

م	اسم المقرر	رمز المقرر	Course Title	الموصف	المراجع	وجود ملف التوصيف		
						DOC	PDF	
							Syllabus	ALL
قسم علوم الحاسوب								
2	CS212	الهيكل المتقطعة	Discrete Structures	أ.عبد العامري	د.عبد الحفيظ مدايش	√	√	√
<p>This course will provide students with fundamental concept of Differential Equations and foundational knowledge for Computer Science mathematics course. The course will focus on the following: Basic concepts of Differential Equations: Definition , types , order , power Solutions of Differential Equations of order one; Separate, Homogeneous and inhomogeneous , Exact and inexact , linear and nonlinear , General Solutions of Homogeneous Differential Equations of order two by use characteristic equation , Partial Solution of Inhomogeneous Differential Equations of order two by operator differentiation. Some methods will be used in the teaching of this course, such as: lectures, problem-solving, Brainstorming, micro- assignments and micro-report.</p>								
6	CS223	مبادئ ترأسل البيانات والشبكات	Principles of Data Communication and Networks	أنبيل المخلافي	أ.فهد الوصايي	√	√	√
<p>This course presents an introduction to data transmission , transmission media, basic fundamentals, network topologies (both local area networks and wide area networks) and protocols, the Internet and OSI models, current network operating systems, network analysis, design, and administrative. An emphasis will be placed on current technologies for optimum network design.</p>								
8	CS222	الجبر الخطي	Linear Algebra	أ.عبد العامري	د.عبد الحفيظ مدايش	√	√	√
<p>This course will provide students with fundamental concept of linear algebra and foundational knowledge for some Computer Science courses.</p> <p>This course discusses the basic concepts of : matrices; matrix operations, transpose, inverse ; determinants; solution of linear systems; eigenvalues and eigenvectors and its practical applications , basic concept of graph theory. Some methods will be used in the teaching of this course, such as: lectures, problem-solving, Brainstorming, micro- assignments and micro-report.</p>								
9	CS311	مواصلة الإنسان مع الحاسوب والبرمجة المرئية	Human Computer Interaction and Visual Programming	أ.محمد الشيباني	أ.فهد الوصايي	√	√	√
<p>Visual programming languages are widely used for the rapid development of graphical applications. This course emphasizes on software systems development in a visual environment. Major topics include visual programming concepts, object oriented concepts, database linkages, and graphics. User interface design and code optimization are covered. Different types of will be covered applications that run on in this course a standalone PC, on a network application. An additional aim of this subject is to give students an understanding of the main ideas of Human-Computer Interaction (HCI).</p>								
10	CS325	هندسة البرمجيات	Software Engineering	أ.فهد الوصايي	د.أسماء الشرجبي	√	√	√
<p>This course is very important to computer science, software engineering, IT and IS students in order to take a look at the Software Engineering concepts that are needed to develop software systems that can meet basic functional and non-functional requirements within a well- defined problem domain. It covers the traditional and most recent practices of different software engineering approaches including the requirements analysis, design, development, verification, and maintenance. A look at some related issues such as SWE projects management and critical systems. An examination of object-oriented software construction focused on the Unified Modeling Language.</p> <p>An introduction to CASE tools. Students will collaboratively define requirements and design of a substantial project. According to the course plan of these programs, this course required the course of system analysis and design as a pre-requisite.</p>								
2	IS223	تحليل وتصميم النظم	Systems Analysis and Design	أ.فهد الوصايي	-----	√	X	X
<p>Information system development has traditionally been an art and is undergoing rapid change. Amidst this volatile environment, a few basic ideas and approaches emerging over the past several years have demonstrated considerable staying power and influence. This course will introduce these ideas. Both concepts and techniques will be covered, reinforced by homework assignments and a project. The course material encompasses the concepts, tools, and techniques required to analyze and design business information systems. The course will include structured development approaches and the system development life cycle, as well as rapid application development through alternative approaches such as Agile and prototyping. Emphasis will be given to the role of information systems in organizations and how they relate to organizational objectives and structure. Upon completion, students should be able to analyze a problem and design an appropriate solution using a combination of tools and techniques.</p>								
6	CS324	الرسم بالحاسوب	Computer Graphics	أ.نسبية المقطري	د.إسماعيل حميد	√	√	√
<p>This course aims to introduce computer graphics to computer science students. It concentrates on defining main concepts, applications, tools, environments, and techniques of computer graphics. It also makes the students familiar with the recent programming package OpenGL.</p>								
