

توصيف المقرارات الدراسية

١. مقررات علوم الحاسوب

Computer Science Courses

CS101 Introduction to Computer Science

١٠١ مقدمه في علوم الحاسوب

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The course provides the student with basic computer terminology, hardware and software components, and communications technology. The different number systems (decimal, binary, hexadecimal) should be explored and conversions among them mastered. The student should be exposed to the logic and arithmetic operations of the computer, the concept of algorithm, and the process of designing computer-based solutions to a range of problems. The course should give a tour of the branches of computer science: computer programming, graphics, networks, system analysis and design. This course also focuses on Operating systems design and implementation. Basic structure, Process and thread management, process synchronization and communication mechanisms; Implementation of processes scheduling and protection; Memory organization and management, including virtual memory, I/O device management, secondary storage, and file systems.

CS102 Computer Programming

١٠٢ برمجه الحاسوبات

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The course gives the student the programming concepts in a light of learning a programming language, the course includes: introduction to programming, how to think in designing a program, writing a program, the compiler, programming language fundamentals (basic data types – program structure – statements – expressions – I/O operations – control statements – computer architecture - algorithms).

CS103 Object Oriented Programming

١٠٣ البرمجه الشيئيه

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This course uses an Object-Oriented language with procedural capabilities (such as C++ or Java) to teach object-oriented concepts, design and programming topics including: classes, inheritance, encapsulation, polymorphism, information hiding, patterns, and CRC cards. Typical programming language topics might include: templates, exception handling, virtual functions, and the parameterized data types.

CS201 Data Structures

ع ٢٠١ هياكل البيانات

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This course investigates abstract data types (ADTs), including lists, stacks, queues, priority queues, trees, and graphs. The emphasis is on the trade-offs associated with implementing alternative data structures for these ADTs. There will be four or five substantial programming assignments.

CS211 File Processing

ع ٢١١ معالجة الملفات

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This course gives an overview of files: file design, file manipulation, blocking and buffering (both single & double buffering). Types of storage devices (magnetic tapes, magnetic disks) are presented. Space and time calculation, Sequential file, relative file, indexed sequential file, multiple key file, and direct access file. External sort / merge algorithms. File systems-disk scheduling.

CS303 Programming Languages Concepts

ع ٣٠٣ مفاهيم لغات الحاسوب

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Language concepts are studied from an abstract point of view, with examples drawn from particular languages and implementations. Students study programming language syntax, semantic definitions, translation and interpretation, variable referencing methods, control structures, data types, input/output, procedures and functions, scope and referencing environments, concurrent computation, and compilation environments.

CS304 Assembly Language

ع ح ٣٠٤ لغة التجميع

An introduction to the assembly levels machine organization. The course emphasizes on the architecture of processors, memory system organization and architecture, input/output, exceptions/interrupts and software interfaces. The general concepts of assemblers and assembly language programming as seen through the Intel 80 x 86 processor families are studied.

CS305 Advanced Programming Languages

ع ٣٠٥ لغات برمجه متقدمه

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This course investigates the science and theory of programming including modular design, recursion, program verification, robustness, and portability. The course presents high-level language programming applications including records, sets, files, class design, inheritance, and polymorphism; introduces data structures such as stacks, linked lists, searching, and sorting; and discusses ethical and social issues in computing.

CS306 Web Programming

ع ٣٠٦ برمجه الويب

ح

This course includes an introduction to the use of Internet services and the fundamentals of web page design and web site development. Topics include basic HTML/CSS/JavaScript, Client/Server programming, Server side controls, Brief overview of PHP with database applications. Basic XML/XSL, N-tier application architecture, Sessions and state management, Security for web applications, Web services. Language constructs, design goals, run-time structures, implementation techniques, and exposure to a wide variety of programming paradigms.

CS307 Logic Programming

٤٧ البرمجة المنطقية

This course deals with the logic programming paradigm and Prolog. It discusses the syntax and the semantics of Prolog, the working of a Prolog interpreter and various applications of Prolog. In particular, the course considers the use of Prolog for Database Querying, for Parsing and for Problem Solving in Artificial Intelligence etc. Meta-Programming aspects of Prolog will be emphasized.

