SCHOOL OF INFORMATICS & IT

Contents

Walk into any bank, airport, school, office, hospital, park, theatre, train station and you will notice the pervasive power and influence of Information Technology. At the School of Informatics & IT, you will receive a strong foundation in IT and an understanding of specialised areas like big data, analytics, financial services, forensics, cyber security, game development and more.

As a leader in the field of IT education, we are recognised as a forward looking and progressive School, providing the widest range of highly relevant courses. Our emphasis on developing problem-solving and thinking skills helps us to cultivate intelligent individuals who are independent, analytical and able to respond effectively to the needs of people and organisations. We have a strong culture of research, innovation and enterprise to nurture professionals who are ready for the industry. Communication skills and teamwork are also emphasised because these are key attributes for people working in a global economy.

Through our Student Internship Programme, you will have the chance to gain real life work experience in either local or overseas companies, organisations or research institutes. In fact, in your final year you can be attached to an organisation for up to one year as an intern, grooming and preparing you for the challenges of the workplace and giving you an edge when you seek employment.

Develop your talents and skills by taking part in enrichment programmes which include national and international competitions. You will also have the opportunity to complete professional IT certification exams. Participation in local and global community projects is something we strongly encourage. There are many opportunities for you to be involved in social outreach projects to make a difference in the lives of others.

After three years, you will graduate with the confidence, qualities and skills to add value to the organisations you join. To ensure that our curriculum remains relevant to the industry, we work closely with employers to maintain quality, industry relevance and high academic standards. An advisory committee, comprising leading industry professionals from a range of companies such as Autodesk, Cisco Systems, EMC, Fujitsu, the Infocomm Development Authority of Singapore, IBM, Microsoft, SAS, ST Electronics and more, provide advice to the School on its strategic direction and development to ensure that the courses we offer prepare you well for the future.

Specialist Centres And Learning Enterprises

Advanced Cyber Security Training Facility

This facility has been set up in collaboration with the Singapore Infocomm Technology Security Authority (SITSA), under the Ministry of Home Affairs. It is the first of its kind in a polytechnic in Singapore and provides students with a programme to hone their skills in detecting and preventing cyber security threats through realistic hands-on training. Through this Centre, SITSA will impart and provide Cyber & Digital Security and Digital Forensics students with training in the latest methodologies to analyse and prevent cyber threats.

Agile IT Solutions Centre

This Centre is a Learning Enterprise where staff, students and industry engage in providing solutions to real-life business and organisational challenges by developing solutions using Agile methodologies and design thinking. The use of Agile methodologies help improve productivity in developing IT solutions, demonstrating in the process a keen sensitivity and responsiveness to user needs.

Centre of Attachment for Business Analytics

The School of Informatics & IT is a Centre of Attachment (CoA) for Business Analytics. This is an initiative in collaboration with the Infocomm Development Authority of Singapore. The aim of the CoA is to equip people from industry with the necessary skills and knowledge in the use of statistics, statistical models and data mining tools for management reporting and strategic decisions. People from industry can be attached to the CoA. They will learn to develop, implement, and evaluate statistical models to support predictive modelling as well as define and implement testing methods to ensure the statistical models achieve the desired outcomes.

Centre for Digital Security & Investigations

This centre was set up in collaboration with the Ministry of Home Affairs' Singapore Infocomm Technology Security Authority (SITSA). It creates a realistic environment to train students in three key security areas of incident response, monitoring and audit, as well as digital artefact analysis. Here, students get the opportunity to work on real security incidents and simulated attacks. They also receive training in monitoring and identifying patterns of security attacks, correlate the incidents and trends to better predict and manage potential security incidents, and perform auditing and analysis of digital artefacts such as malware and mobile security.

Cloud Technology & Innovation Centre

This Centre is a joint laboratory of TP and Huawei that is dedicated to the research, development and teaching of cloud computing technology.

Innovation & Research Centre

This Centre is a Learning Enterprise for staff, students and industry to work together on translational research and innovation projects. It will host and enable participants to pursue applied industry research and participate in programmes that will help commercialise their innovations. The Centre's goal is to support participation in Research, Innovation and Enterprise (RIE) projects to nurture innovative scientists, IT engineers and competent IT professionals through funded projects.

Select-Start Studios

These Studios, located in the Serious Games Hub provide an environment which supports the development of digital games for education, business, human resource training, entertainment and a host of other purposes. It provides students with a real world learning environment and experience at each crucial stage of the game development process. Within the studios, students will have spaces for game design and game development.

TP Green Data Centre

Designed for maximum energy efficiency and minimum environmental impact, the Green Data Centre enables IT applications and services, as well as computing resources to be centrally stored, managed and disseminated, without compromising energy consumption. The first Cisco Unified Computing System (UCS) deployed in South East Asia, it also hosts virtual desktop infrastructure technologies from partners such as VMware, EMC, Cisco and Fujitsu.

TP-Cisco Internet of Everything (IoE) Centre

The Internet of Everything (IoE) Centre at the School of Informatics & IT is a collaboration with Cisco which enables government agencies to funnel industry specific IoE solutions development and other related activities to it. Cisco helps to develop TP staff and students' technical capabilities in the area of IoE from embedded device level, design interface level, and networking level to the application level.

TP-IBM IT Service Management Centre

Established in collaboration with IBM Singapore, this centre functions as a real-time learning enterprise that provides students with a holistic environment in which theory is put into practice as they focus on managing IT Systems, providing IT solutions to clients, monitoring service performance levels and adopting best practices that meet industry standards. The Centre is based on the IBM IT Services Framework which includes IBM's portfolio of products and practices to provide an integrated hands-on training on IT service management.

TP-IBM Security Operations Centre

The Security Operations Centre provides knowledge and skills training to staff and students in IBM's service management processes, methods and Security technologies. Staff and students get opportunities to work alongside IBM security professionals on security projects as well as leverage on IBM's Global Academic Initiative to support TP's IT security related subjects. Students who are attached to this on-campus centre will gain unique hands-on experience in all aspects of cyber security monitoring and analysis, under the supervision of TP staff as well as IBM consultants and experts.

TP-Pivotal Data Science Academy

At this academy located in the School of Informatics & IT, full-time students taking the Big Data Management & Governance and Business Intelligence & Analytics diploma courses will take modules that support their coursework. The academy also provides short elective courses and a six-week projects programme designed to solve hypothetical problems as well as real problems in the areas of Big Data Management and Business Analytics. Students taking part-time courses would also benefit from modules offered by this academy.

TP-RSA, Security Division of EMC Security Operations Centre

This Centre provides an environment equipped with the most advanced IT security and analysis technologies including RSA Security Analytics, SecOps, ECAT and Data Loss Prevention. RSA will impart knowledge and best practices on developing and managing an intelligence driven SOC operations to staff and students.

TP-SAS Business Intelligence & Analytics Centre

Established in collaboration with SAS Institute, this Centre provides the latest infrastructure, facilities, software, and datasets to facilitate learning of comprehensive business intelligence and analytics skill sets in a data-rich environment. This Centre is capable of supporting the end-to-end business analytics life cycle, and focuses on areas such as business intelligence, data mining, web analytics, social media analytics and predictive analytics. It also promotes industry collaboration and capability building by enabling students and staff to undertake relevant industry projects, and conduct applied research and development in advanced analytics.

TP-Thomson Reuters Financial Risk Management Centre

Established in collaboration with Thomson Reuters and equipped with its financial software, and premium financial information terminals, this Centre provides students with the unique opportunity to learn in a live financial market environment that familiarises them with investment banking and risk management operations.

Ui/Ux Future Lab

Also at the Serious Games Hub, we have the Ui (user interface) and Ux (user experience) labs where students will learn about human computer interaction and engage in testing out their applications. Beyond evaluating current user interfaces and user experiences, the Ui/Ux Future Lab is also equipped to work on new forms of interactions for future devices and applications. The labs are equipped with the latest equipment such as state-of-the-art eye tracker system for evaluations. The results of the evaluations help students refine their interface and improve the overall user experience.

TP-IBM Retail Analytics Centre

Established in collaboration with IBM Singapore, this Centre exposes staff and students to IBM's business analytics technologies and methods used in a live production environment. IBM annually engages their retail clients to work with the School's staff and students at the Centre to carry out proof-of-concept and client projects in the area of retail analytics.

BIG DATA MANAGEMENT & GOVERNANCE

"There is a clear demand for graduates who have skills and knowledge in the area of Big Data Management & Governance. Your graduates will fill a known need in the big data value chain with the skills they acquire from this course.

- Eric Goh
Managing Director
EMC Computer Systems (South Asia) Pte Ltd

Did you know that Big Data was Germany's secret weapon at the World Cup 2014? (www.CIOinsights.com) It had teamed up with software giant SAP to create a custom match analysis tool that collected and analysed massive amounts of player performance data. Did you also know that shopping centres are leveraging on big data to study consumers' shopping patterns? Shopping malls are collecting data on shopping trends and profiles of customers in order to provide a better shopping experience to customers.

This is an exciting time for Big Data professionals, especially with the Singapore Government's recent announcement of making Singapore a global data and analytics hub (www.ida.gov.sg). The first polytechnic to offer a Big Data course, you will have opportunities to work with data at your fingertips. When you graduate, your skillsets will be in great demand by organisations. There are many opportunities and potential for you to excel in this area. Graduates with this diploma could also earn as much as 50 percent more than the average professional (www.indeed.com).

In your first year, you will be equipped with good IT foundation and be introduced to the key concepts in the emerging field of data science. In your second year, you will learn how to manage Big Data, such as those which Facebook and Google collect. You will also learn to ensure the quality of the data you extract and how to manage its privacy, because data acquisition may have a significant impact on businesses and lives. By your third year, you would have learnt how to 'mine' Big Data with analytics. You will work with companies or organisations, locally or overseas, on Big Data projects.

Career Opportunities

Graduates can expect good career prospects in hospitals, banks, government agencies as data specialists, data engineers, Big Data operations specialists, data virtualisation specialists, data administrators and data warehousing specialists. They can also pursue degrees in local and overseas universities.

Application

Apply during the Joint Admissions Exercise following the release of the GCE O Level results. For other categories of local applicants, please refer to the section on "Admission and Requirements". For international students, please refer to the section on "Information for International Students".

Minimum Entry Requirements

English Language (EL1)	Grades 1 - 7
Mathematics (E or A)	Grades 1 - 6
Any three other subjects, excluding CCA	Grades 1 - 6

To be eligible for selection, applicants must also have sat for one of the following subjects: Additional Combined Science, Additional Science, Biology, Biotechnology, Chemistry, Combined Science, Computer Studies, Creative 3-D Animation, Design & Technology, Engineering Science, Food & Nutrition, Fundamentals of Electronics, General Science, Human & Social Biology, Integrated Science, Physics, Physical Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry), Science (Physics, Chemistry, Biology).

