توصيف مقرّرات قسم الحاسوب

1.متطلبات الجامعة:

📖 مقدمة حاسوب 1 — Introduction to Computer1 — (UR104)

- Computer history (component of com.----stage development—generations-usage of comp.----advantages). Memory(data storage- storage capacity—memory types(RAM—ROM-CACHE. Inputs and outputs devices-gates.
- Number system 1
- Number systems2 with exercise
- Structure of computer -machine language -assembly-ALU
- Algorithms (Introduction to algorithm -how to represent-discovering-iterative -recursion)
- Programming languages
- Programing language 2(compiler -editor -translate -linker)
- Networks (introduction of network - types -components-LAN-WAN-advantages-
- Internet -protocols -security

📖 اللغة الانجليزية I — English Language1 — (UR102)

Use of English in communication and grammar:

Parts of speech, punctuation, simple sentences, (positive, negative, interrogative), tenses, study of nouns, adjectives, adverbs, three forms of verbs (present tense, past tense, past participle) commonly used in everyday life, simple Active and Passive Voice, study of adjectival clauses, and use of auxiliary verbs, preposition and its proper use study adjectival clauses, omission of relative pronouns .

Objectives :To introduce and familiarize the students with general English through oral and visual practice and comprehension, to increase and consolidate English Grammar and vocabulary, to enable the students to communicate in written and spoken English, to develop with ability with concepts used in general discussion and writing in English.

Reading Comprehension : Reading, studying the passage and paragraph structure besides answering the questions on the topics.

Course Content:

Spoken English, Getting to know each other, Describing yourself and others, Giving your opinion, Agreeing and disagreeing, Explaining, Making Suggestions, Questioning and dealing with questions,

Talking about various topics, Describe and identify, Listen for the difference, Put the story in order, Jumbled texts, Stories in ten words, Passing on a story

(UR103) Arabic Language اللغة العربية

أولاً: النحو: أنوع الكلمة –أقسام الاسم –الإعراب والبناء –المبتدأ والخبر–الأفعال الخمسة –الفعل المضارع المعتل الأخر–العدد.

ثانيا: الصرف: الميزان الصرفي –المشتقات.

ثالثا: الأدب: –مختارات من الشعر–مختارات من النثر الأدبي–أساليب الكتابة–أهل الجنة كما وصفهم الله عز وجل.

رابعاً: المعجمات.

خامسا: المستوى الكتابي.

محتــوى المقــرر: –

تقسيم الكلمة والعلامات والإعراب والبناء، المبتدأ والخبر والنواسخ وإعراب الفعل المضارع، التاء المربوطة والمفتوحة والألف اللينة، همزة الوصل والقطع وعلامات الترقيم والمعاجم، أساليب الكتابة وبعض النصوص الأدبية الشعرية والنثرية.

(UR105) تاريخ حضارة

تعريف مفهوم الحضارة –الفرق بين الحضارة والثقافة – الفرق بين الحضارة الاسلامية والغربية – العوامل التي تساعد على قيام الحضارة – الاسس التي قامت عليها الحضارة الاسلامية – كيفية التعليم في الاسلام – نتائج التعليم في الاسلام – حركة الترجمة في الاسلام – اهم العلوم التجريبية عند العرب المسلمين.

2. متطلبات الكلية:

(GS140) Scientific English انجليزي علمي

COMPREHENSION:

Selections from magazines such as:

- P.C. magazine
- Byte magazine
- Data communication
- Word of Computer COMPOSITION:
- Composition with creative angle:
- Writing the long composition
- Writing on specific topics
- Writing on general topics
- Organizing materials into paragraphs

SUMMARIZNG THE TOPICS TAKEN ABOVE:

- Definition of process
- Process states
- Process transitions
- The context of a process

(GS120) General Mathematics –1 1- رياضة عامة

Cartesian coordinates, distance between two points, division of line segment, slope, angle between two lines, parallel and perpendicular lines, equation of line, distance from point to line, standard equation of circle, parabola, ellipse and hyperbola. Sets and subsets, basic set operations (union, intersection, difference) real line, order, intervals, inequalities and absolute values. Cartesian product of two sets, relations and function: domain and range of functions, graph of functions, composition of function, one-to-one and onto functions, inverse functions, limits, one-sides limits and continuity, derivative, differentiation of trigonometric, inverse of trigonometric, exponential and logarithmic functions application of derivative: tangent and normal, differentials, related rates, maxim and minima, curve tracing.