CS312 Analysis of Algorithms

٤١٢ تحليل الخوارزميات

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This course covers the following topics: problem solving strategies, principles of algorithm design, metrics for evaluating designs, iterative and recursive algorithms, structured and object-oriented paradigms. Algorithms for sorting and selection, randomized techniques, search structures (heaps, balanced trees, hash tables), dynamic programming and greedy algorithms, amortized analysis and graph algorithms (breadth- and depth-first search, MSTs, shortest paths).

CS314 Human Computer Interaction

٤١ طرق اتصال الانسان بالحاسوب
ع ح

Human-computer interaction has to do with human-computer communication and how to facilitate it. This class begins with a discussion of information processing characteristics important to human-computer interaction and formal models of human-computer interaction. Topics include dialogue techniques, response times and display rates, information presentation, interaction devices, computer training, help systems, computer supported co-operative work, information search and visualization, hypermedia and the World Wide Web.

CS315 Software Engineering

٣١٥ هندسة البرمجيات

This course aims to understand and apply a wide range of principles and tools available to the software engineer, such as design methodologies, choice of algorithm, language, software libraries and user interface technique. It also introduces the basics of the software life cycle, from requirements definition to development and evaluation.

CS320 Computer Architecture

٣٢٠ بناء الحاسوب

Computer Architecture course gives a study of computer systems with an emphasis on contemporary designs. Pipelining, cache and memory design, input/output, how the various computer components process the data, and how the operating system and the hardware cooperate to make computer operation possible.

CS321 Theory and Design of Compilers

٣٢١ نظرية تصميم المترجمات

This course aims to acquire the student the practical skills to write a simple compiler for an imperative programming language. It allows the student to understand the concepts of scanning, parsing, name management in nested scopes, and code generation. Also it aims to transfer the skills to general software engineering tasks (e.g. parsing of structured data files or argument lists).

CS340 Computer Graphics

٤٤٠ الرسم بالحاسوب

ح

This course includes an introduction to the basic concepts, 2-D and 3-D modeling and transformations, viewing transformations, projections, rendering techniques, graphical software packages and graphics systems. Students will be expected to develop a graphics application in C in conjunction with a specially developed graphics library.

CS342 Digital Signal Processing

٤٤٢ معالجه الاشارات الرقميه

ح

This course describes the fundamentals and mathematical principles of DSP. Topics to be covered include sampling theory, sequence and sequence operation, discrete-time systems, convolution; discrete-time Fourier analysis and Z-transform; magnitude and phase responses, group delay, linear phase systems, minimum phase and maximum phase, all-pass filters; canonic and non-canonic digital structures;

digital filter design, Butterworth, Chebyshev, and elliptic approximations, bilinear transformation, window functions, Remez algorithm, and computer-aided filter design.

CS350 Introduction to Computer Networks

ع ٣٥٠ مقدمه فى شبكات الحاسوب

ج

This course introduces the computer networks fundamentals with emphasis on higher level protocols and functions are considered. Course contents include network design considerations, software design and layering concepts, interface design, routing and congestion control algorithms, internetworking, transport protocol design, end-to-end communication, session and application protocols. Specific examples of commercial and international standards are cited.

CS351 Modeling and Simulation

ع ٣٥١ النماذج و المحاكاه

ج

This course introduces the concepts and terminology of the modeling and simulation field to students. It provides both analytical and simulative tools that serve as a basis for addressing several performance analyses and engineering problems in computer networks and communication systems. This course also familiarizes the student with the types of software used and exposes them to simulation software through projects. Also, it discusses distributed simulation techniques and simulation protocols.

CS360 Artificial Intelligence

ع ٣٦٠ الذكاء الاصطناعي

ج

This course introduces student to the basic concepts and methods of artificial intelligence from a computer science perspective. The course will emphasize the selection of data representations and algorithms useful in the design and implementation of intelligent systems. It contains an overview of one of the AI languages and some discussion of important applications of artificial intelligence methodology.

CS361 Neural Networks

ع ٤٦١ الشبكات العصبية

The course introduces the theory and practice of neural computation. It offers the principles of neuro-computing with artificial neural networks widely used for addressing real-world problems such as classification, regression, pattern recognition, data mining, time-series prediction, etc... Knowledge and tools for the specification, design, and practical implementation of ANNs are also provided.

CS409 Dynamic Languages

ع ٤٠٩ اللغات الديناميكية

ج

This course introduces the tools and techniques on the approach to language as a dynamical system. It seeks to fruitfully integrate linguistic theory, psycholinguistics, corpus linguistics, and historical linguistics through the means of mathematical modeling. Topics include: string processing, dynamical systems and stability, stochastic processes, mathematical models of population dynamics, and dynamical models of language learning, processing, and change.

