

# INFORMATION TECHNOLOGY

## Admission to Program

Admission to the program is explained in the HCT Admission Policy described in the Academic Policies section of this Catalog.

## Program Mission

The mission of the Bachelor of Information Technology is to develop graduates with Information technology skills and knowledge, and work competencies required to create cutting-edge IT solutions to meet the work environment. The program aims to prepare graduates to be able to work as IT specialist in one of the 4 currently offered concentration. The concentrations are Application Development, Security and Forensics, Interactive Multimedia Technologies and Networking.

In addition to theoretical and technical skills, the program prepares students to adapt to complex and evolving technological environments such as those observed in the workplace, apply ethical standards, and use various communication approaches in their interactions with others.

## Program Description

The Bachelor of Information Technology program prepares students to respond to the needs of the workforce for knowledgeable and skilled IT professionals who can apply ethical values to complex and unpredictable problems and to plan, design, implement, evaluate and manage IT solutions.

The program provides students with the broad technical education necessary for employment in the public or private sector, and it enables them to develop an understanding of fundamentals and current issues important for future development. Students also develop professional work competencies to complement their technical skills and apply high-level special administrative responsibilities.

The program is structured as a set of core, elective, general studies, and concentration courses. In the core courses, students will acquire the core knowledge, skills, and competencies needed for IT. Through the concentration courses, students will develop up-to-date knowledge and skills, in this fast-growing field to meet the industry requirement.

*The program offers four concentrations:*

- **Applications Development**
- **Interactive Multimedia Technologies**
- **Networking**
- **Security and Forensics**

Students have the option to exit the program with a Higher Diploma degree after completion of the third year (see Completion Requirements below).

## Program Goals

### Applications Development Concentration - Goals

- Produce graduates with the development skills required to create cutting-edge software applications and apps on multiple platforms.
- Offer graduates with the required knowledge and skills in current software development methodologies using state-of-the-art tools and facilities.
- Prepare graduates to be able to work as software engineers, enterprise system developers, system architects, project managers, and mobile application developers.

- Prepare graduates who can adapt and evolve in complex technological environments such as those found in the workplace and accept social responsibility at large.
- Produce graduates who contribute to and observe ethical standards and use various communication approaches in their interactions with others.

### Interactive Multimedia Technologies Concentration - Goals

- Produce graduates with professional skills built on a sound foundation in the fields of interactivity and multimedia powered by information technology.
- Prepare graduates to become leaders and innovators in a new and interactive society based on interactive arts, multimedia, web and interface design, game design, and development.
- Prepare graduates to work as 2d and 3d graphic artists, animation experts, interactive multimedia developers, game designers and developers, and simulation specialists.
- Prepare graduates who can adapt and evolve in complex technological environments such as those found in the workplace and accept social responsibility at large.
- Produce graduates who contribute to and observe ethical standards and use various communication approaches in their interactions with others.

### Networking Concentration - Goals

- Produce graduates who can design, configure, implement, and troubleshoot converged campus and enterprise networks.
- Provide graduates with the required knowledge and skills to work at multiple levels of local and enterprise networks.
- Produce graduates who will be able to work as network engineers, network architects, infrastructure designers, project managers, and consultants.
- Prepare graduates who can adapt and evolve in complex technological environments such as those found in the workplace and accept social responsibility at large.
- Produce graduates who contribute to and observe ethical standards and use various communication approaches in their interactions with others.

### Security and Forensics Concentration - Goals

- Produce graduates with skills and a strong foundation in the field of information security.
- Provide graduates with technical and managerial skills for assessing risk, securing information assets, identifying and responding to attacks, conducting a forensic investigation, and recovering from incidents and disasters.
- Prepare graduates to work as requirement security specialists; security practitioners, managers, and consultants; forensic investigators; and it auditors.
- Prepare graduates who can adapt and evolve in complex technological environments such as those found in the workplace and accept social responsibility at large.
- Produce graduates who contribute to and observe ethical standards and use various communication approaches in their interactions with others.

