

Course Code	Course Name	Credits	Pre-requisites	Course Description
ARAB 201	Academic Arabic	3	None	The course teaches students the basic elements of the Arabic language including grammar, syntax, morphology, and vocabulary with a focus on oral and communication skills. Emphasis is also placed on the analytical study of a wide variety of Arabic literary texts, with students exposed to major Arabic literary authors.
BIOL 201	General Biology and Evolution	4	ENGL 200 (co-requisite) or ENGL 201 (co-requisite)	BIOL 201 covers fundamental principles of Biology. A holistic view is generated from the analysis of processes at the molecular level to their incorporation into multicellular organizations. Evolutionary shaping forces will be integrated to provide a platform for understanding the origins and diversity of life.
BIOL 202	Multi-Disciplinary Science Foundations	3	ENGL 200 (co-requisite) or ENGL 201 (co-requisite)	BIOL 202 combines chemical and biological principles to investigate the functions of cells, organs, and human systems. The course provides knowledge of the molecular and physiological foundations of human health and disease.
BIOL 210	Biochemistry	3	BIOL 201, CHEM 210	BIOL 210 covers the fundamentals of metabolism at the cellular and organismal levels, with a focus on regulatory mechanisms that control metabolic flux. Topics include metabolic flux through energy converting pathways, and the metabolism of carbohydrates, lipids, amino acids, and nucleotides.
BIOL 220	Contemporary Healthcare Issues	3	BIOL 201 or BIOL 202	BIOL 220 investigates the most current healthcare issues, including epidemics and pandemics, obesity, and other healthcare and public health problems in the MENA region and the world.
BIOL 310	Molecular Genetics and Genomics	4	BIOL 201	BIOL 310 covers the foundations of Genetics and Genomics. The inter-related topics include: 1) How the phenotypes of cells and organisms are connected to the information encoded within DNA templates; 2) How cells and organisms transmit information to the next generation; and 3) How DNA sequencing and recombinant DNA technology can be used to analyze and manipulate genomic information.
BIOL 311	Molecular Genetics Laboratory	3	BIOL 310	BIOL 311 offers experiences that cover the practical and analytical aspects of modern Molecular Biology. Hands-on training on recombinant DNA methods will be complemented by problem-solving exercises that are based on the generation of data from computer-simulated experiments.
BIOL 320	Cell Biology and Development	4	BIOL 310	BIOL 320 highlights eukaryotic cell biological concepts, that include cellular organization, transport, function, and development. The focus will be primarily on eukaryotic cells and the relationship of cellular mechanisms to developmental biology.
BIOL 321	Functional Morphology	3	BIOL 320 (co-requisite)	BIOL 321 develops an understanding of the biology of human anatomy and physiology. This includes how structures develop and interact with one another to allow animals to function under different conditions.
BIOL 330	Epistemology of Biomedical Sciences	2	CHUM 300	BIOL 330 promotes an understanding of the validity of methodology and the influence of historical and cultural milieu in Biology and Medicine. The focus is on developing critical thinking skills in the biomedical sciences.
BIOL 340	Medicine and Community (Internship) I	1	BIOL 321 (co-requisite)	BIOL 340 establishes, assists, and advises pre-health experiences, such as shadowing a doctor in a hospital environment or volunteering in health-related activities. These experiences will be evidenced by recommendation letters from the physician or health professional on successful completion.
BIOL 420	Principles of Microbiology	3	BIOL 320	BIOL 420 introduces basic principles of Microbiology covering cellular, biochemical and molecular aspects of metabolism, genetics, cell structure, and host-parasite interactions. Some emphasis will be placed on the roles of microbes in health and disease.
BIOL 421	Mechanisms of Immunology	3	BIOL 320	BIOL 421 explores the basic principles of immune system function, primarily human. This includes introducing the cells and factors which mediate the various types of immune responses, as well as their mechanisms of action in such processes as hypersensitivity reactions, inflammation, and neoplastic transformation.
