B.Sc. in Cybersecurity 2021

Program Components

Course Type	CRD
University Requirement (UR)	11
College Requirement (CR)	25
Major Requirement (MR)	75
Major Elective (ME)[1]	12
General Studies Elective (GSE)[2]	9
Total Credit (CRD)	132
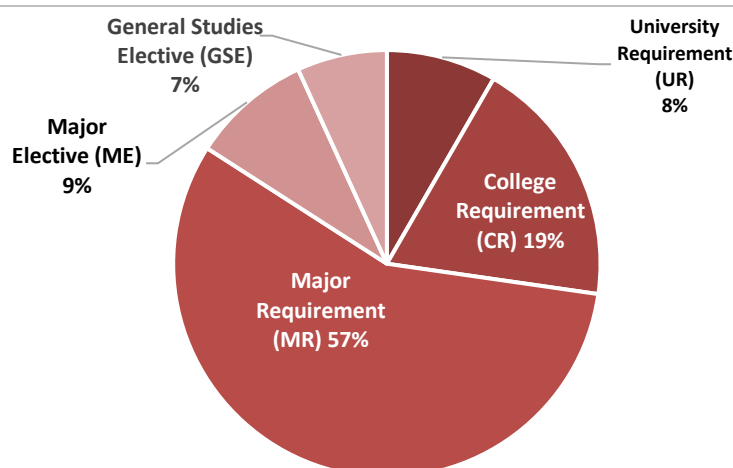
[1] Students must select **four** courses from the Major Elective (ME) ITCY 4XX list (List 1).

[2] Student must select **three** General Studies Electives, distributed according to the following:

- Students must select **two** Business courses from the following list:
  Financial Accounting I (ACC 112), Organization and management (MGT 230), Marketing Management (MKT 261)

- Students must select **one** General Studies Elective from Humanities and Social Science (List 2):
  Humanities: Fine Arts, History, American Studies, Classics, Communications, English, (Foreign Language,) French, Music, Philosophy, Theatre, Literature (Arabic), Religion (comparative).
  Social Science: Anthropology, Economics, Education, Geography, History, Psychology, Sociology, Women's Studies, Political Science.

Detailed Study Plan

Year 1 - Semester 1

Course Code	Course Title	Course Hours			Course Type	Pre Requisite	Major GPA
		LEC	PRAC	CRD			
ITIS 103	Fundamentals of Information Systems	3	2	3	MR	------	Yes
ITCS 113	Computer Programming I	3	2	3	CR	------	Yes
MATHS 101	Calculus I	3	0	3	CR	------	No
ARAB 110	Arabic Language Skills	3	0	3	UR	------	No
ENGL 154	Language Development I	3	0	3	CR	------	No

Year 1 - Semester 2

Course Code	Course Title	Course Hours			Course Type	Pre Requisite	Major GPA
		LEC	PRAC	CRD			
ITCS 114	Computer Programming II	3	2	3	CR	ITCS 113	Yes
ITNE 110	Introduction to Computer & Network Technology	3	2	3	MR	------	Yes
ENGL 155	Language Development II	3	0	3	CR	ENGL 154	No
BUS XXX	Business Elective I	3	0	3	GSE	------	No
HIST 122	Modern History of Bahrain and Citizenship	3	0	3	UR	------	No

Year 2 - Semester 3

Course Code	Course Title	Course Hours			Course Type	Pre Requisite	Major GPA
		LEC	PRAC	CRD			
ITCY 201	Fundamentals of Cybersecurity	3	2	3	MR	ITCS 113 & ITNE 110	Yes
ITIS 213	Database Management Systems	3	2	3	MR	ITIS 103 & ITCS 113	Yes
ITCS 214	Data Structures	3	2	3	CR	ITCS 114	Yes
ITNE 231	Computer Networks I	3	2	3	MR	ITCS 113 & ITNE 110	Yes
ENGL 219	Technical Report Writing	3	0	3	CR	ENGL 155	No
HRLC 107	Human Rights	2	0	2	UR	------	No