## Program Learning Outcomes

### Bachelor of Information Technology

Graduates will be able to:

- Apply knowledge of computing and mathematics appropriate to the discipline
- Analyze a problem, and identify and define the computing requirements appropriate to its solution.
- Design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
- Function effectively on teams to accomplish a common goal
- Understand professional, ethical, legal, security and social issues and responsibilities
- Communicate effectively with a range of audiences
- Analyze the local and global impact of computing on individuals, organizations, and society
- Recognize the need for and engage in continuing professional development
- Use current techniques, skills, and tools necessary for computing practice.
- In addition, each concentration has its specific program learning outcomes.

### Applications Development Concentration

Graduates will be able to:

- Demonstrate a critical awareness of a range of analysis, design and programming methods to solve complex business problems
- Develop secure desktop, web and mobile applications for multiple platforms using client-side and server side coding, and advanced database techniques
- Deploy applications for mobile devices using industry standard tools and practices for design, development and testing.

### Interactive Multimedia Technologies Concentration

Graduates will be able to:

- Demonstrate a solid understanding of Interactive Multimedia Design principles.
- Employ technical skills proficiency with industry-standard tools to produce interactive multimedia products
- Apply industry best practices and techniques for planning, designing and producing interactive multimedia products

### Networking Concentration

Graduates will be able to:

- Explain concepts and theories of networking and apply them to various situations, classifying networks, analyzing performance, troubleshooting and implementing new technologies.
- Design network infrastructure by selecting appropriate devices, topologies, protocols, systems software, network services and security.
- Develop solutions for networking and security problems, balancing business concerns, technical issues and security

### Security and Forensics Concentration

Graduates will be able to:

- Critically consider relevant principles and theoretical knowledge to assess risk and develop policies and procedures to secure an organizational information system.
- Demonstrate the ability to identify security weaknesses using intrusion detection techniques and take corrective actions to secure information assets.
- Employ advanced skills to conduct forensic investigations in line with local and international law and standards.
- Deploy and manage secured client and server operating systems.

## Requirements Completion Requirements

### Bachelor of Information Technology

Students must successfully complete a minimum of 135 credits, including:

Code	Title	Credit Hours
Information Technology Core Courses		60
Concentration Courses		36
4000 Elective Courses		6
General Studies		33
Total Credit Hours		135

### Higher Diploma in Information Technology Exit Option

Students must successfully complete a minimum of 105 credits, including:

Code	Title	Credit Hours
Information Technology Core Courses		48
Concentration Courses		27
General Studies		30
Total Credit Hours		105

Code	Title	Credit Hours
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#### Information Technology Core Courses

Required Credits: 60

CIS 1003	Information Systems in Organisations and Society	3
CIS 1103	Hardware and Networking	3
CIS 1203	Web Technologies	3
CIS 1303	Data and Information Management	3
CIS 1403	Fundamentals of Programming	3
CIS 2003	Statistics and Probability	3
CIS 2103	Principles of Information Assurance, Security and Privacy	3
CIS 2203	Applied Discrete Maths	3
CIS 2303	Systems Analysis and Design	3
CIS 2403	Object Oriented Programming	3
CIS 2806	Work Related Experience I	6
CIS 2903	Operating Systems	3
CIS 3003	Human Computer Interaction	3
CIS 3303	System Architecture and Integration	3
CIS 3806	Work Related Experience II	6

CIS 4603	Project Management	3
CIS 4906	Capstone Project (Integrative & Consultancy Focused)	6

**General Studies**

Required Credits:33

English, Arabic or other Languages :12

Humanities or Arts: 3

Information Technology or Mathematics: 6

The Natural Sciences: 3

The Social or Behavioral Sciences: 9

**Concentration Name: Applications Development Concentration**

Total Credit Hours: 36

Concentration Curriculum:

