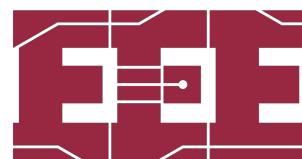# THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

Bachelor of Engineering/
Bachelor of Science (Honours) Scheme in
Information and Artificial Intelligence Engineering

Full-time

Programme Code: 46409

PROGRAMME REQUIREMENT DOCUMENT

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING
電機及電子工程學系

Bachelor of Engineering (Honours) / Bachelor of Science (Honours) Scheme in Information and Artificial Intelligence Engineering (4-year)

Awards offered under the Scheme:

Bachelor of Engineering (Honours) in Electronic Systems and Internet-of-Things

Bachelor of Science (Honours) in Artificial Intelligence and Information Engineering

Bachelor of Science (Honours) in Information Security

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This Programme Requirement Document (PRD) is subject to review and changes which the programme offering Faculty/Department can decide to make from time to time. Students will be informed of the changes as and when appropriate.

1   General Information

1.1   Programme Title

Bachelor of Engineering (Honours) / Bachelor of Science (Honours) Scheme in Information and Artificial Intelligence Engineering
資訊及人工智能工程學(榮譽)工學士 / 理學士組合課程

1.2   Host Department

Department of Electrical and Electronic Engineering

1.3   Duration and Mode of Attendance

Mode	Normal Duration
Full-time	4 years (2 years for Senior Year Intake)

1.4   Award Title

Students will be awarded one of the following awards upon successful completion of the graduation requirements of the programme:

- Bachelor of Engineering (Honours) in Electronic Systems and Internet-of-Things
  電子系統及物聯網(榮譽)工學士學位

- Bachelor of Science (Honours) in Artificial Intelligence and Information Engineering
  人工智能及資訊工程學(榮譽)理學士學位

- Bachelor of Science (Honours) in Information Security
  資訊安全(榮譽)理學士學位

Students admitted to the Scheme complete a common curriculum in Year 1 and then complete their preferred award in the next three years until graduation.

1.5   External Recognition

The BEng (Hons) in Electronic Systems and Internet-of-Things and BSc (Hons) in Information Security programmes have been granted full accreditation by the Hong Kong Institution of Engineers (HKIE). The BSc (Hons) in Artificial Intelligence and Information Engineering programme is provisionally accredited by HKIE.

1.6   Credits Required for Graduation

Programmes	Normal Year 1 Intake	Senior Year Intake
BEng (Hons) in Electronic Systems and Internet-of-Things	Academic Credits: 120 Training Credits: 8 Work-Integrated Education Training: 1	Academic Credits: 67 Training Credits: 8 Work-Integrated Education Training: 1
BSc (Hons) in Artificial Intelligence and Information Engineering	Academic Credits: 120 Training Credits: 5 Work-Integrated Education Training: 1	Academic Credits: 67 Training Credits: 5 Work-Integrated Education Training: 1
BSc (Hons) in Information Security	Academic Credits: 120 Training Credits: 4 (including Work-Integrated Education Training)	Academic Credits: 64 Training Credits: 2 (including Work-Integrated Education Training)

1.7   Minimum Entrance Requirements

(i)   For entry with Hong Kong Diploma of Secondary Education Examination (HKDSE) qualifications

The general minimum entrance requirements are 4 core subjects and 2 elective subjects with:

- Level 3 in English Language and Chinese Language; AND
- Level 2 in Mathematics; AND
- Attained in Citizenship and Social Development; AND
- Level 3 in 2 other Elective subjects [can include Extended Modules of Mathematics (M1/M2)].

There is no compulsory subject requirement. Preferred elective subjects include:

- Extended Modules of Mathematics;
- Information and Communication Technology; and
- All single and combined Science subjects

(ii)   For entry with A-Level qualifications

- Pass in 3 A-Level subjects; AND
- Satisfy the English Language Requirement.

(iii)   For entry with International Baccalaureate (IB) qualifications

- IB Diploma; AND
- Satisfy the English Language Requirement.

(iv)   For those with other qualifications

  - An appropriate Diploma passed with credit or a Higher Certificate from a recognised institution; OR
  - An appropriate Associate Degree / Higher Diploma from a recognised institution

(v)   Qualifications equivalent to (i), (ii), (iii) or (iv) above.

Note 1: Credit transfer may be granted to applicants holding A-Level / IB / Associate Degree / Higher Diploma qualifications upon admission.

Note 2: Holding Associate Degree or Higher Diploma in Engineering, Electronic Engineering, Information Engineering, Communication Engineering, Electrical Engineering, Computer Engineering or other similar disciplines with good academic results at graduation may be considered for advanced standing entry to the Senior Year curriculum.

1.8   Study Options

Under the framework of the 4-year undergraduate degree programmes, students in this programme can work for either a single discipline Major, a Major plus a Minor or a Major plus a Secondary Major (i.e. X + Scheme). However, the Minor and Secondary Major options are not applicable to students who are admitted to Senior Year programme.

