Year 1 Core Modules App Development Project Business Statistics Computing Mathematics Data Analysis & Visualisation Digital Business Effective Communication Skills Fundamentals of Innovation & Enterprise General Studies Infocomm Security Law & Ethics of IT Network Technology Principles of UX Design Programming Essentials Web Development App Development Project [60 hours] Students will learn the concepts of object-oriented programming, including classes, encapsulation, inheritance and polymorphism and apply them to construct practical software components that are maintainable and extensible. Students will work in teams to develop, test and implement innovative and interactive applications to solve real life problems using design thinking approach and agile process. Business Statistics [60 hours] Students will learn statistical knowledge that are useful and relevant for business applications. Topics include descriptive statistics using numerical measures, regression and correlation analysis, discrete and continuous probability distributions, sampling distribution, statistical estimation and hypothesis testing. Students will be equipped with knowledge and skills to transform data into useful knowledge and information for business decision-making. Computing Mathematics [60 hours] Students will be equipped with the knowledge in mathematics and analytical skills for developing algorithms in programming. The topics they learn include Number System, Set Theory and Logic, Matrices, Relations, Functions, Differentiation and Integration. Data Analysis & Visualisation [60 hours] Students will learn the fundamental concepts of visual representation of data for effective communication of information and data analysis. They will be equipped with knowledge of data visualisation approaches for various data types, data mining methods and emerging data visualisation trends. They will also learn how to use software tools to extract, cleanse and transform data into useful information for analysis and better business decision making. Digital Business [60 hours] Students will learn the goals and essentials of business operations and the various industries that businesses operate in. They will learn how industries, such as the financial services industry, use digital technologies to transform their businesses. Students will be equipped with a strong foundation in the underlying technologies such as digital payments; data analytics and block-chain that are transforming the way businesses and the financial industry deliver products and services to customers. Students will be able to explain how digital marketing can empower businesses to engage with prospects and customers. Effective Communication Skills [30 hours] Communicating well is a vital life skill, benefitting all aspects of our lives from professional life to social gatherings. It is thus important to be proficient in both written and oral communication. This module will enable learners to communicate effectively in different settings and on different collaborative platforms. There will be opportunities to practise and deliver various types of presentations, to learn to competently handle questions, and to effectively incorporate verbal and non-verbal elements when speaking. Learners will also acquire media and info literacy, and be able to produce clearly written and well-structured reports and proposals, following standard citation and referencing guidelines. Fundamentals of Innovation & Enterprise Students will develop attributes that are pervasive and synonymous with being innovative and enterprising for career and life. Through this module students will develop positive practices when working with data, propose ideas using user-centric approaches and design processes, determine and locate resources, and leverage collaborative practices to formulate solutions. General Studies To provide you an all-rounded education, NYP offers General Studies Modules (GSMs). So besides taking modules related directly to your chosen diploma course, you will get exposed to areas beyond your usual field of study. Through a combination of prescribed and elective inter-disciplinary GSMs, you will gain interesting, practical knowledge that can be beneficial to you as you prepare for the world of work and life after graduation. To learn more about the GSMs offered, click here Infocomm Security [60 hours] Students will learn basic

concepts and principles 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. Law & Ethics of IT [30 hours] Students will be able to understand the law and ethics surrounding the use of IT. They will be able to describe issues such as intellectual property rights protection and infringement, copyrights and plagiarism, software piracy, computer crimes, Internet fraud, objectionable materials and confidentiality in the information age. They will also be able to articulate Singapore's laws on cybersecurity, data privacy, etc. Network Technology [60 hours] Students will acquire foundation knowledge on how communication networks operate and services they provide. It covers essentials of the Internet including its various services such as email and the web. Students will be able to design and implement network for small and medium enterprises, perform basic configurations for networking devices, and implement IP addressing schemes. Principles of UX Design [30 hours] Students will appreciate the concepts of User Experience (UX) and UX design. They will understand the fundamentals in visual design and apply user-centred design principles and techniques in design prototyping. They will also gain knowledge of best practices and evaluation methods and use them in analysing and evaluating designs of web and mobile applications. Programming Essentials [60 hours] Students will learn the basic concepts and principles behind computer programs, and the building blocks that are used to create them. Students will understand fundamental programming constructs and basic data structures that will help them to apply their knowledge of computational thinking in practical ways. They will also learn to develop strategies for testing, debugging and apply their programming skills to develop algorithms to solve computational problems. Web Development [60 hours] Students will learn the basic concepts of the Internet and hypertext, and how these concepts are integrated to provide World Wide Web applications over the Internet. They will first focus on learning the theory behind current web-based development