Code	Title	Credit Hours
CIA 2503	Web Applications Development	3
CIA 2513	Key Components of IoT Architecture for Smart Applications	3
CIA 3003	Introduction to Mobile Applications	3
CIA 3103	Database Design and Administration	3
CIA 3113	IoT and Security	3
CIA 3123	Mobile Game Development	3
CIA 3133	Advanced Application Development	3
CIA 4003	Advanced Mobile Applications	3
CIA 4103	Data Driven Web Technologies	3
CIA 4203	Enterprise Database Applications	3
CIA 4503	Advanced Object Oriented Programming	3
CIB 3103	Object Oriented Analysis & Design	3

Concentration Electives:

Code	Title	Credit Hours
CIA 4613	Mobile Application Administration	3
CIB 4203	Customer Relationship Management Systems	3
CIB 4603	Enterprise Resource Planning	3
CIM 4103	Web Authoring and Administration	3
CIS 4103	Research Methods for Emerging Technologies	3
CIS 4203	Information Technology Strategy and Governance	3
CIS 4403	Cloud Computing	3
CIS 4703	Blockchain Applications and Coding	3
CIS 4713	Virtual Reality and 3D Virtual Environments	3
CIS 4863	Special Topics In Computer Information Science	3
CSF 4003	Security and Risk Management	3
CSF 4613	Security Intelligence	3

**Concentration Name: Interactive Multimedia Technologies Concentration**

Total Credit Hours: 36

Concentration Curriculum:

Code	Title	Credit Hours
CIA 2503	Web Applications Development	3
CIM 2003	Graphic Design for Multimedia	3
CIM 2103	Storyboarding for Multimedia	3
CIM 3003	2D Animation	3

CIM 3113	Motion Graphics	3
CIM 3203	Programming for Multimedia	3
CIM 3403	3D Modelling and Animation	3
CIM 3503	Computer Game Design and Development	3
CIM 4003	Multimedia Scripting	3
CIM 4103	Web Authoring and Administration	3
CIM 4203	Virtual Reality and Simulation	3
CIM 4303	VFX, Audio, Editing and Composition	3

Concentration Electives:

Code	Title	Credit Hours
CIA 4103	Data Driven Web Technologies	3
CIA 4503	Advanced Object Oriented Programming	3
CIA 4613	Mobile Application Administration	3
CIB 4203	Customer Relationship Management Systems	3
CIB 4603	Enterprise Resource Planning	3
CIS 4103	Research Methods for Emerging Technologies	3
CIS 4203	Information Technology Strategy and Governance	3
CIS 4403	Cloud Computing	3
CIS 4703	Blockchain Applications and Coding	3
CIS 4713	Virtual Reality and 3D Virtual Environments	3
CIS 4863	Special Topics In Computer Information Science	3
CSF 4613	Security Intelligence	3

**Concentration Name: Networking Concentration**

Total Credit Hours: 36

Concentration Curriculum:

Code	Title	Credit Hours
CIN 2003	Enterprise Network Services	3
CIN 2103	Networking Fundamentals	3
CIN 2203	Routing Protocols	3
CIN 3003	LAN Switching	3
CIN 3103	Wireless Networks	3
CIN 3203	WAN Technologies	3
CIN 3303	Network Security	3
CIN 3503	Virtualisation Technologies	3
CIN 4003	Routing Solutions for the Enterprise	3
CIN 4103	Network Management	3
CIN 4113	Scalable Computer Network	3
CIN 4203	Voice over Internet Protocol (VoIP) Fundamentals	3

Concentration Electives:

Code	Title	Credit Hours
CIA 4103	Data Driven Web Technologies	3
CIA 4503	Advanced Object Oriented Programming	3
CIA 4613	Mobile Application Administration	3
CIB 4203	Customer Relationship Management Systems	3
CIB 4603	Enterprise Resource Planning	3
CIM 4103	Web Authoring and Administration	3
CIS 4103	Research Methods for Emerging Technologies	3
CIS 4203	Information Technology Strategy and Governance	3
CIS 4403	Cloud Computing	3

CIS 4703	Blockchain Applications and Coding	3
CIS 4713	Virtual Reality and 3D Virtual Environments	3
CIS 4863	Special Topics In Computer Information Science	3
CSF 4613	Security Intelligence	3

