COURSE MODULES

LEVEL 1.1

Computing Mathematics
This module introduces the basic concepts of relations and functions, matrices, statistical methods and relevant applications. The main emphasis is to develop students' ability in solving quantitative problems in computing mathematics, probability and statistics.

Enterprise Information Systems
Companies today are adopting the use of technology not just to assist them in their day-to-day operations but also gain an advantage over their competitors. Many companies are implementing enterprise-wide information systems that provide them with platforms to integrate and coordinate their business processes. The use of enterprise information systems has become a necessity in multi-national companies (MNCs) as well as small and medium enterprises (SMEs). Within an enterprise information system, there is an intricate relationship between business strategy, organisational structure, business processes and technology resulting in challenges and issues during implementation.

This module introduces students to the different components that build up an enterprise information system. Different types of information systems are used for business processes, from communication and order processing to data analysis for decision making, and in almost all business functions ranging from marketing, sales, procurement, and human resource, to product development and manufacturing, accounting and finance.

Students will learn about the organisations and mapping the business processes to draw the activity diagram flows. It is essential for students to understand how information systems are used to help organisations and they are expected to suggest solutions and new uses of information systems to solve business problems. This will enhance their IT and business processes knowledge to prepare them for future modules, future employment or even future entrepreneurship.

Fundamentals for IT Professionals I
This module provides a broad introduction to the field of IT by exploring the roles, professional practice, ethical expectations and career development paths of IT professionals. Through a guided inculcation of interpersonal and team work skills with strong team bonding spirit, the module aims to deepen students' commitment to the sector that the course prepares them for. In addition, students will be required to begin charting their career path in the IT industry by considering crucial aspects such as personal preferences and aptitude, job roles and responsibilities, skills needed and further education.

Operating Systems Fundamentals
This module focuses on the fundamentals and principles of operating systems. It explains what general operating systems are and what they do. The module teaches concepts that are applicable to a variety of operating systems such as Windows and Linux. Students will learn about the different number and character representation methods such as binary, hexadecimal and ASCII. Concepts including processes, physical and virtual memory, files and directories, file systems, shell and OS commands will be covered.

Programming I
This module introduces the fundamentals of programming and how to develop programs using appropriate problem-solving techniques in a modular style. In this practice-oriented module, students are taught how to apply problem-solving skills using a top- down structured programming methodology and given ample practice in translating solutions into computer programs, then test and debug the programs. Topics include data types, variables, expressions, statements, selection structures, loops, simple computation and algorithms, and the use of libraries.

Students will also practise the use of pseudocodes, best practices of programming, debugging techniques with the help of tools, development of test cases, and suitable program documentation. In addition, they will study various areas where application software plays a prominent part in helping organisations solve problems. Students will be given ample opportunity for independent and self- directed learning.

LEVEL 1.2

Databases

Today's business organisations depend on information systems in virtually all aspects of their businesses. Corporate databases are set up to hold the voluminous business transactions generated by these information systems. This module introduces students to the underlying concepts of database systems and how to model and design database systems that reflect business requirements. Students will be taught how to analyse data needs, model the relationships amongst the data entities, apply normalisation process to relations and create the physical database. Skills to be taught include data modelling technique, transformation of data model to relations, normalisation technique and SQL (Structured Query Language).

Front End Development

This module teaches the fundamental skills required to develop responsive websites that are optimised for mobile and desktop viewing. The students would attain skills and knowledge in programming languages such as HTML, CSS, JavaScript, jQuery, and AJAX which are used to develop interactive websites. This allows students to develop a website with interactive elements, providing them with a tangible product that they can develop into an interactive resume application and e-Portfolio website.

Networking Fundamentals

The module covers the terminology and technologies in current networking environments and provides a general overview of the field of networking as a basis for subsequent related modules in the course. Topics relating to types of networks, network topologies, network technologies and layered protocol architectures will be taught. In addition, the students will also learn the OSI model to understand data networks and understand commonly used network systems such as Ethernet. As TCP/IP is deployed in most of today's network architecture, the topic will be discussed in detail. An overview of internetworking will also be presented to allow students to have a global picture of how local area and wide area networks are interconnected in the real world.