(GS130) General Physics-1 1-فيزياء عامة

The course has two general objectives:

1- Introduction to mechanics, and heat:

This course provides an introduction to the basics of two subjects of physics: Mechanics, and heat. These subjects are important for a computer science student because their principles are widely used in computer designing, manufacturing, maintenance, servicing, and utilizing. Majority of computer peripherals make use of many of these subjects.

Specifically, Mechanics serves to understand the structure, stability and operation of the computer and all of its devices, and peripherals. Heat guides the student to know where, in the computer and peripherals, heat is useful and where it is harmful.

2- Introduction to experimentation:

Physics is an experimental science, and even the most ingenious and plausible physical theories cannot be accepted without experimental verification. Properly carried out experiments in conjunction with careful data analysis and interpretation are the basis for our knowledge and understanding of the physical world.

This course is designed to develop good laboratory practices which, as a rule, are indispensable in any meaningful experimental investigation.

(GS130) General Physics-2 فيزياء عامة -2

The course has two general objectives:

Introduction to heat, optics, and electricity:

This course provides an introduction to the basics of three subjects of physics: Heat, optics, and electricity. These subjects are very important for a computer science student because their principles are widely used in computer designing, manufacturing, maintenance, servicing, and utilizing. Majority of computer peripherals make use of almost all these subjects. Specifically, electricity helps the student to understand most of the operation of a computer. Heat guides the student to know where, in the computer and peripherals, heat is useful and where it is harmful. Optics serves to understand the structure and operation of compact disks, DVD players, very fast internet data transmission, optical storage media, optical mice, scanners ...etc.

2-Introduction to experimentation:

Physics is an experimental science, and even the most ingenious and plausible physical theories cannot accepted without experimental verification. Properly carried out experiments in conjunction with careful data analysis and interpretation are the basis for our knowledge and understanding of the physical world. This course is designed to develop good laboratory practices which, as a rule, are indispensable in any meaningful experimental investigation.

(GS121) General Mathematics -2 رياضة عامة -2

Hyperbolic functions, Rolls and mean value theorems with applications, generalized (Cauchy) mean value theorem, L' Hopital 's rule and indeterminate form, extended mean value theorem and Taylor's expansion formula, approximation and errors. Standard Taylor series of expx, sinx, cosx, $1/(1-x)$, mean value theorem and Newton's method for approximating solutions of equations, indefinite integrals, definite integrals and fundamental theorem of calculus, mean value theorem for integral, differentiation under integral sign. Various technique of integration, improper integrals, numerical integration of indefinite integrals, application of defines integrals: arc length, area, volume, area of surfaces of revolution.

(AS105) General Statistic and Probability إحصاء عامة واحتمالات

Sampling Random, non-random sampling. Simple random sample, stratified and cluster sampling. Multistage sampling. Probability distributions used in statistics (hypergeometric, binomial, Poisson-,

uniform, exponential, normal, etc.). Most important parameters of distributions. Statistical sequences, cumulated frequency distribution and sequence of totals. Statistical tables and their classifications. Distributions with one or more modes., empirical distribution function, frequency total. Correlation. Testing of hypotheses. Parametric tests (u-, t-, F-, and chi-square tests). Non-parametric tests (chi-square tests for goodness-of-fit, independence and homogeneity, binomial tests). Algebra of events

(MA203) Linear Algebra الجبر الخطي

Matrix algebra: elementary row operations, rows-reduced Echelon form, rank of matrix, inverse matrix. Determinant: properties and computations. Classical ad joint and inverse matrix . system of linear equations, homogenous and non-homogeneous case, Crammer's rule. Vector space, linear independence, basis and dimension, linear transformations and matrices. Change of basis for vectors and linear transformations: similar matrices, eigenvalues and eigenvectors, Cayley-liamilton theorem. Diagonalization of matrix, inner product spaces, orthogonal bases, Gram-Schmidt theorem. Bilinear forms, quadratics forms, Hermitian forms and normal forms.

