School	School of Arts & Science
Major	Bachelor of Computer Science

General Education Requirements			
Code	**Title**	**Credits**	**Description**
ARAB200	Arabic Language and Literature	3	تتألف مادة اللغة العربية وآدابها لغير المتخصصين من ثلاثة أقسام، أحدها يتناول دروساً أساسية في النحو والصرف والبلاغة. والثاني يتناول مباحث في الأدب والتحليل. أما القسم الثالث فيعالج بعض تقنيات التعبير والتواصل.
CSCI200	Introduction to Computers	3	The course aims at making students competent in computer-related skills. It is supposed to develop basic computer interface knowledge by providing an overview of managing folders and files, opening a start menu, and hands-on practice on typical software applications such as Word, Excel, and PowerPoint. The student will learn how to use the new features of Microsoft Office 2017, mainly Word documents, Excel spreadsheets, and PowerPoint presentations. Moreover, the course aligns with the Cisco Networking Academy® Get Connected course, which helps students understand how to connect to the Internet.
CULT200	Introduction to Arab - Islamic Civilization	3	تُمثّل الحضارة العربية الإسلامية واحدة من أهم الحضارات في التاريخ بما أنجزته من إبداعات علمية وثقافية وحضارية تركت أثرها العظيم في تاريخ البشرية. تُشكّل هذه المادة الدراسية مقدمةً أساسية ليتعرف كل عربي على تاريخ حضارته، لا ليفتخر بها وحسب، بل ليجعل منها حافزًا يستنهض به قابليّاته وقدراته العلمية الكامنة لإعادة الاستنهاض الحضاري. يتحرك الماضي فينا دون شعورٍ واعٍ منّا، على أنّ هذا المُقرّر الدراسي يحاول أنْ يستثير الوعي الحضاري والثقافي عند الطلاب العرب، فيستفيد من هذا المخزون ليصنع أُفقًا جديدًا للمستقبل.
ENGL201	Composition and Research Skills	3	This course builds upon the skills acquired in pre-requisite courses mainly ENGL 151 to further develop students' critical thinking and academic writing competencies. Students will read and respond to a variety of texts from different disciplines and produce a research paper using analytical and critical skills in response to texts.
ENGL251	Communication Skills	3	Workplace Occupational Writing is an advanced interdisciplinary writing course emphasizing workplace and technical communication and editing appropriate to diverse professions. It incorporates practice and study of selected types of discourse employed in professional writing situations, preparing students for different systems of writing in their professional lives. Examples from the writing of workplace professionals are analyzed and used as models to demonstrate the transition from academic to professional writing.

Core Requirements			
Code	**Title**	**Credits**	**Description**
CSCI205	Computer Science Overview	3	This course presents breadth coverage of computer science courses to 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 with 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. In this lab, students solve programming problems by using primary data types, selection and repetition structures, methods and arrays. This lab is an opportunity for the students to have direct help when needed from the instructor, but it is not sufficient for practice; students should practice with more exercises on their own.
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.
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 the 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 using 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 course 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.
CSCI373	Robotics Design & Coding	3	This course introduces the basic concepts and principles forusing Arduino microcontroller platform as an instrument to teach students about topics in electronics, using C programming language, and human-computer interaction. Students will be able to builduseful devices.Half of the in-class time is entirely devoted to developing, debugging, and refining projects where each session will have a period to solve a problem by the instructor and a period dedicated to the students to practice on a similar problem. This course can help you to ameliorate your programming skills, and to introduce you to hardware realization and application.At the end of the semester, pair or students or more will prepare a final project.
CSCI390	Web Programming	3	This course presents the fundamentals of web programming and design at client side. At first, the course introduces students to Hyper Text Markup Language (HTML) which is the basic language used to create properly structured web pages. Students then learn Cascading Style Sheet, which allows them to design the content of web pages. With the variety of devices from which websites are accessed today, designing a responsive website became a must. Therefore, students learn how to structure the web pages content to be displayed responsively on different screen dimensions. To create dynamic websites, students learn the most popular scripting language JavaScript, in addition to the popular jQuery library that simplifies the tasksmade with JavaScript.

