MODULE SYNOPSES
SCHOOL OF INFORMATION TECHNOLOGY

IT1101
Computing Mathematics 1 **[60 hours]**
This module equips students with the fundamentals of computing mathematics and calculus, and forms the foundation for more advanced mathematics topics. Topics covered include number system, set theory and logic, matrices, relations, functions, differentiation and integration.

IT1110
Communication Skills 1 **[30 hours]**
This module teaches students to communicate effectively and skilfully in an academic and professional environment. It explores effective communication, reading, listening, technical writing, proposal writing and oral presentation. It helps students develop good communication strategies to improve interpersonal and teamwork skills.

IT1111
Programming Essentials **[60 hours]**
This module covers the application of Java programming to problems that require structured thinking. Students learn to think through different kinds of problems and formalise the process of problem-solving strategy by defining the problem, looking for alternatives as solutions and presenting the solutions using Java. It teaches programming as a rigorous discipline to be applied independent of computer type, language or application, and deals mainly with the fundamental programming constructs, its grouping towards comprising a program, the program structure as a whole and the communication between various segments of the program. It also covers program testing, debugging, and a number of program design tools and techniques used to express the solutions needed to solve the impending problem.

IT1201
Computing Mathematics 2 **[60 hours]**
This subject covers basic statistical concepts and spplications. The topics cover basic concepts on descriptive statistics, linear regression and correlation, permutation and combination, probability theory and probability distributions, which serve as foundation for subsequent topics such as estimation and hypothesis testing.

IT1204
Data Structures and Algorithms **[60 hours]**
This module teaches the concepts of data structures and algorithms for effective problem-solving skills and the implementation of solutions using Java. It focuses on dynamic data structures such as stacks, queues, linked lists, trees and graphs. Algorithms for searching and sorting, including common algorithm design techniques, will also be introduced.

IT1205
Operating Systems **[60 hours]**
This module introduces the fundamental concepts of operating systems to students. It provides an overview of the different types of operating systems such as Windows and Linux, as well as their general functions. It discusses in detail essential operating system components and concepts in the area of process management, memory management, storage management and file management.

IT1210
Communication Skills 2 **[30 hours]**
This module develops critical communication and interactive skills needed by students to prepare them for entry into the job market as working professionals. It focuses on interpersonal skills and various types of business communication needed in the workplace. Topics include business correspondence, writing resumes, interviewing skills, conflict management and negotiation skills.

IT1213
Data Communications & Networking **[60 hours]**
This module focuses on network terminologies and protocols, local area networks (LAN), wide area networks (WAN), Open System Interconnection (OSI) models, cabling, routers, router configuration, Ethernet, Internet Protocol (IPv4) addressing and network standards.

IT1214
Digital Media Interaction Design **[60 hours]**
This module introduces the importance of user interface design for digital media. It covers design methodology from the human computer interaction approach, guidelines and standards for using different types of digital media, and techniques used to perform usability testing. Issues on accessibility, personalisation and globalisation are also discussed.

IT1218
Law & Ethics of IT **[30 hours]**
This module aims to provide students with an awareness of the ethics and law of IT. It covers issues like intellectual property rights protection and infringement, copyright and plagiarism, software piracy, computer crimes, Internet fraud, objectionable materials, and confidentiality in the information age. Singapore's laws on copyright, computer misuse and electronic transactions will also be covered at an awareness level.

IT1321
Programming Essentials **[60 hours]**
This module covers the application of programming to problems that require structured thinking. Students learn to think through different kinds of problems and formalise the process of problem-solving strategy. It teaches programming as a rigorous discipline to be applied independent of computer type, language or application, and deals mainly with the fundamental programming constructs, its grouping towards comprising a program, the program structure as a whole and the communication between various segments of the program. It also covers program testing, debugging, and a number of program design tools and techniques used to express the solutions needed to solve the impending problem.

IT1323
Psychology & Sociology **[60 hours]**
This module introduces students to basic concepts of psychology and sociology for online media applications. Students will learn psychology theories such as personality profiles, online social behaviour, online interpersonal relationships, cognition, perception, emotion, and motivation, as well as sociology theories such as online media and socialisation, group dynamics, social identity and social action.

IT1324
Law & Ethics of IT **[30 hours]**
This module aims to provide students with an awareness of the ethics and law of IT. It covers issues like intellectual property rights protection and infringement, copyrights and plagiarism, software piracy, computer crimes, Internet fraud, objectionable materials and confidentiality in the Information Age. Singapore's law on copyright, computer misuse and electronic transactions will also be covered at an awareness level.

IT1325
Computing Mathematics **[60 hours]**
This module equips students with the fundamentals of computing mathematics and calculus, and forms the foundation for more advanced mathematics topics. Topics covered include number system, set theory and logic, matrices, relations, functions, differentiation and integration.

IT1331
Object-Oriented Programming **[60 hours]**
This module introduces students to the fundamentals of object orientation and equips them with object-oriented (OO) programming skills. Students will learn various OO programming topics such as classes, objects, abstraction, encapsulation, inheritance and polymorphism. Students will also learn how to implement these concepts using programming languages.

IT1333
Business Statistics **[60 hours]**
This module covers basic statistical concepts and applications, and includes topics such as permutation and combination, probability theory, probability distribution, estimation, hypothesis testing, least squares method, simple linear regression and correlation.

IT1334
Consumer Behaviour **[60 hours]**
This module provides students with an understanding of the role and applications of consumer behaviour in the digital marketplace. Students will acquire a conceptual understanding of how new trends and technologies change the way marketing is done on the Internet. It covers the concepts of how consumers make decisions both individually and in groups in an ever-changing and dynamic environment. Topics covered include personality, attitudes, beliefs, demographics, psychographics, cultural values, group dynamics, perception and motivation.

IT1335
Communication Skills 1 **[30 hours]**
This module teaches students to communicate effectively and skilfully in an academic and professional environment. It explores effective communication, reading, listening, technical writing, proposal writing and oral presentation. It helps students develop good communication strategies to improve interpersonal and teamwork skills.

IT1501
Computing Mathematics 1 **[60 hours]**
This module equips students with the fundamentals of computing mathematics and calculus, and forms the foundation for more advanced mathematics topics. Topics covered include number system, set theory and logic, matrices, relations, functions, differentiation and integration.

IT1506
Data Structures & Programming Techniques **[60 hours]**
This module equips students with a good fundamental of programming structures, techniques and practices so as to become comfortable with, and adaptable to, any programming languages. It also covers program testing, debugging, and a number of program design tools and techniques used to express the solutions needed to solve the impending problem. Students will be taught to apply Java programming to problems that require structured thinking. Fundamental concepts of data structures and algorithms will be covered, including stacks, queue, linked lists and trees.

IT1507
Web Applications Development **[60 hours]**
This module introduces the basic concepts of the Internet and hypertext, and how these concepts are integrated to provide powerful World Wide Web applications over the Internet. The focus is on learning the theory behind current web-based development tools and technologies, including HTML, DHTML, JavaScript, Java applets, Visual Studio and Personal Web Server, and developing intelligent and dynamic web-based applications with this array of web application development technologies.

IT1521
Computing Mathematics 1 **[60 hours]**
This module teaches students the fundamentals of computing mathematics and calculus, and forms the foundation for more advanced mathematics topics. Topics covered include number system, set theory and logic, matrices, relations, functions, differentiation and integration.

IT1523
Programming Essentials **[60 hours]**
This module introduces students to the notion of programming and the steps involved in developing a program. Students learn to use pseudo code and flow charts to outline the logic of a simple program. The main features of Java, the programming language used in the course, are presented. A variety of practical exercises is employed to teach students the use of operators, variables, flow control, methods and arrays.

IT1525
Communication Skills 1 **[30 hours]**
This module teaches students to communicate effectively and skilfully in an academic and professional environment. It explores effective communication, reading, listening, technical writing, proposal writing and oral presentation. It helps students develop good communication strategies to improve interpersonal and teamwork skills.

IT1528
Cyber Security Technology, Law & Ethics **[60 hours]**
This module gives a broad overview of information processing, communication systems, database management and software development. Key information security components encompassing confidentiality, integrity and availability (CIA) are introduced from the personal and enterprise perspectives. Students will acquire a broad understanding of proper conduct as well as of the handling and use of information resources in accordance to generally accepted ethical code. They will also learn and appreciate the risks and ramifications associated with illegal activities including attacks of various forms and misuse. An overview of client-side security, privacy and cybersecurity-related laws in Singapore, such as the Computer Misuse & Cybersecurity Act, Electronic Transactions Act and Evidence Act, will be presented with case studies and past incidences.

IT1531
Computing Mathematics 2 **[60 hours]**
This subject covers Basic Statistical Concepts and Applications. The topics cover basic concepts in Descriptive Statistics, Linear Regression and Correlation, Permutation and Combination, Probability Theory and Probability Distributions, which serve as foundation for subsequent topics such as Estimation and Hypothesis Testing.

IT1533
Network Technology **[60 hours]**
This module provides a broad understanding of network technology. Topics covered include basic networking concepts, the OSI Reference Model, network topologies, LAN standards and protocols such as Ethernet, Token Ring and FDDI, WAN protocols such as Frame Relay, ATM, the various Internet-working devices and also Virtual LAN. This module also focuses on the various TCP/IP protocols and applications that are the underlying technologies for the Internet. Network design and case studies will be introduced to illustrate connectivity among LAN segments to WAN through service provider networks using TCP/IP and Ethernet as core technologies.

IT1534
Cryptography & Applications **[60 hours]**
This module leads students to discover and learn how cryptography can be used to meet confidentiality and integrity challenges posed by info security threats. It covers a sound foundation of cryptography including different types of symmetric, asymmetric and message digest algorithms, along with techniques to apply correct cryptographic mechanism to achieve specific security objectives. It also provides a comprehensive coverage of the public key infrastructure (PKI), digital signature, key management, authentication and non-repudiation services with application scenarios. Students will subsequently learn introductory topics on steganography, digital watermarking and digital rights management.

IT1535
Communication Skills 2 **[30 hours]**
This module develops critical communication and interactive skills needed by students to prepare them for entry into the job market as working professionals. It focuses on interpersonal skills and various types of business communication needed at the workplace. Topics include business correspondence, writing resumes, interviewing skills, conflict management and negotiation skills.

IT1606
Law & Ethics of IT **[30 hours]**
This module aims to provide students with an awareness of the ethics and law of IT. It covers issues like intellectual property rights protection and infringement, copyrights and plagiarism, software piracy, computer crimes, Internet fraud, objectionable materials, and confidentiality in the information age. Singapore's laws on copyright, computer misuse and electronic transactions will also be covered at an awareness level.