7	CS411	بناء المترجمات	Compilers Construction	د.عبدالقادر العبادي	د.إسماعيل حميد	√	√	√
<p>This course aims to introduce a compiler concept and construction; lexical analysis, syntactic analysis, semantic analysis, introduction to code generation and optimization. Data Structures and Algorithms and Computation Theory courses are pre-requisites for this course. To achieve all course goals different teaching strategies will be applied such as direct, indirect, interactive and self-learning.</p>								
8	CS413	الانترنت وتقنيات الويب	Internet and Web Technologies	أ.محمد الشيباني	أنبيل المخلافي	√	√	√
<p>The aim of this course is to introduce students to the main technologies used for the development of Internet-based applications and show how these technologies can be used within application development and more specifically within systems integration. The course starts with a brief introduction to low-level technologies such as TCP/IP and then rapidly examines application-based technologies such as CORBA, SOAP and web services. The course also looks at some of the major security problems that are associated with the Internet and shows how to design large distributed systems. The final part of the course looks at how the Internet has enabled systems integration to become a major developmental paradigm. It is important to point out that no knowledge of programming is required.</p>								
9	CS421	النمذجة والمحاكاة	Modeling and Simulation	أ.وليد الجوي	د.إسماعيل حميد	√	√	√
<p>Systems modeling and simulation techniques find application in fields as diverse as physics, chemistry, biology, economics, medicine, computer science, and engineering. Computer simulation is important subject as it is complementary to laboratory field experimentation. Modeling a given problem and simulating it could lead to better results through discussing the model and enhancing it before the actual model is built. The purpose of this course is to introduce fundamental principles and concepts in the general area of systems modeling and simulation. Topics to be covered in this course include basics of discrete-event system simulation, mathematical and statistical models, simulation design, experiment design, and modeling of simulation data. The course introduces simulation examples, such as queuing systems, input modeling, High-Level Computer-System Simulation, CPU Simulation, and Memory</p>								

Simulation. The prerequisite of this course is data Structures and algorithms, and probability and Statistics.	√	√	√	د.عبدالقادر العبادي	أ.وليد الجوي	Systems Programming	برمجة النظم	CSL01	1
This course introduces the core concepts for students who want to improve their skills by learning about what is going on under the hood of a computer system. It explains the important and enduring concepts underlying all computer systems, and shows the concrete ways that these ideas affect the correctness, performance, and utility of application programs. Topics covered in this course include Information representation, machine-level representation of C Programs, processor architecture, optimizing program performance, linking, exceptional control flow, measuring program execution time, and concurrent programming with threads. The prerequisite of this course is Advanced Operating Systems. It is assumed that students have some familiarity with C or C++, as the course centers on C/C++ programming, with some assembly language.	√	√	√	د.عبدالقادر العبادي	د.عبداللطيف غلاب	Machine Learning	تعلم الآلة	CSL02	2
Machine Learning has become one of the mainstays of IT and with that, a rather central, albeit usually hidden, part of our life. With the ever increasing amounts of data becoming available there is good reason to believe that smart data analysis will become even more pervasive as a necessary ingredient for technological progress. This course introduces the basic conceptual elements of machine learning, including mathematical models of machine learning, and the design and rigorous analysis of learning algorithms. Topics range from determining appropriate data representation and models for learning, understanding different algorithms for knowledge and model discovery, and using sound theoretical and experimental techniques in assessing performance. Specific approaches covered include statistical techniques (e.g., k nearest neighbor and Bayesian learning), logical techniques (e.g., decision tree and rule induction), function approximation (e.g., neural networks and kernel methods), and reinforcement learning. The topics are discussed in the context of current machine learning and data mining research. Students will participate in seminar discussions and will complete and present the results of group projects.	√	√	√	د.صالح الطويل	د.إسماعيل حميد	Image Processing	معالجة الصور	CSL03	3
This is an introductory course on techniques for digital image processing and analysis. Course topics include : an introduction to image sampling, quantization, image enhancement, 2-D orthogonal transforms, image restoration, segmentation, and image compression. Principles of Artificial Intelligence course is pre-requisites for this course.	X	√	√	د.إسماعيل حميد	د.عبدالقادر العبادي	Parallel Algorithms	الخوارزميات المتوازية	CSL04	4