CS417 Computer Arabization

ع ٤١٧ ترسيب الحاسب

This course discusses issues and techniques that arise in computer Arabization. Topics include Arabic coding systems, Arabic display (visual output), Arabic speech synthesis (audio output), Arabic optical character recognition (visual input), and Arabic speech recognition (audio input).

CS418 Parallel Processing

ع ٤١٨ المعالجة المتوازية

ج

This course will cover a range of topics involved in designing and programming parallel architectures. The course focuses on the most common type of parallel machines: shared and distributed memory multi-processor systems. The course will also cover other parallel machines and programming paradigms including data-flow, vector processing, transactional memory, and multi-threaded architectures.

CS431 Theory of Operating Systems

ع ٤٣١ نظريات أنظمه التشغيل

ج

This course covers in detail many advanced topics in operating system design and implementation. It starts with topics such as operating systems structuring, multithreading and synchronization and then moves on to systems issues in parallel and distributed computing systems. The course will also introduce topics such as virtual memory management, file systems, protection and security, operating system extension techniques, fault tolerance, and the history of systems programming.

CS432 Distributed Systems

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The structure of distributed systems using multiple levels of software is investigated. The aim of this course is to take a look at different parts of distributed systems by considering programming paradigms for distributed systems and the different basic distributed algorithms, which gives an impression of the basic problems involved in developing distributed systems. Also, the course discusses DS security, and how services are located. Finally, it exemplifies the application level by looking at file services, replications and distributed shared memory.

CS443 Digital Image Processing

٤٤٣ معالجه الصور الرقميه

ج

This course focuses on the properties of digital images, design of display systems and algorithms, time and frequency representations, filters, image formation and enhancement, Image sampling and quantization, color, point operations, segmentation, linear image filtering and correlation, image transforms, Eigen images, multidimensional signals and systems, multi-resolution image processing, wavelets, morphological image processing, noise reduction and restoration, simple feature extraction and recognition tasks. Students write and investigate image processing algorithms in Matlab.

CS444 Virtual Reality

٤٤ الواقع الافتراضي

ج

The main objective of the course is to give an introductory to virtual reality and to give the student the basic skills to understand and evaluate VR systems, applications and simulators and its impact on future digital systems and user interfaces. This course Suits for students of all fields. It gives the basic skills to understand and evaluate VR systems, applications and simulators and its impact on future digital systems and user interfaces.

٤٤٥ انظه الرؤيه بالحاسب

CS445 Computer Vision Systems

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The aim of this course is to introduce the principles, models and applications of computer vision, as well as some mechanisms used in biological visual systems that may inspire design of artificial ones. The course will cover: image formation, structure, and coding; edge and feature detection; neural operators for image analysis; texture, color, stereo, and motion; wavelet methods for visual coding and Analysis; interpretation of surfaces, solids, and shapes; data fusion; probabilistic classifier; visual inference and learning.

٤٥٢ اتصالات البيانات

CS452 Data Communications

This course covers the basics of digital communications and local area networks. The topics studied include data transmission, transmission media, signal encoding techniques, error detection and correction, data compression, ARQ protocols, ALOHA protocol, and Ethernet. Topics include multiplexing, spread spectrum, switching and routing algorithms.

٤٥٣ الشبكات اللاسلكية

CS453 Wireless Networks

This course covers fundamental techniques in design and operation of first, second, and third generation wireless networks: cellular systems, medium access techniques, radio propagation models, error control techniques, handoff, power control, common air protocols (AMPS, IS-95, IS-136, GSM, GPRS, EDGE, WCDMA, cdma2000, etc), radio resource and network management. As an example for the third generation air interfaces, WCDMA is discussed in detail since it is expected to have a large impact on future wireless networks.

٤٥٤ تقييم كفاوه الحاسب

CS454 Performance Evaluation

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This course is devoted to studying the performance of computer and communications systems using mathematical tools (both probabilistic and deterministic.) The student should understand the queuing theory which is an essential part of Operation Research (OR) that concerns with the waiting line models. Also, the course will provide the student with a discussion of these models which are basically applications of probability theory and stochastic processes. The ultimate objective of solving these models is to determine the characteristics that measure the performance of the system.