IT1608
Networking Essentials **[30 hours]**
This module is designed to provide a broad understanding of essential network technology. Topics covered include networking concepts, the OSI Reference Model, network topologies, Local Area Network standards and protocols such as Ethernet and the various Internet-working devices. This module also focuses on the various TCP/IP network services and applications, which are the underlying technologies for the Internet. Network design and case studies will be introduced to illustrate the various different network requirements and design of home, small business and enterprise networks.

IT1621
Computing Mathematics 1 **[60 hours]**
This module is designed to equip students with the fundamentals of Computing Mathematics and Calculus, and shall form the foundation for more advanced mathematics topics. The topics covered include number system, set theory and logic, matrices, relations, functions, differentiation and integration.

IT1622
Trends in Fintech & Services **[30 hours]**
This module introduces the latest trends in fintech and financial services. Topics include payments, lending, cryptocurrency, trading, personal financial planning, security and compliance, investments and funds management, insurance, marketplace, crowdfunding, all-in-one addressing systems, unified point-of-sale terminal systems and smart surveillance systems

IT1623
Programming Essentials **[60 hours]**
This module covers the application of Java programming to problems that require structured thinking. Students learn to think through different kinds of problems and formulate the process of problem-solving strategy by defining the problem, looking for alternatives as solutions and presenting the solutions using Java. It teaches programming as a rigorous discipline to be applied independent of computer type, language or application, and deals mainly with fundamental programming constructs, its grouping towards comprising a program, the program structure as a whole and the communication between various segments of the program. It also covers program testing and debugging, and a number of program design tools and techniques used to express the solutions needed to solve the impending problem.

IT1625
Principles of Accounting **[60 hours]**
This module provides students with an understanding of the basic concepts and principles of accounting, covering service and merchandising enterprises in the forms of sole proprietorships and companies. Topics covered include fundamental accounting principles, accounting for assets and liabilities, and measurement of profits. Students will also learn to interpret financial statements through the use of financial ratios. Students will be taught the use of a computerised accounting system or software.

IT1631
Computing Mathematics 2 **[60 hours]**
This subject covers basic statistical concepts and applications. The topics cover basic concepts in descriptive statistics, linear regression and correlation, permutation and combination, probability theory and probability distributions, which serve as foundation for subsequent topics such as estimation and hypothesis testing.

IT1633
Capital Markets and Financial Instruments **[60 hours]**
This module provides students with an understanding of capital markets and their behaviours as well as the various financial instruments available and used in financing business, with emphasis on long-term equity and debt instruments. It includes topics such as capital structure, cost and capital, stock market, bond market, money market, bonds, notes and shares.

IT1634
Economics **[60 hours]**
This module provides students with an understanding of the basic principles of economics and the framework of economic reasoning as applied in business. Topics covered include the principles of demand and supply, theory of the firm, production costs, profit maximisation, market structures, inflation and unemployment, monetary and fiscal policies and foreign exchange.

IT1635
Communication Skills 1 **[30 hours]**
This module teaches students to communicate effectively and skilfully in an academic and professional environment. It explores effective communication, reading, listening, technical writing, proposal writing and oral presentation. It helps students develop good communication strategies to improve interpersonal and teamwork skills.

IT1636
Consumer Banking **[60 hours]**
This module provides students with an understanding of the consumer banking industry, and its role and importance as a component in the business portfolio of the financial services industry. Students will acquire knowledge of the various types of consumer products and services, as well as the distribution channels used for these products and services.

IT1751
Computing Mathematics 1 **[60 hours]**
This module equips students with the fundamentals of computing mathematics and calculus, and forms the foundation for more advanced mathematics topics. Topics covered include number system, set theory and logic, matrices, relations, functions, differentiation and integration.

IT1753
Principles of Computing **[60 hours]**
This module introduces a structured approach to problem-solving independent of computer type or language. Students are taught to plan and describe program logic using flow charts and pseudo codes. Programming fundamentals such as algorithm, logic, computer representation of information, variables and data types are covered.

IT1761
Computing Mathematics 2 **[60 hours]**
This subject covers basic statistical concepts and applications.
The topics cover basic concepts in descriptive statistics, linear regression and correlation, permutation and combination, probability theory and probability distributions, which serve as the foundation for subsequent topics such as estimation and hypothesis testing.

IT1762
Data Structures and Algorithms **[60 hours]**
This module covers concepts of data structures and algorithms for effective problem-solving and implementation of computer programs. Topics include dynamic data structures such as stacks, queues, linked lists and trees. Algorithms for searching and sorting will also be covered.

IT1768
Database Systems **[60 hours]**
This module covers the relational model in database. It describes the fundamentals of database systems, including the logical and physical design in a relational database. In addition, it introduces Structural Query Language (SQL) to facilitate data definition, retrieval, and manipulation together with database security & administration.

IT1769
Laws & Ethics of IT **[30 hours]**
This module aims to provide students with an awareness of the ethics and law of IT. It covers issues like intellectual property rights protection and infringement, copyright and plagiarism, software piracy, computer crimes, Internet fraud, objectionable materials, and confidentiality in the information age. Singapore's laws on copyright, computer misuse and electronic transactions will also be covered at an awareness level.

IT1770
Communication Skills 1 **[30 hours]**
This module teaches students to communicate effectively and skillfully in an academic and professional environment. It explores effective communication, reading, listening, technical writing, proposal writing and oral presentation. It helps students develop good communication strategies to improve interpersonal and teamwork skills.

IT1773
Infocomm Security Fundamentals **[60 hours]**
This module provides students with the foundation of information security concepts such as confidentiality, integrity, availability as well as risks and controls to mitigate risks. Other topics include identification and authentication, authorisation and access control, auditing and accountability, cryptography and a brief introduction to other aspects of security including operating system security, application security and operations security.

IT2106
IP Technology and Networking **[60 hours]**
This module continues from DCN. It leverages on the concepts, standards and protocols covered in DCN, to support the concepts of IP Technology and Networking, particularly in the key areas of routers and routing. It includes WAN, routing concepts, routing protocols, distance vector and link state routing, Cisco IOS, router configuration, RIPv1, RIPv2, EIGRP, OSPF, VLSM and CIDR. Students will get hands-on experience in configuring routers to meet networking requirements.

IT2107
Mobile Usability Design **[60 hours]**
This module covers the essential usability principles of designing and developing the right mobile user experience for an application. It introduces design methodologies and processes for designing interfaces that aim to improve the interactions between user and mobile by making it more usable and receptive to the users' needs.

IT2116
Software Engineering **[60 hours]**
This module begins with a formal definition of software engineering. The details of a software development lifecycle are elaborated and serve as a guide to a maturing engineering discipline. Related issues such as software quality and configuration management are also introduced to provide students with sound understanding to produce a high-quality software system. Various software testing techniques will be introduced to identify the test cases for software validation. Project management techniques such as project planning and control will also be taught.

IT2118
InfoSecurity Technology **[30 hours]**
This module covers the essential aspects of information security from personal and enterprise perspectives. It begins with an understanding about information security risks and motivation. Information security policies, procedures, security technologies, regulatory issues and information ethics will also be covered.

IT2127
C# Application Development **[60 hours]**
This module provides students with training in the fundamentals of developing software applications using the C# programming language, with emphasis on object-oriented programming techniques and the Microsoft environment.

IT2128
C++ Application Development **[60 hours]**
This module provides students with training in the fundamentals of developing software applications using the C++ programming language, with emphasis on object-oriented programming techniques and the Microsoft environment.

IT2201
Database Management Systems **[60 hours]**
This module covers the components of a database system together with its database management system from a relational model perspective, with brief mention of other models of database systems such as hierarchical and network models. It describes the conceptual, logical and physical design of a relational database, as well as SQL in data definition, data retrieval and data manipulation. The module also introduces the concepts of database administration, security and integrity in the areas of database backup, recovery and concurrency.

IT2322
Quantitative Methods **[60 hours]**
This module introduces key quantitative concepts and methods that are frequently used in enterprises for decision-making. Students will acquire the skill sets of quantitative models to formulate, evaluate and solve business problems.

IT2323
Database Management Systems **[60 hours]**
This module covers the components of a database system together with its database management system from a relational model perspective, with brief mention of other models of database systems such as hierarchical and network models. It describes the conceptual, logical and physical design of a relational database as well as SQL in data definition, data retrieval and data manipulation. The module also introduces the concept of database administration, security and integrity in the areas of database backup, recovery and concurrency.

IT2324
Network Technology **[60 hours]**
This module provides students with a broad understanding of network technology. Topics covered include basic networking concepts, the OSI Reference Model, network topologies, LAN standards and protocols such as Ethernet, Token Ring and FDDI, WAN protocols such as Frame Relay, ATM, the various Internet-working devices and also Virtual LAN. This module also focuses on the various TCP/IP protocols and applications that are the underlying technologies for the Internet. Network design and case studies will be introduced to illustrate connectivity among LAN segments to WAN through service provider networks using TCP/IP and Ethernet as core technologies.

IT2325
Communication Skills 2 **[30 hours]**
This module develops critical communication and interactive skills needed by students to prepare them for entry into the job market as working professionals. It focuses on interpersonal skills and various types of business communication needed at the work place. Topics include business correspondence, writing resumes, interviewing skills, conflict management and negotiation skills.

IT2331
Industry Analysis **[60 hours]**
This module introduces students to key vertical segments (e.g. financial services, healthcare, infocomm, urban solutions and retail services) and their differences in terms of structure and needs. Students will learn the differences in terms of overall opportunity, go-to-market strategies, sales and distribution strategies and service requirements, with particular attention on the corresponding requirements on data management and information processing.

IT2333
Advanced Database Systems **[60 hours]**
This module introduces students to advanced topics in online analytical processing (OLAP) concepts. It covers advance database technologies like distributed databases, data warehousing using star schema, data mining and cube databases. It also covers an in-depth understanding and usage of queries for business reporting.

IT2334

Software Engineering Practices **[60 hours]**

This module begins with a formal definition of software engineering. The details of a software development lifecycle are elaborated and serve as a guide to a maturing engineering discipline. Project management concepts are introduced. Related issues such as software quality and configuration management are also introduced to provide an understanding of how to produce a high-quality software system. A fundamental understanding of object-oriented concepts will be discussed, including the illustration of object-oriented analysis and design development. UML is used to facilitate the modelling of analysis and design. Various software testing techniques are introduced to identify the test cases for software validation.

IT2335

Predictive Modelling **[60 hours]**

This module provides students with an overview of predictive modelling technologies. Topics include quantitative prediction, types of predictive models, logistic regression, decision trees and assessment methods to evaluate and compare prediction models. Students will learn to develop predictive models based on collected data using selected software tools.

