Functional Grammar (ARAB 101)	Topics covered in this course include: studying chosen parts of Arabic grammar, verbs, the five verbs, nouns that are subject to desinential infliction with letters, derivatives, abrogative, indeclinable, numbers, and hamzah in a practical way with numerous applications
Objective Writing (ARAB 201)	The topics covered in this course include: sources of objective writing, Holly Quran and Hadith and contemporary literature, Punctuation, Report writing, Arabic Dictionaries, Summary style and steps, Scientific research steps and characteristics, Speech, and Curriculum Vitae writing, Objective essay and Administrative letters.
Arabic Communication (ARAB 301)	The topics covered in this course include: the objectives of communication and its elements, skills needed for personal reading, interviews, speeches, lectures, symposia and how to behave as a listener. Tips are given to avoid and prevent common mistakes.
Islamic Ideology (ISLM 101)	This is a course to vitalize the students' knowledge and commitment to Islamic doctrine, seeking thereby to fortify them against the onslaught of godless ideologies. Topics include an introduction to faith, its foundations and sources; the fundamentals of belief: divinity, prophet hood, and after-life; the treatment of different subjects in the Qur'an which deal with the universe, man, relation with other countries and life. The Islamic family system and Islamic society are also studied. Work ethics is major part of the course.
Human Rights in Islam (ISLM 201)	This course discusses the topics of Islamic legislation and its sources, the economics of Islam and its principles, human rights according to the Islamic concept and the five necessities.
Work Ethics in Islam (ISLM 301)	This course discusses the ethical system in Islam, its concept and its effects, as well as studying the ethics of the profession, its sources, its applications, and its relation to other sciences.

English Composition (ENGL 101)	This course aims to teach how to write paragraphs effectively. Using an approach that views writing as a process successfully completed at several stages, the students are trained to write effective paragraphs from editing and revising techniques. The students also learn how to correct fragments and run-ons sentences, structure ideas in sentences clearly and logically using a common checklist.
Academic Writing Skills (ENGL 331)	This course comprises 3 parts; Speaking, Public Speaking and Presentations. It is based on the 3 Ps (presentation, practice and production) approach. The speaking portion aims, through a hands-on approach, at training students in everyday, naturally occurring conversations in both formal and informal settings. The course will progress from personal introductions and everyday conversations to leading meetings and negotiations. The final portion is dedicated to presentations. The focus is on the preparation and delivery of presentations that will interest and inform audience. When opportunities arise, based on students output, phonetic and /or phonological instructions may take place.
Technical Writing (ENGL 332)	In this course, students are introduced to the basic skills of writing a successful technical report that satisfies the requirements of formal writing in English. The course makes use of the students' background knowledge of academic writing in ENGL 101 and ENGL 131 as well as their professional communication skills. By the end of this course, students will be able to produce a unique business report that is plagiarism-free, making use of knowledge and skills obtained in this course and other previous courses.
Physical Education I (PE 101)	This course is designed to provide the students with comprehensive physical fitness program to make them gain the proper physical shape in order to develop the mental, emotional, physical, and social aspects of living, necessary for a happy and productive life. The students will be introduced to the fundamentals of sports such as volleyball game focusing on skills, rules, and game strategy.
Physical Education II (PE 102)	This course provides students with an integrated fitness program in which they can reach a level of fitness that enables them to carry out their daily duties in keeping with their life conditions and the demands of their studies. Through this program, the

