



جامعة اليرموك  
Yarmouk University  
كلية تكنولوجيا المعلومات وعلوم الحاسوب  
Faculty of Information Technology and  
Computer Sciences



<b>Document Code</b>	<b>Courses Description</b>	<b>Document Approval Date</b>
AP01-PR06		

<b>Department: Computer Science</b>	<b>Program: Computer Science</b>	<b>Official Stamp:</b>
The courses description was approved by the decision of the Department's Council no. .... on ....		

<b>Course Name: Programming in a Selected Language</b>	<b>Course Code and Number:</b> CS 111	<b>Number of Credit Hours:</b> (3)
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**Teaching Language: English**

**Pre-requisite: ----**

<b>Course Description</b>	The objective of this course is to provide student with the basic concepts of a selected programming language (such as C++, Python) and the ability to write simple correct programs. Topics to be covered include: I/O, data types, function definition, visibility and storage classes, parameter passing, loops, arrays, pointers, strings, files, introducing classes and objects, constructors and destructors, function prototypes, private and public access, and class implementation. The practical part of this course is covered in the lab through exercises, practical assignments, and tutorials.
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<b>Course Name: Programming in a Selected Language Lab</b>	<b>Course Code and Number:</b> CS111L	<b>Number of Credit Hours:</b> (1)
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**Teaching Language: English**

**Pre-requisite: CS 111**

<b>Course Description</b>	The objective of this course is to provide student with the opportunity to implement the programming concepts and techniques taught in CS110. Topics to be covered include: Exercises and case studies will be prepared in conjunction with the material covered in CS 111.
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<b>Course Name:</b> Operating Systems Fundamentals	<b>Course Code and Number:</b> CS130	<b>Number of Credit Hours:</b> (3)
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**Teaching Language: English**

**Pre-requisite: CS111**

<b>Course Description</b>	The objective of this course is to provide student with the basic knowledge and skills of operating, managing, and maintaining microcomputer systems. Hands-on experience with windows environment is a major concern in this
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AP01-PR06		

	<p>course. Topics to be covered include: operating system concepts, functions, and components, a general overview of OS services, process management, CPU scheduling, memory management, virtual memory and file system, installing, partitioning, configuring and upgrading Windows, common errors and problems and how to solve them, networking capabilities of Windows. Windows commands, system programs, and Windows facilities are covered in the practical component</p>
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<b>Course Name:</b> Discrete Structures	<b>Course Code and Number:</b> CS142	<b>Number of Credit Hours:</b> (3)
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Teaching Language: English

Pre-requisite: Math 101

<b>Course Description</b>	<p>The objective of this course is to provide student with the foundations of discrete structures and their applications in the computer science field such as algorithms, data structures, network, compiler, cryptography and theoretical computer science. Topics to be covered include: Logic and Proofs and their applications in logic design, Sets, Functions, and Relations and their applications in Algorithms and data structures, Algorithms and Integers counting and its applications in algorithm complexity, Graph Theory and its applications in algorithm and computer network, Trees and its applications in data structure and algorithm, Boolean Algebras and its applications in digital design.</p>
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<b>Course Name:</b> Object-Oriented Programming	<b>Course Code and Number:</b> CS 210	<b>Number of Credit Hours:</b> (3)
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Teaching Language: English

Pre-requisite: CS 111

<b>Course Description</b>	<p>The objective of this course is to provide student with knowledge and needed skills in order to design and develop object-oriented programs. Topics to be covered include: the object-oriented approach, classes, method, object inheritance, replacement and refinement, static and dynamic binding, polymorphism, visibility and dependency, files and storage issues and case studies. The course should use an object oriented language as in CS111.</p>
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<b>Document Code</b>	<b>Courses Description</b>	<b>Document Approval Date</b>
AP01-PR06		

<b>Course Name:</b> Object-Oriented Programming Lab	<b>Course Code and Number:</b> CS210L	<b>Number of Credit Hours:</b> (1)
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Teaching Language: English

Pre-requisite: CS 111 and CS210

<b>Course Description</b>	The objective of this course is to provide student with the opportunity to implement the programming concepts and techniques taught in CS210. Topics to be covered include: Exercises and case studies will be prepared in conjunction with the material covered in CS210.
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<b>Course Name:</b> Computer Logic Design	<b>Course Code and Number:</b> CS220	<b>Number of Credit Hours:</b> (3)
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Teaching Language: English