BIOL 422	Cellular and Molecular Neurobiology	3	BIOL 320	BIOL 422 provides an introduction to the fascinating biology of nervous systems. The emphasis is on mammalian neurobiology, moving from general neuroanatomy and basic cellular mechanisms to more integrated functions of the nervous system.
BIOL 430	BioEthics	2	BIOL 320	BIOL 430 develops critical interdisciplinary thinking and dialogue on ethical issues in biomedical activities (research and health), and explores key-tools that assist researchers and physicians in decision-making.
BIOL 431	History of Medical Thought	3	BIOL 330	BIOL 431 promotes the development of a "virtuous physician" by discussing a large panel of cultural topics linked to the History of Medicine. These activities maintain the sense of "wonder" in students, and an appreciation for "moral virtues" and not only "ethical values".
BIOL 440	Medicine and Community (Internship) II	3	BIOL 321	BIOL 440 establishes, assists, and advises pre-health experiences, such as shadowing a doctor in a hospital environment or volunteering in health-related activities. These experiences will be evidenced by recommendation letters from the physician or health professional on successful completion.
BUSI 201	General Business Principles	3	None	This course introduces students to economic systems, forms of business ownership, and considerations for running a business. Topics include aspects of business, management and leadership functions, organizational considerations, decision-making processes, accounting, money and banking, and securities markets. The course will also discuss business challenges in the legal and regulatory environment, business ethics, social responsibility, and international business.
CHEM 201	General Chemistry	4	ENGL 200 (co-requisite) or ENGL 201 (co-requisite)	CHEM 201 promotes the understanding of basic chemical principles. Topics covered include measurements, atomic theory, bonding, stoichiometry, states of matter, solutions, acids and bases, and nuclear chemistry.
CHEM 210	Organic Chemistry	4	CHEM 201	CHEM 210 provides the necessary foundation to understand the chemistry of carbon-containing compounds. Topics include structure, stereochemistry, nomenclature, synthesis, properties, and reactions of the major classes of organic compounds.
CHEM 320	Chemistry Laboratory	3	CHEM 210	CHEM 320 offers hands-on and computer-simulated experiences that train students in the design, implementation, and analysis of results from chemistry experiments.

CHUM 201	Cultures and Humanities Exploration I	3	ENGL 200 (co-requisite) or ENGL 201 (co-requisite)	CHUM 201 explores historical and cultural perspectives to investigate existential topics, including the basis of ethics and morality, and the origins of socio-political systems. CHUM 201 is interdisciplinary at its core, promotes critical thinking skills through the analysis of primary historical and current texts, and nurtures the ability of students to establish relationships between different information and to formulate new ideas.
CHUM 202	Cultures and Humanities Exploration II	3	CHUM 201	CHUM 202 is a natural extension of CHUM 201. CHUM 202 explores historical and cultural perspectives to investigate existential topics, including the nature of the mind, the origins of belief, and the purpose of human existence. CHUM 202 is interdisciplinary at its core, promotes critical thinking skills through the analysis of primary historical and current texts, and nurtures the ability of students to establish relationships between different information and to formulate new ideas.
CHUM 300	General Anthropology	3	ENGL 201 or ≥ 'C' grade in ENGL 200	CHUM 300 introduces students to the discipline of anthropology and presents the theoretical knowledge of the four major subfields: archaeology, biological anthropology, cultural anthropology, and linguistics. This course also emphasizes the holistic nature of the discipline. Students explore key questions of human diversity in the past, present, and future.
COMM 344	Communication & Presentation Skills	3	ARAB 201, ENGL 202	The course helps students in acquiring the range of skills necessary for impactful business interactions with small and large audiences, as well as one-on-one interactions, by tackling areas such as presentation skills, physical presence and body language, voice training, and team building. In parallel, the course will explore argumentation techniques that can be used to optimally convey content to any type of audience in a structured and impactful way, improving persuasion skills and optimally making use of rhetorical techniques.