	course equips students with the ability to lead an active life, fatigue-free. In addition, students practice basketball skills and are taught the rules so that they can practice this game properly.
Calculus I (MATH 101)	This course is intended to provide a strong base for three semester calculus sequence, emphasis is given to prime topics of differential calculus including: Limits and Continuity of functions of a single variable; Derivatives; Techniques of Differentiation; Applications of first (second) order derivatives to the problems dealing with related rates, linear approximations, behavior of functions, inflection, extreme values and optimization; Newton's method for approximate roots; Rolle's and Mean Value theorems.
Calculus II (MATH 102)	This course includes: knowledge of the fundamental concepts behind definite and indefinite integration for a function of single variable, i.e. Anti-differentiation, Riemann Sums and the Fundamental Theorem of Calculus, different techniques of integration; applications of definite integral in finding areas, volumes, arc lengths and average values; sequences and series including various tests for convergence; alternating series, absolute and conditional convergence; Maclaurin and Taylor series; power series and its convergence.
Calculus III (MATH 201)	Calculus III, a standard third course in calculus, continues the development of both differential and integral calculus. The first two semesters of the calculus sequence dealt with in two-dimensional Cartesian coordinates. A primary goal of Calculus III is to extend these ideas to three dimensions and to other coordinate systems. Therefore, in this course we introduce: polar coordinates and polar curves; properties of vectors and analytical geometry in three dimensions; functions of several variables; limits and continuity in three-space; partial and directional derivatives, gradients; differentiation and integration of multivariable functions; applications of multiple integrals to area and volume.
Linear Algebra & Differential Equations (MATH 204)	This course contains two parts, linear algebra and differential equations. The first part covers: Linear Systems of equations and their solutions, eigenvalues and eigenvectors, diagonalization of matrix, vector spaces and subspaces, linear combination and independence of vectors, basis and dimension for

	vector spaces. The second part is a study of differential equations and mathematical models. Topics include: The solution of first order differential equations with real-life applications, the solutions (general and particular) of homogeneous and non-homogeneous second order linear differential equations with constant coefficients.
General Physics I (PHYS 101)	General Physics I is a calculus-based course for computer science and engineering program. It focuses on basic concepts of Physics and their connections to everyday life. The topics covered in this course include the following fields: Measurements, vector analysis, motion in one and two dimensions, force and motion, work, energy and power, rotational dynamics, Conservation laws, equilibrium, elasticity, gravitation, fluid dynamics, and oscillatory motion. The laboratory part of the course reinforces the theoretical aspects of the course, and focuses on collaborative learning, group work and handling of the lab equipment.
General Physics II (PHYS 102)	This course uses calculus based mathematical models to introduce the fundamental concepts of physics. Topics covered include: wave motion and sound, temperature, first and second law of thermodynamics, kinetics theory of gases, coulomb's law, electric field, Gauss' law, electric potential, capacitors and dielectrics, D.C. circuits, the magnetic field, Ampere's, and Faraday's laws. Upon completion, students will be able to understand the principles involved and display analytical problem-solving ability for the topics covered. Laboratory work reinforces the principles discussed in lecture. This course is intended for computer science and engineering students with an interest in the most fundamental of physics concepts.
Computer Programming (CS 101)	This course will introduce students with basic programming concept. The topics covered in this course include: an introduction to basic structured programming skills, basic data types and operators, console input/output, logical expressions, control structures, functions, arrays, pointers, strings, and structures, algorithms and problem solving, problem analysis, solution design, testing, and fundamental of programming constructs. The laboratory work is designed to implement and support the theoretical concepts covered in the lectures.