Pre-requisite: CS142

<b>Course Description</b>	The objective of this course is to provide student with the basic concepts in digital logic and how the electronic circuits work inside the computer. Topics to be covered include: Binary Systems, Conversion, Boolean expression and its simplification methods, Combinational logic circuits, MSI and LSI, flip-flops and sequential logic circuits, registers, counters, memory units.
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<b>Course Name:</b> Computer Organization Lab	<b>Course Code and Number:</b> CS225	<b>Number of Credit Hours:</b> (1)
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Teaching Language: English

Pre-requisite: CS220

<b>Course Description</b>	The objective of this course is to provide student with practical aspects related to computer organization, architecture, and logic. Topics to be covered include: writing assembly programs to explore and analyze microcomputer organization and architecture.
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<b>Course Name:</b> Data Structures	<b>Course Code and Number:</b> CS250	<b>Number of Credit Hours:</b> (3)
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Teaching Language: English

Pre-requisite: CS210



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**Computer Sciences**



<b>Document Code</b>	<b>Courses Description</b>	<b>Document Approval Date</b>
AP01-PR06		

<b>Course Description</b>	The objective of this course is to provide student with an introduction to various types of data structures, their logical and physical representations, and their related operations. Topics to be covered include: data structure operations, dense lists and matrix representations, linked lists and their different variations, string storage representation and manipulation, queues and stacks and their applications, tree structures and their different variations, graphs and networks.
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<b>Course Name:</b> Multimedia Systems	<b>Course Code and Number:</b> CS281	<b>Number of Credit Hours:</b> (3)
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**Teaching Language: English**

**Pre-requisite: CIS101 and CS 210**

<b>Course Description</b>	The objective of this course is to provide student with the basic concepts and skills needed for understanding, using, and upgrading multimedia systems. Topics to be covered include: Multimedia concepts and terminologies, interactive multimedia technologies, multimedia data types and formats (graphics, images, animation, audio, video, etc.), desktop publishing tools, hypermedia, media presentation, integrated multimedia authoring techniques, techniques for designing and producing multimedia applications, using multimedia-authoring tools, industry standards, future directions in interactive multimedia technology. This course is supplemented by a practical component covered by different assignments..
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<b>Course Name:</b> Advanced Programming	<b>Course Code and Number:</b> CS310	<b>Number of Credit Hours:</b> (3)
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**Teaching Language: English**

**Pre-requisite: CS210**

<b>Course Description</b>	The objective of this course is to provide student with a popular high level programming language based on the demands of the job market. Topics to be covered include: syntax rules and structures, special programming features of the language in comparison with other languages, how data is processed using this language, compilation and implementation issues, files and storage mechanisms, other facilities provided by the language. The practical part of the course will include case studies, exercises and a project.
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<b>Course Name:</b> Operating Systems (2)	<b>Course Code and Number:</b> CS331	<b>Number of Credit Hours:</b> (3)
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**Teaching Language: English**



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<b>Document Code</b>	<b>Courses Description</b>	<b>Document Approval Date</b>
AP01-PR06		

**Pre-requisite: CS130**

<b>Course Description</b>	<p>The objective of this course is to provide student with more advanced concepts, techniques, and in-depth knowledge in issues that have not been covered in CS 130 course. Topics to be covered include: operating system types, operating system structures, systems calls, inter-process communication, communication in client/server systems, multithreading, process synchronization, deadlocks, advanced topics in storage management and virtual memory, file system structure and implementation, mass storage structure management, RAID technology. The practical part of the course involves case studies and a practical component in some operating systems not covered in CS130 such as Linux or UNIX.</p>
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<b>Course Name:</b> Data Communications and Networks	<b>Course Code and Number:</b> CS332	<b>Number of Credit Hours:</b> (3)
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**Teaching Language: English**