(MA213) Differential and Integration تفاضل وتكامل

Sequences and infinite series, tests of convergence, power series, Taylor series with reminder, polar coordinates curve tracing, conic sections, angle between radius vector and tangent line, length of curve, area of region in polar coordinates. Cartesian and polar forms of curvature, functions of several variables: limits, continuity, partial derivatives, tangent plane, normal line, directional derivatives, gradient, chain rule, total differential, maxim and minima, methods of Lagrange multiplier, higher order derivatives. Integral calculus of functions of several variables, multiple integral, double and triple integrals in Cartesian, polar, cylindrical and spherical coordinates. Applications of double and triple integrals for calculating mass, area, volume, surface area, center of mass, moment of inertial, line integral, dependence on path, vector differential operators (grade, div, curl) and relative formulas. Theorem of Green, Gauss, and stokes. Fourier series, half range series.

(MA214) Differential Equations معادلات تفاضلية

Ordinary differential equation, basic concepts, separable equation, homogeneous equation, exact equation, integrating factors, linear first order equations of second order, fundamental theory of solution, solution of equations with constant coefficients, homogenous equation. Particular solution of non-homogenous equation, methods of undetermined coefficients, equations with constant coefficients of higher order, solution of equations with variable coefficients, method of variation of parameters,

application of second order equations. Series solution of second order equation, Taylor series forbenius methods. Bassel and Legendre equation, methods of Laplace transform, system of equations, existence and uniqueness theorems for first and second order equations(statement and illustrations only). Finite difference equations, partial differential equations of first order.

3.المواد التخصصية (الإجبارية والاختيارية الاكاديمية):

🕮 طرق احصائية	**Statistics Methods**	**(CS106)**

Empirical distribution function. Statistical space (sample space, space of parameters), statistic. Sufficient statistic, factorization theorem. Point estimation: unbiased, consistent and efficient estimators, Rao-Cramer inequality, Rao-Blackwell theorem. Maximum-likelihood estimator and its properties. Confidence intervals. Testing of statistical hypotheses, power function, randomized test, Neyman-Pearson lemma. Parametric tests: u-, t- , F-, and chi-square tests. Non-parametric test chi-square. Multivariate normal distribution, limit distributions. Nonparametric tests Estimation and testing hypotheses in the linear model, applications of the linear model. Design of experiment. Time series analysis, trend, seasonality. Process control. maximum-likelihood estimator and likelihood ratio test, Mac queen algorithm.

🕮 رياضة متقطعة	**Discrete Math.**	**CS107)**

Introduction and Prepositional Logic. Simplification and Inferences for Logic. Sets and Relation

Venn Diagramming. Mathematical Induction. Relation associated with partial ordering. Least element and greatest element of Poset and lattices, graph theory. Advance Data Structures analysis

Combinatorial problems. Principal disjunctive normal and conjunctive normal form. Types of Functions. Introduction to Automata Theory.

🕮 مقدمة حاسوب2	**Introduction to Computer2**	**(CS103)**

1. Disciplines of Software engineering
2. life cycle, design methodologies of software engineering
3. Principles of Data Abstractions
4. Data types
5. Fundamentals of Data Structure
6. Fundamentals of Data base
7. Flowcharts
8. Introduction to Artificial Intelligence

9. Intelligence ,Machines and expert systems
10. Introduction to Theory of computation
11. functions and their Computation, Turing machine
12. A Non-computable Functions
13. Complexity of Problem

(CS102) **Fundamentals of Programming1** **اساسيات برمجة1**

Basic elements of C++; C++ programs; Writing C++ program; C++ manipulators; Control structures(Condition structures); Control structures(Repetitive structures); Bifurcation of control loops; Control structures (Selection structure); Nested Control structures(Review Examples).

(CS205) **Visual Programming** **برمجة مرئية**

- Creating the Interface & Resizing, Moving, and Locking Controls & Variables

1-loacl variable 2- static variable& Arithmetical Operators

Setting Properties:

1. To set properties from the Properties window
2. Setting the Icon Property
3. Important points about setting up the properties:

- Writing Code and how To open the Code window & Creating First Application In Visual Basic.

Creating Event Procedures & write programs about VB & Handling some of the common controls & What Are Conditional Statements?

