المقررات الدراسية بقسم الحاسوب

الفصل الدراسي الأول First Semester				
رقم المقرر	اسم المقرر Course Name		عدد الوحدات	المقرر المطلوب Pre-request
0010	لغة عربية	Arabic language	3	--
101	لغة انجليزية I	English I	3	--
1100	رياضة عامة I	General Mathematics I	4	--
2109	إحصاء عام I	Statistics I	4	--
9103	أسس علم الحاسوب و نظم المعلومات (حاسوب I)	Fundamentals of computer science	3	--
9207	مقدمة في البرمجة بلغة السي (حاسوب II)	Problems solving by C language	3	--
مجموع وحدات الفصل : 20				

الفصل الدراسي الثاني Second Semester				
رقم المقرر	اسم المقرر Course Name		عدد الوحدات	المقرر المطلوب Pre-request
0102	لغة انجليزية II	English II	3	0101
1101	رياضة عامة II	General Mathematics II	4	1100
2110	مبادئ الاحتمالات	Introduction in probability	4	2109
9208	لغة السي المتقدمة	(C II) Advanced C language	3	9207
9201	تصميم دوائر منطقية I	Logic Circuit Design I	3	9103
مجموع وحدات الفصل : 17				

الفصل الدراسي الثالث Third Semester				
رقم المقرر	اسم المقرر Course Name		عدد الوحدات	المقرر المطلوب Pre-request
2107	طرق إحصائية	Statistical methods	4	2110
9317	جافا 1	Java I	3	9208
9311	هياكل بيانات	Data structure	3	9208
9202	مقدمة في البنى المجزئة	Discrete structure for CS	3	1100-9103
9301	تصميم دوائر منطقية II	Logic design II	3	9201
مجموع وحدات الفصل : 16				

الفصل الدراسي الرابع Forth Semester				
رقم المقرر	اسم المقرر Course Name		عدد الوحدات	المقرر المطلوب Pre-request
1200	حساب التفاضل والتكامل	Calculus	3	1101
9318	جافا 2	Java II	3	9317
4101	فيزياء عامة	General Physics	3	--
4102	معمل الفيزياء	Physics Lab	1	--
9402	مقدمة في نظم التشغيل	Introduction to operating systems	3	9311
9401	هياكل البيانات المتقدمة	Advanced data structure	3	9311
مجموع وحدات الفصل : 16				

الفصل الدراسي الخامس Fifth Semester				
رقم المقرر	اسم المقرر Course Name		عدد الوحدات	المقرر المطلوب Pre-request
9440	مقدمة في الخوارزميات	Introduction to algorithms	3	9401
9204	تحليل عددي	Numerical analysis	3	9207
9303	حاسبات دقيقة	Micro computers	3	9301
9421	هندسة البرمجيات	Software Engineering	3	9318
9452	شبكات الحاسوب	Computer Networks	3	9402
9475	معمل برمجة	Programming lab	1	9207
مجموع وحدات الفصل : 16				

الفصل الدراسي السادس Sixth Semester				
رقم المقرر	اسم المقرر Course Name		عدد الوحدات	المقرر المطلوب Pre-request
1300	الجبر الخطي	Liner algebra	3	1101
9302	تنظيم حاسبات	Computer Architecture & Distributed Systems	3	9303
9451	امن معلومات	Information Security	3	9452
9310	لغات برمجة	Computer programming languages	3	9318
9414	مترجمات	Compilers	3	9303
9476	معمل برمجة متقدمة	Advanced Programming lab	1	9317
مجموع وحدات الفصل : 16				

الفصل الدراسي السابع Seventh Semester				
رقم المقرر	اسم المقرر Course Name		عدد الوحدات	المقرر المطلوب Pre-request
9416	نمذجة نظم معلومات	Information system modeling	3	9421
9422	نظرية الأتمتة	Theory of Automata & Formal Languages	3	9301
9474	معمل برمجة مرئية	Visual programming Lab	1	9421
9403	قواعد البيانات	Database Sys Design	3	9421
9426	الذكاء الاصطناعي	Artificial Intelligence	3	9416
9418	النظم الانية	Real time systems	3	9452
مجموع وحدات الفصل : 16				