	√	√	√	د.صالح الطويل	د.إسماعيل حميد	Computer Vision	الرؤية بالحاسوب	CSL06	6
This course will introduce the student to computer vision and robot control with an emphasis on vision and how to use it in specific applications. Specific topics include: applications, image formation and acquisition, image processing, pattern recognition, image understanding, representations, planning and robot control. Image Processing courses is pre-requisites for this course.	√	√	√	د.عبدالقادر العبادي	د.عبداللطيف غلاب	Knowledge Base Systems	الأنظمة المعتمدة على المعرفة	CSL07	7
A knowledge-based system (KBS) is a system that uses Artificial Intelligence (AI) techniques in problem-solving processes to support human decision-making, learning, and action. Ideal for advanced-undergraduate and graduate students, as well as business professionals, this course enable students to develop an appreciation of KBS and their architecture and understand a broad variety of knowledge-based techniques for decision support and planning. The course assumes that students have basic computer science skills and a math background that includes set theory, relations, elementary probability, and introductory concepts of Artificial Intelligence. Besides to the central aspects of KBS like knowledge management and KBS fundamentals, architecture, developing, this course covers the Fuzzy Logic, Agent-Based Systems, Connectionist Models, Genetic Algorithms and Soft Computing Systems. It also contains more advanced about E-Learning Solution, Diet Menu Planner, and Question Answering System as real-world KBS applications for Multiagent System Accessing Distributed Database Grid, Knowledge-Intensive Learning, and Natural Language Interface respectively.	√	√	√	أ.فهد الوصابي	أ.وديع القباطي	Requirements Engineering	هندسة متطلبات البرمجيات	SE311	4
This Course is designed to cover Techniques for eliciting requirements, requirements Engineering Process, Functional and non-functional requirements , System services and constraints , Requirements traceability matrix , Metrics for non-functional requirements , Use case description , Use case and context diagrams , Requirements for agile developments , Requirements for various systems: embedded systems, web-based systems, business systems, etc. This course gives also a brief introduction to formal specifications using specification languages such as Z or B. Students participate in a group project on software requirements analysis and specification and requirements management case tools.	√	√	√	أ.فهد الوصابي	أ.وديع القباطي	Software Design & Architecture	تصميم ومعمارية البرمجيات	SE321	5
This Course is designed to cover This course covers the fundamental design principles and strategies for software architecture and design: Architecture requirements specification , Architectural styles, Object-Oriented Paradigm , Data-Centered Software Architecture, Hierarchical Architecture , Architecture documentation, reference architecture, and interface design in detail design process are discussed. Students participate in a group project on software design and architecture and design tools.	√	√	√	أ.وليد الجوي	أ.وديع القباطي	Software Testing & Validation	فحص وتدقيق البرمجيات	SE411	6
This Course is designed to cover the following topics: Introduction to testing, Test process, Test levels, Test types, Static techniques ,Test design techniques, Test management, and Tool support for testing. This course will cover theory (concepts) and practical (lab sessions). The pre-requisite for this course is Software Engineering. and Students participate in a group project on software testing.	√	√	√	د.أسماء الشرجي	أ.فهد الوصابي	Software Process and Modeling	النمذجة وعمليات البرمجيات	SE322	7
This course aims to covers the key concepts, development approaches and methodologies, modeling techniques. This includes a review of Object-Oriented concepts and modeling with UML: Structural Modeling, Behavioral Modeling, System architecture design, User Interface Design, Object Persistence Design, Class and Method Design, Object-Oriented Testing, Unified Process development cycle, Use case analysis, Sequence diagrams, Encapsulation, Inheritance, Polymorphism, Design principles of coupling and cohesion, Design patterns. Students will be also exposed OO case tools, UML Generating tools, standard templates, and software quality and standards. Students will participate in a group project on object-oriented software methodologies and modeling using OO case tools.	√	√	√	أ.وديع القباطي	أ.بريجيت شيسكي	Software Maintenance & Evolution	صيانة وتطور البرمجيات	SE421	8
Organizations across all industries have huge investments in their software systems. These systems must be continually adapted to the changing needs of the organizations. Software maintenance and evolution refers to the process of modifying existing software systems to maintain their usefulness. Some studies have estimated that up to 75% of all technical software professionals are involved in some form of software maintenance activity. This course builds on basic software engineering concepts by expanding the discussion of the issues involved in maintaining and evolving software systems.	√	√	√	أ.نسبية المقطري	أ.وديع القباطي	Software quality Assurance	ضمان جودة البرمجيات	SE323	9

