Jouf University

College of Computer and Information Sciences

Dept. of Computer Science

Courses Description

جامعة الجوف
Jouf University

Course Code	CSC101	Course Name	Introduction to Computer and Programming
No. of Credit	4 (3-2-0)	Level	1
Prerequisites	None		
Course Description	This course gives the students an introduction to computers and programs; Problem solving and algorithm development; Simple engineering and scientific problems; Introduction to the modular programming paradigm. Programming with emphasis on modular and structured programming technique: primitive data types, variables and constants, operators (arithmetic, assignment, increment, decrement, logical and relational); basic statements (Input and output); Boolean expressions; Control structures (conditional statements and loop statements); functions and parameter passing; Arrays (usefulness of arrays, declaration of arrays, access to array elements and operations on arrays); String(Declaration, initialization, access and defined functions).		
Text Book	Introduction to programming Java: With a problem solving approach, by John Dean Dr and Ray Dean. McGraw-Hill Education; 2nd edition, 2013.		

Course Code	CSC102	Course Name	Computer Programming (1)
No. of Credit	4 (3-2-0)	Level	2
Prerequisites	None		
Course Description	An introduction to defining objects, concepts of data abstraction and encapsulation including Inheritance, polymorphism, abstract classes, instruction to complexity and use of predefined collection classes		
Text Book	How to Program in JAVA, by Paul J. Deitel and Harvey Deitel. Pearson; 10th Edition (March 6, 2014).		

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Course Code	CSC104	Course Name	Computer Programming (2)
No. of Credit	4 (3-2-0)	Level	3
Prerequisites	Computer programming (1) (CSC102)		
Course Description	This course is the third course on computer programming; it deals with the application of advanced object-oriented concepts using java. Emphasizes graphical user interface, event-driven programming, error handling, files and streams, inner classes, networking. We will learn to solve problems for which these are the primary tools.		
Text Book	Harvey M. Deitel & Paul J. Deitel. "Java How to Program", Prentice Hall , 10th Edition, 2015.		

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Course Code	CSCI216	Course Name	Logic Design
No. of Credit	4 (3-2-0)	Level	4
Prerequisites	None		
Course Description	- Numbering system: Decimal Numbers, Binary Numbers, Hexadecimal Numbers, Number base Conversion - Boolean algebra: Boolean Algebra & Logic Gates, Boolean Functions, Canonical & Standard Forms, Digital Logic Gates. - Simplification of Boolean Functions: Map Method, NAND & NOR Implementation, Don't Care Conditions, the Tabulation Method. - Combinational Logic: Design procedure, adders, subtractors, code conversion, analysis procedure, multilevel NAND& NOR circuits, exclusive-OR & equivalence functions. - Sequential Logic Circuits: Flip flop, triggering of flip-flop, Registers and Counters		
Text Book	Digital Design, by M. Morris R. Mano and Michael D. Ciletti. Prentice Hall; 4 Edition (2006), ISBN-10: 0131989243, ISBN-13: 978-0131989245		

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Course Code	CSCI 217	Course Name	Data Structures
No. of Credit	4(3-2-0)	Level	4
Prerequisites	Computer Programming (2) (CSC 104)		
Course Description	This course will provide the definitions and implementations of basic data structures such as stacks, queues, linked lists, binary trees, graphs, etc.; internal searching and sorting algorithms. Design of sort and search algorithms and introductory analysis associated with the basic data structures, as well as recursive algorithms, are discussed.		
Text Book	Data Structures and Algorithms in Java, M. T. Goodrich, R. Tamassia, and Michael H. Jon Wiley & Sons Inc, 6th Edition (2014). ISBN-10:1118771338, ISBN-13:978-8131525296.		

Course Code	CSCI 225	Course Name	Computer Organization and Assembly Language
No. of Credit	3 (3-0-1)	Level	4
Prerequisites	Computer Programming (1) (CSC 102)		
Course Description	Introduction to the basic organization of the computer and how it works. The internal organization of personal computers based on Intel's x86. A general review of the programming in assembly language. Data representation. The representation of numbers in the computer. And numbering systems. List of commands in assembly language. Call statements and its situations. Matrices and stacks. Procedure definition. Variables and return orders. Self-recursion. Definition and word processing, orders and define the structural data.		
Text Book	Computer Organization and Design: The Hardware/ Software Interface, by Patterson and J. Hennessy, 5th Edition (2014). ISBN-13: 978-0-12-407726-3		