Object Oriented Programming (CS 102)	Topics covered in this course include introduction to computer science, simple graphical user interfaces element and design, object-oriented programming concepts, classes, objects, methods, encapsulation, inheritance, polymorphisms, method overloading, exception handling, and constructors and destructors. The lab works are designed to complement the theoretical concepts covered in the lectures through program implementation.
Digital Logic (CS 201)	Study of digital logic with an introduction to Boolean algebra, number systems and coding. Digital functions are implemented using logic gates, flip-flops and other integrated circuits. Emphasis is on analysis and design, including timing and gate level minimization techniques for combinational and sequential circuits. Coverage includes decoders, encoders, multiplexers, demultiplexers, latches, flip-flops, registers and counters, ROM and RAM memory. Students are exposed to implementing complex designs using a Hardware Description Language and FPGAs
Discrete Mathematics (CS 202)	This course introduces the foundation of discrete mathematics as they apply to computer science. Topics covered will include basic mathematical notions of sets and functions; logic, propositional logic, truth tables, issues of equivalence; predicate logic; proof techniques; commonly occurring mathematical concepts such as graphs, trees; representational issues; recursion; counting; combinatorics.
Computer Organization and Assembly Lang. (CS203)	The coverage of topics are the Basics of Computer Organization, Performance evaluation and Fundamentals of Computer architecture and Assembly language programming. Other Topics include Computer arithmetic, CPU organization; Data and Control path design, Pipelining, Memory system with Cache and I/O Organization.
Data Structures (CS 204)	This course is designed to provide the students with solid foundations in the basic concepts of programming: data structures and algorithms. Topics to cover include: Abstract Data Types (ADTs), Arrays, Records, Data representation in memory; Static, stack, and heap allocation, Linked structures, Implementation strategies for stacks, queues, and hash tables, Implementation strategies for graphs and trees, Strategies for choosing the right data structure.

Computer Architecture (CS 301)	Elements of computer system design. Topics include the design of high-performance computer systems. Advanced computer arithmetic, dynamic and speculative execution, exceptions, memory hierarchy design; multilevel caches, virtual memory, Storage and I/O. Multicores, multiprocessors, and clusters.
Database Systems (CS311)	This course is designed to teach the fundamental concepts of database design and its use. It provides a study of data model, data description languages, and query facilities using SQL, project requirement, ERD diagram, functional dependency, data normalization and optimization, a review of transactions, backup and recovery concepts. The knowledge of above topics will be applied in the design and implementation of database application using a targeted DBMS as part of a semester-long project.
Operating Systems (CS 480)	This is an introductory course on the internal operations and fundamental principles of operating systems (OS). Topics covered in this course include: Operating system History and overview. Operating system design principles. Concurrency, Synchronization, Scheduling and Dispatch, Memory management, device management, security and protection, and File systems.
Electrical Circuit Analysis (CSE 251)	This course teaches the basic concepts of circuit elements such as independent and dependent voltage and current sources, resistors, capacitors, inductors. It also teaches KVL and KCL, Mesh and Nodal Circuit analysis. Network Theorems. Analysis and design of RC, RL, and RLC electrical networks. Sinusoidal steady state analysis of passive networks using Phasor representation; mesh and nodal analyses.
Electronics (CSE 252)	This course will cover basic PN junction theory of operation, diodes, diode applications, circuit models and analysis; BJT's and models, MOSFETS and models and circuit analysis; Common emitter amplifiers, common collector amplifiers, two stage amplifiers and simulations; operational amplifiers, comparators, summers, integrator/differentiator, voltage regulator, internal structure of DTL/TTL and CMOS logic families.
Signals and Systems (CSE 351)	The course presents and integrates the basic concepts for both continuous-time and discrete-time signals

	and systems. Topics included in this course are Signals and systems, Linear Time-Invariant Systems, Fourier series representation of Periodic signals, continuous time Fourier transform, discrete-time Fourier transform; time and frequency characterization of signals and systems, Sampling, and other transform techniques.
Principles of VLSI Design (CSE354)	Review of semi-conductor physics, nMOS, pMOS and CMOS inverter analysis, fabrication of VLSI MOS circuits, circuit optimization, SRAM, DRAM, ROM, layout design rules, Hardware Description Languages (HDL), use of CAD for modeling, layout, simulations and logic synthesis, timing/delay analysis, power considerations, design flow for ASIC's and FPGA's.
Introduction to Computer Networks (CSE361)	This is an introductory course on computer networking. The course explains Internet, the network topology, performance, security, and protocols. Layered protocol. Application Layer - principles of network applications, application layer protocols and client-server and P2P applications. Transport Layer – connectionless transport (UDP), connection-oriented transport (TCP), reliable data transfer, flow and congestion control. Network layer - Internet protocol (IP), routing algorithms, L3 addressing, routing in the Internet. Data link layer-error control, flow control, multi access control, L2 addressing and local area networks. Fundamental concepts wireless and mobile computing, it also discusses concepts and the "building blocks" of today's data communication networks.
Introduction to Real-Time Embedded Systems (CSE371)	This course contains introduction of real-time, embedded systems. Hardware topics include microcontrollers and its peripherals, as well as interfacing several I/O devices (e.g., servo and stepper motor control etc.). Software topics focus on unique aspects of embedded programming and include interrupts, real-time control, and communication. The course also explores the unique tools that are used to develop and test/debug embedded system design.
Systems Engineering (CSE 401)	Computer Systems engineering is about processes required to implement a computer system (Hardware & Software). Students will be taught different components of a system, nature of the life cycle, the roles and aspects of requirement specification. They