**Concentration Name: Security and Forensics Concentration**

Total Credit Hours: 36

Concentration Curriculum:

Code	Title	Credit Hours
CIN 2003	Enterprise Network Services	3
CIN 2103	Networking Fundamentals	3
CSF 2113	Programming for Information Security	3
CSF 3003	Cyber Law and Ethics	3
CSF 3103	Incidence Response and Disaster Recovery	3
CSF 3203	Intrusion Detection and Ethical Hacking	3
CSF 3403	Computer Forensics and Investigation	3
CSF 3603	Cryptography and Network Security	3
CSF 4003	Security and Risk Management	3
CSF 4103	Web Application and E-Commerce Security	3
CSF 4203	Telecommunications and WAN Security	3
CSF 4613	Security Intelligence	3

Concentration Electives:

Code	Title	Credit Hours
CIA 4103	Data Driven Web Technologies	3
CIA 4503	Advanced Object Oriented Programming	3
CIA 4613	Mobile Application Administration	3
CIB 4203	Customer Relationship Management Systems	3
CIB 4603	Enterprise Resource Planning	3
CIM 4103	Web Authoring and Administration	3
CIS 4103	Research Methods for Emerging Technologies	3
CIS 4203	Information Technology Strategy and Governance	3
CIS 4403	Cloud Computing	3
CIS 4703	Blockchain Applications and Coding	3
CIS 4713	Virtual Reality and 3D Virtual Environments	3
CIS 4863	Special Topics In Computer Information Science	3

## Ideal Study Plan

### Recommended Sequence of Study

**Applications Development Concentration****Year 1**

Semester 1		Credit Hours
CIS 1003	Information Systems in Organisations and Society	3
CIS 1203	Web Technologies	3
ICT 2013	Computational Thinking and Coding	3
LSC 1103	Professional Communication and Reporting	3
LSS 1003	Life and Future Skills	3
	Credit Hours	15

**Semester 2**

AES 1013	Arabic Communications I	3
CIS 1103	Hardware and Networking	3
CIS 1303	Data and Information Management	3

CIS 1403	Fundamentals of Programming	3
LSM 1003	Applied Mathematics	3
	Credit Hours	15

**Year 2****Semester 1**

CIS 2103	Principles of Information Assurance, Security and Privacy	3
CIS 2203	Applied Discrete Maths	3
CIS 2403	Object Oriented Programming	3
CIS 2903	Operating Systems	3
LSC 2103	Academic Reading and Writing II	3
	Credit Hours	15

**Semester 2**

AES 1003	Emirati Studies	3
CIA 2503	Web Applications Development	3
CIA 2513	Key Components of IoT Architecture for Smart Applications	3
CIS 2003	Statistics and Probability	3
CIS 2303	Systems Analysis and Design	3
	Credit Hours	15

**Summer**

CIS 2806	Work Related Experience I	6
	Credit Hours	6

**Year 3****Semester 1**

CIA 3123	Mobile Game Development	3
CIS 3003	Human Computer Interaction	3
CIS 3303	System Architecture and Integration	3
LSN 1113	Introduction to Sustainability	3
LSS 1123	Basic Research Methods	3
	Credit Hours	15

**Semester 2**

CIA 3003	Introduction to Mobile Applications	3
CIA 3103	Database Design and Administration	3
CIA 3113	IoT and Security	3
CIA 3133	Advanced Application Development	3
CIB 3103	Object Oriented Analysis & Design	3
BUS 2403	Innovation and Entrepreneurship	3
	Credit Hours	18

**Summer**

CIS 3806	Work Related Experience II	6
Higher Diploma in Information Technology Exit Option		
	Credit Hours	6

**Year 4****Semester 1**

AES 3003	Professional Arabic	3
CIA 4103	Data Driven Web Technologies	3
CIA 4203	Enterprise Database Applications	3
CIS 4603	Project Management	3
4000 Level Elective		3
	Credit Hours	15

**Semester 2**

CIA 4003	Advanced Mobile Applications	3
CIA 4503	Advanced Object Oriented Programming	3
CIS 4906	Capstone Project (Integrative & Consultancy Focused)	6
4000 Level Elective		3
	Credit Hours	15
	Total Credit Hours	135