Portfolio I

This module provides students with the opportunity to apply the knowledge and skills gained from the various modules in the course to date, and explore topics in IT that they have a personal interest. Students may choose to undertake a real-life IT project, a competition- based project or a research and development project. The chosen project should result in the subsequent deliverable of artefacts that are suitable for their personal portfolios. Through the project, students have opportunities to work in teams, work on real-world problems, and build up their personal portfolios.

Programming II

This module builds upon the knowledge and skills acquired in Programming 1 (PRG1). It aims to provide opportunities for the students to develop medium- scale applications based on the Object-Oriented (OO) approach. A suitable object-oriented high-level programming language will be used for students to continuously apply their problem-solving skills. The main concepts of OO and the implementation of applications using the OO approach will be taught in this module. The module may also cover the concepts of Abstract Data Types (ADTs) and the implementation of some selected ADTs using the OO approach.

Suitable sorting and search algorithms and the use of Application Protocol Interface (API) will be introduced when required. Other key topics include the introduction of system design concepts such as the class diagram. Software robustness and correctness, and good programming practices will be emphasised throughout the module. Independent and self-directed learning will also be encouraged.

COURSE CURRICULUM

Module Name	Credit Units
YEAR 1	

Level 1.1 (25 hours per week)	
Computing Mathematics	4
Enterprise Information Systems	4
Fundamentals for IT Professionals I	3
Operating Systems Fundamentals	4
Programming I	4
Innovation Toolkit ^	4
Sports & Wellness ^	2
Level 1.2 (26 hours per week)	
Databases	4
Front-End Development	4
Networking Fundamentals	4
Portfolio I	6
Programming II	4
Communication & Contemporary Issues ^	4

Notes:
^ For more details on Interdisciplinary Studies (IS) electives, please log on to www.np.edu.sg/is/

IS Modules
The School of Interdisciplinary Studies (IS) delivers a broad-based curriculum, which nurtures a new generation of professionals with multidisciplinary skills and an innovative and entrepreneurial spirit to meet the challenges of a knowledge economy. IS offers both prescribed modules and electives to challenge boundaries. Prescribed modules develop students' competencies in core areas such as Communication, Innovation and Enterprise, Culture and Communication, and Personal Mastery and Development, while elective modules provide insights into Arts and Humanities, Business, Design, and Science and Technology.

COURSE MODULES

LEVEL 2.1

Fundamentals for IT Professionals II
This module gives a course-based experience in which students can engage with the local community and industry. This includes participation in community service events or in Service-Learning projects that leverage students' discipline knowledge and skills to meet identified needs. Through iterative and guided reflection on the service experience, students gain a broader appreciation of their discipline and an enhanced sense of personal voice, empathy and civic responsibility. Industry talks and seminars are organised to keep students up-to-date on emerging trends so as to build up their interpersonal, team and networking skills with the community and industry.

Information Security
This module provides an overview of the various domains of information security. It aims to provide an appreciation of information security from an end-to- end perspective. This module covers security in seven domains: data, physical, system, network, software, end-user and organisation. Students will appreciate the various aspects of information security and this will lead them to the more advanced modules such as "Malware Analysis Tools & Techniques", "Ethical Hacking" and "Digital Forensics".

Object-Oriented Analysis & Design
This module leverages the skills acquired in Object- Oriented Programming to introduce software design and requirements analysis, so that students experience the full cycle of software development. An overview of various Software Development Life Cycles as well as an in-depth look at software development methodologies will be provided.

In particular, students will learn about requirements gathering techniques and the primary artefacts of system design. They will be able to specify, design and document simple software systems using appropriate modelling tools.