COMM 346	Interpersonal Arabic Communication	3	ARAB 201	The course explores various facets of Arabic communication, including psychology (managing relationships and understanding the psyche of patients), sociology (understanding cultural and religious taboos that can affect doctor/patient rapport), and communication (projecting empathy, uplifting the morale of patients, persuading stakeholders, etc.).
ENGL 000	Intensive English	5	SAT 1 (EBRW): 450-500 Toefl (IBT): 46-59 Toefl (PBT): 453-496 Toefl (CBT): 133-169 IELTS: 5.5 Duolingo: 85-90	Designed for developing foundational skills, this intensive course aims at improving the students' levels of English in terms of their listening, speaking, reading, writing, and comprehension skills that are necessary for a successful academic and professional journey. English grammar and vocabulary skills are highlighted.
ENGL 200	Preparatory English	5	SAT 1 (EBRW): 500-550 Toefl (IBT): 60-79 Toefl (PBT): 498-546 Toefl (CBT): 171-211 IELTS: 6 Duolingo: 95-105 ENGL 000: 'CR' (C/D grade equivalent)	This course emphasizes listening, speaking, reading, writing and comprehension skills, and includes an in-depth investigation of the writing of short essays, documentation, sophisticated grammatical structures, and other rhetorical tools. Throughout the course, students will actively engage in communication and academic tasks, such as classroom discussions, debates, oral presentations, and formatted research papers.
ENGL 201	Academic English I	3	SAT 1 (EBRW): >550 Toefl (IBT): ≥80 Toefl (PBT): ≥548 Toefl (CBT): ≥212 IELTS: ≥6.5 Duolingo: >105 ENGL 000: 'CR' (A/B grade equivalent)	This course develops students' critical thinking and helps them compose academic essays on a wide variety of topics. In addition to improving writing skills, this course develops the abilities of students to express their ideas clearly and confidently during class discussions and presentations while expanding their lexical, analytical, and collaborative skills.
ENGL 202	Academic English II	3	ENGL 201 or ≥ 'C' grade in ENGL 200	Building on the skills acquired in Preparatory English and Academic English I, this course is designed to expand students' understanding of key linguistic areas, with emphasis on reading comprehension and analysis, synthesis, critiquing, argumentation, and research techniques associated with academic work.
ITEC 201	Fundamentals of Programming I	4	None	This course provides a first-level exploration of object-oriented programming with an emphasis on procedural abstraction. Topics include disciplined programming styles, data types, control, repetition, and selection constructs, functions, arrays, and files. The mechanics of running, testing, and debugging a program will also be covered.
ITEC 202	Fundamentals of Programming II	4	ITEC 201	This course provides a second-level exploration of object-oriented programming. Topics include data structures used to solve programming problems, and the algorithms for manipulating such structures.
ITEC 280	Requirements Engineering	4	ITEC 201 (co-requisite)	This course introduces requirements gathering, elicitation, specifications, and prioritization for secure software development. Topics include requirement specification process and cost, building requirements, software lifecycles, goals and models for elicitation, artifact-driven elicitation, storyboarding and scenarios, reusing existing knowledge, interviewing and learning from the sources, goal creation, use/misuse cases, group sessions for elicitation, analysis, and negotiation, finding conflicts and risks, risk analysis, assessment and prioritization, treating and controlling risk, and incorporating risk management into the overall process of requirement elicitation.
ITEC 299	IT Liability, Compliance, and Risk Management	3	ITEC 201, ITEC 280	This course provides the general foundations of ethics and their relation to cybersecurity, its governance, risks and management, compliance, and laws. Topics include domains of risk assessment and treatment, structure and content of a cybersecurity-related strategy, plans, and planning, key components and methodologies of cybersecurity policies and policy development, and the role of performance measures.
ITEC 301	Web Programming	3	ITEC 202	This course introduces the languages, tools, and techniques of modern full-stack development of rich internet applications. Topics include advanced markup languages, client- and server-side technologies, scripting, web services, web servers, and multi-layered applications using relational database systems.