IT2521

Database Management Systems **[60 hours]**

This module covers the components of a database system together with its database management system from a relational model perspective, with brief mention of other models of database systems such as hierarchical and network models. It describes the conceptual, logical and physical design of a relational database, as well as SQL in data definition, data retrieval and data manipulation. The module also introduces the concept of database administration, security and integrity in the areas of database backup, recovery and concurrency.

IT2522

Risk & Incident Management **[30 hours]**

This module provides students with a sound foundation in the management of information security risk to protect the business assets of an organisation as well as in the implementation and management of capabilities to detect, respond to and recover from information security incidences. This module starts with risk management methodology including asset classification, threat and vulnerability identification, risk evaluation, risk assessment, risk treatment, establishing mitigated controls and on-going monitoring. Students proceed to learn the incident response process including incident response planning, detection, establishing response capability and management of post-incident activities such as the basics in disaster recovery and business continuity planning.

IT2524

Operating Systems **[60 hours]**

This module introduces the fundamental concepts of operating systems to students. It discusses the different types of operating systems, the core components of operating systems and their related algorithms and security features. In addition, students learn basic security administration and shell script programming for Windows and Linux through hands-on exercises.

IT2525

Data Structures and Algorithms **[60 hours]**

This module teaches the concepts of data structures and algorithms for effective problem-solving skills and implementation of solution using Java. It focuses on dynamic data structures such as stacks, queues, linked lists, trees and graphs. Algorithms for searching and sorting, including common algorithm design techniques, will also be introduced.

IT2533

Servers & Services Security Management **[60 hours]**

This module provides students with a good understanding of provisioning and management of secured server systems, software services and hosting environment. Server applications covered include secured configuration, system hardening, access and activity authentication, authorisation and monitoring of web server, application server, database server and hosting environment such as Windows and Unix operating systems. Students will also learn XML security, best practices and standards in securing Web 2.0 and web services related security flaws.

IT2534

InfoSecurity Standards, Policies and Audit **[30 hours]**

This module provides students with a sound foundation in information security standards, formulating security policies, establishing appropriate controls followed by conducting reviews and audit. Students will learn information security audit process and techniques, including asset evaluation, establishing a risk-based audit strategy, audit planning, conducting audit followed by documenting and communicating the findings. Students will also learn to use Computer Assisted Auditing Techniques (CAAT) and auditing tools with their applications.

IT2535

Software Engineering Practices **[60 hours]**

The module covers the concepts and details of the object-oriented software development lifecycle. Project management, software quality and configuration management concepts are introduced to provide an understanding of their importance in producing high quality software systems. UML is taught to show how it is used to facilitate and document the models of analysis and design. Various software testing techniques are also introduced to identify the test cases for software validation.

IT2537

Cyber Forensic Technologies **[60 hours]**

This module covers technologies and tools involved in digital evidence gathering, analysis and presentations for both investigative and legal purposes. It introduces information recording, storage and retrieval technologies in magnetic, optical and electronic media. It also introduces key industry standard volume and file system formats, advanced techniques and technologies in information retrieval from a given media, duplication technologies and procedures, heuristic and procedural data analysis techniques of examining the captured data, which is followed by the tools and technologies in safeguarding evidences and reporting the findings.

IT2601

Database Management Systems **[60 hours]**

This module covers the components of a database system together with its database management system from a relational model perspective, with brief mention of other models of database systems such as hierarchical and network models. It describes the conceptual, logical and physical design of a relational database as well as SQL in data definition, data retrieval and data manipulation. The module also introduces the concept of database administration, security and integrity in the areas of database backup, recovery and concurrency.

IT2604

Software Engineering Practices **[60 hours]**

The module covers the concepts and details of the software development lifecycle. Project management, software quality and configuration management concepts are introduced to provide an understanding of their importance in producing high quality software systems. Unified Modeling Language (UML) is taught to show how it is used to facilitate and document the models of analysis and design. Various software testing techniques are introduced to identify the test cases for software validation.

IT2605
Applications of Web Services **[30 hours]**
This module introduces students to web services, its fundamentals, components and technologies that enable it, including Universal Description, Discovery and Integration (UDDI), Web Services Description Language (WSDL) and Simple Object Access Protocol (SOAP). Students will be taught how to develop, publish and consume web services using a current web development framework or API.

IT2621
Database Management Systems **[60 hours]**
This module covers the components of a database system together with its database management system from a relational model perspective. It also covers data modelling and design of a relational database as well as SQL in data definition and data manipulation. The module also introduces the concept of data and database administration and transaction management.

IT2624
Financial Management **[60 hours]**
This module provides a basic understanding of the principles and concepts used in managing the finances of a business. Topics include budgeting and forecasting, working capital management and decision, time value of money, capital investment decisions, equity and debt financing. At the end of the module, students will understand the various sources of financing available to a business and how to evaluate the appropriateness of an investment.

IT2625
Communication Skills 2 **[30 hours]**
This module develops critical communication and interactive skills needed by students to prepare them for entry into the job market as working professionals. It focuses on interpersonal skills and various types of business communication needed in the workplace. Topics include business correspondence, writing resumes, interviewing skills, conflict management and negotiation skills.

IT2626
Law, Governance & Ethics **[60 hours]**
This module introduces the different aspects of corporate governance and compliance concerning financial institutions, and provides an awareness of the law and ethics of IT. It covers issues like intellectual property rights protection and infringement, copyright and plagiarism, software piracy, computer crimes, Internet fraud, objectionable materials and confidentiality. Singapore's Copyright Law, Computer Misuse Act and Electronic Transaction Act will also be covered at an awareness level. Students will have the opportunity to use software tools that enable financial institutions and businesses to comply with legal requirements such as Sarbanes-Oxley Act and Basel II.

IT2632
Software Engineering Practices **[60 hours]**
This module presents the concepts and methodologies to construct robust software systems and to better manage software projects. It covers Unified Process, which guides developers with techniques, tools, models and best practices throughout the development lifecycle. A fundamental understanding of object-oriented concepts will be discussed, including the illustration of object-oriented analysis and design development. UML is used to facilitate the modelling of analysis and design. Various software testing techniques are introduced to identify the test cases for software validation. Project management is pivotal in this module to ensure the successful delivery of software projects.

IT2633
Cyber Security for Financial Services **[60 hours]**
This module provides the fundamental knowledge of Infosecurity in financial services industry as well as the skills required to implement security measures to protect computer and network systems. Topics include cryptography and cryptocurrency, authentication and biometrics, identity management, secure network protocols, firewall, virtual private network, intrusion detection system and Internet attacks, trusted computing, security analytics, threat intelligence and active breach detection.

IT2634
Risk Management **[30 hours]**
This module introduces the major risk areas of market, credit and operation that affect a financial institution's capital management. Students will learn the use of financial instruments to manage exposure to credit and market risk as well as the procedures and practices involved in the identification, analysis, assessment, control and minimisation of risk. They will also be exposed to economic capital control and the impact of BIS II regulations.

IT2635
Investment and Financial Derivatives **[60 hours]**
This module covers the basic principles of investment, financial derivatives, investment instruments and strategy, and the fundamental and technical approaches to security analysis. Topics include risk and return, stock and bond valuation, unit trusts, futures, forwards, options, swaps and efficient market hypothesis.

IT2656
Mobile Services and Applications **[60 hours]**
This module familiarises students with the mobile computing world. It exposes students to current trends in mobile services and applications and focuses on new trends and various applications available in the mobile services arena. It also introduces various concepts and ideas of in-trend applications running on mobile devices.

IT2755
Software Engineering **[60 hours]**
This module begins with a formal definition of software engineering. The software development lifecycle is elaborated and serves as a guide to a maturing engineering discipline. Related issues such as software quality and configuration management are introduced to provide students with a good understanding of producing a high quality software system. Various software testing techniques will also be introduced to identify the test cases for software validation. Project management techniques such as project planning and control will be taught.

IT2757
Server & Services Security Management **[60 hours]**
This module aims to provide students with a good understanding in provisioning and management of secured server systems, network services and hosting environment. The server applications covered include secured configuration, system hardening, access and activity authentication, authorisation and monitoring of web and application server, database server, DNS, DHCP, email server and hosting environment such as Windows and UNIX operating systems in physical or virtualised platforms.

IT2758
Operating Systems **[30 hours]**
This module covers the fundamental concepts of operating systems with a focus on the important features and functions of an operating system. These include the management of memory space and peripheral devices, file management, system security requirements and system administration. Students will also be exposed to different types of operating systems such as Linux and Windows.

IT2762
Networking and Communications **[60 hours]**
This module covers routing and switches technology, routing theory and router configuration. It includes routing concepts, routing protocols, distance vector and link state routing theory, routing loop issues, router configuration and troubleshooting, access lists, classless routing, advanced routing protocols, switching concepts and configuration, virtual LAN, spanning tree protocols and virtual trunking protocol. Students will get hands-on experience to configure routers and switches to meet stringent networking requirements.

IT2768
IT Services and Management **[30 hours]**
This module provides insights into the latest developments in the field of IT service management. It enables students to apply various methodologies regarding the planning, support, delivery and management of quality IT services. It covers concepts, terms, definitions, objectives, benefits and relationships within core IT service management processes and functions according to the best practices framework.

IT2771
Rich Internet Application Development [60 hours]
This module equips students with the capability to develop Rich Internet Applications (RIA), which enable the deployment of content-rich web applications over the Internet with the media rich power of the traditional desktop. Students will learn to develop RIA applications targeted for multiple platforms such mobile and rich web applications. Evolving standards such as HTML5/CSS3, which provide support for drag-and-drop, video and animation will also be covered.

IT2774
Network Security [60 hours]
This module provides students with fundamentals of network security, emphasising the role of data communications and encryption. It covers network security, compliance and operation security, threats and vulnerabilities as well as application, data and host security. Other topics include access control, firewalls, VPN, intrusion detection systems, identity management and cryptography.

IT2775
Operations Security [60 hours]
This module covers the protection and controls of information processing assets in an enterprise IT environment. It starts with operations management practices such as user management, access control, patch management, malware defence and management, configurations and change management, backup and recovery process, personnel management best practices, etc. Physical security topics complement the protection of the tangible aspect of information systems. Practical aspects of single sign on, identity management, multi-factor authentication and access audit will be included. This module also includes common practices in contractor/product selection and management, outsourcing security services, managed security and continuous security monitoring.

IT3111
InfoSecurity Management [60 hours]
This module provides a sound understanding of the management and administration of InfoSecurity. It begins with an understanding of Infosecurity as a process followed by topics on security threats, security incidents, risk assessment and mitigation. Various aspects of information security policy, procedures, guidelines and standards, security administration fundamentals and physical security will be taught. Configurations and administrations of current operating systems such as Windows and Unix for security requirements will be covered.

