning, and secure networked systems with Firewall and IDS. The course emphasizes "learning by doing", and requires students to conduct a series of lab exercises. Through these labs, students can enhance their understanding of the principles, and be able to apply those principles to solve real problems.			
Course Number	**Credit Hours**	**Title of the Course**	**Prerequisite-Co-Requisite**
0113456	3	Enterprise Resource Planning (ERP)	0113252
Enterprise Resource Planning (ERP) systems are integrated systems that form the basis of Financial Systems, Supply Chain Management, Human Resources and Manufacturing, and aim to connect			

relevant parties (customers, suppliers, employees and banks) through the Internet. This course will introduce students to these systems and demonstrate how organizations use these systems to run their operations more efficiently and effectively. Typical modules will be taught for Enterprise Systems: Materials Management (MM), Supply Chain Management (SCM), Customer Relationship Management (CRM), Finance and Human Resource Management (HRM). Enterprise Resource Planning (ERP) systems use a single database to integrate business transactions and across operations, leading to benefits such as efficient and error-free workflow as well as accounting and management reporting and improved decision-making.

Course Number	Credit Hours	Title of the Course	Prerequisite-Co-Requisite
0113252	**3**	**Business Information System**	**0113251**

This course covers the application of modern digital technologies in the business domain. Students acquire the skills and techniques to carry out an effective business analysis with a view to improving business operations through the application of business information systems. The course also enables students to gain an understanding of the role of business information systems in facilitating business transformation and implementing digital business models in increasingly competitive market environments. Units of study in this area cover business process integration, enterprise systems, information governance, and business transformation.

Approved by Department Council	**Dr. Mohammad Alia**	Date of Approval	26/10/2017