**Interactive Multimedia Technologies Concentration**

Year 1		
Semester 1		Credit Hours
CIS 1003	Information Systems in Organisations and Society	3
CIS 1203	Web Technologies	3
ICT 2013	Computational Thinking and Coding	3
LSC 1103	Professional Communication and Reporting	3
LSS 1003	Life and Future Skills	3
Credit Hours		15
Semester 2		
AES 1013	Arabic Communications I	3
CIS 1103	Hardware and Networking	3
CIS 1303	Data and Information Management	3
CIS 1403	Fundamentals of Programming	3
LSM 1003	Applied Mathematics	3
Credit Hours		15
Year 2		
Semester 1		
CIS 2103	Principles of Information Assurance, Security and Privacy	3
CIS 2203	Applied Discrete Maths	3
CIS 2403	Object Oriented Programming	3
CIS 2903	Operating Systems	3
LSC 2103	Academic Reading and Writing II	3
Credit Hours		15
Semester 2		
AES 1003	Emirati Studies	3
CIM 2003	Graphic Design for Multimedia	3
CIM 2103	Storyboarding for Multimedia	3
CIS 2003	Statistics and Probability	3
CIS 2303	Systems Analysis and Design	3
Credit Hours		15
Summer		
CIS 2806	Work Related Experience I	6
Credit Hours		6
Year 3		
Semester 1		
CIM 3003	2D Animation	3
CIM 3503	Computer Game Design and Development	3
CIS 3003	Human Computer Interaction	3
CIS 3303	System Architecture and Integration	3
LSN 1113	Introduction to Sustainability	3
LSS 1123	Basic Research Methods	3
Credit Hours		18
Semester 2		
CIA 2503	Web Applications Development	3
CIM 3113	Motion Graphics	3
CIM 3203	Programming for Multimedia	3
CIM 3403	3D Modelling and Animation	3
BUS 2403	Innovation and Entrepreneurship	3
Credit Hours		15
Summer		
CIS 3806	Work Related Experience II	6
Higher Diploma in Information Technology Exit Option		
Credit Hours		6
Year 4		
Semester 1		
AES 3003	Professional Arabic	3
CIM 4003	Multimedia Scripting	3
CIM 4103	Web Authoring and Administration	3
CIS 4603	Project Management	3

4000 Level Elective		3
Credit Hours		15
Semester 2		
CIM 4203	Virtual Reality and Simulation	3
CIM 4303	VFX, Audio, Editing and Composition	3
CIS 4906	Capstone Project (Integrative & Consultancy Focused)	6
4000 Level Elective		3
Credit Hours		15
Total Credit Hours		135

## Networking Concentration

Year 1		
Semester 1		Credit Hours
CIS 1003	Information Systems in Organisations and Society	3
CIS 1203	Web Technologies	3
ICT 2013	Computational Thinking and Coding	3
LSC 1103	Professional Communication and Reporting	3
LSS 1003	Life and Future Skills	3
Credit Hours		15
Semester 2		
AES 1013	Arabic Communications I	3
CIS 1103	Hardware and Networking	3
CIS 1303	Data and Information Management	3
CIS 1403	Fundamentals of Programming	3
LSM 1003	Applied Mathematics	3
Credit Hours		15
Year 2		
Semester 1		
CIS 2103	Principles of Information Assurance, Security and Privacy	3
CIS 2203	Applied Discrete Maths	3
CIS 2403	Object Oriented Programming	3
CIS 2903	Operating Systems	3
LSC 2103	Academic Reading and Writing II	3
Credit Hours		15
Semester 2		
AES 1003	Emirati Studies	3
CIN 2003	Enterprise Network Services	3
CIN 2103	Networking Fundamentals	3
CIS 2003	Statistics and Probability	3
CIS 2303	Systems Analysis and Design	3
Credit Hours		15
Summer		
CIS 2806	Work Related Experience I	6
Credit Hours		6
Year 3		
Semester 1		
CIN 2203	Routing Protocols	3
CIN 3003	LAN Switching	3
CIS 3003	Human Computer Interaction	3
CIS 3303	System Architecture and Integration	3
LSN 1113	Introduction to Sustainability	3
LSS 1123	Basic Research Methods	3
Credit Hours		18
Semester 2		
CIN 3103	Wireless Networks	3
CIN 3203	WAN Technologies	3
CIN 3303	Network Security	3
CIN 3503	Virtualisation Technologies	3
BUS 2403	Innovation and Entrepreneurship	3
Credit Hours		15