IT3112
System & Network Security [60 hours]
This module provides a sound understanding of the technologies and tools used in architecting and implementing effective network security solutions. It begins with security foundation topics, including the use of applied cryptography, public key infrastructure, secure network protocols, wireless security and virtual private network to provide secure communications.

IT3118
Digital Forensics [60 hours]
This module covers the proper handling, management and presentation of digital evidence. This includes the use of scientific methods for collection, preservation, identification, analysis, interpretation, documentation and presentation of digital evidence derived from digital sources so that they can be used as evidence in the judiciary courts.

IT3125
Psychology & Sociology for Online Media [60 hours]
This module introduces students to the basic concepts of psychology and sociology for online media applications. Students will learn psychology theories such as personality profiles, online social behaviour, online interpersonal relationships, cognition, perception, emotion, motivation and sociology theories such as online media and socialisation, group dynamics, social identity and social action. Ethics and law in the social media space will also be introduced.

IT3127
Enterprise Social Media [60 hours]
In this module, students will be introduced to various collaborative tools and services. It will cover the usage of Enterprise Social Media software (e.g. Microsoft SharePoint and IBM Lotus Connection) and tools to facilitate and foster new forms of employee engagement and innovation. Students will learn new forms of social collaboration, including knowledge sharing, knowledge management and workplace collaboration, and how to build and implement an enterprise social media strategy using the latest enterprise social media platform.

IT3128
Social Media Marketing & Analytics [60 hours]
This module provides the basic principles and concepts of social media marketing to create an effective social media marketing plan, and the measurements of success. Students will learn to optimise the use of social media platforms, including LinkedIn, Facebook and Twitter, to design an effective marketing strategy. It covers the use of social media analytics tools and metrics such as Google Analytics and SPSS Modeler data mining and text analytics workbench as well as social media monitoring tools such as Radian6 to understand customers' sentiments and to evaluate the effectiveness of the marketing efforts.

IT3133
Quantitative Methods [60 hours]
This module introduces the key quantitative analysis concepts and the methods that are frequently used in the enterprise for decision making. The students will acquire the skills of quantitative models to formulate, evaluate and solve business problems.

IT3134
Business Intelligence & Analytics [60 hours]
Business intelligence is the technologies, applications and practices for the collection, integration, analysis, and presentation of business information. This module introduces the concept and technologies such as Extract, Transform and Load, Data Warehouse, OLAP, Data Mining and Web Mining related to business intelligence. The students will be exposed to the use of business intelligence software tools to acquire, cleanse, enhance, and transform data into useful information for analysis and better business decision-making.

IT3135
Digital Marketing & Analytics [60 hours]
This module examines the marketing concepts and analytics tools and techniques for an effective multichannel marketing in the digital age. Students will learn how data on customer behaviour on various channels can be used for business decision based on customer segment and predictive analytics for direct marketing, customer relationship and distribution channels selection. Students will also be exposed to the theory and strategy behind marketing analytics to measure the effectiveness of marketing campaigns.

IT3154
Computer Graphics [60 hours]
This module covers the basic concepts of computer graphics and detailed fundamentals of 2D and 3D computer graphics, including the techniques and algorithms that can be applied to a wide range of applications that use computer graphics. Concepts on 3D modelling, transformations and rendering techniques will also be covered in detail, using the latest standard graphics packages and tools.

IT3158
Visual Art Techniques [60 hours]
This module provides an overview of the tools and techniques used to produce digital art for games and animation. This includes 2D and 3D art assets, animation, sound, and video. It covers the basic understanding of the tools required for programmers to work with game artists. Upon completion of this module, students will understand the issues and terminologies used by game artists, and have a working knowledge of the common tools and techniques used in the industry.

IT3160
Concepts of Geospatial Information System [60 hours]
This module introduces the fundamental concepts of a Geospatial Information System (GIS), as well as the properties and structure of a GIS map. Students will be taught the various map projections, types of raster and vector data, spatial relationships as well as geo-processing tools. At the end of the course, students will be able to understand what GIS is and how an organisation can benefit from it through its experience of geographic datasets and features and be able to apply a systematic approach to finding patterns and relationships through data analysis.

IT3161
Geospatial Visualisation **[60 hours]**
This module equips students with the capability to build high-performing and engaging web applications that incorporates geographic information system (GIS) mapping, editing and geo-processing capabilities. It covers the use of ArcGIS API to incorporate basemaps, as well as working with queries to create GIS-enabled web applications. At the end of the course, students will be able to choose an application development environment that is suitable for a particular need as well as design an application for efficient querying and editing of GIS data.

IT3178
Cloud Computing **[60 hours]**
This module covers cloud computing, a paradigm of dynamically scalable and often virtualised resources and services that are provided over the Internet. It introduces the concept and business case of cloud computing and compares it with previous computing models. It proceeds to explain cloud computing characteristics, components and architecture followed by different cloud computing models as well as cloud application development concepts. The module concludes with topics on cloud computing security and standards and governance.

IT3180
Emerging Trends and Technologies **[30 hours]**
This module exposes students to the latest trends and technologies that are evolving in the IT industry. These include both hardware and software developments, which will be discussed in the form of workshops and/or seminars.

IT3291
Final Year Project **[12 weeks]**
The Final Year Project module gives students the practical experience of carrying out an independent software project, from project requirements, implementation, testing to the delivery and presentation of the software. Students will go through a software process with deliverables at different stages of the process. The module requires them to learn new technologies and software tools that are not covered in the course. This will inculcate independent and lifelong learning.

IT3293/IT3296
Overseas Internship Programme **[12/24 weeks]**
The 12/24-week internship programme at an overseas company exposes students to a real-life work environment and facilitates a structured and integrated learning programme for them. They will get to apply the knowledge and skills that they have acquired to work practice. The programme will also enable them to gain a broader perspective and knowledge of the industry, companies and careers in respective professions. The students will get to experience the realities of a work environment and the importance of work values and culture. They will also get to deepen their relevant skills for them to be well-placed to pursue a career in their chosen discipline.

IT3299/IT3298
Internship Programme **[12/24 weeks]**
The 12/24-week internship programme at a company exposes students to a real-life work environment and facilitates a structured and integrated learning programme for them. They will get to apply the knowledge and skills that they have acquired to work practice. The programme will also enable them to gain a broader perspective and knowledge of the industry, companies and careers in respective professions. The students will get to experience the realities of a work environment and the importance of work values and culture. They will also get to deepen their relevant skills for them to be well-placed to pursue a career in their chosen discipline.

IT3322
Data Privacy & Security **[60 hours]**
This module introduces the fundamentals and the challenges of online privacy faced by the online community of today's highly connected social media users. Underlying data security concepts such as data encryption, user authenticity, transaction nonrepudiation and other information security topics will be covered. Upon successful completion of this module, students will be able to understand the basic concepts of data privacy and security for online media applications, be exposed to theories such as data encryption, user authenticity, transaction non-repudiation and other information security topics, and appreciate ethical and legal issues faced by the online community in the social media space.

IT3331
Final Year Project **[12 weeks]**
The Final Year Project module gives students practical experience in carrying out an independent software project, from requirements gathering, analysis and design, to the implementation, testing, delivery and presentation of the applications or solutions. Students will go through a software process with deliverables at different stages of the process. The module may require students to learn new technologies and advanced software tools that may not have been covered comprehensively in the course. This will help nurture the mindset of independent discovery and lifelong learning.

IT3333/IT3336
Overseas Internship Programme **[12/24 weeks]**
The 12/24-week internship programme at an overseas company exposes students to a real-life work environment and facilitates a structured and integrated learning programme for them. They will get to apply the knowledge and skills that they have acquired to work practice. The programme will also enable them to gain a broader perspective and knowledge of the industry, companies and careers in respective professions. The students will get to experience the realities of a work environment and the importance of work values and culture. They will also get to deepen their relevant skills for them to be well-placed to pursue a career in their chosen discipline.

IT3339/IT3338
Internship Programme **[12/24 weeks]**
The 12/24-week internship programme at a company exposes students to a real-life work environment and facilitates a structured and integrated learning programme for them. They will get to apply the knowledge and skills that they have acquired to work practice. The programme will also enable them to gain a broader perspective and knowledge of the industry, companies and careers in respective professions. The students will get to experience the realities of a work environment and the importance of work values and culture. They will also get to deepen their relevant skills for them to be well-placed to pursue a career in their chosen discipline.

IT3351
Analytics for Financial Services **[60 hours]**
This module introduces students to how analytics are used in the financial services to solve complex financial problems, drive profitability, seize new opportunities and manage risk. Topics include financial reporting and planning, profitability and cost analysis, financial crimes and fraud detection and prevention, financial product portfolio optimisation, financial forecasting, financial performance management and credit-risk management.

IT3353
Analytics for Retail & Hospitality **[60 hours]**
This module introduces how analytics are used in the retail and hospitality industries to develop new insights into customers so as to understand business performance and drive decision-making. Topics include campaign management, customer experience analytics, performance management, product portfolio optimisation, event-driven marketing, profitability analysis and marketing mix analysis.

IT3355
Social Media Analytics **[60 hours]**
This module provides students with the fundamental knowledge of the various concepts on how to measure, analyse and interpret social media data. Besides identifying goals and objectives within the context of specific business and marketing plans, students will learn the use of various social media tools and metrics to identify influential, recognise sentiments, extract conversations and present results. In additional, various data extraction, mining and visualisation techniques will be covered.

IT3357
Digital Marketing & Analytics **[60 hours]**
This module examines the marketing concepts and analytics tools and techniques for an effective multichannel marketing in the digital age. Students will learn how data on customer behaviour on various channels can be used for business decision based on customer segment and predictive analytics for direct marketing, customer relationship and distribution channels selection. Students will also be exposed to the theory and strategy behind marketing analytics to measure the effectiveness of marketing campaigns.

IT3358
Geospatial Analytics **[60 hours]**
This module introduces the concepts of a geographic information system, the techniques of incorporating geoprocessing capabilities and the technologies that support the processes of acquiring, analysing and visualising spatial data. Students will be exposed to the various spatial data type, data model, map projections, spatial relationships and geo-processing tools. They will learn how to apply a systematic approach to finding patterns and relationships through geospatial analytics and geovisualisation techniques.

IT3359
Big Data Analytics **[60 hours]**
This module introduces students to big data concepts and how a big data environment allows them to store, process, analyse and visualise massive and complex datasets. Students will learn predictive analytics and their application to practical data analytics problems via data-driven activities using big data technologies and tools. Students will also be exposed to big data trends and the ethical issues involved.

IT3506
InfoSecurity Technology **[30 hours]**
This module covers the essential aspects of information security from personal and enterprise perspectives. It provides an understanding of information security trends, security threats, security incidents, security policies, procedures and guidelines.