٤٩٩ مشروع التخرج

ج

This project is intended to give the student a chance to put to practical use all the knowledge acquired in the Faculty since the start. It should end with a software package designed to fulfill a predefined task. Throughout the project, the student is encouraged to practice the good procedures needed in all phases of system development: analysis, design, implementation, testing, and deployment. The project may or may not include hardware design and implementation.

CS499 Graduation Project

٢. مقرارات نظم المعلومات

Information Systems Courses

IS101 Introduction to Information Systems

١٠١ مقدمه في نظم المعلومات

ن

This course is designed to provide an overview of computer and information systems concepts along with a working knowledge of some of the most popular software tools currently available. Upon the completion of this course, the student will be acquainted with some typical systems such as management information systems (MIS), library information systems (LIS), and geographical information systems (GIS).

IS123 Introduction to Database Systems

١٢٣ مقدمه في قواعد البيانات

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Topics include database models and systems: hierarchical, network, relational, and object-relational; database design principles; structures for efficient data access; query languages and processing; database applications development; views; security; concurrency; recovery. This course investigates the process of relational database design starting from conceptual database design, through logical database design up to and including physical database design, database tuning and administration. Introduction to data abstraction E-R models, normalization theory.

IS210 Systems Analysis and Design

٢١ تحليل وتصميم النظم

ن م

This course focuses on the systems analysis and Design techniques employed in the development of software applications. Topics include: software process and process models (e.g. Rational Unified Process), project management, structured and object oriented analysis, system design, quality systems, system and software architecture, design patterns, re-use and component-based design, change control and configuration management. Analysis and design will be covered primarily from an object oriented perspectives.

IS253 Fundamentals of Multimedia

٢٥٣ أساسيات الوسائط المتعددة

ن م

Introduction to the use of mixed-media software tools for effective communication. The course will include multimedia hardware: multimedia objects and their acquisition, applications of multimedia, multimedia tools and techniques; authoring advanced multimedia applications using authoring systems; investigating Windows programs for multimedia applications. The course will discuss types of multimedia information: text, speech, audio, images, graphics, video, animation and their characterization; multimedia processing, compression standards and techniques;

multimedia systems, storage and I/O devices as well as content generation and manipulation tools; multimedia networking characteristics, requirements and protocols; multimedia applications in communication, database and entertainment.

IS302 Information Security

٣٠٢ أمن المعلومات

ن م

This course provides a broad overview of the threats to the security of information systems, the responsibilities and basic tools for information security, and the levels of training and expertise needed in organizations to reach and maintain a state of acceptable security. This course also introduces the authentication models and protection models. It also aims to let the student understand the security kernels, secure programming, intrusion detection and response, and operational security issues.

IS303 Information Visualization

٣٠٣ رؤيه المعلومات

ن م

Information visualization is an area focusing on representing large quantities of information in a visual form to help people understand and analyze that information. The purpose of this course is to introduce students to the key theoretical and practical concepts and issues in this fast-growing discipline. Upon completion of this course, students should be able to design and evaluate visually-based information systems. Knowledge of information visualization concepts has a wide range of applications. Information visualization has applications in construction, medicine, education, parallel and distributed systems programming, geographical information systems, simulation, in addition to the design of web-based information systems, interactive multimedia, security systems, engineering systems, information booths, digital libraries, virtual environments, and almost any visually-based computer program.

IS304 Library Information Systems

٤٠٤ نظم معلومات المكتبات

ن م

The software and hardware that constitute integrated library systems allow for the efficient operation of library public, technical and administrative services. Online databases, act as key information resources for patrons and staff. Web-based resources are newer innovations and enhance information access, often providing customized content. This course intends to provide students with an understanding of the concepts and applications of computer automation in libraries and information centers. The workload is designed to simulate the challenges of working in library systems: juggling multiple priorities simultaneously in a team-based environment. Students will learn skills that can be applied on the job in both technical and broader administrative capacities. Students will gain confidence in their abilities to support technology initiatives.

IS308 Information Retrieval Systems

٣٠٨ نظم استرجاع البيانات

ن م

Principles of information retrieval and their application to information systems and services are introduced. The course emphasizes models of user information seeking behavior, human information processing and their relationship to retrieval models in information systems. It focuses on the principles and methods of information retrieval through interactive database searching. Problems of online database organization and structure, search strategy formulation, and online search service management are investigated.