Note: Applicants with complete colour vision deficiency are not eligible to apply for this course.

** Sijil Pelajaran Malaysia (SPM)/ Unified Examination Chinese (UEC) holders must have a minimum of grade 6 for the relevant English Language subject (e.g. Bahasa Inggeris).*

Graduation Requirements

Cumulative Grade Point Average	: min 1.0
TP Core Subjects	: 21 credit units
Diploma Subjects	
Core Subjects	: 88 credit units
Elective Subjects	: min 8 credit units
Cross-Disciplinary Subjects	: min 9 credit units
Total Credit Units Completed	: min 126 credit units

Course Structure

TP Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
CCS1001	Effective Interpersonal Communication	1	2
CCS1002	Communication in the Workplace	1	2
CCS1003	Information Literacy for Effective Communication	1	2
CCS1004	The Essentials of Persuasive Presentations	1	2
LEA1001	Leadership: Essential Attributes & Practice 1	1	1
LEA1002	Leadership: Essential Attributes & Practice 2	1	1
LEA1003	Leadership: Essential Attributes & Practice 3	1	1
CSI3001	Student Internship Programme	3	10

Course Structure

Diploma Subjects - Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
CIC1C05	Computer Architecture	1	4
CIC1C05	Data Communications & Networking	1	4
CIC1C06	Database Information Systems	1	4
CIG1C01	Introduction to Data Science	1	3
CIM1C07	Human Computer Interaction	1	4
CIT1C05	Problem Solving & Programming	1	4
CIT1C06	Object Oriented Programming	1	4
CIT1C12	Introduction to Computing	1	1
CIT1C14	Data Structures & Algorithms	1	4
CMA1C01	Computing Mathematics 1	1	3
CMA1C02	Computing Mathematics 2	1	3
CFI2C03	IT Project Management	2	4
CIA2C01	Data Warehouse Modelling	2	4
CIA2C02	Data Analytics & Presentation	2	4
CIG2C01	Big Data Architecture & Systems	2	4
CIG2C02	Programming for Big Data	2	4
CIG2C03	Big Data Acquisition & Quality Management	2	4
CIG2C04	Data Marshalling & Transformation	2	4
CIG2C05	Big Data Virtualisation Concepts & Techniques	2	4
CIG2C06	Data Security & Governance	2	4
CMC2C15	Operating Systems	2	4
CMP3202	Major Project	3	10

Diploma Subjects - Elective Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
CFI2C02	Business Intelligence Systems	2	4
CIA2C05	Data Mining Concepts & Techniques	2	4
CIA2E01	Text & Social Media Analytics	2	4
CIT3P51	Web Analytics	2	4
CMA2P51	Quantitative Techniques	2	4

Cross-Disciplinary Subjects

Students are required to obtain a minimum of 9 credit units from the list of Cross-Disciplinary Subjects.

BUSINESS INTELLIGENCE & ANALYTICS

We strongly support this course which aims to prepare more graduates in this area to meet global demands; which would also support Singapore's position as a business analytics competency centre for Asia.

- Francis Fong
Managing Director
SAS Institute Pte Ltd

To run a successful business, you must understand customer needs, preferences and purchasing trends. You need to know what's available in the market, what's selling well, and what your competitors are up to. Yes, that's right – you need to gather intelligence and analyse it to propose smart business strategies. In essence, you will be the thinker behind successful businesses.
If you like Mathematics and Statistics, have a knack for spotting trends among seemingly unrelated facts, and want to help businesses do better and compete more effectively, then take up this course which will position you for an exciting and rewarding career.

You will learn to:
• apply knowledge from Business, Analytics, IT and Project Management to propose business solutions that help companies succeed;

• gather information from a wide variety of sources, including social media platforms and websites in order to analyse consumer interests and plot trends;

• use project management skills to manage business analytics projects and deliver timely information and insights to customers and decision makers.

You will also undertake projects that equip you with real-world working experience and provide you important business domain knowledge that you require as a professional in this field. Furthermore, you will enjoy exciting opportunities for internship in local or overseas companies where you will gain valuable skills, working with diverse people in a real work environment. You can further your studies at local or overseas universities, leveraging on the advanced standing arrangements that we have.

Career Opportunities

Graduates can expect good employment prospects across many industries such as government, financial and banking institutions and consulting firms as business intelligence analysts, business analytics specialists, business analytics technology consultants, CRM analysts, data mining specialists, data warehousing specialists, text analytics specialists, web & social media analysts and data scientists.

Application

Apply during the Joint Admissions Exercise following the release of the GCE O Level results. For other categories of local applicants, please refer to the section on "Admission and Requirements". For international students, please refer to the section on "Information for International Students".

Minimum Entry Requirements

English Language (EL1)	Grades 1 - 6
Mathematics (E or A)	Grades 1 - 6
Any three other subjects, excluding CCA	Grades 1 - 6

To be eligible for selection, applicants must also have sat for one of the following subjects: Additional Combined Science, Additional Science, Biology, Biotechnology, Chemistry, Combined Science, Computer Studies, Creative 3-D Animation, Design & Technology, Engineering Science, Food & Nutrition, Fundamentals of Electronics, General Science, Human & Social Biology, Integrated Science, Physics, Physical Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry), Science (Physics, Chemistry, Biology).

Note: Applicants with complete colour vision deficiency are not eligible to apply for this course.

** Sijil Pelajaran Malaysia (SPM)/ Unified Examination Chinese (UEC) holders must have a minimum of grade 6 for the relevant English Language subject (e.g. Bahasa Inggeris).*

Graduation Requirements

Cumulative Grade Point Average	: min 1.0
TP Core Subjects	: 21 credit units
Diploma Subjects	
Core Subjects	: 87 credit units
Elective Subjects	: min 8 credit units
Cross-Disciplinary Subjects	: min 9 credit units
Total Credit Units Completed	: min 125 credit units

Course Structure

TP Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
CCS1001	Effective Interpersonal Communication	1	2
CCS1002	Communication in the Workplace	1	2
CCS1003	Information Literacy for Effective Communication	1	2
CCS1004	The Essentials of Persuasive Presentations	1	2
LEA1001	Leadership: Essential Attributes & Practice 1	1	1
LEA1002	Leadership: Essential Attributes & Practice 2	1	1
LEA1003	Leadership: Essential Attributes & Practice 3	1	1
CSI3001	Student Internship Programme	3	10

Diploma Subjects - Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
BRM1005	Marketing Fundamentals	1	4
CFI1C07	Database Information Systems	1	4
CFI1C11	Business Process Management	1	3
CIA1C02	Quantitative Analysis 2	1	3
CIA1C03	Analytics Research Methodologies	1	4
CIA1C04	Quantitative Analysis 1	1	4
CIM1C07	Human Computer Interaction	1	4
CIT1C05	Problem Solving & Programming	1	4
CIT1C12	Introduction to Computing	1	1
CIT1C13	Business Information Systems	1	3
CMC1C05	IT Infrastructure	1	4
CFI2C03	IT Project Management	2	4
CIA2C01	Data Warehouse Modelling	2	4
CIA2C02	Data Analytics & Presentation	2	4
CIA2C04	Business Intelligence Concepts & Techniques	2	4
CIA2C05	Data Mining Concepts & Techniques	2	4
CIA2C06	Business Intelligence Applications	2	4
CIA2C07	Predictive Analytics	2	4
CIA2C08	Systems Analysis & Design	2	4
CIA2C09	Quantitative Analysis 3	2	3
CIA2C10	Customer Relationship Management & Analytics	2	4
CMP3103	Major Project	3	10

Course Structure

Diploma Subjects - Elective Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
CIA2E01	Text & Social Media Analytics	2	4
CIA2E02	Data Governance	2	4
CFI3E01	Financial Analytics	3	4
CIT3P51	Web Analytics	3	4
CIT3P71	IT Governance & Service Management	3	4

Cross-Disciplinary Subjects

Students are required to obtain a minimum of 9 credit units from the list of Cross-Disciplinary Subjects.

CYBER & DIGITAL SECURITY

Viruses, trojans and hackers – these are some of the dangers lurking on the Internet, crippling government and business operations and leading to financial losses. Developing counter measures against them requires creative problem solving skills and talent. Highly skilled information security professionals with strong technical foundation and creativity are vital in battling such cyber threats. If you aspire to be in this highly regarded profession, then join this exciting course.

This course brings significant value to Singapore's drive towards achieving a secure world-class cyber environment. As we become ever-increasingly interconnected, it is critical that we develop a skilled network of security professionals to prepare for a new era of security to enable a deeper level of e-trade and e-commerce.

- Janet Ang
Managing Director
IBM Singapore

In the first year, you will master IT and security fundamentals. In your second year, you will master competencies in security, ranging from network, system and application to cloud security and mobile security. You will receive training at our Centre for Digital Security & Investigations where you will use state-of-the-art facilities for hands-on practice in conducting vulnerability assessments of computer and application systems using ethical hacking tools and implementing intrusion prevention solutions. We also have our Advanced Cyber Security Training Facility, set-up with the Singapore Infocomm Technology Security Authority to provide hands-on training on ethical hacking and defending skills.

In your final year you will have experience working in a Security Operations Centre which we have set up with our industry partners, IBM and EMC. In addition, you will have opportunities to be attached to local and overseas IT security companies where you can apply your knowledge and skills to information security projects and real-life situations. Our students have been attached to organisations like EMC, IBM, Interpol, RedHat, PriceWaterhouseCoopers and OCBC Bank.

You will attain sought-after professional certifications, such as the Cisco Certified Network Associate (CCNA) and RedHat Certified System Administrator/ Engineer (RHCSA/RHCE). Our graduates can pursue degrees in local and overseas universities after completing this course, leveraging on advanced standing arrangements that we have with these institutions.

Career Opportunities

You can expect good employment opportunities with local and multinational businesses, governments, financial and banking institutions, and consulting firms as IT security specialists/ auditors, network and systems specialists, as well as IT security product developers and solutions providers.

Application

Apply during the Joint Admissions Exercise following the release of the GCE O Level results. For other categories of local applicants, please refer to the section on “Admission and Requirements”. For international students, please refer to the section on “Information for International Students”.