	will learn system specification, configuration management, different testing methods, maintenance techniques and processes. Finally, they will get acquainted with the project management processes with emphasis to quality assurance, environment, legal and ethical issues.
Microcomputer Interfacing & Data Acquisition (CSE 471)	Data acquisition and control systems, sampling theorem, data collection fundamentals. Hardware for data acquisition systems, multiplexers, analogue to digital conversion. Principles of modeling, interfacing and signal conditioning of sensors and actuators. Interfacing parallel and serial Communication.
Senior Design Project I (CSE 441)	This course is phase one preparation for completing a design for project. The course requires the students to work in small team to design, develop and implement a computer engineering related problem in conjunction with a faculty advisor. The course reinforces principles of the software/hardware design and development process and serves as the capstone to the computer engineering degree program.
Senior Design Project II (CSE 442)	This course is phase two for completing a design for project. The course requires the students to work in small team to design, develop and implement a computer engineering related problem in conjunction with a faculty advisor. The course reinforces principles of the software/hardware design and development process and serves as the capstone to the computer engineering degree program.
Begin COOP work & COOP (CSE 492 & CSE 493)	A continuous period of 28 weeks spent in industry with the purpose of acquiring practical experience in different areas of Computer Engineering. The period starts with an orientation course in one semester and then follows with the COOP course in the second semester. During this period, a student is exposed to the profession of Computer Engineering by working in the field. Students are required carry a major design project and to submit a final report and give a presentation about the experience and the knowledge they gained during their cooperative work.
Computer Network I (NET 362)	This course provides an overview on LAN (Local-Area Network) and WAN (Wide-Area Network) switching technologies. Hierarchical 3 layer network model (Access, Distribution and Core). The course then focuses on the Ethernet LAN switching, VLAN,

	VTP, spanning tree, trunking and port security. WAN technologies, including concepts of Leased lines, PPP, ISDN, Frame relay, HDLC, ATM. Static and Dynamic Routing protocols. Mutual redistribution of Routing Protocols. Packet filtering, First Hop Redundancy Protocol (FHRP). The course material is supplemented with extensive lab component to give hands-on experience on network design, switching and routing techniques, and end-to-end communication setup and troubleshooting.
Information and Computer Security (NET 363)	This course provides an overview on history and examples of computer crime, security definitions and basic security principles. Covers security policies, procedures, risk assessment and mechanisms. Access control models. Implementation and usability issues. Physical and Infrastructure security. Authentication technologies. Operating system security. Encryption algorithms and protocols. External and internal firewalls. Software flaws and malware. Application, data, and host security, cryptography, Ethical issues in computer security. The course also emphasizes by incorporating ethical considerations and analyzing the societal, cultural, and economic impacts of computing solutions both locally and globally.
Computer Network II (NET 461)	This course covers advance topics in switching, Interior Gateway Protocols (IGP), Board gateway Protocol (BGP). It includes discussion on IP Multicasting, PIM-DM and PIM-SM protocols in detail. Multimedia Networking, internet technologies, Network services, Network security, Cloud Computing and Virtualization. The course also introduces wireless/Mobile Networks, (cellular networks, Wi-Fi, Mesh, mobility management) and further discussion on IP services such as HSPR, VRRP, IP accounting, Turbo ACL, DRP, CEP and DHCP. Student will achieve troubleshooting skills and problem solving techniques related to routing and switching.
Network Management (NET 462)	The course is introduced with an overview of Network Management models such as the OSI, TMN, and IETF. The course then focuses on the TCP/IP-based Internet Management including SNMP protocol, Structure of Management Information (SMI), Management Information Base (MIB), and Agent Architectures. The course introduces and discusses the advanced topics such as Distributed Network Management and Policy-Based Network Management. The course requires students