- Visual Basic Looping:
  - Do While/Loop
  - Do Until/Loop
  - Do /Loop While& Do /Loop Until
  - For loop
- Arrays.
- Function
  - The MsgBox ( ) Function
  - The InputBox( ) Function
- Database Access and Management

(CS104) **Fundamentals of Programming2** **📖 اساسيات برمجة2**

1. Revision in fundamentals of programming1
   - Conditions
     - Command Structure of If Then Else, Code Blocks, Relational Operators, Assignment VS. Equality, Logical Operators, Nested IF statements.
     - Case Control Structure
     - Practice Conditions Commands:
       - Examples using C++, Examples using C#, Example using JAVA
   - Loops
     - Iteration Control Structures
     - While Loop – Do While Loop – Flag Concept –
     - For Loop – Nested For Loops
     - Practice Loop Examples:
       - Examples using C++, Examples using C#, Example using JAVA
2. Functions
   - Parameters and Arguments, Return Statement, Void Data Type, Standard Libraries, Practice Functions:
     - Examples using C++, Examples using C#, Example using JAVA
3. Arrays
   - Arrays and Lists, Index Notations, Displaying Array members, Arrays and Functions, Math statistics with Arrays, Search Arrays, Sorting Arrays,
   - Multidimensional Arrays
   - Dynamic Arrays
   - Practice Arrays Examples:
     - Examples using C++, Examples using C#, Example using JAVA
4. Strings and Files
   - Strings, String Functions, String Formatting, File Input and Output
   - Loading an Array from a Text File
   - Practice Strings and Files Examples:
     - Examples using C++, Examples using C#, Example using JAVA
5. Object–Oriented Programming
   - Object and Classes, Encapsulation, Inheritance and Polymorphism
   - Practice OOP Examples:

- Examples using C++, Examples using C#, Example using JAVA.

(CS201) Logic Design تصميم منطقي

Logic Gates(Introducing basic gates (AND, OR, NOT, NAND, NOR, XOR)- Symbolic representation and truth table- Boolean algebra- Construction logic circuits from logic function Deriving the function from the logic circuit.- Simplification of function by the use of Boolean algebra.- Simplification by use of Karnough map. Drawing logic circuits after simplification - Truth table construction from logic function & from logic circuit- Min and Max terms- Sum of products- Product of sums)- Combinational Logic(Flip flops- Sr, Jk, D types,- State table- State wave- Half adder- Full adder- Half subtracted- Multiplexer- Encoder- Decoder- Counters- Asynchronous- Synchronous- Shift registers)-Introduction to digital Computer units Design:(Microprocessor.- Memory organization.-I/O channels).

(CS206) Technical English انجليزي تقني

A general competency in the English language is a prerequisite of this course. Its main emphasis is an on-teaching student reading skills such as locating and interpreting information. Finding the main idea of a text and distinguishing the main ideas from the supporting details and selecting important or relevant points to summarize an idea. The overall emphasis of the course will be reading with understanding of complete science related books and articles. In the emphasis in the previous paper is on reception the objective of the present paper is on expression. This course envisages to train the students in special language skills connected to computer science. use of transitional markers impersonal passives, and other such syntactical statements. Student is expected to express to is ideas in- coherent and communicable English, Revision &

discussion.

(CS203) System Analysis تحليل نظم

This course provides a methodical approach to developing computer systems including feasibility study, systems planning, analysis, design, testing, implementation and software maintenance. Emphasis is on the strategies and techniques of systems analysis and design for producing logical methodologies for dealing with complexity in the development of information systems. The course includes the Waterfall model (The System Development Life Cycle), system analysis and design techniques (Process Modeling (DFDs), Logical Modeling (decision tree, decision table, structured English), Data Modeling.

(CS204) Automata Theory نظرية احتسابيه

1. Definition of finite automata
2. Formal and informal languages
3. Classification of finite automation definable languages
4. Operation on languages
5. Regular set and expression
6. Convert regular to finite automata machine
7. Nondeterministic finite automata
8. Convert Nondeterministic to deterministic
9. Transition map for deterministic finite automata
10. Sequential machines with output
11. Construction rules
12. Grammar.