IS311 Decision Support Systems

٣١١ نظم دعم اتخاذ القرار

ن م

The course gives an introduction to decision analysis with elements of human cognition under uncertainty. Topics include structuring decision problems and developing creative decision options, quantifying uncertainty and preferences, and combining uncertainty and preferences to arrive at optimal decisions. The class provides the foundation needed to apply methods of decision analysis in decision support systems. NOTE: This course can also be used to fulfill the distribution requirement in the Cognitive Science area.

قواعد البيانات المتسلسلة زمنية

IS330 Time-Series Databases

٣٣٠ ن

In the real world, there are thousands of time series data that coexists with other data. Every day tons of data is collected in the form of time series. Time series is a collection of observations that is recorded or measured over time on a regular or irregular basis generally sequentially. Time series arise in financial, economic, and scientific applications. Typical examples are the recording of different values of stock prices, bank transactions, consumer price index, electricity and telecommunication data, etc. In theory, such data is processed, analyzed, disseminated, and presented. However, many institutions are facing some difficult issues in organizing such a vast amount of data.

قواعد البيانات الشبيهة

IS331 Object-Oriented Database

م ن

The course gives the students knowledge about problems concerning relational databases, extensions of the relational model, especially nested relational systems. Also, this course provides theoretical foundations for the nested relational model, object-oriented databases' concepts and problems, semantic modeling, meta programming and concurrent problems. The course will also introduce prototypes and interfaces for object-oriented database handling, existing commercial and experimental object oriented database handling systems and distributed object-oriented database handling systems.

قواعد البيانات متعددة الأبعاد

IS332 Multidimensional Databases

م ن

During the past decade, multidimensional databases emerged to manage multimedia data, sensor data, business data and more. The multidimensional data models and schemas are used to implement current data warehouses, On Line Analytical Processing (OLAP) systems, and data mining applications.

قواعد بيانات اللغة الحية

IS333 Natural Language Databases

ن م ٣٣٣

The course provides an overview of natural language processing theories, application areas, current research fields, the relationship of natural language processing to other disciplines and the components of a natural language processing system. Querying techniques of NL databases are investigated. The semantics-based query theory is studied.

قواعد بيانات الوسائط المتعددة

IS334 Multimedia Databases

ن م ٣٣٤

The course introduces the student to the principles of multimedia information processing and retrieval. The media to be considered include text, image, audio and video. At the conclusion of this course, the students should understand what multimedia information retrieval is, the principles, which allow the location of relevant information from amongst a large corpus of multimedia data, and the applications of multimedia information retrieval.

ن م ٣٤٠ أدارة شبكات المؤسسات

IS340 Computer Networks Management

The course covers the basic principles of telecommunication, computer networking technologies, and managing a local area network (LAN) in a business environment. The course provides hands-on experience in LAN administration using widely adopted networking software in a computer laboratory. Topics covered include the concepts of computer networking and data communication, understanding and evaluating telecommunication media and devices, understanding and evaluating network protocols, setting up and configuring network services, creating and managing network user environment, and performing network administrative tasks.

ن م ٣٤١ أدارة شبكات المؤسسات

IS341 Enterprise Networks Management

ن م

This course addresses modern enterprise network systems which are complex, multi-vendor, and vital to organizations functioning. They include Local Area Networks (LAN) integrated with Network Management Systems (NMS) that are comprised of internetworking devices, bridges, routers, gateways, and backbone interfaces. Topics cover various aspects: such as NMS standards, hardware and software tools for NMS and configuration management, along with management policies.

ن م ٣٥٢ تمثيل المعرفه والاستدلال

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By the end of the course, a successful student should be able to understand the principles and operations of knowledge-based systems, and be familiar with the design of knowledge bases. Transformation of logical knowledge models into physical knowledge models is investigated. Knowledge representation and case

based reasoning (CBR) techniques are discussed.

ن م ٣٦٠ الاعمال الالكترونيه

م

This subject aims to provide students with an understanding of e-Business fundamentals. It covers key areas of e-Business, including: business-to-consumer, business-to-business and business-to-government electronic commerce (EC), online business models and electronic payment systems (EPS) and EC technology basics, standards, regulation and policy, security and social and economic issues will also be considered in the contexts of business Intranets, Extranets and the Internet. The

subject also provides an introduction to the 'Patterns for e-Business' approach to e-Business analysis and design.