Course Code	CSC 351	Course Name	Computer Center Management
No. of Credit	3 (2-2-0)	Level	5
Prerequisites	Computer Programming (2) (CSC 104)		
Course Description	Environment Organization of Information processing centers, Employment and their particularities, Getting and managing information sources. Estimation of computer efficiency, Planning and managing requested potentialities, Recruitment, training and stimuli in computer science field, Financial aspects in Information and documentation processing centers, High committees for information processing centers management, Administration report, Data, programs and equipment safety, Internal auditing and control, Case studies.		
Text Book	No text book		

Course Code	CSCI 335	Course Name	Operating System
No. of Credit	3 (3-0-1)	Level	5
Prerequisites	Data Structures (CSCI 217)		
Course Description	This course aims to introduce the fundamentals of an operating systems design and implementation. Topics include an overview of the modern operating system basic concepts, the major components of an operating system, process management and scheduling, thread Control and Signals, mutual exclusion and synchronization, deadlock, memory management and virtual machine.		
Text Book	Silberschatz, Peter B. Galvin; "Operating System Concepts", 8th Edition, Wiley & Sons Inc, 2010		

Course Code	CSC383	Course Name	Discrete Structures
No. of Credit	3(3-0-0)	Level	5
Prerequisites	Programming (2) CSC 104		
Course Description	This course studies the mathematical elements of computer science including propositional logic, predicate logic, sets, functions and relations, combinatory, mathematical induction, recursion, algorithms, matrices, graphs, trees, and Boolean logic. During the semester, students will learn to recognize and express the mathematical ideas graphically, numerically, symbolically, and in writing. They will become self-regulated learners and help other students become cooperative learners.		
Text Book	Kenneth Rosen. Discrete Mathematics and Its Applications, 7th Edition , McGraw Hill Publishing Co., (2012).		

Course Code	CSCI 325	Course Name	Database systems
No. of Credit	4(3-2-0)	Level	5
Prerequisites	Data Structures CSCI 217		
Course Description	This course covers the nature and purposes of database systems and an introduction to data modeling: entity relationship model, relational model with relational algebra, relational calculus and SQL, integrity constraints, file organization and index files, and normalization		
Text Book	ELMASRI & NAVATHE, "Fundamentals of Data Base Systems", sixth Edition, Addison-Wesley, 2015.		

Course Code	CSCI 337	Course Name	Concepts of Programming Languages
No. of Credit	3(3-0-1)	Level	6
Prerequisites	Data Structures CSCI 217		
Course Description	Study of Programming Languages. Language design and compilation (Grammars, compilation phases, compilers and interpreters, Finite state Automata, meaningless grammars). Data types: Abstraction and inheritance, sequence control, subprograms control and application. Advances in language design (Exception and Exception templates, parallel processing, concurrent execution). Concurrently control. Overview of Programming Languages: functional programming, logic programming and Object Oriented Programming.		
Text Book	Robert W. Sebesta, Concepts of Programming languages, Addison-Wesley edition 10, 2013.		

Course Code	CSC 328	Course Name	Computer Architecture
No. of Credit	3(3-0-0)	Level	6
Prerequisites	Logic Design (CSCI 216) and Computer Organization and Assembly Language (CSCI 225)		
Course Description	Basics of computer design (introduction, performance and quantitative principles), cost and performance. Instructions and commands design. The role of High-level Languages and compilers. Instruction set examples. Simple techniques in the design and implementation of memory priorities. Input/output. General concepts of primary and Virtual memory. Future trends in computer architectures.		
Text Book	Computer Organization and Architecture: Designing for Performance, by William Stallings, PE; 9th Edition (2013). ISBN-10: 933251870X, ISBN-13: 978-9332518704.		

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Course Code	CSC 343	Course Name	Software Engineering
No. of Credit	3 (3-0-0)	Level	6th
Prerequisites	Concepts of Programming Languages (CSCI 337)		
Course Description	A course that teaches students the formal processes employed for carrying out software projects, including the design, development, testing, and deploying of practical software systems. Students are exposed to the realities involved in developing software for clients and the requirements this imposes on quality, timing, and coordination. Students will develop hands-on experience with practical tools used in real-life applications. The course requires the completion of a group-based real-life software project.		
Text Book	Software Engineering 9th Edition, Ian Sommerville Addison- Wesley, ISBN 10:0-13- 703515-2, ISBN 13: 978-0- 13-703515- 1, 2010.		