(CS202) Data Structure1 هياكل بيانات1

1. Importance of the data structure used to efficiency of the resulting system and implementation
2. How to measure the effectiveness of the used data structures in terms of memory consumption and the speed resulting algorithm
3. The simplest data structures (arrays) one and multi-dimensional
4. How to computer the address of array cells
5. Record of different data type field
6. Array of records
7. Introduction to stacks and application
8. Linked lists and implantation with pointer and dynamic memory
9. Advantage and disadvantage of linked list
10. Charters string and representation techniques
11. Standard function in their record.

(CS207) Computer Architecture معمارية حاسوب

1. Introduction /System tools/System Information
2. Data Representation (Negative numbers and Real Numbers)/System Restore
3. Data Representation (Real umbers)/Tutorials/Disk defragmentation Backup and
4. Computer Structure/ Disk cleanup, security center
5. CPU/ and Control panel
6. Cache memory/ Service tools and Admin tools

7. Cache memory Mapping/problems/Tutorials/ System hardware scanning
8. Internal memory/ BIOS Settings
9. External memory Safe mode operation
10. Input/Output Device Addressing/ Memory test from BIOS
11. Input/Output Interrupts and DMA/ Hardware Identification
12. Instruction sets and Instruction Addressing/CPU Internal Components
13. Operating system support.
14. Parallel Processing

(CS209) Computer Graphics رسوميات

1. Architecture and implementation of displayed interaction of devices.
2. Functional capabilities of graphic implementation of graphic package.
3. DDA line drawing algorithm
4. Bresenham's line drawing algorithm
5. Midpoint Circle drawing algorithm
6. 2D transformations
7. 3D transformations
8. 2D viewing
9. Windowing and Clipping
10. Hidden surface and edges removal algorithms
11. Introduction to three Dimension viewing.

(CS208) Data Structure2 هياكل بيانات2

- Queues and their applications, with examples from the PC environment
- The algorithms used for implementing circular queues
- Non-linear data structures, like graphs history of the graph theory
- Properties and characteristics of graphs and examples of their applications
- Tree representation techniques in memory
- Trees properties, and storage techniques
- Binary tree traversal
- Introduction to recursive programming with an example of insertion sort into a binary tree
- printing the contents of the tree in ascending order
- Introduction to sorting methods
- Revision & discussion

🕮 قواعد بيانات1 Database1 (CS211)

1. Fundamentals of Database Systems
2. Database System Concepts and Architecture
3. Data Modeling Using the Entity–Relationship (ER) Model
4. Entity–Relationship to Relational Mapping
5. Data Modeling Using the Entity–Relationship (ER) Model
6. Relationship Constraints , Participation Constraints and Existence Dependencies
7. Refine the ER Design for COMPANY Database
8. Entity–Relationship to Relational Mapping
9. Entity Relationship Diagram

Practical Part:

10. Practical examples in designing database
11. Labs tutorial on database relationship
12. Using MySQL: Creating Tables of students' database
13. Labs tutorial on database relationship

🕮 تصميم مترجمات Compiler Design (CS210)

1. Introduction to Compiler and Types of compiler. Perfect translation code.
2. Over view and refreshing for programming with files. Examples of translating some source program segments to object code. Representation of compiler by using "C" notation
3. Explain the relating (important options of compiler). "Compiling and translating options"
4. Phases of a compiler
   - Lexical Analysis
   - Syntax Analysis
5. Design small compile program to read input file and recognize the keyword tokens.
6. Semantic Analysis.
7. Symbol table management
8. Error Handler
9. Continue with : Design small compile program to read input file and recognize the keyword tokens, Begin the creation of symbol table " to store identifies"
10. Intermediate code generation
11. Code optimization (Global optimization, .Local optimization

12. Design small compile program to read input file and recognize the keyword, identifies, constant tokens.
13. Code generation

Practical Part:

- Example for the complier operations that must be done to translate specific source language statements.

Implementation of Lexical Analysis Syntax Analysis

–Compiler implementation techniques (Bootstrapping, Cross Compiling)

–Compiling to Intermediate form (P – code).

Implementation of Lexical Analysis Syntax Analysis

- Lexical Tokens.

–Implementation of FSM in Lexical analysis.

- Design FSM for the lexical analysis phase.

- Implementation of FSM for recognize the keyword, identifies, constant tokens.

Action of FSM.

- Create different types of symbol table.