IT3523
InfoSecurity Governance **[30 hours]**
This module provides students with a good appreciation of IT governance concepts and regulatory compliance requirements of today's enterprises. It covers how IT value delivery, risk management, performance measurement and strategic alignment of business and IT are linked to provide a strong IT governance structure. Prevailing corporate and individual ethics related to information security and privacy will be covered subsequently. Students will then learn an overview of information disclosure, info security related compliance requirements as well as regulatory requirements from the local and international perspectives.

IT3525
Cyber Forensic Process **[60 hours]**
This module introduces students to processes involved in conducting effective cyber forensic practices. It covers processes involved in preliminary planning, equipment seizing, evidence collection, recording and safeguarding process, opening and developing a forensic case, forensic anomaly investigation process, reporting and presenting process in legal and civil cases. This module also includes Singapore law as well as legal practices and case studies of past court rulings and prosecutions through digital forensic evidence. The application of cyber forensic process for investigations into cyberattacks and espionage will be covered as well.

IT3526
Cyber Security Attack & Defense **[60 hours]**
This module covers the concepts, tools and techniques used in both cyberattacks and defence. This includes techniques and tools used in foot-printing and social engineering, scanning and enumeration, system and network penetration, reverse engineering, planting Trojans, backdoors and hopping and escalating attack from the compromised systems. Students will proceed to learn the penetration testing process as well as the ethical and legal aspects.

IT3531
Final Year Project **[12 weeks]**
The Final Year Project module gives students the practical experience of carrying out a software development project from project requirements, implementation and testing to the delivery and presentation of the software. Students will go through a software process with deliverables at different stages of the process. The projects often require students to learn and apply new technologies and software tools that are beyond the boundaries of the course curriculum. This will inculcate independent and lifelong learning. The engagement of industry projects provides an added dimension for students to think marketplace, appreciate windows of opportunity and see things from the eyes of the customers, while concurrently being subject to the real-life requirements of quality, cost-effectiveness and time-to-market. Students will also have the opportunity to put project management into good practice.

IT3533/IT3536
Overseas Internship Programme **[12/24 weeks]**
The 12/24-week internship programme at an overseas company exposes students to a real-life work environment and facilitates a structured and integrated learning programme for them. They will get to apply the knowledge and skills that they have acquired to work practice. The programme will also enable them to gain a broader perspective and knowledge of the industry, companies and careers in respective professions. The students will get to experience the realities of a work environment and the importance of work values and culture. They will also get to deepen their relevant skills for them to be well-placed to pursue a career in their chosen discipline.

IT3539/IT3538
Internship Programme **[12/24 weeks]**
The 12/24-week internship programme at an overseas company exposes students to a real-life work environment and facilitates a structured and integrated learning programme for them. They will get to apply the knowledge and skills that they have acquired to work practice. The programme will also enable them to gain a broader perspective and knowledge of the industry, companies and careers in respective professions. The students will get to experience the realities of a work environment and the importance of work values and culture. They will also get to deepen their relevant skills for them to be well-placed to pursue a career in their chosen discipline.

IT3541
Digital Rights Management **[60 hours]**
This module covers the controlled use of digital media by preventing illegal access, illegal copying and conversion to other formats or tempering in an unauthorised manner. Technologies used to protect film, music, and documents such as content scramble system, cryptography, digital watermarking and steganography will be taught. Students will also learn about the shortcomings and issues of digital rights management and the legal aspect of it.

IT3542
IT Project Management **[60 hours]**
This module covers the successful management of IT projects with respect to people, process, technology and tools. Students will learn about project success factors, project lifecycle, project planning, project monitoring and project control. Configuration management, risk management and quality assurance will also be taught.

IT3543
Advanced Cyber Forensic Techniques **[60 hours]**
This module introduces students to the latest technologies and tools used in the collection, collation and analysis of data derived from various digital devices and networks. With fast-changing technology landscape and challenges, forensic techniques have to evolve rapidly to ensure that the ability to investigate and discover evidence is not compromised.

IT3545
Disaster Recovery & Business Continuity Management **[60 hours]**
This module provides comprehensive coverage on how an organisation can prepare for natural, pandemic or man-made disasters that would jeopardise its core mission and long-term business survival. A systematic methodology in scoping, planning, implementing, testing and maintenance of business continuity and disaster recovery process will be introduced with case studies and scenario practices. Students will also learn prevailing industrial practice and standards in this area.

IT3546
Cloud Computing Security **[60 hours]**
This module allows students to learn cloud computing technologies and related security best practices. It introduces cloud computing fundamentals with case studies on existing technologies and services offered by Amazon EC2, Google App Engine and Microsoft Windows Azure with their business models. Subsequently, cloud computing service models including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS) will be introduced together with their potential security issues and best practices. Students will proceed to learn advanced web and network security in a high availability hosting environment. Access control, data replication and backup for data security, privacy and availability as well as data leakage prevention in cloud computing environment will be introduced next. The module concludes with best practices in controls and audit and outsourcing as well as the importance of regulatory compliances.

IT3547
Malware Analysis **[60 hours]**
This module provides students with a sound foundation in the processes and techniques involved in performing malware analysis. It starts by introducing the different types of malware and their techniques of propagation and spreading. Students will proceed to learn malware identification and isolation, unpack binary malware code with basic reverse engineering techniques, study impact analysis and produce vaccine to neutralise its infection and harmful activities. Various security software tools will be used to reinforce the concepts taught. Students will also learn basic reverse engineering techniques.

IT3548
Mobile Security **[60 hours]**
This module introduces the framework of prevalent mobile operating systems. Security models are also discussed to provide a good foundation in secured mobile applications development. Students will learn best practices in implementing secured mobile application solutions for enterprises and lifestyle uses for selected device platforms. Secured configurations and user provisioning will also be covered. The module ends with discussions on the latest development and future trends in the mobile security technology space.

IT3549
Cyber Security Operations & Intelligence **[60 hours]**
This module introduces the latest technologies and tools associated with the collection, collation, analysis and transformation of data into intelligence for use in cybersecurity risk mitigation efforts. Students will learn to integrate this intelligence into cybersecurity operations to enhance resiliency in IT operations within the organisation. The module will also expose students to the latest cybersecurity threat landscape and the current thoughts on cybersecurity trends by leaders in the field.

IT3556
Business Intelligence and Analytics **[60 hours]**
Business intelligence is the technologies, applications and practices for the collection, integration, analysis, and presentation of business information. This module introduces concepts and technologies such as Extract, Transform and Load, Data Warehouse, OLAP, Data Mining and Web Mining that are related to business intelligence. Students will be exposed to the use of business intelligence software tools to acquire, cleanse, enhance and transform data into useful information for analysis and better business decision-making.

IT3557
Cloud Computing for Business Applications **[60 hours]**
This module covers cloud computing, a paradigm of dynamically scalable and often virtualised resources and services which are provided over the Internet. It introduces the concept and business case of cloud computing and compares it with previous computing models. It proceeds to explain cloud computing characteristics, components and architecture followed by different cloud computing models as well as cloud application development concepts. It also covers how cloud computing can be used for business applications. The module concludes with topics on cloud computing security and standards and governance.

IT3621
Emerging Fintech **[30 hours]**
This module examines the underlying technologies that are transforming finance services. Topics include blockchain technology, distributed ledger technology, mobile payment, cybersecurity, biometrics and authentication, financial cloud and infrastructure, big data and machine learning.

IT3622
Enterprise Solutions **[60 hours]**
In this module, students will be exposed to enterprise concepts and key financial activities like accounting, financial analytics, financial supply chain, and corporate governance. Students will have hands-on experience in using enterprise software to implement financial management solutions to deliver integrated business processes in the areas of finance, accounting, financial reporting and performance management.

IT3623
Business Process Management **[60 hours]**
This module presents concepts and techniques to design and model business processes as well as methodologies required to execute a methodical approach to translate business change requirements into IT solutions. Students will be equipped with useful software tools for the modelling of business processes to perform simulation, analysis and optimisation to achieve business objectives.

IT3631
Final Year Project **[12 weeks]**
The Final Year Project module gives students the practical experience of carrying out a software development project from project requirements, implementation and testing to the delivery and presentation of the software. Students will go through a software process with deliverables at different stages of the process. The projects often require students to learn and apply new technologies and software tools that are beyond the boundaries of the course curriculum. This will inculcate independent and lifelong learning. The engagement of industry projects provides an added dimension for students to think marketplace, appreciate windows of opportunity and see things from the eyes of the customers, while concurrently being subjected to the real-life requirements of quality, cost-effectiveness and time-to-market. Students will also have the opportunity to put project management into good practice.

IT3633/IT3636
Overseas Internship Programme **[12/24 weeks]**
The 12/24-week internship programme at an overseas company exposes students to a real-life work environment and facilitates a structured and integrated learning programme for them. They will get to apply the knowledge and skills that they have acquired to work practice. The programme will also enable them to gain a broader perspective and knowledge of the industry, companies and careers in respective professions. The students will get to experience the realities of a work environment and the importance of work values and culture. They will also get to deepen their relevant skills for them to be well-placed to pursue a career in their chosen discipline.

IT3639/IT3638
Internship Programme **[12/24 weeks]**
The 12/24-week internship programme at an overseas company exposes students to a real-life work environment and facilitates a structured and integrated learning programme for them. They will get to apply the knowledge and skills that they have acquired to work practice. The programme will also enable them to gain a broader perspective and knowledge of the industry, companies and careers in respective professions. The students will get to experience the realities of a work environment and the importance of work values and culture. They will also get to deepen their relevant skills for them to be well-placed to pursue a career in their chosen discipline.

IT3642
International Finance and Treasury **[60 hours]**
This module provides an overview of international financial markets with focus on international financial methods, investments and risk management tools. Topics include trade financing methods, money market instruments, financing arrangements in the international capital markets, swaps, futures and foreign exchange.

IT3643
Personal Financial Planning and Insurance **[60 hours]**
This module provides an understanding of the process of financial planning and the needs analysis which assists an individual in attaining financial and lifestyle goals through the appropriate management of financial resources.

IT3645
Mobile Services and Applications **[60 hours]**
This module familiarises students with the mobile computing world. This course exposes students to current trends in mobile services and applications and focuses on new trends and various applications available in the mobile services arena. It also introduces various concepts and ideas of in-trend applications running on mobile devices.

IT3647
Cloud Computing for Business Applications **[60 hours]**
This module provides students with an understanding of the key elements of cloud computing and how common business applications and data can be accessed online from a web service or the browser. Students will learn the business model of cloud, cloud architecture and layers, cloud deployment model, cloud computing security and related issues, as well as case studies of successful business applications in the cloud. Students will acquire hands-on experience in analysis, design, development and implementation of business applications in the cloud using appropriate tools.