الفصل الدراسي الثامن Eighth Semester				
رقم المقرر	اسم المقرر Course Name		عدد الوحدات	المقرر المطلوب Pre-request
9320	تطبيقات متنقلة	Mobile applications ((elective course))	3	9318
9450	نظم محاكاه	Simulation Systems ((elective course))	3	9418
9413	استخراج بيانات	Introduction to Data mining ((elective course))	3	9403-9426
9431	رسومات حاسوب	Computer Graphics	3	9418
9442	طرق بحث و كتابة أكاديمية	Research Methods	2	فصل التخرج
9443	دراسات مستقلة	Independent studies	2	9421
9444	مشروع تخرج	Project	6	استكمال 133 وحدة دراسية
مجموع وحدات الفصل : 20				

9103: Fundamentals of computer science & Information

Fundamental concepts of computing and information science and their application to everyday computer use. Topics include data representation, addressing and mapping, IT History (History of Computing Technology, Development of User Interaction, and History of the Internet). IT Definitions and Disciplines (IT Overview, Computer Science, Software Systems, Information Systems, Computer Systems, Networking, Security, Privacy and Ethical Issues). IT Application Domains (E-Commerce, Bioinformatics, E-Learning, E-Government, Digital Entertainments and Arts, IT in Law Enforcement).

9104: Introduction to Computing and Programming

This course is a rigorous introduction to problem solving using fundamental programming techniques: variables, operators, expressions, decision statements, loops, nested statements, arrays, methods, objects, classes, inputs, and outputs. This course includes programming projects incorporating algorithm design and implementation with a structured computer language and hands-¬-on experience creating, testing, and debugging software. This course is typically the first major-¬-related course taken by computer science majors or anyone interested in learning how to program. Language uses: C, C++ or Pascal.

9205 : Pascal language

Role of algorithms in problem-solving process, Basic syntax and semantics of a programming language including: variables, data types, operators and expressions, control structures. Functions, Recursion, Modular programming, Arrays, Strings, Structs, Pointers, Dynamic Memory Allocation, Files.

9207: Introduction to Computing and Programming (Problems solving by C language

This course is a rigorous introduction to problem solving using fundamental programming techniques: variables, operators, expressions, decision statements, loops, nested statements, arrays, methods, objects, classes, inputs, and outputs. This course includes programming projects incorporating algorithm design and implementation with a structured computer language and hands-¬-on experience creating, testing, and debugging software. This course is typically the first major-¬-related course taken by computer science majors or anyone interested in learning how to program. Language uses: C, C++ or Pascal.

9208: Structured programming

Role of algorithms in problem-solving process, Basic syntax and semantics of a programming language including: variables, data types, operators and expressions, control structures.

Functions, Recursion, Modular programming, Arrays, Strings, Structs, Pointers, Dynamic Memory Allocation, Files.

9201: Logic Circuit Design I

Introduction to basic electrical circuits, digital systems, and computers. Binary systems and codes. Digital logic gates, circuits, and Boolean algebra. Microelectronics and integrated circuits. Coding and multiplexing. Flip-flops, registers, counters, A/D converters, arithmetic, and arithmetic units. Microprogramming and instruction sets. Input/Output.

9202: Discrete Math & Structures

The objective of this course is to study the logical and algebraic relations ships between discrete objects. This course cultivates clear thinking and creative problem solving by developing students mathematical maturity in several core areas: logic and proofs, sets, functions, relations, and counting techniques.

9204: Numerical Analysis

Floating-point arithmetic, Errors, stability, convergence, Taylor's series, Iterative, solutions for finding roots (Newton's Method), Curve fitting; function approximation, Numerical differentiation and integration (Simpson's Rule), Explicit and implicit methods, Differential equations (Euler's Method), Linear algebra, Finite differences.

9303: Microcomputers

The objective of this course is to introduce students to the evolution of microprocessor systems, their characteristics and applications. Topics to be covered include main memory, Central Processing Unit (CPU), microprocessor architecture, instruction register and decoder, microprocessor buses, control lines, memory access time. The students will also learn concept main parts microprocessors 8085 - z-80.