	to engage in detailed study of the SNMP protocol, IETF proposed standard MIBs such as the MIB-II, SNMPv3 MIBs including VACM, USM, Target, and Notification MIBs, Distributed Management MIBs, and RMON2. Students will be introduced to SNMP Agent/MIB implementation using an open source extensible agent toolkit such as the Net-SNMP as part of their individual/group course project. Students are expected to apply the knowledge gained from this course to specify, design, and implement management models and agent architectures to monitor and manage networks, devices, and/or applications. The course material is supplemented with extensive lab component. The laboratory work is designed to implement and support the theoretical concepts covered in the lectures.
Network Security (NET 463)	This course covers the basic concepts in network security. It first introduces the security features within an enterprise network. These include device-level security and the use of firewall. The course then studies the techniques of providing privacy, data integrity, and authentication using encryption, message digest, and digital signature and certification. The course also concentrates on IPSec and the use of IPSec to setup a secure Virtual Private network (VPN). Other topics include wireless security, email security and Intrusion Detection. The course material is supplemented with extensive lab component.
Wireless Networking (NET 464)	The course covers fundamentals of wireless network technologies, topics such as various wireless spectrums, wireless communication topics, signal propagation, antenna technologies, and Physical and MAC layer protocols. The course focuses on Wireless Personal Area Network (WPAN) technologies such as Bluetooth and ZigBee, and Wireless Local Area Network (WLAN) technologies such as WiFi and HIPERLAN and Cellular technology concepts, Wireless Ad-hoc technologies, covering: Wireless Mobile Ad-Hoc Networks (MANET), Wireless Mesh Networks (WMN), Wireless Sensor Networks (WSN) and Independent wireless technologies such as Satellite and RFID. The course material is supplemented with extensive lab component.
IP Telephony (NET 465)	This course covers the concepts and designs of multimedia networks. First it introduces Voice over IP (VoIP) network architecture, voice coding, and the

	configurations of voice interfaces and voice dial peers. Next it investigates the Quality of Service (QoS) techniques in VoIP. These techniques include admission control, traffic policing, traffic shaping, and various queuing disciplines. Then it focuses on VoIP technology and related protocols, such as RSVP, Differentiated Service, and Real-Time Transport Protocol (RTP). Finally, the course will concentrate on various multimedia signaling protocols, including H.323, Session Initiation Protocol (SIP), and Media Gateway control Protocol (MGCP). The course material is supplemented with extensive lab component.
Server Networks (NET 466)	The Server Networks course will first explore the types and approaches to data center virtualization. It will look at virtualization methods of CPU, memory, storage and network. It will further explore the details and policies for network virtualization and interconnection of virtualized data centers with physical networks. In order to have a complete picture of an enterprise-level data center, it will also look at the shared storage, backup and network security requirements. Finally, the delivery mechanisms of the computing resources and services to the end-user as well as the concepts of utility computing and the Cloud Computing will be discussed. The course material is supplemented with extensive lab component.
Fundamentals of Information Management (NET 467)	This course is designed to define the role of information systems in organizations, and in particular the roles of IS staff and end-users in developing and maintaining computer systems. The managerial aspects and implications of databases, telecommunications, hardware, software and e-commerce are included. Special attention is given to organizational setting including: transaction processing, operational reporting, decision support systems and executive information systems. The course prototypically includes analysis of real world business cases.
Storage Networking (NET 468)	The course objective is to explore the design and configuration of intelligent storage systems interconnected in SAN infrastructure. The prevailing SAN configurations based on the Fiber Channel protocol will be studied in the context of Cisco Systems and Brocade implementations. Once the students have a good grasp of the fundamental storage technologies, the attention will be shifted to