Minimum Entry Requirements

English Language (EL1)*	Grades 1 - 7
Mathematics (E or A)	Grades 1 - 6
Any two other subjects, excluding CCA	Grades 1 - 6

To be eligible for selection, applicants must also have sat for one of the following subjects: Additional Combined Science, Additional Science, Biology, Biotechnology, Chemistry, Combined Science, Computer Studies, Creative 3-D Animation, Design & Technology, Engineering Science, Food & Nutrition, Fundamentals of Electronics, General Science, Human & Social Biology, Integrated Science, Physics, Physical Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry), Science (Physics, Chemistry, Biology).

Note: Applicants with complete colour vision deficiency are not eligible to apply for this course.

** Sijil Pelajaran Malaysia (SPM)/ Unified Examination Chinese (UEC) holders must have a minimum of grade 6 for the relevant English Language subject (e.g. Bahasa Inggeris).*

Graduation Requirements

Cumulative Grade Point Average	: min 1.0
TP Core Subjects	: 21 credit units
Diploma Subjects	
Core Subjects	: 92 credit units
Elective Subjects	: min 4 credit units
Cross-Disciplinary Subjects	: min 9 credit units
Total Credit Units Completed	: min 126 credit units

Course Structure

TP Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
CCS1001	Effective Interpersonal Communication	1	2
CCS1002	Communication in the Workplace	1	2
CCS1003	Information Literacy for Effective Communication	1	2
CCS1004	The Essentials of Persuasive Presentations	1	2
LEA1001	Leadership: Essential Attributes & Practice 1	1	1
LEA1002	Leadership: Essential Attributes & Practice 2	1	1
LEA1003	Leadership: Essential Attributes & Practice 3	1	1
CSI3001	Student Internship Programme	3	10

Diploma Subjects - Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
CCD1C02	Enterprise Networking	1	4
CCD1C03	Basic IT Security	1	3
CFI1C07	Database Information Systems	1	4
CIC1C05	Computer Architecture	1	4
CIC1C06	Data Communications & Networking	1	4
CIM1C07	Human Computer Interaction	1	4
CIT1C05	Problem Solving & Programming	1	4
CIT1C06	Object-Oriented Programming	1	4
CIT1C12	Introduction to Computing	1	1
CIT1C14	Data Structures & Algorithms	1	4
CMA1C01	Computing Mathematics 1	1	3
CMA1C02	Computing Mathematics 2	1	3
BLM2007	Legal Aspects of IT	2	4
CCD2C01	Internetworking Security	2	4
CCD2C03	Ethical Hacking & Intrusion Prevention	2	4
CCD2C04	Forensics in Digital Security	2	4
CCD2C05	IT Security Management & Audit	2	4
CCD2C06	Servers Administration & Security	2	4
CCD2C08	Secure Web Applications	2	4
CCD2C09	Enterprise System Security & Assurance	2	4
CMC2C15	Operating Systems	2	4
CCD3C01	Security Technology & Innovation	3	4
CMP3601	Major Project	3	10

Course Structure

Diploma Subjects - Elective Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
CCD2E03	Cloud Computing & Security	2	4
CCD2E04	Malware Analysis	2	4
CFI2C03	IT Project Management	2	4
CFI2E01	IT Outsourcing	2	4
CMC2E04	Tourism Informatics	2	4

Cross-Disciplinary Subjects

Students are required to obtain a minimum of 9 credit units from the list of Cross-Disciplinary Subjects.

DIGITAL FORENSICS

The increasing complexity of cybercrimes coupled with the fast evolving digital landscape that we operate in today, presents a challenging and dynamic environment for the Police to operate in. It is thus reassuring that TP is developing a pool of skilled digital forensic professionals whom the Police can tap on in our fight against cybercrime.

- Technology Crime Division
Criminal Investigation Department
Singapore Police Force

Digital forensics involves the analysis of evidence from any digital sources that can be used to prosecute criminals who have committed offences such as stealing information, and hacking into computers and network systems. The increase in cybercrimes has led to a huge demand for digital forensics specialists who can assist in criminal investigations and homeland security. If you have an analytical and inquisitive mind, join us to become a computer forensics investigator. You will learn to seize, secure, examine and reconstruct digital evidence to unravel the mystery behind a computer-related crime or cyber security incident one byte at a time.

The first polytechnic to launch a digital forensics course, we have established strong industry links and capability in this field. You will be equipped with a broad knowledge of IT, psychology and criminal law, and in-depth knowledge of digital forensic techniques in retrieving digital evidence from computers and networks. In the first year, you will master IT fundamentals and build strong foundations in computer science.

In your second year, you will learn to collect, preserve and analyse different file systems, media, applications and networks for digital evidence in the Centre for Digital Security & Investigations. In addition, you will learn the legal aspects of presenting digital evidence for a court of law and acquire basic knowledge of psychology to understand the motivation behind criminal activities.

In your final year, you will have the experience of working in a Security Operations Centre which we have set up with our industry partners, IBM and EMC, where you will apply your investigative skills in the management of cyber-security incidence. In addition, you may also be attached to organisations such as Interpol, Singapore Police Force and KPMG for internships that allow you to integrate and use knowledge in real-life situations.

You will have the opportunity to attain professional certifications in networking, open source and digital forensics. Our graduates can look forward to furthering their studies by choosing from a range of courses at local or overseas universities, leveraging on the advanced standing arrangements that we have.

Career Opportunities

You can expect to work in financial institutions, government/ law enforcement agencies and consulting firms in positions such as digital forensic analysts/ researchers and IT security analysts/ auditors.

Application

Apply during the Joint Admissions Exercise following the release of the GCE O Level results. For other categories of local applicants, please refer to the section on “Admission and Requirements”. For international students, please refer to the section on “Information for International Students”.

Minimum Entry Requirements

English Language (EL1)	Grades 1 - 6
Mathematics (E or A)	Grades 1 - 6
Any two other subjects, excluding CCA	Grades 1 - 6

To be eligible for selection, applicants must also have sat for one of the following subjects: Additional Combined Science, Additional Science, Biology, Biotechnology, Chemistry, Combined Science, Computer Studies, Creative 3-D Animation, Design & Technology, Engineering Science, Food & Nutrition, Fundamentals of Electronics, General Science, Human & Social Biology, Integrated Science, Physics, Physical Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry), Science (Physics, Chemistry, Biology).

Note: Applicants with complete colour vision deficiency are not eligible to apply for this course.

** Sijil Pelajaran Malaysia (SPM)/ Unified Examination Chinese (UEC) holders must have a minimum of grade 6 for the relevant English Language subject (e.g. Bahasa Inggeris).*

Graduation Requirements

Cumulative Grade Point Average	: min 1.0
TP Core Subjects	: 21 credit units
Diploma Core Subjects	: 95 credit units
Cross-Disciplinary Subjects	: min 9 credit units
Total Credit Units Completed	: min 125 credit units

Course Structure

TP Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
CCS1001	Effective Interpersonal Communication	1	2
CCS1002	Communication in the Workplace	1	2
CCS1003	Information Literacy for Effective Communication	1	2
CCS1004	The Essentials of Persuasive Presentations	1	2
LEA1001	Leadership: Essential Attributes & Practice 1	1	1
LEA1002	Leadership: Essential Attributes & Practice 2	1	1
LEA1003	Leadership: Essential Attributes & Practice 3	1	1
CSI3001	Student Internship Programme	3	10

Diploma Subjects - Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
CCD1C02	Enterprise Networking	1	4
CDF1C01	Introduction to Digital Forensics	1	3
CFI1C07	Database Information Systems	1	4
CIC1C05	Computer Architecture	1	4
CIC1C06	Data Communications & Networking	1	4
CIM1C07	Human Computer Interaction	1	4
CIT1C05	Problem Solving & Programming	1	4
CIT1C06	Object-Oriented Programming	1	4
CIT1C12	Introduction to Computing	1	1
CIT1C14	Data Structures & Algorithms	1	4
CMA1C01	Computing Mathematics 1	1	3
CMA1C02	Computing Mathematics 2	1	3
GEN1016	Introduction to Psychology of Deviant Behaviour	1	3
BLM2008	Criminal Procedure for Forensic Analysts	2	4
CCD2C06	Servers Administration & Security	2	4
CCD2C08	Secure Web Applications	2	4
CDF2C01	Digital File Systems	2	4
CDF2C02	Digital Media Forensics	2	4
CDF2C03	Network Security & Forensics	2	4
CDF2C04	Investigation Methodology & Techniques	2	4
CDF2C05	Application Forensics	2	4
CDF2C06	Fraud Investigation & Audit	2	4
CMC2C15	Operating Systems	2	4
CMP3901	Major Project	3	10

Cross-Disciplinary Subjects

Students are required to obtain a minimum of 9 credit units from the list of Cross-Disciplinary Subjects.

FINANCIAL BUSINESS INFORMATICS

With dual skills in IT banking processes and a keen knowledge of key financial systems, students from this course will be able to support investment operations as well as contribute as business analysts skilled in the banking domain. The training these students receive in Thomson Reuters products, enables them to help customers become more efficient and equips them to lead in the evolution of the global financial market.

- Alfred Lee
Managing Director,
Global Sales and Account Management, ASEAN
Thomson Reuters

In the local and global banking and financial services industry, there is demand for professionals who possess information technology skills and a sound understanding of financial business processes. Such techno-strategists, with their dual skills, are sought after because they can contribute significantly to the organisations they join.

This course equips you with the knowledge and skills to be technically and financially savvy. You will learn how banks and financial institutions are structured to operate in the global financial markets.

In your final year, you will get hands-on experience through attachments to banks and financial institutions. This will also provide you with the opportunity to use the knowledge you have acquired in your first two years and pick up important people skills so that you develop sensitivity to the needs of clients and organisations.

Upon completing the course, you can join the workforce or move on to undertake degree programmes in local or overseas universities, leveraging on the advanced standing arrangements we have with them.

Career Opportunities

With unique dual skills in finance and IT, you are well-positioned for careers in financial institutions, and business/IT consulting firms. You can look forward to jobs as financial systems consultants, IT/business analysts or financial products settlements specialists.

Application

Apply during the Joint Admissions Exercise following the release of the GCE O Level results. For other categories of local applicants, please refer to the section on "Admission and Requirements". For international students, please refer to the section on "Information for International Students".

Minimum Entry Requirements

English Language (EL1)*	Grades 1 - 7
Mathematics (E or A)	Grades 1 - 6
Any two other subjects, excluding CCA	Grades 1 - 6

To be eligible for selection, applicants must also have sat for one of the following subjects: Additional Combined Science, Additional Science, Biology, Biotechnology, Chemistry, Combined Science, Computer Studies, Creative 3-D Animation, Design & Technology, Engineering Science, Food & Nutrition, Fundamentals of Electronics, General Science, Human & Social Biology, Integrated Science, Physics, Physical Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry), Science (Physics, Chemistry, Biology).