9311: Data Structures

The objective of this course is to provide students an understanding of abstract data structures, including but not limited to arrays, linked lists, queues, stacks, trees, and graphs. The course also aims to give a conceptual understanding of the trade-offs between various different data structures, hence enabling students to choose an optimal data structure for a particular application. The students will also learn concept of algorithms design, recursions, and a variety of searching and sorting algorithms

9301: Logic Circuit Design II

The objective of this course is to provide students with the skills and basic knowledge of the concepts, Combinational logic circuits, MSI and LSI, flip-flops and sequential logic circuits, registers, counters, memory units

9317: Java I

Introduction to problem-solving methods and program development including: the role of algorithms in the problem-solving process, implementation strategies for algorithms, the concept and properties of algorithms, and basic algorithms. Basic syntax and semantics of a programming language including: variables; simple types; operators and expressions; conditional and repetitive statements; input and output; study of fundamental concepts of object-oriented programming such as classes objects, and methods using an object oriented

Language such as Java, C# or C++.

9318: Java II

Study of advanced concepts of object-oriented programming: design, encapsulation and information hiding, separation of behavior and implementation. Classes and subclasses inheritance; interfaces; abstract classes; polymorphism; exception handling; GUI design, Greater emphasis in this course is placed on implementing large applications using an object-oriented language such as Java or C#.

9401: Advanced Data Structures

Nonlinear structures: trees, and graphs. Binary trees. Tree Traversal algorithms. Graphs: terminology, representation of a graph and applications of graphs. Graph traversal algorithms: BFS, DFS. Minimum spanning tree (MST). Sorting and searching algorithms: bubble sort, insertion sort, merge sort, Quicksort, sequential search, and binary search algorithms. B-tree and B +-tree structures and hashing techniques.

9440: Analysis And Design Of Algorithms

Topics To Be Covered Include Design Of Computer Algorithms, Complexity Analysis. Performance Measure, Bound, Lower Bound Theory. Sorting Algorithms, Search Algorithms, Divide and Conquer, Greedy Method, Trees, Graphs, Dynamic programming,

9402: Fundamentals Of Operating Systems

Topics To Be Covered Include Operating System Concepts, Functions, And Components, A General Overview Of OS Services , Operating System Types, Operating System Structures, Systems Calls,, Process Management, CPU Scheduling, Memory Management, Virtual Memory And File System, Process Synchronization, Deadlocks,

9302: Computer Architecture

Topics To Be Covered Include: ALU Design, Format For Floating-Point Numbers, Design Of Hardwired Cu And Micro Programmed Cu, The Characteristics Of Instruction Sets, Pipelines Techniques, , (Cache) High Speed Memories, Virtual Memory Tech , Mass Storage, I/O

Channels And I/O Processors, Programmed I/O , Communication , Buses , Centralized , Or De Centralized And Bus Arbitration .

9310: Programming Languages.

This Course Provides Students With The Fundamental Features And Concepts Of Different Programming Languages. Topics Include: Overview Of Different Programming Languages, Introduction To Language Translation, Type Systems, Data And Execution Control, Declaration And Modularity, And Syntax And Semantics.

9403: Database Systems

Characteristics of the database approach. Database concepts and architecture; Data models, schemas and instances; Program data independence, Database languages and interfaces. Data models for database systems; The E-R DM, Relational DM and Relational Algebra. Relational model constraints; Domain, key, and integrity constraints. SQL-relational DB language; Data definition, queries, update statements, and views in SQL. Database design; functional dependencies, Normal forms. Introduction to OO databases.

9414: Compilers Construction

Application of regular expressions in lexical scanners, parsing (concrete and abstract syntax, abstract syntax trees). Application of context-free grammars in table-driven and recursive-descent parsing. Symbol table management. Code generation by tree walking. Architecture-specific operations: instruction selection and register allocation, Optimization techniques. The use of tools in support of the translation process and the advantages thereof. Program libraries and separate compilation. Building syntax-directed tools.

9450: Systems Simulation

Concept of simulation; simulation examples; the statistics of simulation including methods of random number generation; analysis of simulation data; principles of simulation model design and their application to real life problems.