IT3651
Service Science and Innovation **[60 hours]**
This module introduces service science to students. It covers service concepts, service systems, service design and the idea of service classifications. Students will learn about the important role of Information Technology in services management and information services, as well as the dimensions and routes for service innovations.

IT3691
Final Year Project **[12 weeks]**
The Final Year Project module gives students the practical experience of carrying out a software development project from project requirements, implementation and testing to the delivery and presentation of the software. Students will go through a software process with deliverables at different stages of the process. The projects often require students to learn and apply new technologies and software tools that are beyond the boundaries of the course curriculum. This will inculcate independent and lifelong learning. The engagement of industry projects provides an added dimension for students to think marketplace, appreciate windows of opportunity and see things from the eyes of the customers, while concurrently being subject to the real-life requirements of quality, cost-effectiveness and time-to-market. Students will also have the opportunity to put project management into good practice.

IT3693/IT3696
Overseas Internship Programme **[12/24 weeks]**
The 12/24-week internship programme at an overseas company exposes students to a real-life work environment and facilitates a structured and integrated learning programme for them. They will get to apply the knowledge and skills that they have acquired to work practice. The programme will also enable them to gain a broader perspective and knowledge of the industry, companies and careers in respective professions. The students will get to experience the realities of a work environment and the importance of work values and culture. They will also get to deepen their relevant skills for them to be well-placed to pursue a career in their chosen discipline.

IT3698/IT3699
Internship Programme **[12/24 weeks]**
The 12/24-week internship programme at an overseas company exposes students to a real-life work environment and facilitates a structured and integrated learning programme for them. They will get to apply the knowledge and skills that they have acquired to work practice. The programme will also enable them to gain a broader perspective and knowledge of the industry, companies and careers in respective professions. The students will get to experience the realities of a work environment and the importance of work values and culture. They will also get to deepen their relevant skills for them to be well-placed to pursue a career in their chosen discipline.

IT3761
Final Year Project **[12 weeks]**
The Final Year Project module gives students the practical experience of carrying out an independent software development project from project requirements, implementation, testing to the delivery and presentation of the software. Students will go through a software process with deliverables at different stages of the process. This module requires students to learn and apply new technologies and software tools that are not covered in the course curriculum. This will inculcate independent and lifelong learning.

IT3763/IT3766
Overseas Internship Programme **[12/24 weeks]**
The 12/24-week internship programme at an overseas company exposes students to a real-life work environment and facilitates a structured and integrated learning programme for them. They will get to apply the knowledge and skills that they have acquired to work practice. The programme will also enable them to gain a broader perspective and knowledge of the industry, companies and careers in respective professions. The students will get to experience the realities of a work environment and the importance of work values and culture. They will also get to deepen their relevant skills for them to be well-placed to pursue a career in their chosen discipline.

IT3769/IT3768
Internship Programme **[12/24 weeks]**
The 12/24-week internship programme at a company exposes students to a real-life work environment and facilitates a structured and integrated learning programme for them. They will get to apply the knowledge and skills that they have acquired to work practice. The programme will also enable them to gain a broader perspective and knowledge of the industry, companies and careers in respective professions. The students will get to experience the realities of a work environment and the importance of work values and culture. They will also get to deepen their relevant skills for them to be well-placed to pursue a career in their chosen discipline.

IT3772
Communication Skills 2 **[30 hours]**
This module develops critical communication and interactive skills needed by students to prepare them for entry into the job market as working professionals. It focuses on interpersonal skills and various types of business communication needed at the work place. Topics include business correspondence, writing resumes, interviewing skills, conflict management and negotiation skills.

IT3779
Smart Object Technologies **[60 hours]**
This module equips students with knowledge of developing solutions to solve real-life problems by exploiting the latest technologies in smart objects or devices such as wireless sensor networks, ambient devices and RFID tagged objects connected over the Internet. Students will first be taught to develop and deploy applications on smart objects. Supervisory control and data acquisition technologies will also be covered. Topics like Data Analytics will be included to allow students to perform data analysis on raw data.

IT3783
Mobile Applications Development **[60 hours]**
This module focuses on giving students a good understanding of the mobile communication architecture, protocol, gateway, security, integration and implementation. Windows mobile development, WAP, WML, SMS and Bluetooth or similar technologies will be covered. Students will be taught to create mobile-based applications and information services using state-of-the-art wireless technologies. In addition, students will also be exposed to software development tools and methods for portable mobile devices to deliver complete portable mobile solutions.

IT3786
Data Analytics & Visualisation **[60 hours]**
This module provides a basic foundation for students in data analytics and tools. Students will learn how to manage and pre-process data, perform data analytics and develop analytic models for the visual representation of data as well as various visualisation techniques for effective communication of information through graphical means.

IT3784
Computer & Network Forensics **[60 hours]**
This module equips students with skills and knowledge in cyberattack planning, prevention, detection, response, and investigation with the goals of counteracting cybercrimes, and making the responsible persons/groups accountable. The topics covered in this course include fundamentals of digital forensics, forensic data acquisition and analysis, network surveillance, intrusion detection and response, incident response, anti-forensics techniques, anonymity and pseudonymity.

IT3788
Cyber Security Operations & Intelligence **[60 hours]**
This module introduces to the students the latest technologies and tools associated with the collection, collation, analysis and transformation of data into intelligence for use in cybersecurity risk mitigation efforts. Students will learn how to integrate this intelligence into cybersecurity operations to enhance resiliency in IT operations within the organisation. The module will also expose students to the latest cybersecurity threat landscape and the current thoughts on cybersecurity trends by leaders in the field.

IT3787
Enterprise Systems Administration **[60 hours]**
This module covers server administration and management in an enterprise environment. Students will be able to differentiate various types of operating systems and configure network services across multiple server operating systems. Topics covered include users and computer accounts, access to resources, organisational units, printing, group policy, performance monitoring, disk management, disaster recovery, network services, web services, Domain Name Services (DNS), Dynamic Host Configuration Protocol (DHCP), email server, network file-sharing services, security policies and authentication services.

IT3789
Cyber Security Attack and Defence **[60 hours]**
This module covers the concepts, tools and techniques used in both cyberattacks and defence. This includes techniques and tools used in foot-printing and social engineering, scanning and enumeration, system and network penetration, reverse engineering, planting Trojans, backdoors and hopping and escalating attack from the compromised systems. Students will proceed to learn penetration testing process as well as the ethical and legal aspects.

IT3790
Virtualisation & Data Centre Management **[60 hours]**
This module equips students with the knowledge, skills and techniques for the planning, installation and configuration of virtualised infrastructure using virtual machines, virtual storage and virtual networking in a next generation data centre. To support industry needs in various cloud computing and virtualisation environments, system management tools will be covered to equip students with the ability to manage, deploy, and update servers, client computers and devices across physical, virtual and distributed environments. The trends of virtualisation and its role in cloud computing will also be covered. The Green Data Centre methodologies, best practices and business continuity will also be introduced to students.

IT3792
Logistics & Distribution **[60 hours]**
This module equips students with an understanding of warehousing, transportation and distribution, for the dynamic distribution and storage of raw materials, semi-finished parts and sub-assemblies, and finished goods. Topics include warehouse management system, transportation and distribution systems, and barcode and radio frequency identification (RFID) technologies, warehouse material handling equipment and systems, warehouse layout and design, warehouse operation optimisation, and the integration of warehouse and supply chain management systems. In addition, students will be exposed to the use of IT to facilitate and manage warehouse operations, transportation and distribution systems.

IT3793
Advanced Planning & Optimisation **[60 hours]**
This module provides students with the key concepts involved in advanced planning and optimisation (APO) and how APO enables an organisation to maximise its resources to achieve higher customer satisfaction while minimising total cost of providing the service or producing the product. Topics include integrated demand planning, supply network planning, production planning and optimisation, order promising, manufacturing scheduling, collaborative planning, and supply chain intelligence capabilities.

IT3794
Operations Management **[60 hours]**
This module provides students with knowledge in the functional area of business that is concerned with the production of goods and services. In conjunction with other functional areas, it deals with the management of resources (inputs) and the distribution of finished goods and services to customers (outputs). Students will be introduced to key areas like operations strategy, designing the product and process, planning and scheduling resources and managing the supply chain.

IT3795
Database Administration **[60 hours]**
This module provides students with practical skills and techniques required to administer Relational Databases commonly used in the industry. It equips students with knowledge and skills needed by database administrators to effectively perform database administration and management tasks. Students will learn to install, configure, create and control databases; administer user and security; and perform other administrative and management functions such as backup/restore, performance monitoring and tuning as well as troubleshooting.

IT3797
Open Systems Administration **[60 hours]**
This module covers server administration and management using open source solutions. Students are able to differentiate various types of operating systems and configure network services across multiple server operating systems. Topics covered include network services, web services, DNS, DHCP, email server, network file sharing services, security policies and authentication services, securing networks, securing data and resolving service issues.

IT3799

IT Services Operations Management [60 hours]

This module covers service transition processes and activities throughout the service development and deployment lifecycle. It will equip students with the necessary technical knowledge and skills to control the quality of delivery to operations. It extends the management areas into service asset and configuration management, build and test with release and deployment management. By utilising organisational models to support transition, and with guidance on how to reduce variation of delivery, agreed service levels are achieved. This module will also cover service operations in ensuring there are robust end-to-end practices, which support responsive and stable services.

IT3800

Open Source Technologies Development [60 hours]

This module equips students with knowledge in developing solutions for businesses using open source and Web 2.0 technologies. Students will be taught to install, configure LAMP (Linux, Apache, MySQL, PHP), and develop engaging applications using tools and libraries such as JQuery, Dojo and Google App Engine. Issues related to costs and licensing will also be covered.

ITP111

Web Applications Development & Project [120 hours]

This module introduces the basic concepts of the Internet and hypertext, and how these concepts are integrated to provide powerful World Wide Web applications over the Internet. The focus is on learning the theory behind current web-based development tools and technologies including HTML, DHTML, and JavaScript, to develop interactive and rich media web pages. Students, working in teams, will approach the project using design thinking to innovate and implement interactive web applications.

ITP112

Object-Oriented Programming & Project [120 hours]

This module teaches students the concepts of object-oriented programming, including abstraction, encapsulation, inheritance and polymorphism. Students will learn how to implement these concepts in Java through hands-on practical. Java Swing and Java applets will be taught to demonstrate how object-orientation is inherent in the language itself. Students will work in teams to develop, test and implement innovative and useful applications in the Java development platform.