- Design FSM with action to read numeric string and convert it to appropriate internal numeric format

Continue with Implementation of FSM for recognize the keyword, identifies, constant tokens.

- Lexical table (creation of symbol table) –

- Sequential search, Binary search, Hash table.

(CS301) Assembly Language لغة تجميع

Overview of 16–bit Microprocessor 8086, 8088, 80286). Introducing assembly language. Compare assembly with H.L. languages. Review of numbering systems, Memory segmentation, Registers Logical and physical addresses (Addressing modes). Assembly language instructions (Data transfer). Assembly program structures. Debugging programs. Variables, labels, Arithmetic, logic operations and flags operations, bit manipulation, string manipulation, Control transfer, Processor transfer. Interrupts, Procedures and macros.

(CS305) Computer Networks شبكات حاسوب

1. A Communication Model

2. Simplified Communication Model. Simplified Network Model.
3. Switched Networks
4. Network Components. Networks Classification.
5. Networks Classified by Topology.
6. Networks Classified by Geography LAN – MAN – WAN
7. Networks Classification by Tramission Technology. Switching Networks
8. Networks Classification by Switching strategies
9. OSI Reference model
10. Devices used in Networking
11. Relation to Internet Model
12. Categories of Media
13. Circuit switched Networking. Packet Switched Networking.
14. External Virtual Circuit. Flow Control.

(CS304) **Operating Systems** **📖 نظم تشغيل**

1. Software organization
2. Translating, linking and loading
3. Control programmers for batch processing, time sharing and real time application
4. Multiprogramming and multiprocessing
5. Addressing ,paging and memory management
6. Fill system.
7. Protection, review of grammars and language,
8. Lexical and syntax analysis, top down and bottom up
9. Code generation ,and optimization tables and organization
10. Computer complier
11. Control of parallel input–output processing
12. Detailed analysis of small operating system

(CS302) **Object Oriented Programming** **📖 برمجة كائنات**

1. Introduction of Object–Oriented Programming (OOP)
2. Classes, Objects & Construction Functions
3. OOP Concepts
4. Inheritance
5. Method overloading
6. Method Overriding

7. Polymorphism
8. Fundamentals of abstraction
9. Encapsulation mechanisms in OOP
10. Abstract class
11. Interface
12. Object oriented design methodology.

(CS303) Database2 قواعد بيانات2

1. Schemas versus Instances; Conceptual design; ;Logical design; Practical examples in designing database; Database Relationship practical examples in designing database (Course Project) ; Entity Relationship Diagram practical examples in designing database (Course Project); Tutorial on database relationship; database (Review and Evaluation Course Project); Functional Dependencies; SQL: Creating Tables of students' database; 1st , 2nd and 3rd Normal form;
2. Describe the concept of Distributed Database.
3. Describe Distributed Database architectures.
4. The concept of Distributed Database.
5. Distributed Database architectures.
6. Describe the concept of Client/server database systems.
7. Describe it's architectures
8. Client / Server database system.
    - Describe deductive database model.
    - Introduce deductive database system architectures
    - Describe query evaluation and constraints
9. Deductive database model.
    - Deductive database system architectures
    - Query evaluation and constraints
10. Describe Multimedia Databases concepts.
    - Discuss Multimedia database issues

*Practical Part:

SQL: Creating Tables of students'

SQL: Creating the relations between table;

SQL: Insert Record in table.

SQL: Delete Table and Database.

(CS306) Numerical Methods طرق عددية

1. Interpolation polynomials: difference tables & errors effects
2. Interpolation polynomials & applications
3. Symbolic derivations
4. Inverse interpolation in 2- Dimensions
5. Numerical differentiation's:1st & higher derivatives from interpolation polynomials
6. Extrapolation Techniques ,accuracy of derivatives
7. Numerical integration: newton cotes integration formulas
8. Methods of undetermined coefficients, multiple integrals
9. Errors in numerical integration
10. Solution of nonlinear equations: methods of halving ans linear interpolations
11. Iterative methods
12. Errors discussion

(CS307) Internet Programming برمجة انترنت

Introduction to Web-programming, web-designing, WWW, Web-servers, Website and HTTP; Working with Basic and various text styling tags; Designing tables in Web pages (Simple and Complex); Working with Images and images in table; Web page linking(External and Internal) linking with image; Designing Forms in web page; Frames (Simple and Complex); Introduction to JavaScript, Variables in JavaScript and objects in JavaScript; Working with String functions and Date functions; Using Control structures and working with function; Validation using JavaScript Pop-up boxes (prompt, alert, confirm) & Form; Introduction to Web-programming, web-designing, WWW, Web-servers, Website and HTTP.