Web Application Development

This module provides students with the knowledge and skills needed to develop web applications and web application protocol interface (API). Students will be introduced to an integrated development environment that will enable them to design and develop web applications and web API over the Internet. They will learn how to make use of web development technologies such as ASP.NET framework, jQuery for rich internet applications, data interchange formats such as JSON AJAX, source code version control systems such as GIT or SVN to develop effective web applications, and web API targeting both mobile web and unified web experience. This module aims to provide students with a good understanding of the web development architecture and service layer as well as the various issues related to Web Application Development.

LEVEL 2.2

Full-Stack Development

This module uses the knowledge and skills acquired in the Programming (PRG1 & PRG2), Web Application Development (WEB) and Databases (DB) modules. It aims to provide opportunities for students to be part of a software development team working on both back-end and front-end technologies. The approach is based on Agile methodology. The module may cover source version control, backups, code documentation, refactoring and code reviews. Other key topics include test driven development and automated processes.

Fundamentals for IT Professionals III

This module provides a stepping stone to the students in their IT career. Students are given an insight into the infocomm industries and are kept updated with the latest skill sets required in their IT career path. They also have the opportunity to be exposed to various institutes of higher learning to further acquire their skill sets.

Portfolio II

This module builds on the previous module Portfolio I (P1). Like for Portfolio I, students may choose to undertake a real-life IT project, a competition-based project or a research and development project. The chosen project should ideally include problem definition, requirements gathering, analysis and design, development and testing and the subsequent deliverable of artefacts that are suitable for their personal portfolios. The project may be a continuation of their previous project in Portfolio 1.

User Experience

This module focuses on the principles and techniques for designing good user experience in software applications and other products such as ATMs, kiosks, etc. Students will learn to apply business requirement gathering techniques as well as the analysis, design and validation phases of the user experience design life cycle, with emphasis on building empathy with users. They learn to communicate designs through deliverables such as personas, sitemaps and wireframes. Practical hands-on design activities will be guided by concepts such as information architecture, content strategy, formulation of user needs, and the application of design principles in interface, navigation, interaction and usability. The student will apply these concepts and techniques to design and prototype a web/ mobile application, and to present and critique design decisions.

COURSE CURRICULUM

Module Name	Credit Units
YEAR 1	
Level 1.1 (25 hours per week)	
Career & Professional Preparation II	2
Elective Module #	5
Elective Module #	5

Fundamentals for IT Professionals II	5
Information Security	5
Object-Oriented Analysis & Design	6
Web Application Development	5
Interdisciplinary Studies (IS) elective ^	2
Level 1.2 (26 hours per week)	
Elective Module #	4
Elective Module #	4
Full-Stack Development	4
Fundamentals for IT Professionals III	2
Portfolio II	6
User Experience	4
Interdisciplinary Studies (IS) elective ^	2

Notes:
^ For more details on Interdisciplinary Studies (IS) electives, please log on to www.np.edu.sg/is/

IS Modules
The School of Interdisciplinary Studies (IS) delivers a broad-based curriculum, which nurtures a new generation of professionals with multidisciplinary skills and an innovative and entrepreneurial spirit to meet the challenges of a knowledge economy. IS offers both prescribed modules and electives to challenge boundaries. Prescribed modules develop students' competencies in core areas such as Communication, Innovation and Enterprise, Culture and Communication, and Personal Mastery and Development, while elective modules provide insights into Arts and Humanities, Business, Design, and Science and Technology.

The elective modules offered may change from year to year, depending on relevance and demand. They may also include modules available in other diplomas offered by the School.

COURSE MODULES

LEVEL 3.1

Internship or Project
This module provides students with the opportunity to apply the knowledge and skills gained to develop an IT solution to solve a practical problem. Students may undertake an in-house industry-driven project, a Technopreneurship Enterprise project or a real-life IT project in a local or overseas organisation. These projects may include problem definition, requirements analysis, design, development and testing, delivery and presentation of the solution. Through the project, students will learn to appreciate the finer points of project planning and control issues relating to IT project development.

LEVEL 3.2

In this semester, students will take any five elective modules offered by the school that are aligned with their interest and passion.