	the advanced SAN traffic engineering and management topics. We will investigate the new SAN development trends driven by the data center virtualization and cloud computing, explore the storage and data networks relationship, and look into the storage virtualization techniques and performance objectives. The concepts covered in class will be reinforced with the laboratory exercises using Cisco, Brocade, Qlogic and EMC devices. The course material is supplemented with extensive lab component.
Digital Signal Processing (CSE 352)	Sampling and reconstruction of signals; z – transform and its application to Analysis of LTI systems, DFT Applications, FFT, Implementation of Discrete-Time systems, Filters structures IIR filter design and FIR filter design. Application on audio and image processing.
Digital System Design (CSE 353)	This course covers topics in the advanced design and analysis of digital circuits with HDL. The primary goal is to provide in depth understanding of logic and system design, synthesis, and optimization for area, speed and power consumption. The course enables students to apply their knowledge for the design of advanced digital hardware systems with corresponding EDA tools. HDL will be used for simulation and synthesis.
Digital Image Processing (CSE451)	Topics include Digital image modeling and representation. Image formation: scanning, digitization, sampling, quantization, etc. Transforms and operations on images. Enhancements, smoothing, and reconstruction techniques. Restoration and filtering methods. Segmentation: edge and boundary detection, feature extraction. Compression and encoding. Color & multi- image processing. Applications: Multimedia, videoconferencing, computer vision, etc.
Digital Communication (CSE 452)	Topics include basic digital passband modulation ASK, PSK, FSK, QPSK, OPSK and MSK. Multiple Access Techniques: FDMA, TDMA, CDMA and OFDMA, Spread Spectrum: FHSS, DSSS and CDMA of DSSS. Error-control coding: Redundancy for error correction, Linear block codes, cyclic codes and convolutional codes.
Mobile Communication (CSE 453)	This course gives an overview of wireless networking, which includes an introduction to

	wireless physical characteristics and mobility. It discusses signal propagation, wireless channel characteristics, coding and modulation and multiplexing techniques. It discusses cellular networks with the system-level details of GSM and GPRS. It also gives an overview of the architecture of 3G system – UMTS. It discusses the need for specialized MAC for wireless, and MAC protocols for 802.11, WiFi, and GPRS. It covers IEEE 802.11 standard in sufficient detail. Mobility is an important characteristic of cellular and wireless LAN networks. The course describes Mobile IP. Ad Hoc and Sensor Networks are also discussed.
LTE Communication (CSE 454)	This course introduces the technology used by 3GPP Long Term Evolution, both the techniques used for radio communication between the base station and the mobile phone, and the techniques used for signaling communication and data transport in the evolved packet core.
Advanced Digital System Design (CSE 455)	Hierarchical modular design of digital systems, design modeling with a hardware description language, functional and timing simulation of digital systems, implementation in programmable logic devices and field-programmable gate arrays, formal verification, fault models and testing. Designs are developed, simulated and implemented in field-programmable gate arrays in laboratory sessions.
Global Issues in ICT (XE 452)	This course on ICT (Information and Computer Technology) is designed as a social/general elective for MIS, CS and CE undergraduate level students. It provides a comprehensive treatment of the issues faced by computer professionals in today's modern working environment reflecting the latest trends and technologies, with a socio-technological perspective. It focuses on the work of few individuals that has an impact on many people world-wide. By knowing these factors, managers can make a rational choice among options that are effective and economical. The course covers issues in which students may and/or will face as members of a technological society, relevant to the wider group of users, and citizens as well as professionals in computer-related fields.