<p>This Course is designed to cover the concepts, Components, metrics, and models in software quality assurance. It presents a framework for software quality assurance and discuss individual components in the framework such as planning, reviews, testing, configuration management, and so on. It also discusses metrics and models for software quality as a product, in process, and in maintenance. The course will include case studies and hands on experiences. Students will develop an understanding of software quality and approaches to assure software quality . The pre-requisite for this course is Software Engineering.</p>								
√	√	√	د.عبدالقادر العبادي	أ.وديع القباطي	Web-based systems engineering	بناء الأنظمة المعتمدة على الويب	SEL02	2
<p>This Course is designed to covers technical and business aspects, systematic development of Web applications, requirement engineering for Web applications, modeling, Architectures of Web Applications, technology driven design, testing, operation and Maintenance of Web applications and The course explains how Web Engineering differs from software engineering, and the increased importance of user interfaces and human-computer interaction. Students will be exposed to techniques of web development implementation in web tools.</p>								
√	√	√	د.عبد الله الحاشدي	د.عبد اللطيف غلاب	E-Business	الأعمال الإلكترونية	SEL04	5
<p>The course introduces the principles and concepts of e-business with focus on e-commerce. It provides an understanding of the many aspects that shape e-commerce systems. Topics include e-commerce infrastructure, the World WideWeb, e-business models (B-to-C, B-to-B and intra-business), developing e-commerce web sites, information and communication security, payment systems and marketing. We will also examine the challenges and limitations triggered by the deployment and expanded use of E-commerce systems, including the ethical, social and political problems and the future roles of the E-commerce systems.</p>								
√	√	√	أ.غادة عادل	د.عبد اللطيف غلاب	ERP Systems	أنظمة تخطيط موارد المؤسسات	SEL05	6
<p>Enterprise Resources Planning (ERP) is an advanced IT course dealing with both the theoretical and practical aspects of the enterprise systems. This course is designed to provide students with an understanding of the practical use of ERP systems in modern business. It will introduce students to ERP systems integration and show how they can be used by organizations to run their operations more efficiently and effectively. The course comprises major of the ERP fundamentals such as the architecture, development life cycle, implementation strategies, software and vendor selection, operational and post-implementation. It also covers many of the new trends and challenges of ERP management. Particularly it explains in details the management of program and project, organizational change and business process re-engineering, global, ethics, and security, supply chain, and the customer relationship management. The course will incorporate a laboratory component using SAP software and some business cases as practices for students. It will also help you to refine your communication skills and group work skills, and assist you in the development of your research skills. ERP course is required to complete CS221-Database Systems Design and CIT10-Object Oriented Programming as pre-requisites.</p>								
√	√	√	أ.فهد الوصابي	أ.وديع القباطي	Selected topics in Software Engineering	مواضيع مختارة في هندسة البرمجيات	SEL07	8
<p>This Course is designed to cover the different special topics of interest . Topics of interest could be one or several from the followings: Software Reuse, Embedded software, component-based engineering, Distributed software engineering, Aspect-oriented engineering and Service-oriented architecture. and Other topics can be added as needed. The course will include case studies and hands on experiences. students participate during group discussions projects related to the special topics selected.</p>								
√	√	√	د.عبدالقادر العبادي	أ.وليد الجوبي	Mobile application engineering	هندسة تطبيقات الأجهزة النقالة	SEL08	9
<p>As informatics is underway of migrating from desktop platform to mobile platform, mobile computing has been evolved to be the frontier of computing technology. It is necessary to prepare students majoring in SE to be professional application developers in mobile computing platforms. Therefore, this course is introduced to provide students with knowledge and skills of software development on Android mobile computing platforms. It covers the fundamentals of Android programming using the Android SDK. Topics discussed in this course include: fundamental concepts in Android programming: activities and intents, designing user interface using views, data persistence, content providers, messaging and networking, location-based services, and developing android services. The prerequisite of this course is Operating systems, Java programming, and Data structure.</p>								