(CS313) Advanced Internet Programming برمجة انترنت متقدم

Fundamentals of PHP; Arrays in PHP; Forms in PHP; Passing Variables with Data between Pages; Functions in PHP; PHP Built-in Function; PHP & Mysql; PHP File Handling; PHP Cookies & Sessions; PHP Classes/Objects.

(CS308) Artificial Intelligent ذكاء اصطناعي1

This course is an introductory course to artificial intelligence. The goal of this course is to provide students with the underlying principle of the artificial intelligence and soft computing paradigms with their advantages over traditional computing. Topics to be covered will include: Introduction to Intelligent Systems: Tools, Techniques and Applications; Expert Systems; Fuzzy Systems; Artificial Neural

Networks; Genetic Algorithms; Case-based Reasoning; Data Mining; Intelligent Software Agents; Language Technology. Mini Project.

🕮 ذكاء اصطناعي متقدم — Advanced Artificial Intelligent — (CS408)

A advance approach for artificial intelligence techniques, Natural Language, Introduction to Fuzzy Language, Natural Language Processing, Python Language, Rule based Expert System.

Introduction to Fuzzy Language, Machine Learning, Neural Network, Entropy Uncertainty Factors and Bayesian Reasoning.

🕮 هندسة برمجيات — Software Engineering — (CS309)

Introduction to Software Engineering, Design strategies, System specification, Projects estimation, DFD, Costing and planning, Project control development, Programming Testing and debugging, Validation and certification, Evaluation and measurements, Maintenance and modification, Reverse Engineering, Refactoring.

🕮 بحوث عمليات — Operations Research — (CS310)

1. Construction of liner programming problem.
2. Production planning.
3. Transporting system.
4. Graphical method's for solving two and three dimensional liner programming .
5. Simplex methods.
6. Computer application of simplex methods.
7. The routs scheduling problem.
8. Minimal spanning trees.
9. Shortest route problems.
10. Formalization of network models the maximum flow problem.
11. Construction of mathematical models and algorithm.

🕮 طرق البحث العلمي — Research Methods — (CS311)

1. مقدمة عن الفكر والبحث:
   - مفهوم الفكر وأساليبه
   - المعرفة والعلم
   - مدخل في البحث العلمي ومشاريع التخرج

- شروط البحث العلمي والناجح ومشاريع التخرج

2. التعريف بالنظم المكتبية والخدمات المكتبية
3. طرق ومناهج البحث والمشاريع العلمية
4. مراحل اعداد البحث ومشاريع التخرج
5. المجتمع الإحصائي في البحوث والمشاريع
6. عمليات جمع وتصنيف وتحليل المعلومات
7. اختبار الفرضيات في البحث والمشاريع
8. أنواع وخصائص التقارير العلمية والعملية
9. متطلبات كتابة التقارير والبحوث العلمية ومشاريع التخرج

(CS402) Image Processing معالجات صورية

Introduce the fundamentals of digital image processing and pattern analysis, Specific topics include grey-level histograms, Algebraic and geometric operations on images, Linear system theory, Fourier transforms, Filter design, Noise, Wavelets, Segmentation, Image compression and pattern analysis, Processing of color images.

(CS401) Data Security أمنية بيانات

Security Concepts guidelines, Information Security, vulnerabilities , Security Countermeasures, Security threats , attacks , malware Definition and functions, malware protection، worms, virus security policy , access control, Encryption and decryption. Encryptions techniques ,,stream cipher , block cipher Public key cryptography (example an algorithm). private key cryptography (example an algorithm). Authentication, authorization, Hacking, Ethical hackers, white and red hat good password policy Internet security, Cyber Security Principles network security, firewall. Cryptographic protocols.