ELECTIVE MODULES

AREA OF INTEREST: BUSINESS & DATA ANALYTICS
Big Data

This introductory module covers the fundamentals of elements of Big Data: volume, velocity and variety. Students will learn various technologies & tools used to create a big data ecosystem which is able to handle storing, indexing & search. This module also covers the whole technology stack of Big Data: infrastructure, data management and analytics. Tools such as Hadoop, HDFS, and MapReduce will be taught in this module.

Data Visualisation

This module covers the techniques and tools for creating effective visualisations based on principles from graphic design, perceptual psychology and cognitive science. Students will learn how to process large volumes of data to create interactive visualisations for ease of exploration. Topics that are covered include visualising patterns, proportions, relationships, spatial and temporal elements, and multi-dimensional visualisations.

Descriptive Analytics

Descriptive Analytics refers to a discipline used by many companies to analyse their data for improved decision making. Descriptive Analytics describes what happened in the past. It can include various forms of reports, queries and dashboards. This module aims to teach students the descriptive analytics lifecycle. Students will learn to ask the appropriate analytics questions, identify and aggregate data sources and create data models. They will apply techniques to analyse the data captured in these models. They will also create appropriate visualisation components to gain insights from the data. These visualisation components will be synthesized into dashboards that add value and can be readily consumed by business users.

Predictive Analytics

This module introduces students to the statistical techniques used to make predictions about future trends in business or financial services. Students are taught the assessment techniques that are used to identify risks and opportunities patterns found in historical and transactional data, and to make intelligent decisions by evaluating the prediction models developed using software tools. Topics covered include data mining methods, such as association, classification and cluster analysis, forecasting methods and prediction models.

Quantitative Analysis

This module aims to introduce students to the statistical concepts and methods that are used to analyse and interpret business or financial data. Students will be equipped with the technical know-how to formulate statistical models, and make informed decisions by evaluating the statistical models using software tools. Topics covered include frequency distribution, probability distribution, quantitative modelling, correlation analysis and linear regression analysis.

AREA OF INTEREST: CLOUD COMPUTING

Cloud Architecture & Technologies

This module gives insight into the key concepts and technologies of cloud computing which include cloud characteristics, service models (SaaS, PaaS, and IaaS), deployment models (Public cloud, Private cloud, Community cloud, and Hybrid cloud), and the features of cloud computing technologies. It also covers the cloud computing architecture, emerging trends and issues such as clouds for mobile applications, cloud portability and interoperability, scalability, manageability, and service delivery in terms of design and implementation issues.

The module discusses the benefits and challenges of cloud computing, standards of cloud computing service delivery, and Service Level Agreement (SLAs) for cloud services. Hands-on activities are included to expose students to various cloud computing services offered by major cloud computing providers such as Amazon Web Services (AWS), Google App Engine (GAE), and Microsoft Windows Azure.

Designing & Managing Cloud Databases

This module covers analysis, design, and implementation of cloud database models, data management life cycle, and data governance to manage master data. Students will be introduced to query languages for cloud database development and best practices for implementing the extract, transform and load (ETL) process cycle. The module provides insight into cloud storage components, and data transformation and integration methodologies for data migration into cloud databases. It will further explore laws and regulations governing data access, usage, storage and transmission.

The module will also introduce the concepts and technologies of Distributed and Parallel Databases which include their design, structures, theories, algorithms and implementation. Examples of distributed and parallel platforms and frameworks for processing Big Data, such as MapReduce and Hadoop, will be also be discussed.

Developing Cloud Applications

This module covers the analysis of business and technical requirements of a cloud-based system, implementation of a cloud strategy with appropriate programming tools, deployment, and testing and debugging the cloud application. Analysis of business requirements to determine how they can be mapped into a cloud environment is discussed in this module. The module extends its discussion to cloud computing design patterns, best practices, cloud migration issues and considerations. Students are exposed to a cloud computing platform such as Windows Azure to get extensive hands-on practice to build, migrate, host and scale web applications and services through the vendor's data centres.