Year 2 - Semester 4

Course Code	Course Title	Course Hours			Course Type	Pre Requisite	Major GPA
		LEC	PRAC	CRD			
ITIS 252	Cloud Computing I	3	2	3	MR	ITNE 110	Yes
ITIS 266	IT Project Management I	3	2	3	MR	ITIS 103	Yes
ITCS 254	Discrete Structures I	3	2	3	MR	ITCS 113 & MATHS 101	Yes
ITNE 240	Network Operating Systems	3	2	3	MR	ITCS 214 & ITNE 231	Yes
ITNE 241	Computer Networks II	3	2	3	MR	ITNE 231	Yes
BUS XXX	Business Elective II	3	0	3	GSE	------	No

Year 3 - Semester 5

Course Code	Course Title	Course Hours			Course Type	Pre Requisite	Major GPA
		LEC	PRAC	CRD			
ITNE 341	Network Security I	3	2	3	MR	ITNE 241	Yes
ITNE 352	Network Programming	3	2	3	MR	ITCS 214 & ITNE 231	Yes
ITCS 333	Internet Software Development	3	2	3	MR	ITIS 213	Yes
ITCS 342	Design of Algorithms	3	2	3	MR	ITCS 214 & ITCS 254	Yes
STAT 273	Probability and Statistics	3	0	3	CR	MATHS 101	No
GSE XXX	Humanities and Social Sciences Elective	3	0	3	GSE	------	No

Year 3 - Semester 6

Course Code	Course Title	Course Hours			Course Type	Pre Requisite	Major GPA
		LEC	PRAC	CRD			
ITCY 351	Cryptography	3	2	3	MR	ITNE 341	Yes
ITCY 354	Secure Software Engineering	3	2	3	MR	ITIS 266 & ITNE 352	Yes
ITIS 362	Governance and Management of Enterprise IT	3	2	3	MR	ITIS 103	Yes
ITIS 322	Entrepreneurship and Digital Innovation	3	2	3	MR	ITIS 266	Yes
ISLM 101	Islamic Culture	3	0	3	UR	------	No

Training Requirement

Course Code	Course Title	Course Hours			Course Type	Pre Requisite	Major GPA
		LEC	PRAC	CRD			
ITCY 482	Internship in Cybersecurity	0	3	1	CR-Training	Pass 85 Credits	Yes

Year 4 - Semester 7

Course Code	Course Title	Course Hours			Course Type	Pre Requisite	Major GPA
		LEC	PRAC	CRD			
ITCY 401	Information Security	3	2	3	MR	ITCY 351	Yes
ITCY 470	IT Auditing and Business Continuity	3	2	3	MR	ITCY 201	Yes
ITCY 480	Cyberethics	3	2	3	MR	ITCY 201	Yes
ITCY 4XX	ITCY Elective 1	3	2	3	ME	As per ME list	Yes
ITCY 4XX	ITCY Elective 2	3	2	3	ME	As per ME list	Yes
ITCY 499	Senior Project	0	6	3	CR	Passing 85 Cr, ENGL 219	Yes

Year 4 - Semester 8

Course Code	Course Title	Course Hours			Course Type	Pre Requisite	Major GPA
		LEC	PRAC	CRD			
ITCY 410	Digital Forensics	3	2	3	MR	ITCY 201 & ITIS 362	Yes
ITCY 460	Security Risk Assessment and Countermeasures	3	2	3	MR	ITCY 201 & ITIS 362	Yes
ITCY 481	Ethical Hacking	3	2	3	MR	ITCY 351 & ITNE 352	Yes
ITCY 4XX	ITCY Elective 3	3	2	3	ME	As per ME list	Yes
ITCY 4XX	ITCY Elective 4	3	2	3	ME	As per ME list	Yes

Major Elective Courses

Major Elective Courses (ITCY 4XX)

Note: Students should select **four** major elective courses from the following list:

Course Code	Course Title	Course Hours			Course Type	Pre Requisite	Major GPA
		LEC	PRAC	CRD			
ITCY 490	Selected Topics in Cybersecurity I	3	2	3	ME	Department Approval	Yes
ITCY 491	Selected Topics in Cybersecurity II	3	2	3	ME	Department Approval	Yes
ITCY 492	Current Topics in Cybersecurity	3	2	3	ME	Department Approval	Yes
ITCY 420	Secure Coding	3	2	3	ME	ITCY 354	Yes
ITCY 431	Secure Information Storage and Management	3	2	3	ME	ITIS 252 & ITIS 362	Yes
ITCY 432	Internet of Things (IoT) Security	3	2	3	ME	ITNE 341	Yes
ITCY 440	Wireless Network Security	3	2	3	ME	ITNE 341	Yes
ITCY 441	Network Management and Administration	3	2	3	ME	ITNE 241	Yes
ITCY 450	Information Security Management	3	2	3	ME	ITCY 401	Yes
ITCY 493	Blockchain Technology and Applications	3	2	3	ME	ACC 112 & ITNE 341	Yes
ITCY 494	Cloud Security	3	2	3	ME	ITIS 252 & ITCY 351	Yes