ITEC 330	Introduction to Networks and Cybersecurity	3	ITEC 202	This course provides an integrated approach to computer networks and cybersecurity. The network component of this course provides a full overview of computer networking. Topics include fundamentals of modern networking technologies and protocols, overview of cloud storage and services, and network troubleshooting. The security component of this course provides a wide variety of IT security concepts, threats and attacks, tools, and best practices in security architecture. Topics include the basics of encryption algorithms, authentication, authorization, and accounting in information security, and firewalls to Wifi encryption options.
ITEC 331	Fundamentals of Network Administration	3	ITEC 202, ITEC 301	This course introduces network principles, layered models, ethernet, internet protocol stack, network routing and congestion control, network security, network packet analysis, and network traffic analysis techniques. Popular diagnostic tools are used to monitor protocols in action and to understand how network protocols work. Network programming, error detection and correction, security, and performance evaluation will also be explored.
ITEC 340	Operating Systems and Administration	3	ITEC 202	This course introduces the essentials of operating systems design and management, and the basic security issues involved in the design and implementation of such systems. Topics include operating system roles, functions and services, hardware components, virtualization, and the installation, configuration, and administration of a secure operating system.
ITEC 350	Databases Modeling and Practices	3	ITEC 202, MATH 201	This course introduces the basic concepts, fundamental structures, and general techniques to design, develop, and maintain data resources using widely available software within a structured development method. Topics include data modelling and relational data models, normal forms, and the <u>Structured Query Language</u> .
ITEC 380	Application Development	3	ITEC 202, ITEC 341	The course introduces students to systems analysis and design as a problem-solving activity within the framework of a selected methodology. Topics include contemporary industry practices, advanced system requirements and documentations, design and implementation activities options, and professional skills required for application development. Students will also learn how to use cloud services to build secure, scalable, and cloud-native applications.
ITEC 401	Enterprise Cloud Systems	3	ITEC 380	This course introduces the various types of components and data sources in large, scalable, secure, and distributed enterprise applications . Topics include large-scale enterprise environments, virtualized or cloud-based systems and services, network storage, distributed authentication, configuration and change management, and other contemporary topics.
ITEC 451	Design and Programming of Databanks	3	ITEC 401	This course introduces students to the design and programming of databanks as a collection of local and/or cloud-based heterogeneous databases. Topics include assembling and analyzing data from multiple operational systems, such as nutrition and health services data, establishing data history, analyzing trends, generating reports and forecasts, and supporting general ad hoc queries.
ITEC 460	Human Computer Interaction	3	ITEC 301, ITEC 380	This course covers the Human Computer Interface (HCI) discipline and the design of usable interfaces for computer applications. It examines how user requirements are gathered and how the principles of design are incorporated to successfully develop interfaces that meet those requirements. Students will also analyze and evaluate interfaces for usability applying techniques derived from the principles. Topics include needs-finding, rapid prototyping, heuristic evaluation, direct manipulation and representations, visual design and information design, designing experiments, connecting people through technology, challenges and opportunities of online collaboration, crowdsourcing, input, search and navigation, and gestural interfaces.
ITEC 470	Basics of Clinical Digital Health	3	STAT 207, ITEC 350	This course provides a clinically-oriented introduction to health Informatics and digital health, and clinical research, population health, and healthcare system planning. Topics include current trends and future directions in digital health, specifically from the perspectives of information science and technology, health and biomedical sciences, management sciences, and behavioral and social sciences.
ITEC 471	Methods and Tools in Health Informatics	3	ITEC 470	This course provides the scientific foundations of digital health and examines the major methods and tools used in the improvement of healthcare informatics. Topics include integration and analyses of structured and unstructured health data, modelling and simulation of the dynamics of health conditions and health services, managing the exponential growth in health and biomedical knowledge, and undertaking digital health <u>research and innovation projects</u> .
ITEC 472	Data and Knowledge in Health	3	ITEC 471	This course investigates the generation, collection, storage, communication, integration, and analysis of health data, and how this data is converted into knowledge for clinical, research, and administrative purposes. Topics include data sources in health, information modelling in health, information processing in health, information analysis and visualization in health, and management in health informatics.