Virtualisation & Data Centre Management

This module introduces the foundations of virtualisation, and creating and managing virtual machines for cost efficiency and agility in delivering IT services. Hands-on sessions are included to give students practical experience in virtualisation tools such as Windows Server and VMWare. It will also explore the impact of virtualisation technologies on cloud database development. The module will then proceed to provide an understanding of basic data centre design principles, and physical infrastructure, and a framework for managing a data centre using appropriate tools. Tools and methods for usage metering and billing in a cloud environment are also covered in this module.

AREA OF INTEREST: ENTERPRISE SOLUTIONING

Business Process Modelling & Development

This module equips students with the skills for eliciting, documenting, modelling and analysing business processes within an organisation. Processes in sales, purchasing, inventory management and finance will be discussed and investigated. Students will learn to use a Business Process Management tool to model and develop solutions that improve process efficiency and quality.

Customer Experience Management

With SMAC (Social, Mobility, Analytics and Cloud) technologies resulting in a new competitive environment, the control has shifted from the seller to buyer. This module provides students with the knowledge and understanding of Customer Experience Management (CXM) as a business strategy in this new environment. The buyer's experience is not limited to a single transaction but includes the sum of all experiences across all touch points and channels between a buyer and a seller over the duration of their relationship.

This strategy aims to achieve a sustainable competitive advantage to help sellers manage the buyer's experience that is both collaborative and personalized. Students will have an opportunity to have hands-on experience with customer management systems used by sellers that collect and create customer data, segment that data into manageable data sets, make sense of the data and make it available for timely delivery. This allows companies to deliver consistent customer experiences that delight customers or achieve other organisational goals.

Enterprise Business Solutions

This module educates students on the importance of backend cloud-based enterprise business systems and the role it plays in helping organisations increase productivity, enable collaboration and improve overall effectiveness. Students will learn to use cloud-based enterprise business systems to drive workflows and gather insights from analytics dashboards. Students will also be exposed to the next generation of enterprise business solutions that hinges on the interoperability of various backend enterprise systems with frontend Internet of Things (IoT) devices. With such holistic exposure, students will be better prepared to support the Smart Nation initiatives and gain hands on experience on information technologies/concepts such as IoT, programming, cloud computing, analytics and enterprise computing.

AREA OF INTEREST: GAME PROGRAMMING

Artificial Intelligence for Games
This module introduces the various approaches for injecting intelligence into games. Topics covered include AI architecture (e.g. rule-based systems, finite state machines), movement, pathfinding and planning (both strategic and tactical). AI-related game design issues such as realistic non-player character behaviour and game difficulty will also be taught.

Game Interactivity
This module introduces game interactivity and the various game interaction devices to the students. Topics include current and experimental game devices, console usability, player profiling and psychology, measuring playability and testing techniques. Students will be required to research and develop a game prototype demonstrating their understanding of game interactivity.

Game Production
This module provides an overview of the game development process and introduces game design. Key concepts of game design such as storytelling, game mechanics and level design will be covered. Students will have the opportunity to design and prototype a game using an industry standard game creation system.

Gameplay Programming
This module presents fundamental concepts of game implementation and architecture, such as the game loop, game-system component separation, the game state manager, input/output handling and frame rate control. Basic concepts in computer graphics, such as collision detection and back buffering, will also be introduced. Consequently, students will have the opportunity to develop a game prototype without the use of a game engine.

Maths for Games
This module provides an in-depth examination of the various mathematical concepts that are relevant to games programming. Topics covered may include vector geometry (e.g., vector arithmetic, dot product, cross product), linear transformations (e.g., rotations, reflections), matrices, trigonometry (e.g., trajectory) and physics (e.g., acceleration/deceleration, gravity).

AREA OF INTEREST: INFOCOMM SALES & MARKETING

Customer Decision Making & Negotiation Skills
Students will be introduced to soft skills in understanding customer biases and concerns, building rapport, handling objections, identifying informal and formal decision makers, selling functions/features/ benefits, negotiating and closing sales techniques. They will also learn about reference selling and proofs of concept as well as pick up presentation and communication skills. The module offers opportunities to role play and develop value proposition in sales calls within the context of ICT.