IS365 Electronic Government

٣٦٥ الحُوكِمَةُ الْإِلَكْتَرُونِيَّةُ

ن م

This course will introduce the ways in which internet technologies are affecting how people interact with government, and how governments, in turn, are using and managing these technologies to better provide information and services to the public. Course content is divided into three main themes, and begins with an overview of development techniques and assessment methods for public web sites and on-line applications. The course will then examine key policy issues relevant to implementation of e-government programs, as well as to the broader use of information technology in democratic societies. Finally, you will have a chance to explore the skills and concepts needed to effectively manage e-government projects and programs. A variety of internet tools to help accomplish this, including blogs,

RSS feeds, and virtual technologies, such as Second Life are investigated.

IS405 Geographical Information Systems

٤٠٥ نظم المعلومات الجغرافية

ن م

Geographic Information Systems (GIS) are systems of hardware, software, and procedures designed to support the capture, management, manipulation, analysis, modeling and display of spatially referenced data for solving complex planning problems. This course covers underlying geographic concepts (world coordinate system and projections, vector map topology, tiled and layered maps, standard computer map file formats, urban applications, etc.) and provides computer lab tutorials and case studies on the leading GIS software, ArcGIS. By the end of the course, students will have sufficient background so that with on-the-job experience, they can become expert users of GIS in organizations - building, managing, and using GIS maps and data.

ن ٤٠٦ نظم معلومات الويب

IS406 Web Information Systems

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This course will provide a design and development of Web-based systems. It includes Internet and Web technology; Web development using design procedures, HTML, and XML; and hands-on experience in website design and authoring. The course will provide students with real world experience in the field of web information systems. Students will become acquainted with the work place while enhancing their professional skills and interacting with other web information systems professionals.

ن ٤٠٧ نظم المعلومات الطبيه

IS407 Medical Information Systems

ن م

This course will provide the student with a framework for understanding the vocabulary, theory and issues germane to the advancement of informatics and its application in the medical and health sciences. While the emphasis will be on health sciences as exemplars of applied informatics, some working systems will be explored. This overview of medical and health informatics will focus on the multi-disciplinary nature of thefield.

قواعد البيانات الموزعه

IS435 Distributed Databases

ن ٤٣٥ م

The principles and system organization of distributed databases are introduced. Data fragmentation and distribution, distributed database design, query processing and optimization, distributed concurrency control, reliability and commit protocols, and replicated data management. Distributed algorithms for data management: clocks, deadlock detection, and mutual exclusion are discussed. Heterogeneous and federated distributed database systems are introduced.

ن ٤٣٦ قواعد بيانات البيانات الفوقيه

IS436 XML Databases

ن م

This course will explore the current literature on XML databases and related technologies. The course will discuss current solutions to such issues as storage, indexing and query processing, and identify potential research areas. This course will also introduce topics such as XSLT, XPath, XML Schema, and XML DOM.

٤٥ . نظم قواعد المعرفة

IS450 Knowledge Based Systems

ن م

This course reviews the first-order logic, relational algebra, and relational calculus. Fundamentals of logic programming and logic for knowledge representation are introduced. Architecture of a knowledge-base system. Fundamentals of deductive databases. Top-down and bottom-up query processing. Some important query processing strategies and their comparison. Project or term paper on current research topics. The course also includes knowledge-based methods for artificial intelligence systems: knowledge representation, organization, and application. Typical content includes: Principles of memory organization, indexing and retrieval. Memory-based, analogical, and case-based reasoning.

٤٥١ النظم الخبرية

IS451 Expert Systems

ن م

The course includes topics such as concepts of knowledge-based systems and expert systems. Use of artificial intelligence concepts in the development of systems for expert decision making, with application to business problems. Review and use of selected commercial expert systems software packages. Components of expert systems. Knowledge acquisition. Expert systems development with a commercial shell. Manipulation of quantified uncertainty factors. Derivation of knowledge from data. Significance of groupware and document management systems to decision-making.

٤٦١ التجارة الإلكترونية

IS461 Electronic Commerce

ن م

In this course, the student will examine the history of the Internet and its influence on E-Commerce; the validity of E-Commerce, and why it is increasingly being integrated into the business model. You will also explore the fundamental business concepts as they relate to E-Commerce, such as customer relationship management; e-procurement; security and staffing issues; planning; metric identification techniques for measuring the success of E-Commerce initiatives; marketing strategies on the World Wide Web; and information on E-Commerce software, hardware, and service providers.