** Sijil Pelajaran Malaysia (SPM)/ Unified Examination Chinese (UEC) holders must have a minimum of grade 6 for the relevant English Language subject (e.g. Bahasa Inggeris).*

Graduation Requirements

Cumulative Grade Point Average	: min 1.0
TP Core Subjects	: 21 credit units
Diploma Subjects	
Core Subjects	: 88 credit units
Elective Subjects	: min 8 credit units
Cross-Disciplinary Subjects	: min 9 credit units
Total Credit Units Completed	: min 126 credit units

Course Structure

TP Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
CCS1001	Effective Interpersonal Communication	1	2
CCS1002	Communication in the Workplace	1	2
CCS1003	Information Literacy for Effective Communication	1	2
CCS1004	The Essentials of Persuasive Presentations	1	2
LEA1001	Leadership: Essential Attributes & Practice 1	1	1
LEA1002	Leadership: Essential Attributes & Practice 2	1	1
LEA1003	Leadership: Essential Attributes & Practice 3	1	1
CSI3001	Student Internship Programme	3	10

Course Structure

Diploma Subjects - Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
BAF1007	Basic Business Finance	1	4
BAF1009	Fundamentals of Accounting	1	3
CFI1C07	Database Information Systems	1	4
CFI1C08	Financial Economics	1	4
CFI1C10	Core Banking & Financial Businesses	1	4
CFI1C11	Business Process Management	1	3
CIA1C04	Quantitative Analysis 1	1	4
CIM1C07	Human Computer Interaction	1	4
CIT1C05	Problem Solving & Programming	1	4
CIT1C09	Web Programming	1	4
CIT1C12	Introduction to Computing	1	1
CIT1C13	Business Information Systems	1	3
CMC1C05	IT Infrastructure	1	4
BAF2006	Fundamentals of Investment	2	4
CFI2C02	Business Intelligence Systems	2	4
CFI2C03	IT Project Management	2	4
CFI2C08	Fixed Income & Equities Processing	2	4
CFI2P14	Foreign Exchange & Money Market Processing	2	4
CIA2C08	Systems Analysis & Design	2	4
CFI3C01	Risk & Governance	3	4
CFI3C02	Wealth Management	3	4
CMP3801	Major Project	3	10

Diploma Subjects - Elective Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
CFI2E01	IT Outsourcing	2	4
CFI2E05	Derivatives & Structured Products	2	4
CIA2C10	Customer Relationship Management & Analytics	2	4
CFI3E01	Financial Analytics	3	4
CFI3E02	Mobile Banking	3	4
CFI3E03	Portfolio Performance Management	3	4

Cross-Disciplinary Subjects

Students are required to obtain a minimum of 9 credit units from the list of Cross-Disciplinary Subjects.

GAME DESIGN & DEVELOPMENT

As the game development industry moves towards more compelling and complex games even beyond the realm of entertainment, students today need to be equipped with the latest tools and techniques. This course utilises the latest industry-standard tools to equip their students with relevant skills for the fast-growing game development industry.

– V R Srivatsan
Managing Director, ASEAN
Autodesk Asia Pte Ltd

This is a thrilling time for the video games industry with Singapore growing in status as a hub for the most exciting game companies. Video game companies which have produced many of the world's best games have set up offices here alongside renowned video game publishers and development studios. Together, they complement Singapore's strategy to be a leader in the Interactive Digital Media landscape.

Any person can play a video game; but to successfully develop a game that excites, engages, and educates an audience requires skill. These include skills in concept – such as digital storyboarding, production – including 2D/3D animation, and publication – involving the business of video games.

Our partnership with Autodesk and Unity will give you a unique advantage in working with the leading tools in the game industry. In addition, you will be part of the team which developed the first games course in Singapore to incorporate Autodesk Gameware into its curriculum.

Our subjects allow you to have a strong understanding of and experience in the various aspects of the game production pipeline, giving you a firm grasp of the end-to-end process in developing a successful game.

Our lecturers, several of whom have worked on some of the world's best-selling video game titles, specialise in various areas of game production. They will help you acquire the skills to create your games from the initial stages of concept development and design, through to programming and the final stages of publishing a game.

To give you a head start in the industry, you will work on a Major Project to develop a showcase portfolio. Some of our students' projects include commercially available iPhone games, as well as games for local companies and organisations. You will also have the chance to be attached to leading game developers, overseas companies and universities for your internship.

Upon graduation, you can join the workforce or further your studies at local and overseas universities.

Career Opportunities

You will graduate with the skills to fill the following types of positions: game designers, graphics software developers, game content developers, game programmers and mobile game developers.

Application

Apply during the Joint Admissions Exercise following the release of the GCE O Level results. For other categories of local applicants, please refer to the section on "Admission and Requirements". For international students, please refer to the section on "Information for International Students".

Minimum Entry Requirements

English Language (EL1)*	Grades 1 - 7
Mathematics (E or A)	Grades 1 - 6
Any two other subjects, excluding CCA	Grades 1 - 6

To be eligible for selection, applicants must also have sat for one of the following subjects: Additional Combined Science, Additional Science, Biology, Biotechnology, Chemistry, Combined Science, Computer Studies, Creative 3-D Animation, Design & Technology, Engineering Science, Food & Nutrition, Fundamentals of Electronics, General Science, Human & Social Biology, Integrated Science, Physics, Physical Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry), Science (Physics, Chemistry, Biology).

Note: Applicants with complete colour vision deficiency are not eligible to apply for this course.

** Sijil Pelajaran Malaysia (SPM)/ Unified Examination Chinese (UEC) holders must have a minimum of grade 6 for the relevant English Language subject (e.g. Bahasa Inggeris).*

Graduation Requirements

Cumulative Grade Point Average	: min 1.0
TP Core Subjects	: 21 credit units
Diploma Subjects	
Core Subjects	: 84 credit units
Elective Subjects	: min 12 credit units
Cross-Disciplinary Subjects	: min 9 credit units
Total Credit Units Completed	: min 126 credit units

Course Structure

TP Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
CCS1001	Effective Interpersonal Communication	1	2
CCS1002	Communication in the Workplace	1	2
CCS1003	Information Literacy for Effective Communication	1	2
CCS1004	The Essentials of Persuasive Presentations	1	2
LEA1001	Leadership: Essential Attributes & Practice 1	1	1
LEA1002	Leadership: Essential Attributes & Practice 2	1	1
LEA1003	Leadership: Essential Attributes & Practice 3	1	1
CSI3001	Student Internship Programme	3	10

Diploma Subjects - Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
CFI1C07	Database Information Systems	1	4
CGE1C06	Game Design	1	4
CGE1C09	Introduction to Computer Games	1	3
CIC1C05	Computer Architecture	1	4
CIC1C06	Data Communications & Networking	1	4
CIM1C07	Human Computer Interaction	1	4
CIT1C05	Problem Solving & Programming	1	4
CIT1C06	Object-Oriented Programming	1	4
CIT1C12	Introduction to Computing	1	1
CIT1C14	Data Structures & Algorithms	1	4
CMA1C01	Computing Mathematics 1	1	3
CMA1C02	Computing Mathematics 2	1	3
CGE2C04	Introduction to Game AI	2	4
CGE2C07	3D Game Texturing, Lighting & Animation	2	4
CGE2C12	Game Modelling	2	4
CGE2C15	Game Math & Physics	2	4
CGE2C16	Game Development	2	4
CGE2C17	Game Development Project	2	4
CMC2C15	Operating Systems	2	4
CGE3C06	Game Production & Publishing	3	4
CMP3702	Major Project	3	10

Course Structure

Diploma Subjects - Elective Clusters

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
Advanced Game Development			
CGE2E02	Graphics Programming	2	4
CGE2P11	Advanced Game AI	2	4
CGE3C02	Mobile Game Programming	3	4
3D Game Design & Development			
CGE2P21	Advanced Game Modelling	2	4
CGE2P22	Advanced Game Design	2	4
CGE3P21	Game Engine Scripting	3	4

Cross-Disciplinary Subjects

Students are required to obtain a minimum of 9 credit units from the list of Cross-Disciplinary Subjects.

INFORMATION TECHNOLOGY

More than 3 billion people with devices will be leveraging on cloud services that cut across work and life. Computational thinking is a fundamental skillset for problem solving and for driving innovative products and services. Students from this course will be well-placed to lead future industry trends, and groomed to solve real world problems. This course provides a strong foundation for nurturing outstanding IT professionals who will benefit the industry when they graduate.

- Jessica Tan
Managing Director
Microsoft Singapore Pte Ltd

Are you interested in creating IT solutions for the world around you? Are you interested in joining a vibrant industry that is at the forefront of innovation? Are you interested in a diploma course that gives you a general array of IT skills while offering the distinct advantage of branching out later into different areas?

Graduates from this course are able to use IT to transform the culture and environment of any business organisation, bank, hotel, airport, and hospital. They would be frontline innovators helping to bring software solutions to people and businesses through the use of technologies. If you enjoy solving problems and are passionate about developing solutions through IT, then consider this course in Information Technology.

You have two clusters of elective subjects to choose in this course:

• **Business Analytics Cluster**: focuses on analysing and interpreting data and converting them into useful insights for developing strategies for the organisation;

• **Project Management Cluster**: focuses on teaching you the knowledge and skills needed to manage IT projects.

In your final year, you will integrate the knowledge that you have acquired to complete a major project. You will also be attached to either a local or overseas company as an intern.

This course has an established track record of producing highly successful students who have won top positions in national and international IT software applications and development competitions. Our graduates have also gone on to pursue both undergraduate and postgraduate degrees in local and overseas universities, with a significant number receiving attractive scholarships to further their studies.

Career Opportunities

With a broad-based education in IT, your employment prospects are excellent. You will be able to fill positions as IT business analysts, application developers and systems analysts in government organisations, software houses, large multinational corporations, financial institutions.

