Brief course description- Course Plan Development and Updating Procedures\.Department of Software Engineering	QF01/0409-3.0E

Faculty	Science & IT	Academic Department	Software Engineering	Number of the course plan (24)
Number of Major requirement courses		Date of plan approval	28/7/2021	

This form is just for the major requirement courses

Course number	Credit hours	**Title of the course**	Prerequisite-co-requisite
0114150	3	Communication Skills and Professional Ethics	0125130
This course considers the ethical issues that arise as a result of increasing use of computers, and the responsibilities of those who work with computers. The course includes the understanding of the legal, ethical, and societal implications of information technology that you'll need as a successful IT professional. Examine ethical situations in IT and review practical advice for addressing common issues as you study professional codes of ethics, cyberattacks and cybersecurity, security risk assessment, privacy, electronic surveillance, and freedom of expression. You also review Internet censorship, protection of intellectual property, ethical decisions in software systems, IT's impact on society, social networking, and ethics of IT corporations. This book provides a thorough foundation for addressing ethical issues in today's workplace. Business vignettes, Critical-Thinking exercises, thought-provoking Cases and decision-making features prepare you to make key business decisions			
Course number	Credit hours	**Title of the course**	Prerequisite-co-requisite
0114213	3	**Data Structure and Algorithm**	0112220
An overview of data structure concepts, arrays, stack, queues, trees, and graphs. Discussion of various implementations of these data objects, programming styles, and run-time representations. Course also examines algorithms for sorting, searching and some graph algorithms. Algorithm analysis and efficient code design is discussed.			
Course number	Credit hours	**Title of the course**	Prerequisite-co-requisite
0114223	3	Visual Programming Applications	0112220
This course shows how to design different forms by using the different GUI controls in Java, design forms to be user friendly and clear using the Integrated Development Environment (IDE). It also solves the run time problem for a program with having "Exception Handling". In addition to know Files and streams, Multimedia, Multithreading.			
Course number	Credit hours	**Title of the course**	Prerequisite-co-requisite
0114324	3	**Web Application Development**	0125220
This course will cover the following topics in ASP.NET Core 3.1: The introduction of ASP.NET Core 3.1 with MVC 3 , Model , View and Controller (MVC) pattern design, HTML helper and HTML tags, working with controller , working with View and razor code , transferring data between Controllers and Views , Model Binding , Validation in both client and server side , SQL server database , CRUD in ASP.NET Core MVC , Authentication and Authorization			
Course number	Credit hours	**Title of the course**	Prerequisite-co-requisite
0114341	3	**Database**	0114213

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In this course, the students should learn about the database design methodology that is explicitly divided into three phases: conceptual, logical, and physical. This course focuses on an introduction to database systems design implementation and management issues, as well as an extensive treatment of database languages and standards.

Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0114343	3	**Systems Analysis and Design**	0114354

The course covers the development of information systems and of their software components. it focuses on the elicitation and initial modelling of information systems requirements that enable identification of information problems and the subsequent analysis and modelling of an efficient solution to those problems. The approach follows the object-oriented (OO) methods expressed by the Unified Process software development life-cycle. including its methodological deliverables and models and tools, with exposure to manual and automated diagramming and modelling techniques. It critically examines the issues and professional responsibilities that need to be considered at different phases in the development of information systems for an organization; including the impact of the systems on intended users and maintenance of quality.

Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0114442	3	**Database management System**	0114341

The aim of the course is to introduce students to current techniques, methods and results from the active field of database systems and data management. Typical topics include query planning and optimization; transaction processing and concurrency control; database Security and Distribution; Advanced Database Models, data mining, data warehousing; File Structures, and Indexing and Hashing

Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0114151	3	**Software Engineering Principles**	0120001

This course provides an overview of the software engineering discipline, introducing the student to fundamental principles and methods of software engineering. The course highlights the need for an engineering approach to software products by presenting the software development processes.

Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0114152	3	**Software specification and design**	0114151

Software requirements engineering consists of activities performed to discover what functional and nonfunctional attributes and interfaces a software system should have to satisfy the needs of the customer. It also includes analysis and management activities performed in order to discover flaws in requirements artifacts and to manage the requirements engineering process. Topics include requirements elicitation, prototyping, functional and non-functional requirements, object-oriented techniques, and requirements tracking.

Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0114453	3	Software Testing	0114343

This course emphasis on software testing techniques to identify and resolve software problems and high-risk issues early in the software lifecycle. Applying software testing to all phases of the software development lifecycle that includes planning, reporting, testing, auditing, reviewing, inspection techniques, and related testing tools.