General Studies Elective Courses List

General Studies Elective (Business Courses) (BUS XXX)

Note: Students should select **two** Business courses from the following list:

Course Code	Course Title	Course Hours			Course Type	Pre Requisite	Major GPA
		LEC	PRAC	CRD			
ACC 112	Financial Accounting I	3	0	3	GSE	------	No
MGT 230	Organization and Management	3	0	3	GSE	------	No
MKT 261	Marketing Management	3	0	3	GSE	------	No

General Studies Elective (Humanities and Social Sciences)

Course Code	Course Title	Course Hours			Course Type	Pre requisite
		LEC	PRAC	CRD		
FREN 141	French I	3	0	3	GSE	------
CHL 101	Introduction to Chinese Language	3	0	3	GSE	------
EDPS 144	Psychology of Learning and Memory	3	0	3	GSE	------
ART 133	Fundamentals of Music and its Appreciation	3	0	3	GSE	------
ART 141	Drawing and Painting	2	1	3	GSE	------
ART 221	Traditional Music of Bahrain and its Application	3	0	3	GSE	------
EDAR 126	Playing on Piano and Org 1	3	0	3	GSE	------
JAPN 101	Japanese Level I	3	0	3	GSE	------
GERM 101	Introduction to German	3	0	3	GSE	------
KL 101	Korean Language I	3	0	3	GSE	------
TL 101	Turkish Language	3	0	3	GSE	------
ENGL 130	Introduction to Literature	3	0	3	GSE	------
PSYC 103	Introduction to Psychology	3	0	3	GSE	------
PSYC 120	Psychology of Marriage	3	0	3	GSE	------
PSYC 211	Educational Psychology	3	0	3	GSE	------
SOCIO 161	Introduction to Sociology	3	0	3	GSE	------
SOCIO 181	Introduction to Anthropology	3	0	3	GSE	------
SOCIO 191	Citizenship, Identity and Globalization	3	0	3	GSE	------
SOCIO 224	Sociology of Health	3	0	3	GSE	------

Course Code	Course Title	Course Hours			Course Type	Pre requisite
		LEC	PRAC	CRD		
SOCIO 226	Sociology of Arabian Gulf	3	0	3	GSE	------
HISTO 212	Contemporary History of The Arab World	3	0	3	GSE	------
HISTO 281	Landmarks of Islamic Civilization	3	0	3	GSE	------
ARAB 141	Modern Arabic Lit.	3	0	3	GSE	------
ARAB 242	Arabic Poetry in The Renaissance Period	3	0	3	GSE	------
ISLM 114	Quranic Sciences	3	0	3	GSE	------
ISLM 136	Biography of The Prophet	3	0	3	GSE	------
ISLM 141	Introduction to Shari'a	3	0	3	GSE	------
ISLM 252	Islamic Doctrine	3	0	3	GSE	------
LAW 101	Introduction to Legal Studies	3	0	3	GSE	------
LAW 102	History of Law	3	0	3	GSE	------
LAW 106	Constitutional Law I	3	0	3	GSE	------
PHYCS 181	Elementary Astronomy	2	3	3	GSE	------
GSE XXX	Other electives	X	X	3	GSE	Department Approval

University Requirements (UR) Courses Descriptions

Course Code: ARAB 110   **Course Title:**   Arabic Language Skills
This course focuses on basic Arabic skills including form, function, and meaning. It also helps the student to appreciate and understand structures and approach them from a critical point of view, through various genres in literature.

Course Code: HIST 122   **Course Title:**   Modern History of Bahrain and Citizenship
Spatial identity of Bahrain: Brief history of Bahrain until the 18th century; the historical roots of the formation of the national identity of Bahrain since the 18th century; the modern state and evolution of constitutional life in Bahrain; the Arabic and Islamic dimensions of the identity of Bahrain; the core values of Bahrain's society and citizenship rights (legal, political, civil and economic); duties; responsibilities and community participation; economic change and development in Bahrain; Bahrain's Gulf, Arab and international relations.

