Courses Description

1501110   Computer Programming (1)   ---
This introductory course is intended for students with little, if any, previous programming experience.   Students will gain the basic knowledge and experience to solve simple programming problems using established techniques in program design and development. The practical work associated with the course enables students to learn how to edit, compile, run and test programs. Java is the selected language addressed in lectures. Topics include: first "Hello" program, input/output, expressions, identifiers and data types, flow of control statements, methods, and Arrays.

1501111   Programming (1) Lab   ---
Practical applications of the concepts studied by the student in computer programming 1. Through answering the prepared sheet paper that produced by teachers, students practice practical programming in evaluating and implementing problems. The work sheet paper should be designed to enhance the student's programming skills and to develop their interpersonal and communication skills. The work sheet contains three main parts:
Part I: Includes the Objectives and topics that will be covered and the actions that preceded access to the laboratory (Prelab activity and Prelab assignment).
Part II: The student activity to be implemented in the laboratory (InLab)
Part III: Skills and activities that will be conducted by the student after the laboratory (PostLab activity).

1501112   Computer Programming (2)   1501110
This course aims to introduce students to fundamental concepts of object oriented programming with Java, gives an introduction to event driven programming and graphical user interface, exception handling, files manipulation and recursion. The topics covered in this course provide a foundation for more advanced courses in Computer Science and Information Systems.

1501113   Programming (2) Lab   1501111
Practical applications of the concepts studied by the student in computer programming 2.

1501210   Selected Programming Language   1501110
In this course, students learn a programming language other than the language that learned in Computer Programming 1 and 2. The selected language should contain visual programming capabilities, and libraries for various applications. This is in addition to basic skills in programming, such as data input and output, control and condition sentences, repetition, arrays, files, and others. The course includes practical application part of the theoretical concepts.

1501220   Discrete Mathematics   1501110

This course studies the mathematical elements of computer science including propositional logic, predicate logic, sets, functions and relations, proofs technique, mathematical induction, algorithms, recursion, complexity of algorithms, introduction to graph theory.

1501221   Data Structures   1501112

This course is a prerequisite for most of advanced courses in the study plan, and covers the basic concepts of advanced programming that include: sequential data structures: arrays, lists, linked lists, stacks, and queues. Hierarchical data structures: general tree structures, binary trees, binary search trees and dictionaries, and heaps. Hash tables and hash functions are also included. This course introduces some algorithms for sorting and searching. All the presented techniques are applied by a selected programming language such as Java.

1501230   Digital Logic Design   ---

This course includes the following topics: Number systems, and logic gates, Boolean algebra: Boolean variables, Boolean expressions and simplification of Boolean expressions. Combinational and sequential logic circuits registers, counters, coders-decoders, and multiplexes.

1501231   Computer Organization and Architecture   1501230

This course presents different aspects of computer architecture, and some organizations. The topics covered by this topic: Von Neumann architecture, addressing modes, instruction set, loading and linking, program execution, computer main units, levels of computer architecture, programmed and interrupted DMA, hardwired control, micro-programmed control, and memory organization.

1501310   Advanced Programming   1501310+1503270

Topics: Classes and objects, implementation by some modern language such as C#, Graphical user interface concepts, Databases, SQL, ADO and Database connections, Graphics and multimedia.

1501321   Design and Analysis of Algorithms   1501221

Topics: Methods of designing algorithms, backtracking, branch and bound, divide and conquer, dynamic programming, the greedy method, basic search and traversal techniques, analyzing algorithms, complexity measures and types, selected algorithms and applications from sorting and searching, introduction to graph algorithms.

1501322   Theory of Computation   1501221

This course introduces students to the mathematical foundations of computation including deterministic and non-deterministic finite automata, regular expressions, non-regular languages, context free grammars, pushdown automata, non-context free language, Turing Machines, Definition of Algorithm, Decidable and un-decidable languages, the Halting Problem.

1501324   Programming languages   1501221

Topics: programming languages and software development process, history, types values declarations and binding, expressions and statements, program structure, subprograms, structured data, inheritance and dynamic binding, syntax and semantics, functional and logic programming.

1501326   Artificial Intelligence   1501221

Topics: AI Definition, Theorem proving and inferencing techniques, predicate calculus, searching techniques, production systems, knowledge representation, approximate reasoning, natural language processing, scene analysis, planning, game playing, machine learning.

1501330   Assembly Language   1501231

This course includes knowledge of programming PC device using assembly language. Students learn the structure of an assembly program; write commands, memory addresses, registers function, control and iteration commands and sub-programs. Some practical applications, such as interrupts. Input and output data, display, files, and others. The course also includes how to download, connect, and implementation of operational programs.

1501340   Computer Networks   1501221

Introduction and computer network definition, networks classification and uses. Computer networks architecture protocol stack (physical layer, data-link layer, network layer, transport layer, and application layer), for each layer introduces its services, and protocols.

1501341   Network Administration   1501340

This course includes information and skills related to recent developments in local and extended networks. It includes an introduction about networks in terms of: physical infrastructure and software, concepts, tools, and design. As well as protocols used in each different types of networks. The main theme of this course focusing on the basic functions for management of local area networks, and management systems connected to the network in general. This course teaching style includes a practical application for the management of specific types of servers, such as Microsoft Server, and others.

1501390   Project 1   ---

An introductory course of project design, implementation and documentation. The student should provide a fully described project in order to be completed in the graduation semester. A team as well as a supervisor must by determine.

1501391   Internship for CS   ---

During this course, the student registers a training session in a certified company or a governmental institute after successfully pass 90 credit hours. The student should provide a fully described report the training stages and difficulties.

1501420   Artificial Intelligence Tools   1501326

This course provides the basic tools needed for the application of artificial intelligence concepts, neural networks such as: basic concepts of, neural networks architecture, learning models, applications and case study. Also genetic algorithms and its applications are covered. Latest AI software tools will used in this course.

1501421   Compilers Construction   1501322

Topics: Introduction includes compiler definition, front-end and back-end stages, the design and construction of compilers and other translators. This course focuses on compilation phases: lexical analysis design and implementation using regular expressions and transition diagrams, syntax analysis design and implementation using context-free grammar and top-down and bottom-up parsing, syntax directed translation, and intermediate and final code generation.

1501430   Operating Systems   1501221

Topics: Basic concepts and OS history, process management, deadlock, CPU scheduling, memory management, file and disk management, input-output systems, case studies.

1501431   Distributed systems and cloud computing   1501321

This course introduces students to the principles, design, and implementation of distributed systems. The lectures focus primarily on the principles and design of distributed systems, and cover transparency, communication, distributed storage, naming, synchronization, fault tolerance, peer-to-peer systems and data centers. The student studies cloud systems as the newest distributed systems and the impact it caused in the world of computing.

1501441   Wireless Networks   0308323

Introduction to Wireless and Mobile Systems, Probability, Statistics, and Traffic Theories, Mobile Radio Propagation, Channel Coding, The Cellular Concept, Multiple Radio Access, Multiple Division Techniques, Channel Allocation, Mobile Communication Systems, Existing Wireless Systems, Satellite Systems, Network Protocols, Ad Hoc and Sensor Networks, Wireless WANs, LANs, and PANs.

1501490   Graduation Project 2 for CS   1501390

The student Complete the implementation stages of the graduation project initiated by the student in the project 1.

1501491   Special Topics in CS   ---

Specialized topic of current interest in computer science.

1501492   Emerging Topics in IT   ---

Specialized topic of current interest in Information Technology