School	
Major	Bachelor in Computer Science

Core Requirements			
Code	**Title**	**Credits**	**Description**
CSCI390	Web Programming	3	The course investigates various techniques used for designing web pages. Presenting the basics of static web page design using HTML. Dynamic web page design using JavaScript. Introduces the server side scripting languages such as : ASP and PHP4. Prerequisite(s): CSCI 300
CSCI373	Robotics Design & Coding	3	This course introduces the basic concepts and principles for using the Arduino microcontroller platform as an instrument to teach students about topics in electronics, programming, and human-computer interaction. Students will be able to build useful devices. Half of the in-class time is entirely devoted to developing, debugging, and refining projects where each sessio_n will have a period to solve a problem by the instructor and a period dedicated to the students to practice on a similar problem. At the end of the semester, pair__students__more will prepare a final project.
CSCI345	Digital Logic	3	The course develops the ability of the student to understand the design of digital electronic circuits which are the main components in digital computers, data communication, digital recording, and so forth. The course covers number systems, Boolean switching algebra, combinational circuit design, flip-flops, counters, registers, state machine notation, analysis of sequential circuits, and sequential circuit design
CSCI205	Computer Science Overview	3	This course presents breadth coverage of computer science courses so that students would understand computing and appreciate technology□s impact on society. Topics include binary values and number systems; data representation; gates and circuits; computing components; operating systems; file systems and directories; information systems; computer networks; and elementary Programming.
CSCI250	Introduction to Programming	3	This course introduces the basic concepts and principles of structured programming in Java. It starts by an introduction to Java showing its syntax and the structure of a program in Java then teaches simple data types, control structures, methods, arrays, and strings.
CSCI250L	Introduction to Programming Lab	1	This course is a co-requisite for the Introduction to Programming course (CSCI250). The students apply in the lab the fundamentals of programming, explained in CSCI250, by solving lab exercises. The objective of the lab is to implement programming problems using basic data types, selection and repetition structures, methods and arrays.
CSCI300	Intermediate Programming with Objects	3	The course emphasizes the principles of Object Oriented Programming using the Java Programming Language. It starts by an introduction to creating applications using Java. Then the course introduces how to define classes and declare objects and discusses the main topics related to object oriented programming (constructors, methods, dependency, aggregation, inheritance, and polymorphism). Finally, the course introduces exception handling as well as writing to and reading from files.he course emphasizes the principles of Object Oriented Programming using the Java Programming Language. It starts by an introduction to creating applications using Java. Then the course introduces how to define classes and declare objects and discusses the main topics related to object oriented programming (constructors, methods, dependency, aggregation, inheritance, and polymorphism). Finally, the course introduces exception handling as well as writing to and reading from files.
CSCI300L	Intermediate Programming with Objects Lab	1	This course is a co-requisite for the Intermediate Programming course (CSCI300). The students implement and practice in the lab the concepts and the programming techniques they learn in CSCI300 by solving lab exercises. The main concepts of Java language as well as the object oriented programming issues are to be discussed and implemented in this module using the NetBeans IDE.

CSCI335	Database Systems	3	This course introduces fundamentals of database systems. It starts by motivating the need of the database approach in real life scenarios and the benefit of adopting a Database Management System (DBMS). This course includes data modeling (based on the entity relationship model), data normalization and data manipulation SQL queries. Students will learn how to design, implement and query a relational database by using a Microsoft SQL Server DBMS.
CSCI342	Fundamentals of Networking Technologies	3	The ITNcourse introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. The principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the CCNA curriculum.
MATH260	Discrete Mathematics	3	Sets, elementary logic, method of proofs, induction, relations, functions, recurrence relations, difference equations, modular arithmetic, arithmetic in different bases, Boolean algebra, counting, combinatorial methods, complexity analysis, graphs, trees, algorithms, finite-state machines. Prerequisite: MATH 170 or Math Placement Test
MATH210	Calculus II	3	The course material includes hyperbolic functions and their inverses and their derivatives integration techniques, improper integrals, sequences, infinite series, power series, Taylor and Maclaurin series and application of power series. The mathematical software Maple will be introduced and used in support of the comprehension of the material. Prerequisites: MATH160
MATH225	Linear Algebra with Applications	3	Introduction to the systems of linear equations and matrices, Gaussian eliminations, matrix operations, inverses, types of matrices, determinants and their applications, vector spaces, subspaces, linear independence, basis and dimension, rank and nullity, inner product spaces and orthogonal bases, eigenvalues and eigenvectors, applications from other disciplines such as physics, computer science, and economics.
Major Requirements			
Code	**Title**	**Credits**	**Description**
CSCI392	Computer Networks	3	The Routing and Switching Essentials course describes the architecture, components, and operations of routers and switches in a small network. Students learn how to configure a router and a switch for basic functionality.
CSCI490	Information System Development	3	Information systems development is a legitimate engineering discipline. Software process models, software engineering methods, and software tools have been adopted successfully across a broad spectrum of industry applications. Effective development of an information system depends on proper utilization of a broad range of information technology, including database management systems, operating systems, computer systems, and telecommunications networks. This course covers the phases from physical system design through the installation of working information systems; Concentrates on using the results of systems analysis and design, typically documented in CASE technology, and either building or generating systems to meet these specifications. The course is a semester-long field project with various hands-on exercises that provide practical experience in building, testing, and installing a system.
MATH310	Probability & Statistics for Scientists & Engineers	3	The concept of probability and its properties, descriptive statistics, discrete and continuous random variables, expected value, distribution functions, the central limit theorem, random sampling and sampling distributions, Hypothesis testing. Prerequisite: MATH 170
CSCI378	Data Structures and Algorithms	3	This course covers the design and implementation of important data structures and their algorithms. The data structures considered include stacks, queues, lists, linked lists, trees, and graphs. Students will also learn basic to fundamental algorithms for solving problems and how to compute the time complexity of algorithms and will focus on general design and analysis techniques that lie beneath these algorithms.