٤٦٢ التعليم الإلكتروني

IS462 Electronic Learning

ن م

In the education sector, e-learning increases access to education by making it possible for students to fit their education into traditional lifestyles and work schedules and choose from a wider-range of courses and learning opportunities. E-learning uses a Learning Management System (LMS) to host courses. A student can log into the system, using an ID and password, and use the course interactively. The learning system provides ways for self assessment, interaction with the teacher, interaction with the peers, uploading and downloading assignments. Relevant software, hardware, and courseware will be reviewed. The course will also introduce a learning content management system to monitor teaching-learning process. Participants will draft their own courseware development plan based on sound principles of instructional systems design.

٤٦٣ الصحة الإلكترونية

ن م

This course provides IT professionals with the theoretical and practical knowledge which will enable them to take leading roles within the emerging field of Health Informatics. Principles of tools such as telemedicine, remote operating theatre, interconnection of medical data systems, automatic diagnosis, analysis of medical images, and archiving of medical records are investigated.

٤٦٤ البنوك الإلكترونية

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Technology for managing payments across electronic networks, including the banking and electronic funds transfer network. Payment gateways, electronic presentment, clearance, and dishonor, credit card transactions, and electronic bill payment. Properties and examples of digital cash: e-cash, cyber-cash, electronic purses, negotiable electronic instruments, secure checks, billing servers, micropayments. Authenticity, integrity, provability of transactions, methods for assuring delivery before payment: electronic bills, letters of credit, risks: money laundering, kiting, offshore issues, allocation of risk among buyer, seller, bank and intermediaries

٤٧٠ مستودعات البيانات

ن م

In this course, students study the issues involved in planning, designing, building, populating, and maintaining a successful data warehouse. Students learn the reasons why data warehousing is a compelling decision-support solution in today's business climate. Upon course completion, the student should be able to explain how a data warehouse can be used to support all levels of management when making strategic, tactical and operational decisions that affect the organization.

٤٧١ التقىب عن البيانات

IS471 Data Mining

ن م

Data mining plays an important role in financial industry, retail industry, Internet services, and e-business. It integrates techniques from databases, machine learning, artificial intelligence, statistics, and visualization to discover implicit and useful knowledge from large datasets. The course will provide a comprehensive introduction to data mining, various data mining techniques, and some successful

applications. The emphasis is on modern approaches such as OLAP, decision tree learning, Bayesian learning, clustering, and association learning. Real world applications with data mining algorithms and tools will be emphasized.

IS480 Bioinformatics

٤٨٠ المعلوماتية الحيوية

ن م

The course introduces principles, concepts, methods, techniques, algorithms, tools, and strategies to transform and process the masses of information from biological experiments, focusing particularly on biological sequence data. It covers topics such as: DNA and protein sequence alignment and analysis, sequence analysis software, database searching, database search heuristic algorithms, sequence alignment dynamic programming algorithms, RNA folding, and multiple sequence alignment and analysis.

IS499 Graduation Project

٤٩٩ مشروع التخرج

ن م

This project is intended to give the student a chance to put to practical use all the knowledge acquired in the Faculty since the start. It should end with a software package designed to fulfill a predefined task. Throughout the project, the student is encouraged to practice the good procedures needed in all phases of system development: analysis, design, implementation, testing, and deployment. The project may or may not include hardware design and implementation.

٣. مقررات العلوم الأساسية

Basic Science Courses

BS101 Calculus

١٠١ تفاضل وتكامل

أ ع

This course covers the basics of calculus, topics covers real numbers and functions, inequalities and absolute values, the domain and the range of a function, operations and properties of functions, composite functions, even and odd functions, increasing and decreasing functions, the inverse functions, limits and continuity of functions, limit of sequences, differentiation, the integration, definite integrals and applications of the integration.

BS102 Linear Algebra

١٠٢ الجبر الخطى

أ ع

This course covers the following topics: Linear systems and matrices, introduction to linear systems, Gauss-Jordan elimination, matrix operations, inverses of matrices,

determinants, 2×2 determinants, higher-order determinants, determinants and elementary row operations, Cramer's rule and inverse matrices, vectors in the plane and in space, vector spaces, the vector spaces R^2 , the vector space R^3 , orthogonality and the Dot product.