Course Code: HRLC 107   **Course Title:**   Human Rights
This course deals with the principles of human rights in terms of the definition of human rights, scope, sources with a focus on the International Bill of Human Rights; The Charter of the United Nations; Universal Declaration of Human Rights; The International Covenant on Economics, Social and Culture rights; Convention against Torture and other Cruel, Inhuman or Degrading Treatment or Punishment; Mechanics and the Constitutional Protection of Rights and Public Freedoms in Kingdom of Bahrain.

Course Code: ISLM 101   **Course Title:**   Islamic Culture
An introduction to the general outline and principles of Islamic culture, its general characteristics, its relationships with other cultures, general principles of Islam in beliefs, worship, legislation and ethics.

College Requirements (CR) Courses Descriptions

Course Code: ITCS 113 **Course Title:** Computer Programming I
This course introduces problem solving and fundamental programming concepts and techniques implemented by a high-level programming language. Topics include primitive and compound data types, syntax, semantics, expressions, assignment, input, output, conditional and iterative control structures, functions.

Course Code: ITCS 114 **Course Title:** Computer Programming II
This course covers key concepts of object-oriented programming. Topics include object-oriented design, encapsulation, event handlers, memory management, arrays, exception handlers, searching algorithms, programming applications.

Course Code: ITCS 214 **Course Title:** Data Structures
This course covers data structures and their implementations in an object-oriented programming language. Topics include subtyping, abstract base class, lists, stacks, queues, trees, graphs, hash tables, strategies for choosing appropriate data structure.

Course Code: ENGL 154 **Course Title:** Language Development I
The first of a series of three integrated language courses designed specifically for IT/CS and CE majors. Special attention is given to IT related vocabulary, reading texts and writing.

Course Code: ENGL 155 **Course Title:** Language Development II
ENGL 155 is the second of three integrated language courses designed for IT students. The level is upper intermediate.

Course Code: ENGL 219 **Course Title:** Technical Report Writing
This course deals with professional and technical writing. It looks at the theoretical and practical aspects of technical report writing. It also teaches the vocabulary and language structures typically found in report writing with a view to producing a full-length formal research report.

Course Code: MATHS 101 **Course Title:** Calculus I
Algebra. Functions and graphs. Trigonometry. Conic sections. Limits and continuity. Derivatives and integrals. Applications of derivatives which include mean value theorem, extrema of functions and optimization. Definite integrals and the Fundamental Theorem of Calculus.

Course Code: STAT 273 **Course Title:** Probability and Statistics
Descriptive Statistics, Introduction to probability and probability distributions. Some of probability Densities, Sampling distributions. Central limit theorem. t and F distributions. Estimation. Tests of hypotheses. Goodness of fit tests. Regression and correlation.

Major Requirements (MR) Courses Descriptions

Course Code: ITIS 103   **Course Title:**   Fundamentals of Information Systems
This is a foundation course that introduces students to the definitions, concepts and tools used in the IS field. It focuses on discussing the business implications of information systems, social and ethical issues it creates, their relationship with organization activities and how they support e-Commerce, knowledge management and decisions making. Topics covered include: information systems in global business today, ethical and social issues in information system, achieving operational excellence and customer intimacy, e-commerce, building and managing systems, managing knowledge and collaboration, enhancing decision making.

Course Code: ITNE 110   **Course Title:**   Introduction to Computer and Network Technology
This foundational course introduces basic computer and network theory, and component identification and function. Hardware Basics: Case, Motherboard, CPU, Cards, HDD, FDD, CD, Power supply, memory, etc. BIOS, CMOS, POST, Basic connections and troubleshooting, Operating systems, Important files (Win.ini, System.ini, config.sys, autoexec.bat, etc.), Registry, Upgrading; Networks glossary, OSI Model, Physical Media, Internet Backbones, Basic network troubleshooting.

Course Code: ITCY 201   **Course Title:**   Fundamentals of Cyber Security
This course provides a general overview of cybersecurity. students will be introduced to the concept of cybersecurity governance and the organization's approach to protecting the organization's critical infrastructure from attack, damage, and misuse. Topics include an overview of cybersecurity frameworks; cybersecurity infrastructure; defense techniques, defense tactics and practices; cybersecurity safeguards, and defense in depth.