CSCI430	Operating Systems	3	Fundamental overview of operating systems. First Quarter: Operating system structures, processes, process synchronization, deadlocks, CPU scheduling, memory management, file systems, secondary storage management. Requires substantial programming projects. Prerequisites: High Junior Standing or instructor□s consent.
CSCI430L	Operating Systems Lab	1	This course is a co-requisite for the Operating System course. The students apply in the lab all concepts they learn in the Operating System course by solving lab exercises, and preparing several projects. The concepts include a fundamental practice of Linux OS and the basics related to process management discussed in the course sessions. These basics include process creation and termination, process communication, and process synchronization using semaphores. The students will be able to practice all of these concepts by developing, debugging, and testing programs under one of the Unix/Linux distributions.
MATH375	Numerical Methods for Scientists & Engineers	3	Bases and number representation, analysis of error propagation and error correction, roots for non-linear equations, computational linear algebra, polynomial interpolation, approximation of functions by polynomials, numerical differentiation and integration, numerical methods for solving differential equations, Runge-Kutta method, numerical methods for solving systems of equations and differential equations. Prerequisite: MATH 265 and CSCI 250.
CSCI380	Software Engineering	3	This course provides an understanding of the system development process which links user requirements to the computer based system. This course emphasizes problem formulating and problem solving. Students will learn how to analyze a problem domain and develop the appropriate analysis and design models to formalize the requirements using object oriented methods and appropriate theory.
CSCI351	Concepts of Programming Languages	3	The course introduces the main concepts of current programming languages and provides the student with the tools necessary to evaluate existing and future programming languages. It also explains the design of compilers by explaining in depth the programming language structures, describing the syntax in a formal method and introducing approaches to lexical and syntactic analysis.
CSCI435	Computer Architecture	3	The course describes the organization and architecture of computer systems; considerable differences in performance and functionality of a computer are due to its internal structure and organization. Students will understand exactly how a computer functions by writing programs in a common assembly language
CSCI475	Artificial Intelligence	3	The course introduces the principles of non-algorithmic problem solving based on heuristics. The course explores two approaches that examine problems that could not be solved with algorithms: the Search-Based approaches and the Knowledge-Based approaches. At the end of the course the students will acquire a good knowledge about how to solve problems using heuristics and deductive reasoning techniques based on Propositional Logic and First Order Logic. The course introduces also an inference motor (tool) named PROLOG that assists to implement and test deductive inference techniques in the First Order Logic.
CSCI491	Internship	3	Internship

General Education Requirements			
Code	**Title**	**Credits**	**Description**
ARAB200	Arabic Language and Literature	3	This course is a comprehensive review of Arabic Grammar, Syntax, major literature and poetry styles, formal and business letters.

CSCI200	Introduction to Computers	3	The course aims at making students competent in computer-related skills. It is supposed to develop basic computer knowledge by providing an overview of the computer hardware and basic components as well as hands-on practice on common software applications such as Word, Excel, Power Point, Internet and Email. The student will learn how to use the new features of Microsoft Office 2010 mainly Word documents, Excel spreadsheets and PowerPoint presentations. On the surface, MS Office 2010 looks a lot different than previous versions (no more menus__toolbars!), but by learning to understand the dramatically changed, Ribbon-based interface, you'll quickly get back on the road to productivity.
CULT200	Introduction to Arab - Islamic Civilization	3	The purpose of this course is to acquaint students with the history and achievements of the Islamic civilization. Themes will include patterns of the political and spiritual leadership; cultural, artistic, and intellectual accomplishments Prerequisites: ENGL051, ENGL101, ENGL151.
ENGL201	Composition and Research Skills	3	This course focuses on the development of writing skills appropriate to specific academic and professional purposes; the analysis and practice of various methods of organization and rhetorical patterns used in formal expository and persuasive writing; the refinement of critical reading strategies and library research techniques; and the completion of an academically acceptable library research paper. Prerequisites: ENGL150, ENGL151.
ENGL251	Communication Skills	3	The objectives of this course are to improve students writing skills for academic purposes by developing effective use of grammatical structures; analytical and critical reading skills; a sensitivity to rhetorical situation, style, and level of diction in academic reading and writing; and competence in using various methods of organization used in formal writing.