Application

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TP Core Subjects

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CCS1002	Communication in the Workplace	1	2
CCS1003	Information Literacy for Effective Communication	1	2
CCS1004	The Essentials of Persuasive Presentations	1	2
LEA1001	Leadership: Essential Attributes & Practice 1	1	1
LEA1002	Leadership: Essential Attributes & Practice 2	1	1
LEA1003	Leadership: Essential Attributes & Practice 3	1	1
CSI3001	Student Internship Programme	3	10

Diploma Subjects - Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
CFI1C07	Database Information Systems	1	4
CIC1C05	Computer Architecture	1	4
CIC1C06	Data Communications & Networking	1	4
CIM1C07	Human Computer Interaction	1	4
CIT1C05	Problem Solving & Programming	1	4
CIT1C06	Object-Oriented Programming	1	4
CIT1C12	Introduction to Computing	1	1
CIT1C13	Business Information Systems	1	3
CIT1C14	Data Structures & Algorithms	1	4
CMA1C01	Computing Mathematics 1	1	3
CMA1C02	Computing Mathematics 2	1	3
CGE2C09	Software Engineering	2	4
CGE2C11	Object-Oriented Analysis & Design	2	4
CIT2C11	Enterprise Solutions & Entrepreneurship	2	4
CIT2C12	Advanced Data Structures & Algorithms	2	4
CIT2C13	Business Systems & Processes Integration	2	4
CIT2C14	Enterprise Web Development & Testing	2	4
CIT2E08	Mobile Device Programming	2	4
CIT2P32	Enterprise Security & Application Management	2	4
CIT2P44	Dynamic Web Application Development	2	4
CMC2C15	Operating Systems	2	4
CMP3102	Major Project	3	10

Course Structure

Diploma Subjects - Elective Clusters

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
Business Analytics			
CFI2C02	Business Intelligence Systems	2	4
CIA2C10	Customer Relationship Management & Analytics	2	4
CIT3P51	Web Analytics	3	4
Project Management			
CFI2C03	IT Project Management	2	4
CMC2P42	IT Service Desk Management	2	4
CIT3P71	IT Governance & Service Management	3	4

Cross-Disciplinary Subjects

Students are required to obtain a minimum of 9 credit units from the list of Cross-Disciplinary Subjects.

MOBILE & NETWORK SERVICES

The Internet of Things allows billions of devices, sensors, cloud infrastructure and business intelligence tools to come together to enable people to make informed decisions. This helps businesses to drive more innovation and services. Cisco predicts that it will create a massive opportunity worth $14.4 trillion over the next decade. Graduates from this course would be in high demand as they would have acquired the right skills to develop smart applications and services to respond to industry's needs.

- Irving Tan
President Asia Pacific & Japan
Cisco Systems (USA) Pte Ltd

Imagine a world where billions of objects can sense, communicate and share information over the Internet. These interconnected objects have data regularly collected, analysed and used to help streamline business processes and provide innovative new services to increase productivity and save costs.

This course grooms you to become an expert in network systems. You will learn to develop Internet of Things (IoT) applications for various purposes on the latest cloud and mobile phone platforms. You will also be trained in the best practices and use state-of-the-art tools from IT Service Management (ITSM) industry giants in our TP-IBM IT Service Management Centre, which is the first 'live' centre in an institution in Asia to offer real-life ITSM practice.

You will have the choice of specialising in the area of IT Service Management or Advanced IoT. Through these options, you will acquire specific skills to help manage IT services for an organisation and create innovative IoT apps that can enhance the lives of people and business processes.

You will have a chance to work with companies such as Cisco Systems and IBM on projects. Our Student Internship Programme also allows you to gain valuable experience and exposure which prepares you as a professional. To provide you an edge when you graduate, the course also prepares you for professional certifications such as the Cisco Certified Network Associate (CCNA) and IT Infrastructure Library (ITIL), awarded by Cisco Systems and IBM respectively.

Upon completing the course, you can join the workforce or pursue a degree in the local or overseas universities.

Career Opportunities

Upon successful completion of the course, you can enter a variety of challenging and rewarding careers as network administrators/ engineers, computer systems and server administrators, wireless systems specialists, associate infrastructure analysts, customer support engineers, IT customer service executives, IT operations specialists and mobile system development specialists.

Application

Apply during the Joint Admissions Exercise following the release of the GCE O Level results. For other categories of local applicants, please refer to the section on “Admission and Requirements”. For international students, please refer to the section on “Information for International Students”.

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Course Structure

TP Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
CCS1001	Effective Interpersonal Communication	1	2
CCS1002	Communication in the Workplace	1	2
CCS1003	Information Literacy for Effective Communication	1	2
CCS1004	The Essentials of Persuasive Presentations	1	2
LEA1001	Leadership: Essential Attributes & Practice 1	1	1
LEA1002	Leadership: Essential Attributes & Practice 2	1	1
LEA1003	Leadership: Essential Attributes & Practice 3	1	1
CSI3001	Student Internship Programme	3	10

Diploma Subjects - Core Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
CFI1C07	Database Information Systems	1	4
CIC1C05	Computer Architecture	1	4
CIC1C06	Data Communications & Networking	1	4
CIM1C07	Human Computer Interaction	1	4
CIT1C12	Introduction to Computing	1	1
CIT1C05	Problem Solving & Programming	1	4
CIT1C06	Object-Oriented Programming	1	4
CIT1C14	Data Structures & Algorithms	1	4
CMA1C01	Computing Mathematics 1	1	3
CMA1C02	Computing Mathematics 2	1	3
CMC1C05	IT Infrastructure	1	4
CMC1C06	Introduction to the Internet of Things	1	4
CCD2C06	Servers Administration & Security	2	4
CCD2E03	Cloud Computing & Security	2	4
CMC2C10	Server Side Software Development	2	4
CMC2C11	Mobile & Wireless Networking	2	4
CMC2C15	Operating Systems	2	4
CMC2C16	IoT Application Development	2	4
CMC2C17	Smart Systems Development	2	4
CMC2P23	Internetworking Technologies	2	4
CMC3C02	Software-Defined Networking	3	4
CMP3402	Major Project	3	10

Course Structure

Diploma Subjects - Option Subjects

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
Advanced IoT			
CMC2P51	IoT Data Management	2	4
CMC2P52	IoT Security & Privacy	2	4
CMC2P53	IoT System Design	2	4
IT Service Management Option			
CCD2C05	IT Security Management & Audit	2	4
CMC2P41	IT Infrastructure Management	2	4
CMC2P42	IT Service Desk Management	2	4

Cross-Disciplinary Subjects

Students are required to obtain a minimum of 9 credit units from the list of Cross-Disciplinary Subjects.

Subject Synopses

BAF1007 Basic Business Finance
This subject provides a general overview of the balance sheet and profit and loss statement of the company. It also provides a basic understanding of the sources and allocation of funds within a business enterprise, and an appreciation of some of the financial tools and techniques used by the financial manager in the management of funds and other financial resources.

BAF1009 Fundamentals of Accounting
This subject covers double-entry bookkeeping, profit determination and contents of financial reports for sole proprietorship businesses. You will have opportunities through various learning methods to apply the knowledge to real world situations.

BAF2006 Fundamentals of Investment
This subject provides a framework for understanding and analysing securities, and covers the key institutional features and theories of investment. Topics covered include the investment environment, return and risk in an investment setting, common stocks, fixed-income securities and alternative investments.

BLM2007 Legal Aspects of IT
The subject covers at an introductory level the law which is relevant to the information technology industry, and which an IT professional will be likely to apply in the course of his work or business.

BLM2008 Criminal Procedure for Forensic Analysts
This subject provides digital forensic professionals with an understanding of the criminal procedure and rules of evidence in Singapore necessary for the work of digital forensic analysts.

BRM1005 Marketing Fundamentals
This subject provides you with an understanding of the basic concepts and practices of modern marketing. It focuses on the role and the tools utilised by marketers in developing the appropriate marketing mix and in the identification of target segments.

CCD1C02 Enterprise Networking
This subject covers the enterprise wired and wireless networking concepts. Basic theories of routing and switching, wireless architecture and their applications in an enterprise network environment will be discussed. You will learn the knowledge and skills to design, install and configure small to medium-sized wired and wireless networks.

CCD1C03 Basic IT Security
This subject covers basic elements on the topic of IT security, reviews operational planning and practices, and provides a foundation for discussion and implementation of security strategies to minimise operational risks in an organisation. You will understand the theoretical, practical and ethical aspects of basic IT security.

CCD2C01 Internetworking Security
This subject introduces you to internetworking security technologies, including Wide Area Network (WAN) and remote access, and the security techniques from host to Internet security. You will learn how to secure both wired and wireless access over an internetwork.

CCD2C03 Ethical Hacking & Intrusion Prevention
This subject discusses threats on the Internet and provides an understanding of how a cyber-attacker will penetrate a network. It equips you with the principles and practices of preventing such attacks, discussing threats such as malicious codes, website defacing and hacking, illegal access to unauthorised information, privacy violations, distributed denial of services and cyber terrorism. You will acquire knowledge of potential threats, various penetration strategies and methods, and the respective counter measures. You will also learn the principles of creating a secure network design.

CCD2C04 Forensics in Digital Security
This subject covers the concept and techniques required to discover and investigate evidence from various digital storage devices. Topics include using common tools and commercial toolsets for extraction and analysis of digital evidence. Network traffic capture and analysis would also be discussed and investigated for the tracing of specific information and source of attacks.

CCD2C05 IT Security Management & Audit
This subject aims to familiarise you with the various IT security policies processes and procedures, as well as best practices in industry and government. You will learn about the associated standards for risk management and the management of IT security. You will also learn how to plan, execute, report and follow up on an information security management system audit.

CCD2C06 Servers Administration & Security

This subject covers the concept and techniques required to configure and administer a typical networked server using common operating systems in the industry. Topics include installation of a server system, configuration of devices, disks and file systems with security configuration of Local Area Network (LAN) and Wide Area Network (WAN) environments. Administering of key server services, using various tools and system scripting to monitor and analyse its performance and security will be discussed and applied. The subject also covers the concepts of encryption methodology, Public Key Infrastructure, key distribution and authentication.

CCD2C08 Secure Web Applications

This subject focuses on secure web application design and development. It discusses the inherent threats and vulnerabilities of web applications and the corresponding counter-measures. In addition, it includes industry best practices such as OWASP (Open Web Application Security Project) Top Ten Web Application Vulnerabilities.

CCD2C09 Enterprise System Security & Assurance

This subject covers the design of security architecture typically implemented for an enterprise. It includes conducting risk assessment, integrating and testing the security of database and information systems for an organisation to ensure compliance, as well as exercising incident response procedures to contain security breaches.

CCD2E03 Cloud Computing & Security

This subject covers topics such as technologies used in cloud computing, the motivations that drive the development of these technologies, the implementation of cloud based services such as infrastructure-as-a-service (IAAS). Other topics include the assessment of the security risks that arise from using cloud computing and the identification of controls used to mitigate security risks.

CCD2E04 Malware Analysis

You will learn topics such as the tools available to perform basic static and dynamic analysis on malware to determine the purpose of such malicious code.

CCD3C01 Security Technology & Innovation

This subject covers topics such as security trends and technologies in the industry, the types of innovation, key elements of innovation and innovation skills required to move progressively from idea to impact. It discusses topics on security innovation relating to the methods, ideas, production, market needs, effective processes, impact and needs of customers.