(CS404) Simulation محاكاة

1. Introduction of context-aware systems: types of context ,modeling
2. Design principles of CA systems and issue to consider when building CA system
3. Introduction to CCA: related process calculi and main features of CCA
4. Syntax and semantics of CCA and ambient
5. Mobility and communication primitives
6. Process abstraction and context-guarded capabilities
7. Context model for CCA process
8. Algebraic semantics of context:

- Spatial reduction relation
- Spatial reduction reflexive and transitive closure

9. Syntax and semantics of context expressions
10. Formalizing common context predicates in CCA
11. Context-guarded capability revisited

(CS312) Algorithms Design تحليل وتصميم خوارزميات

Introduction about algorithms –criteria of analyzing algorithm-Greatest common divers (GCD) . Time complexity- asymptotic natation

1. asymptotic natation
2. fibonacci number-mathematical induction

Recurrence(substitution- recursion tree –master method

Sorting problem analysis:

1. (Bubble-selection-insertion) algorithm

Sorting problem:

2. quick sort-merge

Searching algorithm:

1. linear search
2. binary search

Shortest path algorithm (DIJEKSTRA Algorithm++-

String matching algorithm(Brute Force- Boyer Moore) algorithm

Minimum spanning tree algorithm(MST) Prom`s algorithm-Kruskal algorithm; Combination problems.

(CS409) Data Mining تنقيب بيانات

Origins of Data Mining; Types of Data; Classification: Basic Concepts and Techniques; Model of Overfitting; Nearest Neighbor Classifiers; Bayes Classifier; Association Analysis: Basic Concepts

Association Rules Mining; Cluster Analysis: Basic Concepts and Algorithms; Weka Application Program.

(CS417) Java Programming تطوير البرمجيات جافا

1. Graphical user Interface Components (Part I)
2. Graphical user Interface Components (Part II)

3. Applications for GUI
4. Event Handling (part I)
5. Event Handling (part II)
6. Working with GUI & Event Handling
7. Java Applet
8. Using of JOptionPane Class
9. Graphical Objects
10. Exception Handling
11. Basic File Handling using java.io package
12. Java Collections.

(CS418) **Mobile Applications** **تطبيقات موبايل**

This course is intended to show students (with Java Programming background) how to build real-world and fun mobile apps using the new Android SDK 4 (Ice Cream Sandwich), which unifies Gingerbread for smartphones. Exploring Android's core building blocks and APIs in depth and learning how to create compelling apps that work on a full range of Android devices is the main objective of the course. The course also covers sensors, Maps, alarms, native

development, multi-touch screen, 2D graphics, and many other topics.

(CS106) **Statistics Methods** **طرق احصائية**

Sampling Random, non-random sampling. Simple random sample, stratified and cluster sampling. Multistage sampling. Probability distributions used in statistics (hypergeometric, binomial, Poisson-, uniform, exponential, normal, etc.). Most important parameters of distributions. Statistical sequences, cumulated frequency distribution and sequence of totals. Statistical tables and their classifications. Distributions with one or more modes., empirical distribution function, frequency total. Correlation. Testing of hypotheses. Parametric tests (u-, t-, F-, and chi-square tests). Non-parametric tests (chi-square tests for goodness-of-fit, independence and homogeneity, binomial tests). Algebra of events

(CS403) **Project** **مشروع تخرج**

اختيار فكرة المشروع واعداد المقترح، عرض المقترح امام لجنة التقييم، إعادة اعداد المقترح على ضوء ملاحظات لجنة التقييم، تنفيذ مرحلة تجميع المعلومات، تنفيذ وإنجاز مرحلة التحليل، تنفيذ وإنجاز مرحلة التصميم، عرض المراحل الثلاثة المنجزة على لحنة التقييم، مراجعة المراحل الثلاثة الأول على ضوء ملاحظات لحنة التقييم، انهاء مرحلة التصميم ومراجعتها، البدء في مرحلة البرمجة، اجراء الاختبارات الأولية على المنظومة، البدء في مرحلة الكتابة لوثيقة المشروع، التقييم النهائي للمشروع: (عرض المشروع امام اللجنة وتقييم أداء كل عضو في فريق العمل).

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يعتمد

رئيس القسم **وكيل الشئون العلمية للكلية**

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مجلس الكلية

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وكيل الشئون العلمية	رئيس الجامعة
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