ITP131

Principles of Web Usability Design & Project [120 hours]

This module covers the general subjects of colour, design elements, design principles, design structure and interactivity interface of websites. It also covers the basic concepts of the Internet, Internet architecture, Internet services, Internet scripting language and rich media technologies for creating interactive web applications. It will equip students with skills to formulate and implement a website strategy, which will raise its productivity well above the norm. SEO tools, techniques and analysis will also be introduced. Students will use the web development tools to develop innovative and optimised web solutions for business applications and social connections.

ITP132

Social Media Applications & Project [120 hours]

This module covers the history and evolution of Social Media, from the era of Usenet systems to present day. It provides students with an understanding of social media technologies and applications in the areas of communication, collaboration, multimedia, entertainment and brand monitoring. Students will be equipped with the concepts and techniques of developing social applications on top of popular social networking platforms. Students, working in teams, will collaborate to deliver innovative social media and digital marketing solutions to fulfil new business needs. The concept and importance of using analytics to measure engagement, analyse conversation, identify influence mapping and spot market trend will also be introduced to the students.

ITP161

Web Applications Development & Project [120 hours]

This module introduces the basic concepts of the internet and hypertext, and how these concepts are integrated to provide powerful World Wide Web applications over the Internet. The focus is on learning the theory behind current web-based development tools and technologies including HTML, DHTML, and JavaScript to develop interactive and rich media web pages. Students, working in teams, will approach the project using design thinking to innovate and implement interactive web applications.

ITP162

Object-Oriented Programming & Project [120 hours]

This module teaches students the concepts of object-oriented programming, including abstraction, encapsulation, inheritance and polymorphism. Students will learn to implement these concepts in Java through hands-on practical. Java Swing and Java applets will be taught to demonstrate how object-orientation is inherent in the language itself. Students will work in teams to develop, test and implement innovative and useful applications in the Java development platform.

ITP171

IT Fundamentals & Project [120 hours]

This module equips students with a broad understanding of the enabling information and communication technologies powering the infrastructure in today's connected world. Students will learn about the organisation and functionalities of hardware components working together with IT software and tools in a typical computer system. The module will also cover computer security, networks and communications, servers and storage as well as software application tools for creating media rich web sites. Students will undertake a project to explore ideas in applying their IT knowledge and skills, to implement innovative web applications for engineering and business.

ITP172

Networking Fundamentals & Project [120 hours]

This module incorporates a new approach to teaching networking fundamentals while incorporating critical business and financial skills to equip students for entrepreneurship opportunities in networking business scenarios. Networking topics taught include network terminology and protocols, local area networks, wide area networks, Open System Interconnection (OSI), various types of transmission media, Internetworking devices, Ethernet technologies and switching, TCP/IP protocol suites and Internet protocol addressing and packet analysis and network standards. Basic business and financial concepts are also taught through hands-on exercises and realistic scenarios. Students will undertake a project to develop an innovative networking business proposal that requires them to apply their networking, business and financial skills acquired.

ITP182

Object-Oriented Programming & Project [120 hours]

This module is designed to provide training in the concepts of object-oriented programming, including abstraction, encapsulation, inheritance and polymorphism. Students will learn to implement these concepts through hands-on practical sessions. They are expected to code and implement an object-oriented application with graphical user interfaces and connection to database.

ITP191

Web Applications Development & Project [120 hours]

This module introduces the basic concepts of the Internet and hypertext, and how these concepts are integrated to provide powerful World Wide Web applications over the Internet. The focus is on learning the theory behind current web-based development tools and technologies including HTML, DHTML and JavaScript to develop interactive and rich media web pages. Students working in teams will approach the project using design thinking to innovate and implement interactive web applications.

ITP192
Object-Oriented Programming & Project [120 hours]
This module teaches students the concepts of object-oriented programming, including abstraction, encapsulation, inheritance and polymorphism. Students will learn to implement these concepts in Java through hands-on practical sessions. Java Swing and Java applets will be taught to demonstrate how object-orientation is inherent in the language itself. Students will work in teams to develop, test and implement innovative and useful applications in the Java development platform.

ITP211
Object-Oriented Analysis, Design & Project [120 hours]
This module introduces various object-oriented modelling techniques and system implementation issues. UML is used to facilitate the modelling of analysis and design that include sequence diagram and class diagram. Students will work in teams to apply their knowledge to develop the application, adopting the analysis and design techniques learnt.

ITP212
Java Enterprise Development & Project [120 hours]
This module integrates the various skills of the students, from human computer interface, software engineering and Java enterprise application development, to deliver a compelling and well-engineered Java Enterprise Application.

ITP213
Enterprise Applications Development & Project [120 hours]
This module integrates the various skills of the students, from database management, human computer interface, software engineering and .NET enterprise application development, to deliver a compelling and well-engineered multi-tier .NET Snterprise Application.

ITP231
Mobile Application Development & Project [120 hours]
This module introduces students to different genres of mobile devices and focuses on giving them a good understanding of mobile communication architecture, protocol, gateway, security, integration and implementation. Students will be equipped with concepts and techniques to develop innovative mobile applications such as location-aware services and geo-spatial apps. These mobile applications can be used to harness data from end-users as well as access processed analytics information. The concept of mobile analytics will also be introduced to students.

ITP232
Business Analytics & Visualisation Project [120 hours]
This module covers the theories of visual representation of data as well as the various visualisation techniques for effective communication of information through graphical means. Topics include information presentation, information graphics, thematic map, statistic graphics, information representation, graphic design, visualisation algorithms, modelling and simulations, visual representation and interaction techniques. It will also expose students to some real-life implementation of business analytics approaches by using various visualisation methods and analytics tools. Students will embark on a development project that combines their computing skills and the fundamental concepts learnt with available tools and metrics into an application or dashboard for measuring, analysing and interpreting data within the context of specific business goals and objectives.

ITP261
Enterprise Applications Development & Project [120 hours]
This module introduces students to large-scale applications development for business enterprises. It covers issues of enterprise application development, including team collaboration, enterprise component development, security, integration, testing, deployment and maintenance. Students will learn to develop enterprise applications and use the latest enterprise development tools. Through this project, students will acquire hands-on experience in building business-to-business and enterprise applications integration systems to fulfil business needs. Students will work in teams and put project management into practice.

ITP262
Business Analytics & Project [120 hours]
This module introduces the concepts and technologies, such as Extract, Transform and Load, Data Warehouse, OLAP, Data Mining and Web Mining related to business intelligence. Students will be exposed to the use of business intelligence software tools to acquire, cleanse, enhance, and transform data into useful information for analysis and better business decision-making. In the project, students will work in teams and be exposed to the use of rules-based management tools to experience and deliver business agility, as well as the use of business intelligence software tools to extract, cleanse, enhance, and transform data into useful information for analysis and decision-making.

ITP271
Web Application Development & Project [120 hours]
This module provides students with knowledge and skills to develop web applications using the latest web technologies. Web application architecture and various issues related to web applications development will be covered. Students will learn to create dynamic and interactive web pages using server-side programming to create web forms and web server controls, perform state management, secure and debug web applications, and manipulate data using database access techniques. Students will undertake a project to apply Internet technologies and web skills to create interactive websites using rich digital web media and interactive scripts for engineering and business applications.

ITP272
Sensor Technologies & Project [120 hours]
This module provides students with a broad coverage of sensor technologies, their applications as well as the basic analog and digital support circuitry required for interfacing to these sensors. Students also learn to select various types of sensors and program these intelligent smart objects to collect and process data. Students will undertake a project to explore innovative skills in applying their IT, sensor and hardware interfacing knowledge to create applications used in a business and engineering environment, where data is acquired through sensors for monitoring, control and analysis.

ITP281
e-Business & Project [120 hours]
This module introduces students to the concept of e-commerce as well as software development for e-business application. It identifies the challenges and benefits of setting up electronic commerce. It involves team collaboration, implementing client-side and server-side technologies, security, integration, testing, deployment and maintenance. The student will then learn how to develop a usable e-business applications and by using the latest .Net development tools and technologies.

ITP282
Enterprise Applications Development & Project [120 hours]
This module introduces students to large-scale applications development for the business enterprises. It covers issues of enterprise application development, including team collaboration, enterprise component development, security, integration, testing, deployment and maintenance. Students will learn how to develop enterprise applications and use the latest enterprise development tools.

ITP291
Network Security & Project [120 hours]
This module provides students with a sound understanding of the technologies and tools used in architecting and implementing effective wired and wireless network security solutions. It covers TCP/IP based secure network protocols, firewall, virtual private network, intrusion prevention and detection and network admission control (NAC) systems. Students proceed to learn wireless security imperatives, standards, implementations, issues and countermeasures. Students will then be provided with the practical experience of applying their knowledge in the development of a project, using skills learnt from other modules, including network security and risk and incident management. Students working in teams will make use of risk management methodology and tools as well as network security monitoring and assessment tools to develop, test and implement info security solutions for given scenarios.

ITP292

Applications Security & Project **[120 hours]**

This module provides students with a sound understanding of the methods, processes, tools and technologies in developing secured and security-enabled software applications. It begins with important techniques and concepts in developing secure applications throughout the software development lifecycle, from planning to deployment. Students will learn techniques and process in building software applications to meet confidentiality, integrity, availability needs as well as authentication, non-repudiation and authorisation requirements. Application security testing techniques and tools such as white box and black box security testing, and foundation of reverse engineering techniques will also be covered. Students will then be provided with the practical experience of applying their knowledge in the development of a project, using skills acquired from the other info security modules in developing secured and security-enabled software applications. Students will be able to employ the methods, processes, tools and technologies they have learnt to develop the projects in a simulated environment.

ITP311

Application Security & Project **[120 hours]**

This module provides students with a sound understanding of the methods, processes, tools and technologies in developing secured and security-enabled software applications. It begins with important techniques and concepts in developing secure applications throughout the software development lifecycle. Students will learn techniques and processes in building software applications to meet confidentiality, integrity, availability needs as well as authentication, non-repudiation and authorisation requirements. Application security testing techniques and tools such as white box and black box security testing, and foundation of reverse engineering techniques will also be covered. Students will embark on a case study to apply the knowledge they acquired in the prescribed electives, to deliver innovative and creative information security applications.

ITP312

Smart Device Development & Project **[120 hours]**

This practical-oriented course examines the principles of application design and development for smart devices. Using iOS as the development platform, this module teaches the fundamentals of native iOS programming which cover topics including UI architecture and navigation to advanced APIs such as location and mapping services as well as social media integration. Students will embark on a case study to apply the knowledge they acquired in the prescribed electives, to deliver innovative and creative applications on the iOS platform.