CCS1001 Effective Interpersonal Communication

This subject introduces you to the principles of effective interpersonal communication. You will learn to consider the message, audience, purpose and strategy in all communicative acts. You will also learn the appropriate conventions to observe in social interaction and how to engage in and sustain conversations.

CCS1002 Communication in the Workplace

This subject aims to equip you with the knowledge and skills to obtain employment and to develop confidence in handling both interpersonal skills and business correspondence in the workplace. You will learn job hunt skills. You will also discover ways to communicate effectively and tactfully in the workplace. You will learn to show sensitivity to your audience by using the concepts of message, audience, purpose and strategy.

CCS1003 Information Literacy for Effective Communication

This subject introduces you to research process skills to enable you to plan, prepare and present reports in written and oral form. You will learn to consider the message, audience, purpose and strategy when preparing reports and oral presentations.

CCS1004 The Essentials of Persuasive Presentations

This subject deals with the general principles of persuasion. You will be taught persuasive strategies to write a proposal and convince an audience about an idea, product or service. You will also be taught to consider the message, audience, purpose and strategy in written and oral presentations.

CDF1C01 Introduction to Digital Forensics

This subject introduces the principles of using digital evidence in forensic investigations and how this may lead to liturgical or non-liturgical proceedings.

CDF2C01 Digital File Systems

This subject introduces the principles of the most common media types and file systems found in operating systems and other digital media types.

CDF2C02 Digital Media Forensics

This subject covers three main areas: Mobile Device Forensics, Image & Video Forensics, and Correlation & Artificial Intelligence. Besides learning how to use different tools to extract and analyse digital media data from various mobile devices, you will also learn the fundamental elements of digital photos and digital videos. You will be taught to use different image and video enhancement techniques to process evidence for investigation purposes, matching and correlation techniques, and the use of artificial intelligence.

CDF2C03 Network Security & Forensics

This subject covers the traffic analysis of data sources from various network equipment and systems, such as Web proxies, firewalls, intrusion detection systems, routers and switches, which may contain evidence that can be used to solve a security incident. The topics included are the design and implementation of a secured enterprise network, as well as the analysis of network traffic and logs collected from different data sources in a network to understand attacks and trace suspect activities.

CDF2C04 Investigation Methodology & Techniques

This subject introduces you to the methodology and techniques of analysing multiple sources of digital evidence to determine the cause and effect of an incident. The topics in the subject include the application of best practices and techniques to relate digital evidence to cybercrimes. You will review various case facts to determine how they are related to a crime, reconstruct an incident as well as produce and present findings in a manner that is acceptable to a court of law. You will also go through case examples on best practices and how cause and effect were derived during an investigation.

CDF2C05 Application Forensics

This subject covers the investigation of applications such as web browsers, word processors and standalone executables, as well as Internet applications such as emails and social networking websites, in the context of digital forensics. These applications may be used for illegitimate means or to introduce malicious software into a computer system. In these cases, digital forensic analysis would be carried out to determine the source and extent of the damage.

CDF2C06 Fraud Investigation & Audit

This subject will cover how computers are used as a tool for fraud, including Internet and E-commerce frauds. Security auditing and testing tools, techniques that can be used in the detection and investigation of computer fraud and the implementation of appropriate audit strategies to mitigate incidents of fraud in an enterprise will also be covered.

CFI1C07 Database Information Systems

This subject will introduce you to the fundamental concepts of relational database systems, the design methods specific to relational database and the techniques of implementing relational databases. It will also cover database manipulation using a database query language.

CFI1C08 Financial Economics

This subject covers basic microeconomic and macroeconomic principles as well as the role and concepts of money and interest rates in the monetary system. The functions of the government as a regulatory body and the impact of government policies in the financial market will also be covered.

CFI1C10 Core Banking & Financial Businesses

This subject covers core banking services and processes in the retail, commercial and investment banks. Supporting systems and technologies that are used to meet strategic, operational and regulatory requirements in the banks are also introduced.

CFI1C11 Business Process Management

This subject covers business processes, process modelling and analysis techniques. It will also cover topics on streamlining processes and implementing simple processes automation.

CFI2C02 Business Intelligence Systems

This subject introduces concepts and techniques of turning raw data from various sources into information to help companies better manage their performance. It also covers data warehousing concepts, principles and applications of Business Intelligence and the underlying building technologies.

CFI2C03 IT Project Management

This subject covers the key processes from project initiation to project closure such as project planning, project monitoring and control, resource management, project implementation and closure.

CFI2C08 Fixed Income & Equities Processing

This subject covers the concepts, benefits and associated risks of the Fixed Income and Equities class. It also covers deal processing and trade settlement of related products using financial application systems.

CFI2E01 IT Outsourcing
This subject introduces you to the key concepts of IT Outsourcing. The topics that are covered in this subject include the rationale for outsourcing, the different types of outsourcing, Request for Proposal (RFP) and Service Level Agreement (SLA), problem management and change management. You will also learn about the risks and legal issues associated with outsourcing.

CFI2E05 Derivatives & Structured Products
This subject covers the concepts of prime brokerage and collateral management, and their applicability to the various financial products and the processes involved. It also covers the concepts for the various types of financial derivatives and structured products; deal processing and trade settlement of related products by using financial application systems.

CFI2P14 Foreign Exchange & Money Market Processing
This subject covers concepts of Foreign Exchange and Money Market, instruments and trade processes involved. Trade processes include settlement, reconciliation and revaluation of trades. Analyses of trades and the related risks in Foreign Exchange and Money Market will also be covered.

CFI3C01 Risk & Governance
This subject introduces the Monetary Authority of Singapore (MAS) regulations and risk management guidelines for financial institutions. Topics covered include the MAS Act, internal controls for risk management, credit risk management, market risk management, operational risk management, technology risk management, and audit considerations.

CFI3C02 Wealth Management
This subject introduces the financial planning concepts and techniques used in designing a portfolio that meets the varied needs of high net worth individuals and business owners. Topics covered include the wealth management advisory process, investment and portfolio management, client relationship management, investment fund products and other financial products like life assurance and taxation issues.

CFI3E01 Financial Analytics
This subject covers the concepts and techniques behind predictive analysis, scoring models, and the development of financial models as well as how they can be harnessed to bring greater value to organisations in the banking and finance industry.

CFI3E02 Mobile Banking
This subject introduces the services and applications offered by the mobile platform in the banking and finance industries. The concepts of designing and implementing simple mobile applications that are relevant to financial services will also be covered.

CFI3E03 Portfolio Performance Management
This subject introduces portfolio theory and the various models of portfolio management applied by organisations today. It will also cover technical analysis and industry-company analysis using current tools and techniques.

CGE1C06 Game Design
The subject emphasises the use of game design to improve ideas before and during implementation. It covers various aspects of game design, from initial target audience, player behaviour and attitude to aspects affecting implementation within the actual video game. By examining various successful video games within different genres, you will learn to include a variety of attributes in your video games such as motivation for the player and being able to generate re-playability.

CGE1C09 Introduction to Computer Games
This subject aims to equip you with an understanding of the game industry, its current practices, and how a modern video game is created. This will lay the foundation for practical game development subjects later in the course. This subject introduces the history of games and how they have evolved, different common genres of games today, and the impact of games on society. Other topics covered include the state of the industry, how games are developed today, and current and future trends.

CGE2C04 Introduction to Game AI
This subject introduces the skills to use introductory Artificial Intelligence (AI) concepts which are crucial to games development. It emphasises techniques such as Decision Making and Navigation for the application of Artificial Intelligence within game development. The subject covers basic AI techniques to give game characters the appearance of intelligent movement and decision making, as well as the implementation of AI techniques in a suitable programming language.

CGE2C07 3D Game Texturing, Lighting & Animation

This subject provides you with the knowledge to produce key frame based biped animation and Tangent Space Normal map for real-time shader. It covers advanced texturing techniques such as Tangent Space Normal Mapping and real-time shader set-up via the 3D authoring tool's interactive development environment (IDE) interface. You will also be introduced to real-time 3D lighting parameters and biped animation.

CGE2C09 Software Engineering

The subject covers an overview of the entire SDLC from requirements gathering to deployment of a software project. Topics such as software development paradigms, software process metrics, configuration management, software quality assurance and the fundamentals of project planning will also be covered.

CGE2C11 Object-Oriented Analysis & Design

This subject introduces object-oriented analysis and design (OOAD) techniques using a suitable tool. The topics covered include use case model, use case specifications, domain model, sequence diagrams, view of participating classes (VOPC), database design and mapping class diagram to code.

CGE2C12 Game Modelling

This subject will introduce you to the 3D model creation workflow specifically for the game production pipeline. You will learn to use Polygon Mesh construction methods and texturing concepts for 3D game production. This subject also introduces Digital Content Creation (DCC) tools that you will apply to 3D modelling techniques such as low-poly meshing and digital texturing practices such as using coordinate mapping function and photographic texture creation for crafting 3D in-game art assets.

CGE2C15 Game Math & Physics

This subject will teach you the mathematics and physics concepts, principles and formulas that are crucial to developing games that look realistic, and how to apply these concepts into game situations such as simulating rigid-body collisions using momentum and energy. The subject includes geometry, trigonometry, vectors and matrices, and physics concepts, such as Newton's Laws of Motion and Forces and Energy, which will enable you to simulate realistic motion in games.

CGE2C16 Game Development

This subject provides you with the knowledge and skills to develop graphical interactive games through the use of existing game libraries and to create the component parts of a game, both assets and programming code, and then bring them together to produce a complete game. The subject covers game development techniques such as sprite creation, rendering and animation; collision detection; the main game loop; event handling and control of the frame rate. The in-game usage of sound effects will also be taught, as well as key programming concepts required in game development such as memory management, programming standards and debugging.

CGE2C17 Game Development Project

This subject introduces you to the key processes in the pre-game production, game production and post-game production stages. Topics on game industry roles and responsibilities, game development methodology, programming, design techniques and game-testing and quality assurance will also be covered.

CGE2E02 Graphics Programming

This subject introduces you to the theory and technical skills required to program computer graphics for games. You will be able to make use of the programmable graphics pipeline to program basic 2D and 3D computer graphics. It also covers basic computer graphics concepts in the context of the programmable graphics pipeline such as colour, lighting, polygons and textures, as well as more advanced ones such as fog, alpha blending and computer graphics optimisation.

CGE2P11 Advanced Game AI

This subject covers the development of techniques that are required to develop industry-level video game AI, including the key concepts of Decision-Making and Navigation, within a game environment.