tools and technologies including HTML, CSS and JavaScript to develop interactive and rich media web pages. Students will then advance to learning how to create optimized responsive web pages for optimal viewing on devices with different screen size and resolution. Year 2 Core Modules Applications Security Project Applied Cryptography Communication and Personal Branding Cyber Forensic Technologies Data Structures & Algorithms Database Management Systems General Studies Infosecurity Project Infosecurity Standards, Policies & Audit Network Security Operating Systems & Administration Software Engineering Systems Security Management Applications Security Project [60 hours] Students will learn about the methods, processes, tools and technologies in developing secured and security-enabled software applications. Students will learn techniques and process in building software applications to meet confidentiality, integrity and availability needs, as well as authentication, non-repudiation and authorisation requirements. Students will then apply their knowledge in the development of a project, using skills acquired from this and other modules in the course. Applied Cryptography [60 hours] Students will learn how cryptography works to enforce confidentiality and integrity in the digital world and protect information from security threats. They will understand the foundation of cryptography, including different types of encryption and hashing algorithms. Students will be able to apply cryptography in various scenarios, including public key infrastructure (PKI), digital signatures, key management and authentication applications. Communication and Personal Branding [30 hours] In today's competitive environment, a strong personal brand sets one apart from others. In this module, learners will develop techniques to impress and persuade others to accept their ideas. They will also learn how to communicate effectively over e-mail. To support their job search, learners will use digital portfolios to showcase their abilities, as well as gain the knowledge and skills to promote their capabilities in their cover letters and resumes. They will also

acquire skills to project themselves positively and for performing well at interviews. Cyber Forensic Technologies [60 hours] Students will learn how to use technologies and tools involved in digital evidence gathering, analysis and presentations for both investigative and legal purposes. Students will know about information recording, storage and retrieval technologies in magnetic, optical and electronic media, key industry standard volume and file system formats, 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, including how to safeguard evidence and reporting the findings. Data Structures & Algorithms [60 hours] Students will learn how to use concepts of data structures and algorithms for effective problem solving. Topics such as arrays, dynamic data structures, stacks, queues and algorithms for searching and sorting will be covered. Database Management Systems [60 hours] Students will learn to design and implement a relational database. They will learn the components of database systems, the conceptual, logical and physical design of relational databases. It covers skills in accessing and manipulating database systems through the use of SQL (Structured Query Language). General Studies To provide you an all-rounded education, NYP offers General Studies Modules (GSMs). So besides taking modules related directly to your chosen diploma course, you will get exposed to areas beyond your usual field of study. Through a combination of prescribed and elective inter-disciplinary GSMs, you will gain interesting, practical knowledge that can be beneficial to you as you prepare for the world of work and life after graduation. To learn more about the GSMs offered, click here Infosecurity Project [60 hours] Students will learn about the methods, processes, tools and technologies in identifying, classifying and protecting information. They will be able to integrate this knowledge in the design and development of infosecurity solutions. Students will learn apply their knowledge in the development of a project, using skills acquired from this and other modules in the course. Infosecurity Standards, Policies & Audit [30 hours] Students will learn about information security standards, how to formulate security policies, establishing appropriate controls, followed by conducting reviews and audits. 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 of the findings. Students will learn how to do this using Computer Assisted Auditing Techniques (CAAT) and auditing tools. Network Security [60 hours] Students will learn how to secure networks by implementing appropriate protocols and strategies. Topics covered firewalls, access control lists and Virtual Private Networks. Students will also be able to recognise and mitigate threats and patch vulnerabilities by applying concepts in intrusion detection and prevention techniques. Operating Systems & Administration [60 hours] Students will learn fundamental concepts of operating systems, including the different types of operating systems, the core components of operating systems and their related algorithms and security features. Students will acquire skills in system administration and shell script programming for Windows and Linux. Software Engineering [60 hours] Students will learn how to explain the concepts and methodologies to construct high quality software systems and to manage software projects. It covers Unified Process and Agile Software Development Process. A fundamental understanding of good software design principles will be discussed, including the illustration of object-oriented analysis and design development. UML is used to facilitate the modelling of analysis and design. Students will explore various software testing techniques to identify the test cases for software validation. They will also understand concepts of DevOps that enable fast delivery of business values in a changing world. Systems Security Management [60 hours] Students will learn the techniques and technologies used in provisioning and management of secured server systems, software services in hosting environment. Students will learn how to implement secured system