Summer		
CIS 3806	Work Related Experience II	6
Higher Diploma in Information Technology Exit Option		
Credit Hours		6
Year 4		
Semester 1		
AES 3003	Professional Arabic	3
CIN 4003	Routing Solutions for the Enterprise	3
CIN 4103	Network Management	3
CIS 4603	Project Management	3
4000 level elective		3
Credit Hours		15
Semester 2		
CIN 4113	Scalable Computer Network	3
CIN 4203	Voice over Internet Protocol (VoIP) Fundamentals	3
CIS 4906	Capstone Project (Integrative & Consultancy Focused)	6
4000 level elective		3
Credit Hours		15
Total Credit Hours		135

### Security and Forensics Concentration

Year 1		
Semester 1		Credit Hours
CIS 1003	Information Systems in Organisations and Society	3
CIS 1203	Web Technologies	3
ICT 2013	Computational Thinking and Coding	3
LSC 1103	Professional Communication and Reporting	3
LSS 1003	Life and Future Skills	3
Credit Hours		15
Semester 2		
AES 1013	Arabic Communications I	3
CIS 1103	Hardware and Networking	3
CIS 1303	Data and Information Management	3
CIS 1403	Fundamentals of Programming	3
LSM 1003	Applied Mathematics	3
Credit Hours		15
Year 2		
Semester 1		Credit Hours
CIS 2103	Principles of Information Assurance, Security and Privacy	3
CIS 2203	Applied Discrete Maths	3
CIS 2403	Object Oriented Programming	3
CIS 2903	Operating Systems	3
LSC 2103	Academic Reading and Writing II	3
Credit Hours		15
Semester 2		
AES 1003	Emirati Studies	3
CIN 2103	Networking Fundamentals	3
CIS 2003	Statistics and Probability	3
CIS 2303	Systems Analysis and Design	3
CSF 2113	Programming for Information Security	3
Credit Hours		15
Summer		
CIS 2806	Work Related Experience I	6
Credit Hours		6
Year 3		
Semester 1		
CIN 2003	Enterprise Network Services	3
CIS 3003	Human Computer Interaction	3
CIS 3303	System Architecture and Integration	3
CSF 3003	Cyber Law and Ethics	3

LSN 1113	Introduction to Sustainability	3
LSS 1123	Basic Research Methods	3
Credit Hours		18

Semester 2		
CSF 3103	Incidence Response and Disaster Recovery	3
CSF 3203	Intrusion Detection and Ethical Hacking	3
CSF 3403	Computer Forensics and Investigation	3
CSF 3603	Cryptography and Network Security	3
BUS 2403	Innovation and Entrepreneurship	3
Credit Hours		15

Summer		
CIS 3806	Work Related Experience II	6
Higher Diploma in Information Technology Exit Option		
Credit Hours		6

Year 4		
Semester 1		
AES 3003	Professional Arabic	3
CIS 4603	Project Management	3
CSF 4003	Security and Risk Management	3
CSF 4103	Web Application and E-Commerce Security	3
4000 Level Elective		3
Credit Hours		15

Semester 2		
CIS 4906	Capstone Project (Integrative & Consultancy Focused)	6
CSF 4203	Telecommunications and WAN Security	3
CSF 4613	Security Intelligence	3
4000 Level Elective		3
Credit Hours		15
Total Credit Hours		135

Additional courses may be offered in each Summer Semester at the discretion of the academic faculty

## Faculty and Academic Staff

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