CGE2P21 Advanced Game Modelling

This subject teaches you key techniques used in today's game industry for game character creation. You will learn to produce Object Space Normal Map and 3D game characters with complete texture maps and optimisation. This subject also covers the game character production workflow such as character-based modelling method, UV mapping, character mesh detailing and texture painting with digital sculpting tool, and techniques such as texture map baking approach and game model optimisation technique such as Level of Detail (LOD).

CGE2P22 Advanced Game Design

The subject emphasises the use of advanced game and level design concepts to improve ideas before and during implementation. You will be analysing specific areas of games, their appearance historically and their impact to the player. Arranging and producing a level will give you hands-on experience with factors like spawn point placement and level objectives construction.

CGE3C02 Mobile Game Programming

This subject aims to equip you with programming skills and knowledge to develop mobile games for common mobile devices currently available in the market, to optimise code to suit mobile application life-cycles, to test application on emulators and devices, and to build a simple framework for games. It also introduces Software Development Kits of mobile platforms, and how to use them to write games to run on embedded devices. You will learn about the mobile market landscape and the tools and platforms used for mobile games.

CGE3C06 Game Production & Publishing

This subject covers aspects of marketing and business planning specific to games and areas such as quality assurance and testing to ready the products for publishing onto various platforms for games. You will acquire the skills and knowledge to see through a game from the pre-production stages which include the business and marketing aspects of the game to the final stages of publishing.

CGE3P21 Game Engine Scripting

This subject aims to equip you with skills and knowledge of game engines to develop individual scripts within the engine and to analyse, assemble and understand the game engine elements within a game. It covers the use of game engines within games, from how the user may interface with the engine to how the engine interfaces with the other areas in the game. The subject uses standardised general-purpose modelling languages for conception of ideas and you will implement code within specific areas, such as emitting particles and activating cut scenes.

CIA1C02 Quantitative Analysis 2

This subject equips you with statistical knowledge and skills that will enable you to analyse statistical problems. You will be able to make comparison between two or more population data to determine the relationship between them. The subject covers linear regression and correlation between a dependent variable and independent variable. Analysis of variance and chi-squared tests will also be covered.

CIA1C03 Analytics Research Methodologies

This subject provides you with the knowledge and skills to plan and conduct analytics research to collect and transform data. It covers the concepts of research design, data collection and transformation strategies, design of research process, crafting of questionnaires and interviews, ethical considerations in the research process. It will also provide a survey of analytics applications and software tools that could be used in the research process.

CIA1C04 Quantitative Analysis 1

This subject equips you with the knowledge and skills to collect, measure and represent data graphically. You will be able to use inferential statistics to draw conclusions. The subject covers basic statistical concepts with emphasis on data analysis and presentation, frequency distributions, probability theory, probability distribution, statistical inference and hypothesis testing.

CIA2C01 Data Warehousing Modelling

This subject equips you with the knowledge and skills on data modelling techniques for data warehousing. On completion of this subject, you would be able to design and implement a data warehouse model. The subject introduces the fundamental concepts of data warehouse modelling and covers concepts and principles of data warehouse, introduction to data warehouse model design, data warehouse model implementation and data warehouse applications and tools.

CIA2C02 Data Analytics & Presentation

This subject equips you with knowledge and skills to process data, techniques of analysing data and presenting analysed data using analytics software applications. The subject covers graphing fundamentals, graphing properties and building dashboard for reporting purposes using relevant statistical modelling and analysis techniques. You will also learn how to prepare and present reports on data analysis to support managerial decision making.

CIA2C04 Business Intelligence Concepts & Techniques

This subject equips you with knowledge and skills to integrate data and organise them into analytical reports for an organisation. The subject covers Business Intelligence (BI) concepts and techniques of turning raw data from various sources into information, and implementing BI applications to help companies manage their business performance.

CIA2C05 Data Mining Concepts & Techniques

This subject equips you with knowledge and skills to use data mining tools to analyse and segment data to explore and discover previously unknown patterns and relationships to generate useful information. The subject covers concepts, methodology, techniques and application of data mining. You will also learn several popular data mining techniques, such as cluster analysis, association analysis and decision tree.

CIA2C06 Business Intelligence Applications

This subject equips you with knowledge and skills to develop Business Intelligence applications for an organisation so that the organisation can align its business performance to identified goals. The subject covers the concepts, techniques and emerging technologies of Business Intelligence applications development. You will also learn the ethical and legal issues in developing Business Intelligence applications.

CIA2C07 Predictive Analytics

This subject equips you with knowledge and skills to create a predictive model based on historical data to predict future trends and behaviours. The subject covers Multiple Linear Regression, Logistic Regression, Decision Trees, and some other techniques such as neural networks.

CIA2C08 Systems Analysis & Design

This subject equips you with the theory and practice of systems analysis and design to undertake the analysis of a given problem situation, to produce a definition of user requirements and to design an appropriate information system. The subject covers the concepts of system requirements analysis of a defined problem, system design using requirement specifications and the post implementation process. You will also learn the transition from business requirement analysis to design in the unified process of systems development, using case modelling and data flow diagrams.

CIA2C09 Quantitative Analysis 3

This subject equips you with the knowledge and skills to apply statistical concepts in the analysis of economic data, social science data and the data gathered from other domain areas. It covers non-parametric statistics, two-way Analysis of Variance (ANOVA) and multivariate analysis, including their applications in economics, social science and other domains.

CIA2C10 Customer Relationship Management & Analytics

This subject equips you with knowledge and skills to apply the concepts of Customer Relationship Management (CRM) and CRM systems in businesses, and analyse CRM data to help improve business performance. It covers the concepts of CRM, customer portfolio management, customer data analytics, and customer lifecycle. You will also learn the applications of CRM in marketing, sales force automation and service automation.

CIA2E01 Text & Social Media Analytics

This subject equips you with the knowledge and skills to process textual data and social media for analytical insight. It covers topics such as social media analytics concepts and techniques, text analytics process and techniques such as information extraction, text categorization, cluster analysis and sentiment analysis.

CIA2E02 Data Governance

This subject equips you with the knowledge and skills to assess, manage, improve, monitor, and protect the use of organisational data. It covers the concepts of data stewardship, data quality, data architecture and risk management for enterprise data.

CIC1C05 Computer Architecture

This subject introduces the architecture and organisation of the digital components of a computer. This will also include studying the various mobile devices. You will also learn about the central processing unit, bus, memory and the input/output interfaces of a computer.

CIC1C06 Data Communications & Networking

The subject equips you with the skills and knowledge to design, configure and implement a wired Local Area Network (LAN) for resource sharing and communication. You will be taught the theoretical and practical aspects of data communications and networking. Topics include Open Systems Interconnect (OSI) reference model, Transmission Control Protocol/ Internet Protocol (TCP/IP) networking model, data communications hardware and software and their associated standards.

CIG1C01 Introduction to Data Science
This subject introduces you to the key concepts in the emerging field of data science. The data science life-cycle, history and context, as well as the business value of analytics and big data will be covered in this subject.

CIG2C01 Big Data Architecture & Systems
This subject introduces you to the emerging data architectures driven by "Big Data" adoption. It covers new paradigms of data systems within the realm of "Big Data," which evolved from Google, LinkedIn, and Facebook. You will be exposed to the concepts and techniques that have driven Big Data adoption and compare these with traditional data store architectures such as structured databases and data warehouses. Emerging data architectures such as real-time and complex event processing tools will also be covered.

CIG2C02 Programming for Big Data
This subject equips you with the knowledge and skills to program a data management application to manage big data. It covers commonly used scripting languages (such as python) and how it can be used for Big Data collection and processing. Other languages for data integration and processing (such as R) will be covered as well.

CIG2C03 Big Data Acquisition & Quality Management
This subject equips you with the knowledge and skills to acquire very large unstructured data sets from a myriad of data sources and to ensure data quality. It covers the concepts, methods and techniques to extract, transform and load (ETL) Big Data sets. It also covers various data acquisition and query techniques used in practice such as web crawling, integration to social media platforms, text systems and machine logs. You will also learn the tools and techniques used for the management of data quality.

CIG2C04 Data Marshalling & Transformation
This subject provides you with the knowledge and skills to gather and transform data into a standardised format for network transmission and storage. It covers methods and tools used to covert data objects into data streams, standard industry data formats, and data marshalling in Big Data systems.

CIG2C05 Big Data Virtualisation Concepts & Techniques
This subject introduces you to the concepts and techniques of data virtualisation. It will cover approaches to data management that allow retrieval and manipulation of data through a virtualised data abstraction layer. Various techniques to accessing data in-place, as well as data abstraction and transformation techniques will be covered. You will also be introduced to the differences between data virtualisation and the traditional ETL approach.

CIG2C06 Data Security & Governance
This subject covers data security and governance as a quality control discipline for assessing, managing, using, improving, monitoring, maintaining, and protecting organisational information. You will learn about concepts such as data security and access, data protection, data policies, business process management, and risk management surrounding the handling of data in an organisation.

CIM1C07 Human Computer Interaction
This subject introduces how human behaviour can influence the design, development and the use of computer systems. It also introduces how to analyse, design and evaluate a range of interfaces, based on users' needs and requirements. Topics covered include the principles of usability, user-centred design methodology and usability evaluation paradigms.

CIT1C05 Problem Solving & Programming
This subject introduces you to the fundamentals of problem solving and programming. These skills are taught through programming constructs as well as simple object-oriented concepts.

CIT1C06 Object-Oriented Programming
This subject introduces you to the principles and rationale behind an object-oriented approach to programming. Topics covered include objects and classes, composition, simple data structures, memory management, file input and output, inheritance and polymorphism. An object-oriented programming language is used to teach object-oriented concepts.

CIT1C09 Web Programming
This subject covers the concept of web programming, development of form-based web applications and data driven applications. It also covers the creation of web pages and session and state management.

CIT1C12 Introduction to Computing
This subject introduces the concepts of computing and the application of computing throughout history. Topics covered include the history of computing, programming languages, operating systems, database systems, networking and the Internet, as well as the impact of these on business operations and day-to-day communication.

CIT1C13 Business Information Systems
This subject covers the role of information systems in various business domains, the concepts of information and processes in businesses and e-commerce/ m-commerce technologies.

CIT1C14 Data Structures & Algorithms
This subject introduces you to the fundamentals of recursion and data structures in solving problems using a programming language. Topics covered include stacks, queues, linked lists and trees. Searching techniques and sorting algorithms will also be covered.

CIT2C11 Enterprise Solutions & Entrepreneurship
This subject covers the foundations of entrepreneurship such as entrepreneurial process and styles, and introduces commonly used enterprise solutions and E-business concepts and models. The subject also covers the development of a business plan.