Course Code: ITCS 254   **Course Title:**   Discrete Structures I
This course covers basic discrete structures that are backbones of computer science. Topics include logic, predicate calculus, proofs, sets, relations, functions.

Course Code: ITIS 213   **Course Title:**   Database Management Systems
This course presents the fundamental concepts for designing, using, and implementing database systems. It includes extensive coverage of the relational model, relational algebra, and SQL. The course also covers data modeling using entity-relationship diagrams, and relational database design principles based on functional dependencies and normal forms.

Course Code: ITIS 266   **Course Title:**   IT Project Management I
This course provides students with the basic principles of project management, including concepts of project initiating, planning, executing, monitoring, and controlling, and closing process groups. The course introduces the fundamentals of five project management areas: integration, scope, time, cost, and quality.

Course Code: ITIS 252   **Course Title:**   Cloud Computing I
This course introduces the concepts of cloud computing as a new computing paradigm. Students will explore various terminologies, principles and applications of cloud computing. Topics covered include: classic data centers, virtualized data centers (VDCs), business continuity in VDCs, cloud infrastructure, cloud services such as Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS), cloud management, cloud security, and cloud migration considerations.

Course Code: ITNE 231   **Course Title:**   Computer Networks I
Packet-Switched Networks. Protocol Layers. Application Layer. HTTP, FTP, Electronic Mail, DNS. Web Servers. Transport Layer: Multiplexing and Demultiplexing, Reliable Data Transfer and Congestion Control. Network Layer and Routing: The Internet Protocol (IP), IPv6, Multicast Routing and Mobility.

Course Code: ITNE 240   **Course Title:**   Network Operating Systems
This course provides fundamentals of network operating systems and applications. Topics covered are Standards & Protocols, Addressing, Address Resolution, Network OS, File Systems, Intro to Linux, File Sharing, System Administration, Software installation, Network Services, Security.

Course Code: ITNE 241   **Course Title:**   Computer Networks II

Data and Signals, Signal transmission; Bandwidth Utilization; Transmission media and systems; Signal encoding; Interfacing; Data link control; Error detection and correction; Multiple Access; Ethernet; Multimedia networking.

Course Code: ITCY 351   **Course Title:**   Cryptography

Basic of cryptographic systems, symmetric block ciphers (DES, AES, other contemporary symmetric ciphers), linear and differential cryptanalysis, perfect secrecy, public-key cryptography (RSA, discrete logarithms), algorithms for factoring and discrete logarithms, cryptographic protocols, hash functions, authentication, key management, key exchange, and signature schemes.

Course Code: ITIS 322   **Course Title:**   Entrepreneurship and Digital Innovation

This course covers areas related to developing and managing technology-based new ventures. Topics covered include: role and personality of the entrepreneur, business planning, building and managing teams, digital innovative products, market evaluation and developing a business and marketing plan, legal issues including intellectual property, preparation of venture budgets, and raising finance.

Course Code: ITCY 354   **Course Title:**   Secure Software Engineering

This course introduces students to the discipline of designing, developing, and testing secure and dependable software-based systems. It focuses on how to incorporate security in each phase and what are the techniques /approaches/tools to use to get software that is secure by default. Topics to be covered include Secure software development lifecycle, Low level and application related vulnerability analysis, Security requirement and secure design, Secure coding practices and software inspection, and Security testing.

Course Code: ITIS 362   **Course Title:**   Governance and Management of Enterprise IT

This course provides students with the knowledge to become skilled in directing, planning, running, building and monitoring of Enterprise IT. Topics covered include: Introduction to Enterprise IT Management; strategic alignment of IT strategy to enterprise strategy, types of IT organizations and functions; organizational structures, Enterprise IT governance concepts and frameworks; concepts of measuring, governance enablers, reporting and controlling; outsourcing approaches.

Course Code: ITCS 342   **Course Title:**   Design of Algorithms

This course covers techniques used to design and analyze algorithms. Topics include time and space complexity analysis of algorithms, brute force, divide-and–conquer, recursive and sorting algorithms, greedy, dynamic programming, parallel algorithms, scheduling algorithms, and heuristics. A special focus is dedicated to real life applications in cybersecurity such as cryptography, digital forensics, data Integrity and authentication etc.