ITP314

Games Development & Project **[120 hours]**

This module teaches the fundamentals of game engine architecture design and development. Students will be introduced to the components and concepts encountered when developing a game engine. These include the translation of game play requirements into technical requirements, graphics engines, animation, lighting and texturing effects, mixing and streaming of sound and music, game artificial intelligence, modelling of real world physics, user input devices and multiplayer game techniques. Students will embark on a case study to apply the knowledge they acquire to deliver innovative and creative games applications in the digital entertainment industry.

ITP313

Social Media Technologies & Project **[120 hours]**

The module begins with the history and evolution of Social Media, from the era of Usenet systems to present day. It will provide students with an understanding of social media technologies and applications in the areas of communication, collaboration, multimedia, entertainment and brand monitoring. Students will be equipped with the concepts and techniques to develop social applications on top of popular social networking platforms. The module will be practical-oriented with extensive hands-on sessions using software, tools and case studies to reinforce students' learning. Students will embark on a case study to apply the knowledge they acquired in the prescribed electives, to deliver innovative and creative social media applications.

ITP315

Business Analytics & Visualisation Project **[120 hours]**

This module covers the theories of visual representation of data as well as the various visualisation techniques for effective communication of information through graphical means. Topics include information presentation, information graphics, thematic map, statistic graphics, information representation, graphic design, visualisation algorithms, modelling and simulations, visual representation and interaction techniques. This module exposes students to real-life implementation of business analytics approaches by using theories and techniques.

ITP331

Enterprise Business Analytics Project **[120 hours]**

This module introduces students to the different types of analytics based on statistical and quantitative analysis and predictive modelling. Students will be exposed to implementing descriptive analytics, modelling and data-driven methodology based on business scenarios. It also covers the analysis of unstructured data in enterprise. Students, working in teams, will identify the case and use business analytics software tools to harness data collected from interconnected sources, develop models, validate models, deploy models and monitor results to uncover trends, predict future events and enable better decision making. Students will also use text analytics tool to enrich analytic insights with unstructured data, to understand options and predict outcomes.

ITP361

Fintech Innovation Project **[120 hours]**

This module provides a platform for students to develop and apply their innovative and enterprising skills to create a financial technology venture that leverages on IT to transform the way financial institutions and businesses use financial services and products. Students will work in teams to identify, assess and develop new or improve an existing idea. They will also have the opportunity to perform prototype development, as well as technology evaluation. Students are also encouraged to apply their creative problem-solving skills in their entrepreneurial quest.

ITP371

Enterprise Software Development & Project **[120 hours]**

This module provides in-depth coverage of technologies for building and deploying applications both within an enterprise and over the Internet. Students will be equipped with knowledge and skills in security models, databases, client-server applications, and web applications, distributed systems for an enterprise environment and web services. Students will undertake a project to explore innovative skills to design and implement enterprise applications to solve a particular problem in their area of focus using smart object technologies.

ITP372

Enterprise Networking & Project **[120 hours]**

This module covers advanced network technology and network management issues in an enterprise environment. Students will be equipped with in-depth knowledge to differentiate the various types of network technology and use the correct tools and techniques to manage a network. Topics covered include Scaling IP Addresses, WAN Technologies, Point-to-Point Protocol, Integrated Digital Service Network, Dial-on Demand, Frame Relay and Network Management. Students will have hands-on sessions on LAN and WAN design and implementation issues in an enterprise environment and undertake a project to explore innovative skills to design and implement networks in an enterprise environment using smart object technologies.

ITP373

Global Supply Chain Management & Project **[120 hours]**

This module provides students with the fundamental knowledge in and the key concepts of supply chain management (SCM) and how SCM is enabled through IT to become an integral part of strategy and operations management in the logistics, retail, services and manufacturing industries. The focus will be on global supply chain strategies for the integration of supply chain components into a coordinated system to enhance service level and reduce system-wide costs. The module also provides examples of tools and off-the-shelf software packages that have been proven to be effective in understanding key concepts in supply chain management. Topics covered include SCM basics, information technology in a supply chain, customer relationship management and demand planning, operations planning and management, supplier management and supply planning, demand fulfilment and logistics. Advanced supply chain analysis and modelling as well as future trends and issues in the context of a global and integrated supply chain will be explored. Students will undertake a project to explore innovative skills to design and implement an application with supply chain focus using smart object technologies.

ITP374

Systems & Network Security Project **[120 hours]**

This module aims to provide students with a sound understanding of the core security concepts and skills needed for installation, troubleshooting and monitoring of secured server systems, network services and devices to maintain the integrity, confidentiality and availability of data and services. It covers the in-depth theoretical and practical understanding of network security principles as well as the tools and configurations available to design, implement and support system and network security. Topics include AAA, advanced firewall technologies, Intrusion Prevention System, LAN security, virtual private network and remote access services, DDOS detection and mitigation, system and security policy, web security and other emerging topics. Students will also undertake a project using the knowledge and skills acquired.

ITP381

Business Informatics Project **[120 hours]**

This module provides a platform for students to develop and apply their innovative and enterprising skills to create a business informatics venture that leverages IT to transform the way start-ups and corporates use business services and products. Students will work in teams to identify, assess and develop new or improve an existing idea. They will also have the opportunity to perform prototype development as well as technology evaluation. Students are also encouraged to apply their creative problem-solving skills in their entrepreneurial quest.

ITP391

Operations Security & Case Study **[120 hours]**

This module covers the protection and controls of information processing assets in an enterprise IT environment. It starts with operations management practices, such as user management, access control, patch management, malware defence and management, configurations and change management, backup and recovery process, personnel management best practices, etc. Physical security topics complement the protection of the tangible aspect of information systems. Practical aspects of single sign on, identity management, multi-factor authentication and access audit will be included. This module also includes common practices in contractor/product selection and management, outsourcing security services, managed security and continuous security monitoring. The knowledge learnt will be used to identify potential projects and case studies, and implemented as a project to demonstrate the practical aspects of cyber security.

BUSINESS MODULES

BM0030

Business Communication 1 **[60 hours]**

This module provides students with a basic foundation in communication skills. It equips them with the foundation skills in writing, speaking and reading in preparation for higher order communication tasks in a business context. The topics covered will include elements of the communication process and the essentials of listening, speaking, writing and reading.

BM0031

Principles of Accounting **[60 hours]**

This module provides students with an understanding of the basic concepts and principles of accounting, covering service and merchandising enterprises in the forms of sole proprietorships and companies. Topics covered include fundamental accounting principles, accounting for assets and liabilities, and measurement of profits. Students will also learn to interpret financial statements through the use of financial ratios. Students will be taught the use of a computerised accounting system or software.

BM0032

Essentials of Marketing **[60 hours]**

This module provides an overview of the fundamentals of marketing and marketing mix. It includes marketing management concepts and differences between consumer and business markets, and the integration of product, price, place and promotion in producing an effective marketing plan.

BM0034

Business Statistics **[60 hours]**

This module covers basic statistical concepts and applications, and includes topics such as permutation and combination, probability theory, probability distribution, estimation, hypothesis testing, least squares method, simple linear regression and correlation.

BM0035

Principles of Economics **[60 hours]**

This module provides students with an understanding of the basic principles of economics and the framework of economic reasoning as applied in business. Topics covered include the principles of demand and supply, theory of the firm, production costs, profit maximisation, market structures, inflation and unemployment, monetary and fiscal policies and foreign exchange.

BM0036

Management Principles **[60 hours]**

This module provides an overview of the principles of management and an understanding of organisation behaviours. Students will learn to manage life at work through the understanding of people's behaviour in organisations. Topics include learning and personality, perception, motivation, attitudes and values, leadership, communication and decision-making.

BM0501

Business Communication 2 **[60 hours]**

This module builds on the basic communication skills acquired and equips students with more specific communication skills that are required in a business context. Topics include higher order writing skills, questioning techniques, academic and technical report writing and oral presentation skills. Taught through small group tutorial sessions, the focus will be on addressing common errors, correcting ineffective writing styles, and enhancing students' English language proficiency through writing practises and use of workbooks.

BM0505

Market Research **[60 hours]**

This module provides students with an understanding of market research techniques, use of research data and information in business decision-making. Topics include research design, data collection and analysis. Students will also learn to interpret and analyse information and marketing research data collected to achieve competitive advantage.

BM0515

Entrepreneurship **[60 hours]**

This module inculcates an entrepreneurial spirit and mindset in students, and provides them a platform to develop and exercise their innovation and creativity in a practice-based environment. Through entrepreneurship studies, students will learn to identify, assess and develop new or improve on existing business ideas, and to plan, implement and manage these business ventures and enterprises effectively and profitably. At the end of the module, students will be able to develop a total business plan encompassing feasibility studies, environmental research and analysis, as well as marketing, operations and financial strategies. Students will also experience and understand the challenges and recovery issues faced by a typical entrepreneur through research, case studies and sharing sessions.

BM0518

Business Environment **[30 hours]**

This module provides students with an understanding of various regional and international environmental factors and the dynamic nature of these factors, namely political, social, economic, technological and competition, which may affect business operations/decisions. Case studies or scenario approaches will be used. The essential aspects of the legal system and issues, such as contract, intellectual property rights protection and infringement, will be covered at an awareness level. Students will also gain hands-on experience in searching and processing information from media, online retrieval resource systems, and other sources for analysing and making business decisions.

BM0519

Financial Management **[60 hours]**

This module provides a basic understanding of the principles and concepts used in managing the finances of a business. Topics include budgeting and forecasting, working capital management and decision, time value of money, capital investment decisions, equity and debt financing. At the end of the module, students will understand the various sources of financing available to a business and how to evaluate the appropriateness of an investment.

BM0522

International Business **[60 hours]**

This module provides a basic understanding of the globalisation of business and borderless trade. Topics include the global economy, trade liberalisation and protectionism, international financing from a legal perspective, foreign market entry modes and the new distribution channels that e-commerce opens up for companies that venture into foreign countries.

BM0523

Services Marketing Management **[60 hours]**

This module focuses on problems and strategies specific to the marketing of services. Problem commonly encountered in marketing services, such as difficulties in controlling quality, managing service failure and recovery situations, will be addressed. Case studies and practical examples used by successful service marketers to overcome these difficulties will be discussed extensively. In addition, the delivery is driven primarily through role plays as well as discussions of best practices to ensure currency and relevance for students.

BM0528

Teaching Enterprise Project (Practicum) **[12 weeks]**

The Teaching Enterprise Project (TEP) is a module where students are trained using a practice-based and application-oriented approach. Students are assigned to relevant live and real business centres to attain on-the-job practical work experience and lifelong skills under the supervision of staff. These business centres emulate the industry environment, thus providing learning experiences that are as close as possible to the real world. The attachment is over a period of 12 weeks and covers two training locations. At end of each attachment, students are required to submit a report describing their duties and learning outcomes.