Infocomm Sales & Marketing Strategies
This module will introduce students to the concept of market segmentation and the development of sales and marketing strategies for each segment. They will acquire an understanding of industry and customer segmentation from corporate, small and medium businesses to consumers. They will also delve into the different go-to-market strategies and selling techniques required in the context of ICT (such as consultative selling, major account selling and management, territory selling and management, partner management and consumer marketing).

Infocomm Sales Life Cycle Management
This module introduces students to a customer's ICT purchase decision making process and sales life cycle management. Students will also pick up some fundamental concepts in interpreting customer annual reports, financial ratios, industry analysis and competitive strategies so that they can recognise customer needs and wants. They will follow the sales life cycle from prospecting, qualifying, developing solutions, negotiating and closing the sales to post-sale support and services, up-selling and cross-selling.

AREA OF INTEREST: MOBILE BUSINESS APPLICATIONS

Mobile Applications Development
This module focuses on the design and development of applications for mobile devices like hand phones, personal digital assistants (PDAs) and handheld computers. Due to the nature of these handheld devices, issues such as memory storage, user interface and data input methods require more careful consideration and planning. At the end of this module, students will be able to develop applications that can run on mobile devices and interact wirelessly with server-side programmes.

Mobile Applications Development II
This module builds upon the skills and knowledge that students have acquired from the Mobile Applications Development module. It will focus on the development of advanced applications and emerging mobile operating systems. For example, students could develop applications for industries such as entertainment, games and healthcare. They will learn to develop applications for emerging operating systems such as the iPhone OS and Android.

Mobile Device Security & Forensics
This module covers techniques and tools in the context of a forensic methodology to extract and utilise digital evidence on mobile devices. Students will learn how to use current forensic tools to preserve, acquire and examine data stored in a mobile device. The module covers basic SIM Card examination and cell phone forensics on multiple platforms such as iPhone, Android and Windows Mobile. The module takes a practice- oriented approach to performing forensics investigation on mobile phones.

AREA OF INTEREST: SOLUTION ARCHITECT

Advanced Object-Oriented Analysis & Design
This module leverages the core analysis and design skills acquired in the Object-Oriented Analysis & Design module to introduce complex design artefacts, relevant methodologies and the analysis techniques needed to model and document complex software systems. Students will also learn to appreciate the design, deployment and management of complex software systems in relation to the best practices that the industry recommends.

Data Structures & Algorithms
This module aims to provide students with the knowledge and skills to analyse, design, implement, test and document programmes involving data structures.
It teaches basic data structures and algorithms within the conceptual framework of abstract data types.
The emphasis here is to use the class feature of an Object-Oriented language platform to give the concrete implementation of various abstract data types.

eCommerce Applications Development
This module aims to provide students with the technical skills as well as an appreciation of the business perspective on electronic commerce (eCommerce). The main focus will be on building a Business-to Consumer (B2C) eCommerce website. Students will be taught the building blocks and enabling technologies for building eCommerce applications, the processes of eCommerce transactions and some business issues on eCommerce. The module will also provide hands-on experiences for students to build a simple B2C eCommerce website on their own.

Secure Software Development
This module provides students with the knowledge of the secure software development lifecycle. It trains students to incorporate security throughout the entire process of software development. With the knowledge gained from this module, students would be able to design, code, test and deploy software with a security mindset. The module begins with training students on how to identify, gather and record security requirements for a software. Students will learn secure software design, where various security frameworks, considerations and methodologies are taught. Students will understand how software vulnerabilities can be exploited and how to address the risks. Students are trained to write secure code that is resilient against critical web application attacks. Finally, students are trained in secure software testing and how to securely deploy software.

GENERAL ELECTIVES

Capstone Project

In this module, students are required to complete a substantial project that is the culmination of their education in ICT. The project can be a real-world problem proposed by a client, or it can be proposed by students in pursuit of their personal interests.