CIT2C12 Advanced Data Structures & Algorithms
This subject introduces the principles of advanced data structures. Topics covered include analysis of algorithms, recursive algorithms, algorithmic design, advanced sorting and algorithms on data structures such as trees, graphs and heaps.

CIT2C13 Business Systems & Processes Integration
The subject covers topics such as intra and inter organisational integration, data integration methods, message oriented integration techniques and Service-Oriented Architecture (SOA) based enterprise integration. You will use a development tool to design and implement solutions to integrate business systems and processes in order to improve business efficiency and effectiveness.

CIT2C14 Enterprise Web Development & Testing
This subject introduces you to the principles of Web 2.0 technologies, web services and testing of enterprise web applications. Topics covered include client-side scripting, Web 2.0 Application Programming Interfaces, web services and web testing techniques. An Integrated Development Environment will be used to design, implement, test and deploy an enterprise web application that incorporates Web 2.0 technologies, web services and databases.

CIT2E08 Mobile Device Programming
This subject covers the fundamentals and concepts of developing mobile applications using a programming language. Topics covered include an overview of the mobile industry, user interface and mobile application development on a specific mobile platform.

CIT2P32 Enterprise Security & Application Management
The subject will cover topics on security threats and how they can be prevented, detected or reduced, symmetric and asymmetric cryptography technologies, and methods to identify, evaluate and ensure good security practises in application development.

CIT2P44 Dynamic Web Application Development
This subject covers the concepts and implementation of dynamic web-based applications. Topics covered include designing web pages and implementation of the business and data layers of a web application. Technological and design issues of web-based application development will also be discussed.

CIT3P51 Web Analytics
The subject covers topics such as the underlying concepts of web analytics and related issues, trends and best practices. Measurement and analysis of web metrics and application of web analytics to search engine optimisation and marketing will also be discussed.

CIT3P71 IT Governance & Service Management
This subject covers concepts, frameworks and best practices in IT service management and IT governance, based on the IT Infrastructure Library (ITIL) and Control Objectives for Information and Related Technologies (COBIT) respectively. The use of ITIL processes and functions to support and operate the IT Service Desk will also be covered.

CMA1C01 Computing Mathematics 1
This subject equips you with the ability to use mathematics and mathematical processes as tools for developing algorithms in computing and other real-life applications. You will also be equipped with the knowledge and skills to do reasoning, proof and induction. The subject covers logic, sequences and mathematical induction, and sets. You will also learn the fundamental concepts of mathematics needed for the other core computing subjects.

CMA1C02 Computing Mathematics 2
This subject equips you with the ability to use mathematics and mathematical processes as tools for developing algorithms in computing and other real-life applications. You will also be equipped with the knowledge and skills to analyse numerical information. The subject covers functions, counting, probability and recursion. You will also learn the fundamental concepts of mathematics needed for the other core computing subjects.

CMC1C05 IT Infrastructure
This subject teaches you how to integrate IT infrastructure in order to communicate and share information. The topics covered include networking concepts, computer systems for interacting with the network, and security concepts that enable one to keep the IT infrastructure safe.

CMC1C06 Introduction to the Internet of Things
This subject covers the concepts of the Internet of Things (IoT), its conceptual framework and how the IoT contributes to business and daily life. It will also cover the IoT architecture and gives an overview of the core technologies required for supporting IoT. It also covers typical application scenarios in the IoT.

CMA2P51 Quantitative Techniques
This subject provides you with the knowledge and skills to perform data and statistical analysis and familiarise students to the tools used for performing these analyses. The subject covers the concepts of statistical inference, hypothesis testing, linear regression and correlation analysis. You will use software tools to perform these analyses and make decisions based on the analysis results.

CMC2C10 Server Side Software Development
This subject equips you with the knowledge and skills to develop and deploy scalable server-side software. You will be able to develop the backend modules which provide services to the heterogeneous desktop and mobile clients. The subject focuses on creating an understanding of event driven programming, and business and data access objects development in a client-server architecture.

CMC2C11 Mobile & Wireless Networking
This subject covers the various concepts and principles in mobile communication and wireless networking. Basic theories on mobile and wireless architecture and their applications will be discussed. You will also learn how to secure, troubleshoot and analyse wireless systems.

CMC2C15 Operating Systems
This subject introduces the structure, functions and mechanisms of operating systems. Topics covered include the basics of operating systems, the functions and goals of the main managers of operating systems as well as the design underlying some of the operating systems in practice.

CMC2C16 IoT Application Development
This subject equips you with the knowledge and skills to build interactive systems, using a combination of hardware, embedded software, web services and cloud computing platform that can sense and respond intelligently to inputs from smart devices in the real world. It covers the concepts of distributed system architectures in computing, the design principles of connected devices, prototyping techniques and techniques for writing web services.

CMC2C17 Smart Systems Development
This subject equips you with the knowledge and skills to design and develop mobile applications taking into account IoT and its implications.

CMC2E04 Tourism Informatics
This subject focuses on developing your skills to understand the issues encountered in the tourism industry and to propose IT solutions to address them. Topics covered include introduction to tourism, IT systems in tourism, and IT solutions for the tourism industry.

CMC2P23 Internetworking Technologies
This subject covers internetworking technologies and protocols for enterprise network environments. Concepts in network scalability, scalable routing/ switching technologies and protocols are also taught.

CMC2P41 IT Infrastructure Management
This subject introduces the concept and framework of IT Service Management, and the 12 ITIL (IT Infrastructure Library) processes used in implementing and operating enterprise IT infrastructure systems.

CMC2P42 IT Service Desk Management
This subject introduces the concept and framework of IT Service Desk Management, and the ITIL (IT Infrastructure Library) processes and functions used in supporting and operating IT service desks.

CMC2P51 IoT Data Management
This subject equips you with the knowledge and skills to apply techniques and tools to store, manage and analyse the massive data generated by smart devices in real time efficiently. It will cover topics that include data security and privacy, the real time big data analytics stack and the five phase process model (data distillation, model development, validation and deployment, real-time scoring and model refresh) for real time analytics. You will also learn the various tools used for supporting real time analytics.

CMC2P52 IoT Security & Privacy

This subject introduces security and privacy issues in the implementation of IoT applications and services. It will cover topics that the encryption and authentication technologies, IP-based security solutions and privacy support through data abstraction, data anonymisation, data integration and data synchronisation.

CMC2P53 IoT System Design

This subject equips you with the knowledge and skills to apply design techniques when designing an Internet of Things system. You will cover topics that include the design principles for connected devices, prototyping of embedded devices and prototyping of online components.

CMC3C02 Software-Defined Networking

This subject equips you with the knowledge and skills to design, program and configure software-defined network (SDN) controllers, switches (physical and virtual), and virtualisation overlays. Topics covered include SDN architecture, standards such as the OpenFlow Standard, use of SDN in Data Centres and troubleshooting techniques using SDN.

CMP3102 Major Project

In this subject, you apply the skills and knowledge in Software Engineering, acquired from the various Diploma in IT subjects and in business domain electives, to a project. You will analyse, design, develop, implement and test viable and working information systems and solutions. You will be required to work in teams to manage your project development, and to present and demonstrate your systems. You will learn to handle problems and difficulties inherent in project work where teamwork and co-operation are important success factors. Concurrently, you will acquire new knowledge in technology and new skills in project management, problem solving, communication and interpersonal skills which will serve you well as you embark on your careers as IT professionals.

CMP3103 Major Project

This subject equips you with the skills and knowledge to apply the acquired business intelligence & analytics skills and knowledge from your curriculum to the design and development of a final group product. The subject involves the integration of analysis, design, development, implementation, testing, project management, presentation, and interpersonal skills as well as acquiring new skills in a domain-specific area to solving real-life problems.

CMP3202 Major Project

This subject involves the integration of knowledge and skills developed from the various subjects in the course. It helps you develop a practical understanding of the products, methodologies, processes, systems, project management and presentation skills needed for big data management and governance application projects. You will work in a team to develop, present and demonstrate a solution to a problem. This provides an opportunity for you to experience group work and the problems and difficulties inherent in project work where teamwork and cooperation are important success factors.

CMP3402 Major Project

This subject involves the integration of knowledge and skills acquired from the various subjects in the Mobile & Network Services curriculum. It fosters a practical understanding of mobile and network services, systems development methodology, advanced mobile application programming, mobile software testing, quality assurance, project management, and presentation skills.

CMP3601 Major Project

This project involves the integration of knowledge and skills developed from the various subjects in the course. It helps you develop a practical understanding of development methodology, programming and design techniques, evaluation processes, project management and presentation skills for security related systems projects. You are required to work in teams and present and demonstrate your solutions and products.

CMP3702 Major Project

This subject helps you integrate and apply the knowledge and skills acquired from the various subjects in the Game Design & Development curriculum. It helps you develop a practical understanding of game development methodology, programming and design techniques, quality assurance, project management and presentation skills. You will work in teams to present the solutions you create and demonstrate the products you develop.

CMP3801 Major Project

This project involves the integration of knowledge and skills developed from the various subjects in the course. It helps you develop a practical understanding of the products, methodologies, processes, systems, project management and presentation skills needed for the financial information systems projects. You will work in a team to develop, present and demonstrate your solution to a problem. This provides an avenue for you to experience group work and the problems and difficulties inherent in project work where teamwork and co-operation are important success factors.

CMP3901 Major Project

This project involves the integration of analysis, design, development, implementation, testing, project management, presentation, and interpersonal skills, as well as the acquisition of new skills in a domain-specific area to solve real-life problems.

CSI3001 Student Internship Programme

The Programme exposes you to an industry environment and is an integral part of the curriculum. Immersion in a real working environment will enhance your understanding of the application of IT in an organisation, and provide an opportunity for you to grow into responsible professionals. You will be expected to show sensitivity to the needs of your clients and organisations as you apply and integrate the knowledge and skills acquired in IT and domain areas to the work you are assigned. You will also be expected to demonstrate independence, initiative, creativity, strong conceptual thinking, technical proficiency and sensitivity to the needs of clients.

GEN1016 Introduction to Psychology of Deviant Behaviour

This subject introduces you to the theoretical and psychological perspectives of human behaviour. It will examine the psychological factors that relate to deviance and crime on a general level with specific focus on offences conducted with the assistance and use of digital and computer technology. Through this subject, you will be able to appreciate the contribution of psychology and apply it to an investigative process model.

LEA1001/1002/1003 Leadership: Essential Attributes & Practice (LEAP)

This programme comprises three core subjects – LEAP 1, 2 and 3. It seeks to cultivate in students the dispositions (i.e. attitude, skills and knowledge) towards the development of their leadership competencies. It is a character-based leadership programme that enables students to develop leadership life-skills that embrace character as the core foundation for their leadership credibility and influence.