configuration, system hardening, access and activity authentication, authorization and monitoring of web server, application server, database server and hosting environment such as Windows and Linux / Unix operating systems. Year 3 Core Modules Cybersecurity Project Final Year Project General Studies Governance, Risk & Compliance Internship Programme or Overseas Internship Programme Cybersecurity Project [60 hours] Students will learn how to apply the methods, processes, tools and technologies learnt in the course to identify, design and implement a cybersecurity solution to a selected problem. They will be able to work as a team to manage the project, including the risk and deliver a working solution. Students will learn apply their knowledge in the development of a project, using skills acquired from this and other modules in the course. Final Year Project The Final Year Project module gives students the practical experience of carrying out a software development project from project requirements, implementation, testing to delivery and presentation of the software. The 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 boundary of the course curriculum. This will inculcate independent and life-long learning. The engagement of industry projects provides an added dimension for students to think market place, appreciate windows of opportunity and see things from the eyes of the customers, while concurrently subjected to the real-life requirements of quality, cost-effectiveness and time-to-market. The students will have the opportunity to put project management into good practice. The above areas are not meant to be exhaustive. In general, all projects which are relevant to the course will be given serious consideration. General Studies To provide you an all-rounded education, NYP offers General Studies Modules (GSMs). So besides taking modules related directly to your chosen diploma course, you will get exposed to areas beyond your usual field of study. Through a combination of prescribed and elective inter-disciplinary GSMs, you will gain interesting, practical knowledge that can be beneficial to you as you prepare for the world of work and life after graduation. To learn more about the GSMs offered, click here Governance, Risk & Compliance [30 hours] Students will learn about IT governance and regulatory compliance of today's business environment. They will know how to apply risk management techniques in the formulation, design, implementation and maintenance of IT and security governance, relying on controls such as policies, procedures, infrastructure, technology and people. Students will be able to describe relevant regulations of today and explain how they can be complied with in the modern IT environment. Internship Programme or Overseas Internship Programme The 12/24-week internship programme at a local or 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. Prescribed Electives (Choose three modules) Cybersecurity Track Cloud Computing Security Cybersecurity Attack & Defense Cybersecurity Operations & Intelligence Mobile Security Operations Security Cloud Computing Security [60 hours] Students will learn about cloud computing technologies and related security best practices. They will explore prominent cloud service models, including Infrastructure as a Service (IAAS), Platform as a Service (PAAS), and Software as a Service (SAAS). Students will 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. The module concludes with best

practices in controls & audit and out-sourcing as well as the importance of regulatory compliances. Cybersecurity Attack & Defense [60 hours] Students will learn the concepts, tools and techniques used in both cyber attacks 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. The students will learn penetration testing process and the ethical and legal aspects of penetration testing. Cybersecurity Operations & Intelligence [60 hours] Students will learn 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 be able to integrate this intelligence into Cybersecurity operations to enhance resiliency in IT operations within the organization. The module will also expose students to the latest cybersecurity threat landscape and the current thoughts on cybersecurity trends by leaders in the field. Mobile Security [60 hours] Students will learn about the framework of prevalent mobile platforms, including their respective security models. They will be able to implement secured mobile applications. Students will know the best practices in implementing secured mobile application solutions for enterprises and lifestyle users for selected device platforms. Students will be able to take advantage of the security configurations and user provisioning to mitigate threats against mobile users and their applications. Cyber Forensics Track Advanced Cyber Forensic Techniques Cyber Forensic Process Disaster Recovery & Business Continuity Management Malware Analysis Advanced Cyber Forensic Techniques [60 hours] Students will study the latest technologies and tools which are used in the collection, collation and analysis of data derived from various digital devices and networks. Students will learn about the challenges faced in cyber forensics, and advances in forensic techniques and technologies that help ensure the ability to investigate and discover evidence is not compromised. Cyber Forensic Process [60 hours] Students will learn about the processes involved in conducting effective cyber forensic practices. Students will practice the 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. The Singapore law, as well as legal practices and case studies of past court rulings and prosecutions through digital forensic evidence will be taught. The application of cyber forensic process onto investigations into cyber attacks and espionage will be covered as well. Malware Analysis [60 hours] Students will learn the processes and techniques involved in performing malware analysis. They will be able to describe different types of malware and their techniques of propagation and spreading. Students will learn malware identification and isolation, unpacking binary malware code with basic reverse engineering techniques, study impact analysis followed by producing vaccine to neutralise its infection and harmful activities. Various security software tools will be used to reinforce the concept taught. Students will also learn basic reverse engineering techniques. Cross-Disciplinary Elective (Choose one Prescribed Elective module from any SIT diploma course) Entrepreneurship Foundation of AI Robotic Process Automation Social Media Analytics *Modules may be revised to align learning content with developing trends and technologies.