Minor study

Minor study will be a free choice by students and not mandatory. Each student is allowed to take not more than one Minor. Students who opt for Minor study will be subject to the following regulations:

(i)   A Minor programme is a collection of subjects totalling 18 credits with at least 50% (9 credits) of the subjects at Level 3 or above;

(ii)   Students interested in a Minor must submit their applications to and obtain approval from the Minor-offering department, no later than the commencement of second year of study. Students should submit their applications to their Major department, which will indicate its support or otherwise (since the taking of a Minor will increase the student's study load), before the Minor-offering department makes a final decision on the application;

(iii) Students are expected to complete their approved Minor as part of their graduation requirements. Students who wish to withdraw from a Minor need to apply for approval officially from the Minor offering department, before the end of the add/drop period of the last Semester of study;

(iv)   Students with approved Minor will be given a higher priority in taking the Minor subjects over the students who take the subjects as free-electives. 'Free electives' under the 4-year Ug degree programmes refers to any subjects offered by the University, unless otherwise specified;

(v)   Subject to approval by the Minor-offering department, students may count up to 6 credits from their Major/General University Requirements (GUR) [including Language Communication Requirement (LCR) subjects at proficiency level] towards their chosen Minor. Nevertheless, students must take at least 6 credits from their chosen Minor programme in order to satisfy the residential requirement of their chosen Minor. In

addition, to be eligible for the Major and Minor awards, the total number of credits taken by the students for their Major-Minor studies must not be lower than the credit requirement of the single discipline Major programme;

(vi) Credit transfer can be given for not more than 9 credits of a Minor programme if the previous credits were earned from approved institutions outside of the university; and not more than 12 credits of a Minor programme if the previous credits were earned from programmes offered by PolyU;

(vii) Only students with a GPA of 2.5 or above can be considered for Minor study enrolment. The Minor-offering department may set a quota and additional admission requirements for their Minor; and

(viii) Students are required to obtain a GPA of at least 1.70 in order to satisfy the requirement for graduation with a Major plus a Minor.

Note: There is no guarantee that a clash-free timetable can be provided for all students who pursue Minor study.

Secondary Major (only applicable to students opting BEng (Hons) in ESIoT as their Major)

Studying on a Secondary Major is a free choice by students and not mandatory. Each student may take not more than one Secondary Major. Students who opt for a Secondary Major will be subject to the following regulations:

(i) Students are expected to complete the "X (Major in Electronic Systems & Internet-of-Things) + Secondary Major" within the normal duration of the major programme.

(ii) Students may count up to 12 credits of their Major/GUR subjects towards the Secondary Major. Nevertheless, students must take at least 12 credits from their chosen Secondary Major in order to satisfy the residential requirement of the chosen Secondary Major. Students who have completed more than 12 credits of subjects that are eligible for double counting will need to apply for graduation and indicate the subjects intended for double counting.

(iii) Students must apply to and obtain approval from the programme offering Department, normally no later than the commencement of the second year of study, to be admitted to the Secondary Major.

(iv) Only students with a Cumulative GPA of 2.70 or above may be considered for Secondary Major enrolment. Each Secondary Major may stipulate additional selection criteria for admission.

(v) Students must complete the Secondary Major as part of their graduation requirements. Students who wish to withdraw from the Secondary Major must obtain approval from the programme offering Department normally before the end of the add/drop period of the last semester of study.

(vi) If deemed appropriate by the programme offering Department, students are allowed to take a Major with a Secondary Major and a Minor. Subjects already double-counted for the Major and Secondary Major cannot be used to fulfil the Minor requirement.

The Secondary Major in Artificial Intelligence and Data Analytics (AIDA) can be found in the in Appendix II.

4

<u>Fast-track Integrated Bachelor's and Master's Degree Programme</u> (only applicable to students opting BEng (Hons) in ESIoT or BSc (Hons) in IS as their Major)

The fast-track programmes offer a pathway for high-achieving and ambitious students to complete both undergraduate and taught postgraduate studies at an accelerated pace. Students can enrol in the programme either in Year 1 or Year 3, depending on their academic standing.

Eligible entrants will receive an offer of admission to the undergraduate programme, as well as a conditional offer to the taught postgraduate programme. Upon successful completion of both the undergraduate and taught postgraduate degrees, students will be awarded two separate degrees: a Bachelor's degree and a Master's degree.

As part of the Fast-track Programme, students will take taught postgraduate courses that comprise no more than 30% of the taught postgraduate curriculum (9 credit units), which can be taken as Majors or Free electives in the undergraduate curriculum.

Students are required to maintain a cumulative GPA of 3.30 at the end of Semester Two to stay on the Fast-track Programme.

1.9 Student Exchange Programme

Student exchange to overseas universities for a semester or an academic year is possible through various exchange schemes organised by the University, Faculty or Department. Students are encouraged to participate so as to enhance their learning experience.

Credit transfer may be given to exchange-out students. However, in order to ensure attaining pre-requisite knowledge for smooth integration of study, students should seek approval on their study plan and credit transferability from the programme offering Department before leaving for the exchange.