**Pre-requisite: CYS 230**

<b>Course Description</b>	<p>The objective of this course is to provide student with an overview, concepts and fundamentals of data communication &amp; computer networks. Topics to be covered include: data communication concepts and techniques in a layered network architecture, communications switching and routing, types of communication, network topologies, network model components, layered network models (OSI reference model, TCP/IP networking architecture ) and some of their protocols and addressing, various types of networks (LAN, MAN, WAN and PAN). The course is supplemented by a practical component covered in CS 332L concurrently.</p>
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<b>Course Name:</b> Data Communications and Networks Lab	<b>Course Code and Number:</b> CS332L	<b>Number of Credit Hours:</b> (1)
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**Teaching Language: English**

**Pre-requisite: CS332**

<b>Course Description</b>	<p>The objective of this course is to provide student with the design issues that arise in building and using networks. Topics to be covered include: design and</p>
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<b>Document Code</b>	<b>Courses Description</b>	<b>Document Approval Date</b>
AP01-PR06		

	installation of LAN, network operating system, setting up a network system such as users and their permissions and rights, groups and domains, adding workstations and sharing of resources across the network.	
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<b>Course Name:</b> Theory of Computation	<b>Course Code and Number:</b> CS342	<b>Number of Credit Hours:</b> (3)
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Teaching Language: English

Pre-requisite: CS142

<b>Course Description</b>	The objective of this course is to provide student with formal languages and their representation, automata, and theory of computation. Topics to be covered include: formal languages and their representation, different grammars, finite automata: deterministic and non-deterministic, regular languages, regular expressions, context-free languages, push-down automata, Turing machines and computability, universal Turing machine, computability and complexity.
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<b>Course Name:</b> Analysis and Design of Algorithms	<b>Course Code and Number:</b> CS351	<b>Number of Credit Hours:</b> (3)
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Teaching Language: English

Pre-requisite: CS142 and CS250

<b>Course Description</b>	The objective of this course is to provide student with the knowledge and skills in complexity analysis and design of computer algorithms. Topics to be covered include: sorting algorithms, search algorithms, divide and conquer, greedy method, trees, graphs, dynamic programming, backtracking, branch and bound, Lower bound theory, NP-complete problems. The practical part of the course will include writing programs for solving problems using techniques taught in this course
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<b>Course Name:</b> Wireless Networks	<b>Course Code and Number:</b> CS360	<b>Number of Credit Hours:</b> (3)
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Teaching Language: English

Pre-requisite: CS 332

<b>Course Description</b>	The objective of this course is to provide student with fundamental concepts of wireless networks technology and their components. Topics to be covered include: an introduction to the wireless physical layer, commonly used wireless MAC mechanisms, wireless data communication standards,
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AP01-PR06		

	Wireless networking challenges, wireless local area networks (802.11), wireless personal area networks (e.g., Bluetooth), wireless metropolitan networks (i.e./ WiMax 802.16), and satellite systems.	
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<b>Course Name:</b> Artificial Intelligence	<b>Course Code and Number:</b> CS376	<b>Number of Credit Hours:</b> (3)
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**Teaching Language: English**

**Pre-requisite: CS351**

<b>Course Description</b>	The objective of this course is to provide student with the basic concepts, knowledge and skills required in utilizing Artificial Intelligence techniques in solving practical problems. Topics to be covered include: knowledge representation methods like propositional logic and predicate calculus, blind search strategies (breadth-first and depth-first), heuristic search strategies (hill-climbing, best-first and A*), backward and forward reasoning, applications: expert systems, natural language processing, pattern recognition, image processing, and planning. The practical part of the course involves programming exercises and case studies related to the topics covered.	
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<b>Course Name:</b> Computer Graphics	<b>Course Code and Number:</b> CS380	<b>Number of Credit Hours:</b> (3)
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**Teaching Language: English**

**Pre-requisite: CS250 and MATH241**

<b>Course Description</b>	The objective of this course is to provide student with the basic concepts, technical and mathematical knowledge and skills required to design and implement computer graphics. Topics to be covered include: graphics hardware, software utilities, two and three dimensional transmutation and viewing, graphics arts and animations. Students are expected to be design programs using programming graphics tools and libraries such as Open GL to perform practical assignments.	
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<b>Course Name:</b> Smart Phones Applications Development	<b>Course Code and Number:</b> CS411	<b>Number of Credit Hours:</b> (3)
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**Teaching Language: English**