Course Code	CSCI 363	Course Name	Artificial Intelligence
No. of Credit	3 (3-0-1)	Level	6th
Prerequisites			
Course Description	This course aims to provide students with an overview of Artificial Intelligence with a focus on basic knowledge of the fundamentals of modern Artificial Intelligence areas. It is intended for undergraduate students who have some understanding of algorithms, logic, and programming. This course introduces the preliminary concepts of AI. Modeling and formalizing problems are the essential activities of AI. Many techniques are here introduced in problem solving domain such as Search strategies (Deep First, Breadth First, Iterative deepening search, Uniform cost, and A* algorithm, etc.). In another hand, this course focalizes on logical reasoning. In this way, students have to learn how to construct a proof according to a set of logical rules and axioms sentences. Another mode of reasoning is the probabilistic reasoning based on uncertainty. Techniques of Bayes rules, conditional probabilities and Probabilistic Networks are used to construct a knowledge which is not necessary certain. Another aspect very interesting in Artificial Intelligence is a machine learning techniques able to enhance capabilities of problem resolving.		
Text Book	Artificial Intelligence: A Modern Approach Third Edition Stuart Russell and Peter Norvig, 2010. Pearson Education, Inc. ISBN: 978-0- 13-604259- 4		

Course Code	CSC 375	Course Name	Computer Graphics & human Computer Interaction
No. of Credit	3 (3-0-0)	Level	6th
Prerequisites	Data Structure (CSCI 217)		
Course Description	This course aiming to write programs that utilize the OpenGL graphics environment, use polygonal and other modeling methods to describe scenes and understand and be able to apply geometric transformations. This course covers the fundamentals of computer graphics. Topics include overview of graphics systems, output primitives, attributes of graphics primitives, geometric transformations, two-dimensional viewing, three-dimensional viewing, visible-surface detection methods, illumination models and surface-rendering methods, color models and color applications and computer animation. Moreover, this course also covers the projection and clipping of different shapes.		
Text Book	Fundamentals of Computer Graphics, Marschner, Steve and Shirley, Peter, CRC Press, 2015		

Course Code	CSC 338	Course Name	Compiler Design
No. of Credit	3 (3-0-0)	Level	7th
Prerequisites	Concepts of Programming Languages (CSCI 337)		
Course Description	This course covers the principles and practices for the design and implementation of compilers and interpreters. Topics include all stages of the compilation and execution process: lexical analysis; parsing; symbol tables; type systems; scope; semantic analysis; intermediate representations; run-time environments and interpreters; code generation; program analysis and optimization; and garbage collection.		
Text Book	Compilers Principles, Techniques, & Tools, by Aho, Lam, Sethi, Ullman, Pearson; 2nd Edition (2013)		

Course Code	CSCI 442	Course Name	Computer Networks
No. of Credit	3 (3-0-1)	Level	7th
Prerequisites	Operating System (CSCI 335)		
Course Description	Benefits of computer networks. Networks topologies. Networks layers architecture. Study of the different layers (functions, services and protocols). Local networks. Internetworking. Data security. Case studies		
Text Book	Computer Networking A Top-Down Approach, James F. Kurose, Amherst Keith W. Ross, 2013		

Course Code	CSCI 426	Course Name	Advanced Database
No. of Credit	3	Level	7
Prerequisites	Database systems(CSCI 325)		
Course Description	Advanced data models: object-oriented model, and object-relational model, conceptual database design. Transaction processing: transactions, failure and recovery, and concurrency control techniques. Database backup and recovery. Query processing and optimization. Database security. Distributed databases: distributed data storage, distributed query processing, distributed transaction processing and concurrency control. Homogeneous and heterogeneous solutions, client-server architecture. XML and relational databases. Introduction to data warehousing, introduction to other current trends in database systems.		
Text Book	ELMASRI & NAVATHE, "Fundamentals of Data Base Systems", sixth Edition, Addison-Wesley, 2015.		