9416: Information System Modeling

Systems concepts; system components and relationships; cost/value and quality of information; competitive advantage of information; specification, design, and re-engineering of information systems; application versus system software; package software solutions; procedural versus non-procedural programming languages; object oriented design; database features, functions, architecture; networks and telecommunication systems and applications; characteristics of information systems professionals and career paths; information security, crime, and ethics. Practical exercises may include developing macros, designing and implementing user interfaces and reports; developing a solution using database software

9418: Real Time System

Introduction to real-time systems, Designing real-time systems, Reliability and fault tolerance, Remote Debugging, Micro Analyzer, Reliability and fault tolerance, Concurrent programming, Shared variable-based synchronization and communication, Message-based synchronization and communication, Atomic actions, concurrent processes and reliability, Resource control, Scheduling, Distributed systems.

9421: Software Engineering

Practical techniques of program development for medium-scale software; Modeling methods, techniques and tools to support the specification and design of large software systems; Software development from problem specification through design, implementation, testing, and maintenance; The fundamental design techniques of stepwise refinement and data abstraction. Emphasizes teamwork in small groups on a substantial project.

9423: Internet Programming

The objective of this course is to provide aboard overview of internet and web technologies. Topics include HTML, XHTML, CSS, Client –side scripting (JavaScript), server-side scripting (PHP), Web database connectivity, and XML Technologies, The students will be encouraged to design, implement, and evaluate small-scaled Web projects in group's teams.

9426: Artificial Intelligence

Introduction, Intelligent Agents, Solving Problems by Searching, Informed Search Methods, Agents that Reason Logically, First-Order Logic, Inference in First-Order Logic, Production Systems and Semantic Network, Planning, Uncertainty, Probabilistic Reasoning Systems, Learning from Observations, Learning in Neural and Belief Networks, Game Theory and AI, Philosophical Foundations.

9431: Computer Graphics

History and applications of computer graphics. Ethical issues arising in computer graphics. The graphics pipeline. Affine transformations between spaces in the pipeline. Clipping algorithms. Scan conversion algorithms for lines, circles, and polygons. Hidden object detection and obscuration algorithms. Illumination, shading, and color models.

9451: Information Security

Basic information security concepts; elementary cryptography; program security (malicious code); protection in general purpose operating security, designing trusted operating systems; database security; and network security. Specific topics may include: security threats, vulnerabilities and countermeasures; security objectives and techniques; risk analysis; Trojan horses, viruses, and worms; symmetric key cryptography, public key cryptography, and cryptanalysis; access control, pass-word-based security, authentication and authorization; ACLs and capabilities; multilevel and multilateral security; covert channels and inference

control; BLP and Biba's models; 0perating system security; network attacks; firewalls, and intrusion detection systems.

9452: Computer Networks

Computer Networks, Networks Hardware and Software Components, Networks Benefits, Network Classifications, OSI Model, Transmission media, Communication devices, Protocols, TCP/IP, IP addressing methods, Sub netting, LAN Networks, Wireless networks, Packet switching and Datagram approach, Error detection and correction, Integrated Services Digital Network, Network security, Crypto graphy.

9311: Independent studies

The main objective of this course is to teach students how to summarize a paper in a subject for some fields like Software Engineering, Operating System, Analysis and Design Algorithms, etc. making a presentation about it, and how can they explain their understanding about these papers

9474: Visual Programming Language Lab

Introduction, controls (properties & events), error handling, graphics, files manipulation, connecting to databases, reports, packaging and distribution, obfuscation, n-tier architecture. Exercises And Case Studies Will Be Prepared In Conjunction With The Material Covered In Course **9421**.

9475: Programming Language Lab

The Objective Of This Course Is To Provide Students With The Opportunity To Implement The Programming Concepts And Techniques Taught In Course **9208**. Exercises And Case Studies Will Be Prepared In Conjunction With The Material Covered In Course **9208**.

9476: Advanced Programming Lab

The Objective Of This Course Is To Provide Students With The Opportunity To Implement The Programming Concepts And Techniques Taught In Course **9318**. Exercises And Case Studies Will Be Prepared In Conjunction With The Material Covered In Course **9318**.

Introduction to Computers: (for other departments)

The main objective of this course is to provide students with the ability to utilize commonly used computer applications in their daily life and work. It covers a range of topics and applications including: general overview of computer hardware technology computer software systems, MS Windows, word processing, spreadsheets, Power Point presentations, Web browsing …etc