Course Code: ITCS 333   **Course Title:**   Internet Software Development

This course exposes the key technologies underlying the World-Wide Web and the principles and tools that are used to develop dynamic web applications. Topics include web design technologies (HTML, CSS style sheets), current server-side programming, web server processing, database access, event-driven programming.

Course Code: ITNE 341   **Course Title:**   Network Security 1

The course will cover the security topics in the following areas: Access control, simple authentication protocols, password-based security, ACLs and capabilities, multilevel and multilateral security, covert channels and inference control, firewalls and intrusion detection systems. Software: flows and malware, buffer overflows, viruses and worms, software reverse engineering, digitals rights management, secure software development and operating systems security.

Course Code: ITNE 352   **Course Title:**   Network Programing

This course introduces the basics of computer network programming. Topics include: designing and implementation of software for distributed systems (client/server and peer-to-peer), creating and managing sockets and interfaces, addressing, TCP and UDP programming, programming for web services (RESTful AP), message passing, securing connections, multithreading, remote procedure call, and remote object access.

Course Code: ITCY 401   **Course Title:**   Information Security

This course covers the practices intended to maintain a secure infrastructure. It focuses on threat management and using business drivers to guide the cybersecurity activities. Topics include integrating cybersecurity risks with

organization's risk management processes, best practices in dealing with complexity and uncertainty, protecting against advanced persistent threat (APT), Dynamics of Threats and Resilience, improving cybersecurity and resilience of critical infrastructure.

Course Code: ITCY 410   **Course Title:**   Digital Forensics
This course introduces the fundamental concepts of digital forensics, topics include the principles and techniques for digital forensics investigation and the spectrum of available computer forensics tools. Students will learn about core forensics procedures to ensure the admissibility of evidence, as well as the legal and ethical implications. Lab work will cover forensic investigation on different file systems, and guide students through forensic procedures and review and analyze forensics reports.

Course Code: ITCY 460   **Course Title:**   Security Risk Assessment and Countermeasures
This course examines information security as a risk management problem where the organization identifies information security risks, evaluates those risks, and makes risk mitigation and acceptance decisions given its resource constraints. The students will learn the foundational concepts in risk management and will be introduced to standard risk management approaches for identifying, analyzing, and responding to risk, as well as the tools and methodologies for metrics to monitor risk management activities.

Course Code: ITCY 470   **Course Title:**   IT Auditing and Business Continuity
This course covers system audit and control concepts and practices. Topics covered include: risk assessments concepts in compliance with information systems audit standards and guidelines, types of audits to ensure that systems are protected and controlled, strategies to minimize risks, control objectives and controls related to audit planning, audit project management techniques and standards and procedures for the development and maintenance of the Business Continuity Plan (BCP) and testing methods.

Course Code: ITCY 481   **Course Title:**   Ethical Hacking
Practice and methodology of ethical hackers are identified to provide the learners with an understanding of networks threats and possible attacks, ability to plan and apply penetration test, distinguish recommended countermeasures, and compose a penetration test report.

Course Code: ITCY 482   **Course Title:**   Internship in Cybersecurity
The course is a fulltime internship training program whereby the student works in a Cybersecurity related environment that provides a comprehensive experience of the professional environment. The course provides an opportunity for gaining knowledge and application while being supervised by experienced professionals in various industries. The students are expected to gain new technical, interpersonal, and professional skills throughout this internship. The Internship should last for at least 8 weeks. The student should produce a report detailing their experience and observations through reflecting upon the lectures and labs taught in the university and linking them to the internship period.

Course Code: ITCY 499   **Course Title:**   Senior Project
The student has to undertake and complete a research topic or develop a system under the supervision of a faculty member in order to probe in depth a specific problem in Cybersecurity. The student is expected to make a final project presentation before a committee.

Major Electives (MR) Courses Descriptions

Course Code: ITCY 490   **Course Title:** Selected Topics in Cybersecurity I

This course focuses on a particular topic or application in the Cybersecurity and related fields. The intention is to provide a rapid response to shifts in trends and advances in the Cybersecurity landscape and provides a focused and in-depth course on a particular topic, with topic and content changing on a regular basis. The course description is to be approved by the Department council upon offering.

Course Code: ITCY 491   **Course Title:** Selected Topics in Cybersecurity II

This course focuses on a particular topic or application in the Cybersecurity and related fields. The intention is to provide a rapid response to shifts in trends and advances in the Cybersecurity landscape and provides a focused and in-depth course on a particular topic, with topic and content changing on a regular basis. The course description is to be approved by the Department council upon offering.