ITEC 473	Modile Health and Internet of Things	3	ITEC 471	This course examines how Internet of Things (IOT) technology is used in healthcare to facilitate the deployment of telemedicine. Requirements for the delivery of telemedicine services and basic knowledge of the telemedicine standards will be explored. The course will also serve as a public awareness tool to promote and advocate the use of advanced communication technologies to expand healthcare outreach and overcome geographic barriers to deliver patient care and services.
ITEC 491	IT Project Management	3	ITEC 380	This course provides students with the skills required to successfully manage an IT project while preparing for CompTIA Project+ certification. Topics include steps of IT project management processes, critical strategies for on-time and within-budget projects, proven methods of project initiation, team members' selection criteria, management approval, communication, realistic timetables, costs tracking, and project closing.

ITEC 492	Information Technology Practicum	1	ITEC 499 (Co-Requisite)	This course provides an opportunity for a professional learning experience in applied information systems and technologies, allowing students to apply the knowledge, skills, and practices of professional attitudes and behavior in real-world experience, solve real-world problems, make the learning experiential, facilitate project-based learning, and integrate scholarship with practice.
ITEC 499	IT Major Project	3	ITEC 299, ITEC 401, ITEC 460, ITEC 491, ITEC 492 (Co-Requisite)	In this course, students work in teams to complete a significant project in Information Technology under the mentorship of a faculty member. In the first phase of this course, a detailed project proposal is formulated and includes identification of a problem, background research, social, ethical and economic considerations, intellectual property and patents, and proposal writing, including methods of analysis and theoretical modeling. In the second phase of this course, the project is implemented, documented, and presented to a panel.
MATH 201	Discrete Math	3	None	Discrete Mathematics is a branch of applied mathematics that deals with arrangements of discrete objects. Students will develop skills in applying fundamental mathematical principles, including logical reasoning, sets, relations and functions, propositional logic, and difference equations. The relevance of Discrete Mathematics to selected scientific and computing fields will also be explored.
MATH 210	Calculus I	3	None	This course covers topics that include Fundamentals of Calculus, Equations, Functions, Limits, Continuity, Differentiation with Addition to Integration Techniques, Improper Integrals, and Infinite series.
PHYS 201	Physics I	3	MATH 201 (co-requisite)	PHYS 201 provides an introduction to mechanics. This includes motion in one and two dimensions, Newton's laws of motion and their applications, work and energy, linear momentum and collisions, rotational motion, and principles of conservation.
PHYS 202	Physics II	3	PHYS 201	PHYS 202 covers electromagnetism topics, including a study of electric charges, forces, and field, Coulomb's law, electric potential and electric potential energy, electric current, electric circuits, and an introduction to magnetism.
PHYS 310	Physics Laboratory	3	PHYS 202	PHYS 310 combines hands-on and computer-simulated experiences that train students in the design, implementation, and analysis of results from physics experiments.
PSYC 201	Introduction to Psychology	3	ENGL 201 or ≥ 'C' grade in ENGL 200	PSYC 201 introduces the concepts and theories of psychology and their links to biological processes. The topics covered in this course include sensation, perception, and learning and memory.
SOCI 201	Introduction to Sociology	3	ENGL 201 or ≥ 'C' grade in ENGL 200	SOCI 201 introduces the scientific discipline that is used to study society. SOCI 201 focuses on the systematic understanding of social interaction, social organization, social institutions, social inequality, and social change.
STAT 202	Probability & Statistics	3	MATH 210	This course provides an introduction to probability and statistics with applications. Topics include basic probability models, random variables, notions of sampling, hypothesis testing, discrete and continuous probability distributions, statistical estimation and testing, confidence intervals, and an introduction to linear regression.
STAT 207	Statistics for IT	3	None	This course introduces fundamental topics and applications of statistical methods that are critical in information systems. Topics include Exploratory Data Analysis, Introduction to R, Probability, Random Variables, Probability Distributions, and Statistical Modelling of Inferences.