Emerging Trends in IT

The revolution in computing and communications has spurred the rapid advancement of IT in modern societies, and there is little to suggest that its proliferation will slow down in the near future. In light of this trend, this module is designed to help students keep abreast of the latest IT developments to stay current and relevant in the fast moving industry. To achieve this objective, the syllabus for this module will be guided by technology research and feedback from industry partners, and both seminar-style and hands- on workshop teaching approaches may be adopted depending on the nature of the topic covered.

Technopreneurship

The rapid emergence of new infocomm technologies is empowering new capabilities as well as opportunities for creativity and entrepreneurship. This module focuses on the processes and mechanisms by which new ideas and inventions can be commercialised in the market. Students will examine case studies of real- world examples of technopreneurship. They will also learn about the issues and challenges of transforming a technological innovation into a successful product or service in the market place.

COURSE CURRICULUM

Module Name	Credit Units
YEAR 3*	
Level 3.1	
Internship and/or Project	22
Level 3.2 (24 hours per week)	
Capstone Project or 2 Elective Modules #	8
Elective Module #	4
Elective Module #	4
Elective Module #	4
Interdisciplinary Studies (IS) elective ^	2
World Issues: A Singapore Perspective ^	2

ELECTIVES:

AREA OF INTEREST: BUSINESS & DATA ANALYTICS

- Big Data
- Data Visualisation
- Descriptive Analytics
- Predictive Analytics
- Quantitative Analysis

AREA OF INTEREST: CLOUD COMPUTING

- Cloud Architecture & Technologie
- Designing & Managing Cloud Databases
- Developing Cloud Applications
- Virtualisation & Data Centre Management

AREA OF INTEREST: ENTERPRISE SOLUTIONING

- Business Process Modelling & Design
- Customer Experience Management
- Enterprise Business Solutions

AREA OF INTEREST: GAMES PROGRAMMING

- Artificial Intelligence for Games
- Game Interactivity
- Game Production
- Gameplay Programming
- Maths for Games

AREA OF INTEREST: INFOCOMM SALES & MARKETING**

- Customer Decision Making & Negotiation Skills
- Infocomm Sales & Marketing Strategies
- Infocomm Sales Life Cycle Management

AREA OF INTEREST: MOBILE BUSINESS APPLICATIONS

- Mobile Applications Development
- Mobile Applications Development II***
- Mobile Device Security & Forensics

AREA OF INTEREST: SOLUTIONS ARCHITECT

- Advanced Object Oriented Analysis & Design
- Data Structures & Algorithms
- e-Commerce Application Development
- Secure Software Development

GENERAL ELECTIVES

- Capstone Project
- Emerging Trends in IT
- Technopreneurship

Notes:

^ For more details on Interdisciplinary Studies (IS) electives, please log on to www.np.edu.sg/is/

IS Modules

The School of Interdisciplinary Studies (IS) delivers a broad-based curriculum, which nurtures a new generation of professionals with multidisciplinary skills and an innovative and entrepreneurial spirit to meet the challenges of a knowledge economy. IS offers both prescribed modules and electives to challenge boundaries. Prescribed modules develop students' competencies in core areas such as Communication, Innovation and Enterprise, Culture and Communication, and Personal Mastery and Development, while elective modules provide insights into Arts and Humanities, Business, Design, and Science and Technology.

The elective modules offered may change from year to year, depending on relevance and demand. They may also include modules available in other diplomas offered by the School.

** The Infocomm Sales & Marketing modules are offered in collaboration with Microsoft Singapore. They provided their expertise on the design, development and delivery of curriculum pertaining to the sales and marketing of infocomm products, services and solutions.

Microsoft Singapore proudly supports the School's commitment to jump-start the process of creating a pool of highly skilled and sought-after professionals in infocomm sales and marketing. Microsoft is a trademark of the Microsoft group of companies.

*** ICT is a member of the iPhone Developer University Program. Under this programme, the School has incorporated iPhone apps development into its curriculum.