**Pre-requisite: CS130 and CS 310**



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<b>Document Code</b>	<b>Courses Description</b>	<b>Document Approval Date</b>
AP01-PR06		

<b>Course Description</b>	<p>The objective of this course is to provide the student with an introduction to programming technologies, design and development related to mobile applications. Topics to be covered include: accessing device capabilities, industry standards, operating systems and programming for mobile applications using an OS software Development Kit (SDK).</p>
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<b>Course Name:</b> Computer Architecture	<b>Course Code and Number:</b> CS432	<b>Number of Credit Hours:</b> (3)
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**Teaching Language:** English

**Pre-requisite:** CS 225

<b>Course Description</b>	<p>The objective of this course is to provide student with the basic concepts and various techniques of computer architecture. Topics to be covered include: ALU design, IEEE 754 format for floating-point numbers, coprocessors, design of hardwired CU and micro-programmed CU, the characteristics of instruction sets, pipelines techniques, the architecture of RISC and CISC machine, (cache) high speed memories, I/O channels and I/O processors, parallel processing.</p>
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<b>Course Name:</b> Expert Systems	<b>Course Code and Number:</b> CS470	<b>Number of Credit Hours:</b> (3)
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**Teaching Language:** English

**Pre-requisite:** CS376

<b>Course Description</b>	<p>The objective of this course is to provide student with the knowledge and skills required for developing expert systems and applying them in real-life application problems. Topics to be covered include: knowledge acquisition, knowledge representation techniques, inference methods, reasoning under uncertainty, design of expert systems, and introduction to an expert system programming tool, expert systems case studies. In the practical part of the course students are expected to design a small expert system using an expert system programming tool.</p>
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<b>Course Name:</b> Image Processing	<b>Course Code and Number:</b> CS480	<b>Number of Credit Hours:</b> (3)
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**Teaching Language:** English

**Pre-requisite:** CS376

<b>Course Description</b>	<p>The objective of this course is to provide student with the basic concepts techniques, and technologies of digital image processing. Topics to be covered include: image and video representation technologies, image</p>
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<b>Document Code</b>	<b>Courses Description</b>	<b>Document Approval Date</b>
AP01-PR06		

	enhancement and filtering techniques, mathematical morphology, noise removal techniques, image compression techniques, edge detection and segmentation techniques.
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<b>Course Name:</b> Special Topics	<b>Course Code and Number:</b> CS492	<b>Number of Credit Hours:</b> (3)
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**Teaching Language: English**

**Pre-requisite: Passing 90 Credit Hours**

<b>Course Description</b>	The objective of this course is to provide the student with one of the trending technologies that did not covered in the program courses. The course syllabus must be approved by the department committee and must be within the knowledge areas of the program
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<b>Course Name:</b> Practical Training	<b>Course Code and Number:</b> CS498	<b>Number of Credit Hours:</b> (3)
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**Teaching Language: English**

**Pre-requisite: Passing 90 Credit Hours and Department Approval**

<b>Course Description</b>	The objective of this course is to provide the student with an opportunity to practice the knowledge he has gained from the department, which include analysis, design, programming databases and building data and algorithms, operating systems, and web programming, networks and communications, etc., It's an opportunity for students to gain knowledge in information and communications technology industry. Students will have the opportunity to develop their professional skills through interaction and communication with their colleagues.
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<b>Course Name:</b> Graduation Project A	<b>Course Code and Number:</b> CS499A	<b>Number of Credit Hours:</b> (0)
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**Teaching Language: English**

**Pre-requisite: Passing 98 Credit Hours**

<b>Course Description</b>	The objective of this course is to give the student a real world problem related to the knowledge areas that have been covered in the program. The student will study and analyze the problem.
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<b>Course Name:</b> Graduation Project B	<b>Course Code and Number:</b> CS499B	<b>Number of Credit Hours:</b> (3)
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**Teaching Language: English**



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Computer Sciences



Document Code	Courses Description	Document Approval Date
AP01-PR06		

Pre-requisite: CS499A	
Course Description	The objective of this course is to give the student a real world problem related to the knowledge areas that have been covered in the program. The student will study, analyze the problem, prepare the necessary design to solve it, implement a program and write a report according to instructions by the department committee.