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Course number	Credit hours	Title of the course	Prerequisite-co-requisite
0114354	3	**Software Architecture**	0114152
This course defines the software architecture discussing the Architecture components in terms of identifications, coupling, cohesion, partitioning and granularity. In this course different software architecture are defined and discussed such as: layered Architecture, pipeline architecture …etc. Where each one of them is defined in terms of topology, terms used, and its best practices.			
Course number	Credit hours	**Title of the course**	Prerequisite-co-requisite
0114455	3	**Software development and documentation**	0114343
This course introduces students to programming technologies, design and development related to Web applications. Topics include, Introduction to oracle ADF, ADF Faces Rich Client Lifecycle, Working with Oracle ADF Task Flows, Page Navigation, Working with GUI Components, Working with security, etc…. Upon completion, students should be able to create basic Web application			
Course number	Credit hours	**Title of the course**	Prerequisite-co-requisite
0114456	3	**Software project management**	0114343
Software project management is concerned with the knowledge of planning, organization, and monitoring of all software life-cycle phases. Software management ensures software development to an organization in software versions and configurations. Project work is divided appropriately, communication is facilitated, and progress is accurately charted.			
Course number	Credit hours	**Title of the course**	Prerequisite-co-requisite
0114357	3	**Software Economics**	0114343
In Chapter. 1, we give an overview of the finance domain and of financial services and markets. In Chapter 2, we consider in more detail some key financial products such as bonds and shares and describe how these are modelled and analyzed. Chapter 3 introduces the software lifecycle, modelbased development (MBD) and agile development. In Chapter 4, we describe techniques for financial system specification using UML, and in Chapter 5 techniques for financial system design.			
Course number	Credit hours	**Title of the course**	Prerequisite-co-requisite
0114458	3	**Software Quality Management**	0114453
This course defines the quality of the software, the foundations of quality measurement system, quality management, assurance of quality, planning, quality of product and process quality, software product metrics, management of the quality factors of the software and its effectiveness, global scale ISO 9001, check the software and plans and techniquesfor quality.			
Course number	Credit hours	**Title of the course**	Prerequisite-co-requisite
0114381	3	Human computer interaction	0114152
The Human Computer Interaction (HCI) aims at improving the interactions between users and computers by making computers more usable and receptive to the user's needs. This course is concerned with methodologies and processes for designing interfaces even if they are Software or Hardware Interfaces (i.e., design the best possible interface within given constraints, optimizing for a desired property such as learning ability or efficiency of use), techniques for evaluating and comparing interfaces, developing new interfaces and interaction techniques, and developing descriptive & predictive models & theories of interaction. In addition to the measurements functional and			

nonfunctional requirements of interactivity in HCI quality for standardization such as flexibility, learnability.

Course number	Credit hours	**Title of the course**	Prerequisite-co-requisite
0114443	3	Object Oriented Systems Analysis and Design	0114343

Scrum is an Agile-based framework in which developers can address complex issues while delivering high-value products creatively and productively. It is used to manage product development. Developers can use it to deploy numerous processes and techniques for the development of the product.

Course number	Credit hours	**Title of the course**	Prerequisite-co-requisite
0114382	3	Intelligent System engineering	0114343

A comprehensive introduction to different AI solutions will be discussed. The main focus will be on providing a basis for AI research and applications. The students are expected to learn how to approach a problem, how to formulate a solution and what tools are present in AI literature. The course will try to establish what a rational solution is and will discuss common techniques to find a viable solution. Course will cover goal formulation, problem formulation, searching for an optimal solution, representation of knowledge through logic and an introduction to machine learning methods.

Course number	Credit hours	**Title of the course**	Prerequisite-co-requisite
0114494	3	Special topics in SE	-

This course introduces students to programming technologies, design and development related to mobile applications. Topics include, Introducing Flutter, Learning Dart Basics, Using Common Widgets, Writing Platform-Native Code, Saving Data With Local Persistence and, Adding the Firebase And The Firestore Client App. Upon completion, students should be able to create basic applications for mobile devices.

Course number	Credit hours	**Title of the course**	Prerequisite-co-requisite
0114495	3	**Software Security**	0114213

This course we will explore the foundations of software security. We will consider important software vulnerabilities and attacks that exploit them -- such as buffer overflows, SQL injection, and session hijacking -- and we will consider defenses that prevent or mitigate these attacks, including advanced testing and program analysis techniques. Importantly, we take a "build security in" mentality, considering techniques at each phase of the development cycle that can be used to strengthen the security of software systems

Course number	Credit hours	**Title of the course**	Prerequisite-co-requisite
0114496	3	**Special programming language**	-

Python is a language with a simple syntax, and a powerful set of libraries. It is an interpreted language, with a rich programming environment, including a robust debugger and profiler. While it is easy for beginners to learn, it is widely used in many scientific areas for data exploration. This course is an introduction to the Python programming language for students without prior programming experience. We cover data types, control flow, object-oriented programming, and data analysis .

Course number	Credit hours	**Title of the course**	Prerequisite-co-requisite
0114392	3	Mobile application Engineering and development	0114223

This course introduces students to programming technologies, design and development related to

mobile applications. Topics include, Introducing Flutter, Learning Dart Basics, Using Common Widgets, Writing Platform-Native Code, Saving Data with Local Persistence and, Adding the Firebase and The Firestore Client App. Upon completion, students should be able to create basic applications for mobile devices.

Course number	Credit hours	**Title of the course**	Prerequisite-co-requisite
0114489	3	Software maintenance and re-engineering	011455

This course introduces the concepts of software re-engineering and its phases, includes legacy systems re-engineering to enhance the maintenance process, and presents the different cost-effective methods to maintain software products. This course covers the concepts of the software reversal engineering, and how to use the CASE tools during the maintenance process.

Course number	Credit hours	**Title of the course**	Prerequisite-co-requisite
0114497	3	**Cloud Computing and Big Data**	0114442

This course is a capstone Artificial Intelligent (AI), Web3 Decentralized Applications technologies and Big Data that can be combined the emerging technology. Students will learn about principles, processes, and techniques for understanding phenomena via the (automated) analysis of data., Students will learn refer to cloud term the computing and hosting services, storage services, networking services, big data services, and machine/deep learning services

Approved by department council		Date of approval	