MATH210	Calculus II	3	This is the second course in the Calculus sequence. The course material includes logarithmic, exponential, and trigonometric functions, their inverses and their derivatives, integration techniques, improper integrals, sequences, infinite series, tests of convergence, alternating series, power series, polar coordinates and its application.
MATH225	Linear Algebra with Applications	3	This course provides an introduction to linear algebra topics. Emphasis is placed on the development of abstract concepts and applications for vectors, systems of equations, matrices, determinants, vector spaces, multi-dimensional linear transformations, eigenvectors, eigenvalues, diagonalization and orthogonality. The concepts of linear algebra are extremely useful in physics, economics and social sciences, natural sciences, and engineering.
MATH260	Discrete Mathematics	3	This course introduces discrete mathematical structures. Students will learn how to use logical and mathematical formalisms to formulate and solve problems in computer engineering. Topics include formal logic, proof techniques, recurrence relations, sets, combinatorics, relations, functions, algebraic and structures.
PHYS205	General Physics for Scientists	3	This course introduces students to classical mechanics, thermodynamics, waves, and basic electricity. Topics include motion in one-dimension, angular motion, temperature, heat, sound waves, mirrors, resistance, and capacitors. Emphasis is placed on developing problem-solving skills and applying physics concepts to real-world scenarios.

Major Requirements			
Code	**Title**	**Credits**	**Description**
CSCI378	Data Structures and Algorithms	3	This course covers the design and implementation of important data structures and their algorithms in addition to their time complexity using the big-Oh notation. The data structures considered include stacks, queues, lists, linked lists, trees, and graphs. An approach based on abstract data types and classes will be emphasized and sorting algorithms are discussed.
CSCI380	Software Engineering	3	This course provides an understanding of the system development process which links user requirements to a 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.
CSCI405	Computer Organization and Architecture	3	This course introduces students to the fundamental principles of computer organization and architecture. It combines essential concepts from digital logic and computer architecture to give students a systems-level understanding of how computers work, from the gate level to instruction execution and system design; considerable differences in performance and functionality of a computer are due to its internal structure and organization.
CSCI430	Operating Systems	3	This course presents an introductory study of operating system basics. It focuses on the essential operating system concepts more specifically those related to process and its creation and termination, process communication, process scheduling and synchronization as well as an overview of memory management and strategies used for this purpose. By the end of this course the student should have full understanding of operating system theory, structure and mechanism. This would include Full analysis of Multitasking systems and process communications as well as memory management. The student should have the ability to develop a project related to Operating system Concept.

CSCI430L	Operating Systems Lab	1	This course is a co-requisite for Operating System course. The students apply in the lab the concepts they learn in the course by solving lab exercises. The concepts include a fundamental practice of Linux OS and the basics related to process management seen in the course. These basics include process creation and termination, process communication, and process synchronization using semaphore. The student will be able to practice all these concepts by developing, debugging, and testing programs under the Linux platform.
CSCI450	Theory of Computation	3	This course provides an introduction to the theoretical foundations of computation, focusing on formal languages, automata theory, Turing machines, and the fundamental concepts of computability. It also covers topics such as regular expressions, context-free grammars, and the relationship between languages and automata. Students will explore different models of computation and their applications, with a focus on understanding both the power and limitations of computational systems.
CSCI451	Parallel Processing	3	This course introduces the principles and practices of parallel processing, emphasizing both theoretical foundations and practical applications. Topics include parallel architectures, programming models, algorithm design, performance analysis.
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 First Order Logic. The course introduces PROLOG that **assists** to implement and test deductive inference techniques in the First Order Logic.

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.
CSCI499	Internship	3	This senior-level, three-credit course offers students the opportunity to gain professional experience in the computing field through an approved internship. Designed to bridge academic learning and industry practice, the course enables students to apply their technical knowledge in real-world environments such as software companies, tech startups, government agencies,__other relevant organizations. The internship enhances career readiness by providing exposure to workplace dynamics, technical projects, and professional collaboration. Students are required to attend scheduled check-ins with a faculty supervisor and submit a comprehensive final report that reflects on their learning outcomes and contributions during the internship.
MATH310	Probability & Statistics for Scientists & Engineers	3	The course is intended to provide you with the basic probabilistic and statistical concepts with related computational and analytic skills for three main purposes: 1) To become an integrated part of the student scientific education. 2) To give the student an adequate ability for comprehending and interpreting many non-deterministic situations. 3) To appreciate the wide range of applications of such concepts to real-life situations.

MATH375	Numerical Methods for Scientists & Engineers	3	This course is a study of mathematical techniques used to find numerical solutions to the mathematically formulated problems that do not have exact analytical solutions. This course includes the following computational techniques: root-finding techniques, interpolation and polynomial approximation, numerical differentiation and integration, extrapolation techniques and numerical schemes for solving initial-value problems for first and higher order ordinary differential equations. In computer practical, laboratory sessions involve the implementation of the above numerical methods in practice using MATLAB.