BS103 Discrete Mathematics
الرياضيات غير المتصلة

This course covers the mathematical topics most directly related to computer science. Topics included: logic, relations, functions, basic set theory, countability and counting arguments, proof techniques, mathematical induction, graph theory, combinatory, discrete probability, recursion, recurrence relations, and number theory, with an emphasis on application on computer science.

BS110 Statistics and Probabilities
احصاء واحتمالات

This course gives an introduction to probability theory and mathematical statistics that emphasizes the probabilistic foundations required to understand probability models and statistical methods. Topics covered will include the probability axioms, basic combinatory, discrete and continuous random variables, probability distributions, mathematical expectation, common families of probability distributions, and the central limit theorem. Most of exercises are related to the computer applications.

BS203 Differential Equations

أع

This course provides an introduction to the basic methods of solving differential equations (both ordinary & partial). Separable, homogenous, exact and linear differential equations are addressed. The main techniques considered to solve higher order differential equations are operator method, series solution, Laplace transform, and numerical methods, Euler's method, Runge-Kutta methods, multistep methods, predictor-corrector methods, stability theory, stiff systems. The course presents view of: First Order PDE's, linear equations and quasi-linear equations, shock waves, Parabolic Problems (heat equation, separation of variables, integral transform methods), Hyperbolic Problems (wave equation, D'Alembert Solution), Elliptic Problems (Dirichlet problem, Green's functions).

BS204 Advanced Mathematics

أع

This course covers the study of integral transforms, especially the Laplace and Fourier transforms and convolution theorems; Topics include definitions, basic formulas, relations, operational properties, complex analysis and integration, inversion formulas, and solutions of ordinary and partial differential equations.

BS205 Operations Research

This course presents new description: convex set function and concave function, feasible region of solution, and modeling in operations research, linear programming, graphical method, Duality, sensitivity analysis, network models, shortest path, maximum flow problems, transportation and assignment problems. The course also includes case studies on Game theory, Fractional linear programming. The student should understand how to formulate problems, construct and solve mathematical models, and apply the systems approach to problem solving. Also be able to apply the general concepts of optimization to solve these models.

٤١١ العلیات التصادفیة

BS211 Stochastic Processes

This course includes an introduction to elementary stochastic processes and their applications to various phenomena in engineering, management science, the physical and social sciences, and operations research. It also covers: Markov chains and processes, Brownian motion and Gaussian processes, point processes and renewal processes, martingales and weakly dependent stochastic processes, and convergence of stochastic processes.

٤٢١ فیزیاء

٤

This course gives an introduction to analog and digital electronics with an emphasis on their use in the laboratory. Topics include linear devices and basic linear circuit analysis, diodes, transistors, op-amps, the use of digital components including logic gates, flip-flops, counters, clocks and microcontrollers, and analog to digital conversions.

٤-المقررات العامة

General Courses

G101 Introduction to General Ecology

٤٠١

مقدمة في علوم البيئة

The topics of this course includes: population structure and dynamics, organization and classification of communities, and nutrient and energy flows in ecosystems, techniques and methodologies to assess organism, population, community, or ecosystem interactions, current ecological approaches used to quantify impacts of natural and human disturbances on ecosystem structure and function. Case studies illustrate impacts and management strategies in fields such as environmental toxicology, conservation ecology, agro-ecosystem ecology, and restoration ecology.

٤ اللغة العربية

G104 Arabic Language

ع

This course is designed to increase vocabulary and extend facility with Arabic grammatical forms. Reading and writing abilities will develop beyond the range of a simple sentence to that of more complexes. Emphasis will be on the technical uses of the Arabic Language.

٥ اللغة الإنجليزية ١

ع

This course introduces the student to the technical English styles and modern trends, with the aim to allow the student to communicate an idea or a problem in English to a reader effectively. It helps students in researching, planning, writing, revising and presenting a formal technical report. The emphasis will be on the technical English that is oriented towards computer and information technology.

٣ اللغة الإنجليزية ٢

ع

This syllabus provides a general outline proposal for creating courses for advanced level students. The objective of this course is to improve Daily life interrogative and discourse capabilities, Basic person and place descriptive abilities, Number, time, quantity, and cost use, Daily life receptive understanding skills, written usage to express situations, give instructions and explanations, communicate opinions, and narrate and comprehend stories.

٢ الكتابة الفنية

ع

By the end of the course, the student should have been exposed to writing such documents as proposals, projects, term papers, specification sheets, user manuals and project catalogs.