Course Code: ITCY 492   **Course Title:** Current Topics in Cybersecurity

This course focuses on the latest trends and emerging topics in the Cybersecurity and related fields. The course content is changed with every offering. The course description is to be approved by the Department council upon offering.

Course Code: ITCY 431   **Course Title:** Secure Information Storage and Management

This course introduces fundamental concepts of secure Information Storage and Management. Students will learn how to identify and characterize the data that needs protection, and develop an understanding of the storage security foundations, and implementing protection and security measures to meet a wide range of requirements. Topics include: Securing the Storage Infrastructure, Evolution of Storage Technology and Architecture, Components of a Storage System Environment, Intelligent Storage System, Direct-Attached Storage, Network-Attached Storage, Content-Addressed Storage, and Storage Virtualization.

Course Code: ITCY 450   **Course Title:** Information Security Management

This course will provide the student with an understanding of the principles of information security management that are commonly used in business and be able to apply these principles for proper asset identification and valuation, Identifying and prioritizing information assets, Identifying and prioritizing threats to information assets, including evaluating the value of confidentiality, integrity, availability, and replacement of assets. Topics include Understanding Information Security Management Systems (found in the ISO/IEC 27001, ISO/IEC 27002, and ISO/IEC 27035 standards), Integrated threat management (ITM), and Planning for a Privacy Breach.

Course Code: ITCY 432   **Course Title:** Internet of Things (IoT) Security

This course aims to introduce the security of Internet of Things (IoT), the course focuses on security issues for IoT devices and systems. Topics covered Sensors and actuators in IoT, IoT standards and protocols, IoT Connectivity, the security techniques for IoT devices, Lightweight Cryptography, Programming of IoT devices, and Hardware security for IoT devices.

Course Code: ITCY 440   **Course Title:** Wireless Network Security

The Wireless Network Security course discusses the relevant wireless security technologies, vulnerabilities, and potential threats, and introduces the corresponding security standards and protocols, as well as provides solutions to security concerns. Security aspects of the following types of wireless networks is considered: Wireless Cellular Networks, Wireless Local Area Networks (WLANs), Bluetooth Networks and Communications and Wireless Sensor Networks (WSNs).

Course Code: ITCY 421   **Course Title:** Secure Coding

This course explains the principles and practices for secure computing and writing secure software. Topics include code vulnerabilities, static code analysis, error handling, secure coding practices, secure I/O, race conditions and mediation, handling buffer overflow, and handling vulnerabilities in web and database programming.

Course Code: ITCY 441 **Course Title:** Network Management and Administration

The network management course is concerned with providing the principle background theory and practical skills that are vital to understand the tools that are necessary to manage and maintain the operation of computer networks. Network management protocols such as SNMP 1,2,3, RMON1, RMON2.

Course Code: ITCY 493 **Course Title:** Blockchain Technology and Applications

The course provides students the most important Blockchain concepts, the philosophy of decentralization behind blockchain, and recent development and technologies in the Blockchain environment. In addition, it covers the recent applications of Blockchain and its impacts.

Course Code: ITCY 494 **Course Title:** Cloud Security

This course covers in-depth knowledge in the field of cloud security. Topics include cloud security basics, Security of the cloud, Security in the cloud, security services, Securing the services, Authentication, Access control, Compliance, Incident Management & Troubleshooting.

Genral Studies Electives (GSE) Business Courses Descriptions

Course Code: ACC 112 **Course Title:** Financial Accounting I
Students will be introduced to: Steps of the accounting cycle; analyzing and recording transactions; general journal; general ledger; trial balance; adjusting and closing entries; preparation of financial statements; accounting for merchandising operations; special journals and subsidiary ledgers; inventories and accounting for cash and receivables..

Course Code: MGT 230 **Course Title:** Organization and Management
This course presents an overview of management theories and practices and introduction to the study of organizational structures, management functions and processes within an action frame of reference. The course discusses about organization, planning and control systems, leadership and employee motivation, decision-making models and the management of change..

Course Code: MKT 261 **Course Title:** Marketing Management
This course covers in-depth knowledge in the field of cloud security. Topics include cloud security basics, Security of the cloud, Security in the cloud, security services, Securing the services, Authentication, Access control, Compliance, Incident Management & Troubleshooting.