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Course Code	CSCI 447	Course Name	Software Projects Management
No. of Credit	3	Level	7
Prerequisites			
Course Description	This course describes the key aspects of a software project. It begins with the job description of a software manager and then addresses those topics germane to successful software development management, including organizing the software development team; interfacing with other engineering organizations (systems engineering, quality assurance, configuration management, and test engineering); assessing development standards; selecting the best approach and tailoring the process model; estimating software cost and schedule; planning and documenting the plan; staffing the effort; managing software cost and schedule during development; risk engineering; and continuous process improvement. Personnel management topics, including performance evaluations, merit planning, skills building, and team building, are also covered. This course introduces software engineers aspiring to become technical team leaders or software project managers to the responsibilities of these roles. For those engineers who have advanced to a software development leadership position, this course offers formal training in software project management.		
Text Book	Project management with CPM, PERT and precedence Diagramming by Moder J , Phillips C, and Davis E, 1983, ISBN-13 = 978-0442254155		

Course Code	CSCI_490	Course Name	Selected Topics I
No. of Credit	3	Level	7
Prerequisites	None		
Course Description	From time to time, new advanced courses will be designed and offered according to the interests of the college, industry and the students to explore those areas of computer science that are not part of the core of the curriculum. The intention is to provide a rapid response to current trends, with topic and content changing with each offering.		
Text Book	Depends on the content of the course		

Course Code	CSC 494	Course Name	Graduation Project 1
No. of Credit	2	Level	7
Prerequisites	CSC 343, CSCI 325		
Course Description	This course is the first part of a sequence of two courses that constitute the BSc graduation capstone project. In this part, the student is expected to propose, analyze, and design a software system or conduct a thorough investigation of a particular computer science-related problem for research-based projects. The student will deliver oral presentations and written reports.		
Text Book	None		

Course Code	CSCI 403	Course Name	Internet Technologies
No. of Credit	3	Level	8
Prerequisites	Computer Networks (CSCI 422)		
Course Description	This course will provide an overview of Internet technologies (definitions, evolutions, examples, and, applications). Publishing and browsing technologies. Internet tools. TCP/IP and Client/server architectures. WWW, HTTP and HTML for text, images, links and forms. Web-based applications development: client-side scripting, server-side scripting and the MVC design approach. WEB site development. Security and privacy.		
Text Book	Learning PHP, MySQL & JavaScript: With JQuery, CSS & HTML5, by Robin Nixon. O'Reilly Media; 4th Edition (2014). ISBN-10: 1491918667, ISBN-13: 978-1491918661.		

Course Code	CSCI 413	Course Name	Design and Analysis of Algorithms
No. of Credit	3 (3-0-1)	Level	8
Prerequisites	CSC 383		
Course Description	This course will include the design and analysis of algorithms. Algorithms that manipulate data structures such as lists, stacks, queues, trees, and graphs are discussed in terms of efficiency and existence. Topics also include balancing algorithms, divide-and-conquer algorithms, dynamic programming, the greedy approach, advanced search/sort techniques, the P and NP problem, and newly promoted algorithms will be studied and researched.		
Text Book	Computer Algorithms , Horowitz, StartajSahni, &SanguthevarRajasekaran, 2nd Edition Ellis Horowitz, 978-0929306414		

Course Code	CSCI 491	Course Name	Select Topics II
No. of Credit	3 (3-0-1)	Level	8
Prerequisites	None		
Course Description	From time to time, new advanced courses will be designed and offered according to the interests of the college, industry and the students to explore those areas of computer science that are not part of the core of the curriculum. The intention is to provide a rapid response to current trends, with topic and content changing with each offering.		
Text Book	Depends on the content of the course		

Course Code	CSC 492	Course Name	Distributed Systems and Parallel Processing
No. of Credit	3 (3-0-0)	Level	8
Prerequisites	CSCI 422 and CSCI 426		
Course Description	- Providing students with web-based exercises for extra training. - communicating with students through teacher website by posting course related information and receiving student feedback.		
Text Book	- Distributed Systems: Principles and Paradigms (2nd Edition) by Andrew S. Tanenbaum, Maarten Van Steen. ISBN-13: 978-0132392273. - Parallel Programming: Techniques and Applications Using Networked Workstations and Parallel Computers by Barry Wilkinson, Michael Allen (2nd Edition) ISBN-10: 0131405632.		

Course Code	CSC 495	Course Name	Graduation Project (2)
No. of Credit	3 (2-2-0)	Level	8
Prerequisites	CSC 494		
Course Description	This course is the second part of a sequence of two courses that constitute the BSc graduation capstone project. In this project, the student will continue the System/Research development of the project that started in graduation project 1. The student will implement the design and produce an executable system. He will also deliver oral presentations, progress reports, and a final report.		
Text Book	None		