1.10 Summer Term Teaching

Usually, there will be no summer term teaching on engineering subjects. Industrial Centre training and external training will take place during the summers.

1.11 Daytime and Evening Teaching

Subjects will be offered predominantly during the daytime. Some subjects, particularly the technical elective subjects, may be available only in the evenings or on Saturdays.

1.12 Medium of Instruction

English is the medium of instruction (the only exceptions are for a small number of programmes/subjects which have received special approval to be taught and examined in Chinese due to the nature and objectives of the programmes/subjects concerned).

In the presence of non-Cantonese-speaking students, English should be used all the time.

2   BEng (Hons) / BSc (Hons) Scheme in Information and Artificial Intelligence Engineering

2.1   Background and Rationale

We are living in a smart era in which many of our daily decision-making processes are based on the collection, processing, analysis, and interpretation of a large amount of data and information. The availability of Internet-of-Things technologies enables us to collect virtually any data that are useful to our decision-making from virtually anywhere, while artificial intelligence and information engineering provide the powerful computational tools for analysing the collected data intelligently and efficiently to provide us with firmly grounded rationale for decision making. To take advantage of these technologies, various hardware and software systems are required to be closely interconnected through very complex information networks, thus posing security risks when a massive amount of data and information flows through these networks. It is therefore vitally important to protect and safeguard them against various forms of cyber attacks. The Scheme encompasses three programmes that are aimed at training professionals who are interested in working in the three closely related and mutually supporting technological areas mentioned above, namely, (1) electronic systems and Internet of Things; (2) artificial intelligence and information engineering; and (3) information security. Depending on their own areas of interest, students admitted into the Scheme are allowed to choose to specialize in one of these three areas.

2.2   Relationship of Programme Aims to University Missions

The University has the following missions:

1.   To nurture socially responsible professionals and leaders with a strong sense of national pride and a global perspective.

2.   To pursue world-leading research and innovation for societal benefits.

3.   To foster a University community in which all members are united with a strong sense of belonging and pride, empowering the University to scale new heights.

The following table illustrates the relationship between Programme Aims of BEng (Hons) in Electronic Systems and Internet-of-Things (see Section 3.2 below), BSc (Hons) in Artificial Intelligence and Information Engineering (see Section 4.2 below) and BSc (Hons) in Information Security (see Section 5.2 below) and University Missions:

Programme Aims	University Missions		
	1	2	3
1	√	√	√
2	√	√	
3	√	√	
4	√		√

2.3 Institutional Learning Outcomes

PolyU is committed to cultivate next-generation talents for a sustainable future, who are:

- Socially responsible leaders with a strong sense of national pride and a global outlook
- Future-ready professionals who possess technical acumen
- Critical thinkers and creative problem solvers
- Effective communicators and collaborators
- Adaptable and resilient lifelong learners

The institutional learning outcomes for these attributes are provided as follows:

1. **Socially responsible leaders with a strong sense of national pride and a global outlook:** Care about and understand local, national and global issues, and be able to think globally, act responsibly, and lead with integrity and pride for the benefit of society and a sustainable future.

2. **Future-ready professionals who possess technical acumen:** Be able to integrate and apply in-depth discipline knowledge and specialised skills, leverage changing and emerging technologies for work, function in variable interdisciplinary contexts, and demonstrate professionalism and entrepreneurial spirit at work.

3. **Critical thinkers and creative problem solvers:** Be able to critically evaluate information and arguments, draw logical and informed conclusions, identify problems and formulate innovative solutions, in both professional and everyday contexts.

4. **Effective communicators and collaborators:** Be able to communicate effectively in English and Chinese in professional and everyday contexts*, collaborate with people from diverse backgrounds and different perspectives, and contribute to effective teamwork and positive group dynamics.

5. **Adaptable and resilient lifelong learners:** Committed to continual learning and self-improvement, engage in learning with a sense of purpose, manage their own learning, adapt to different learning situations, and deal effectively with the arising stress and challenges.

* The expectation to communicate in Chinese does not apply to foreign students.

3 BEng (Hons) in Electronic Systems and Internet-of-Things

3.1 Rationale

Electronic Systems and Internet-of-Things (IoT) are among the key technologies that play important roles in modern-day living. Various sectors, including business, commerce, communication, education, entertainment, healthcare and transportation, require Electronic Systems and IoT for efficient operation. Thus, it is envisioned that there is a great need of professionals who exercise knowledge and leadership in the areas of Electronic Systems and IoT, as well as generic skills of problem solving, innovation, analysis and adaptability to contribute to the technological and economic development in the region and in the world.

In particular, IoT is a fast-developing field throughout the world. According to Fortune Business Insights, the global IoT market was valued at US\$190 billion in 2018 and is projected to reach US\$1,102.6 billion by 2026. However, Immersat Research finds that around 47% of organisations surveyed do not possess sufficient IoT skills and are outsourcing such work. Gartner Research predicts that around 75 percent of the IoT projects may take twice as long as they should because of the shortage of IoT talent. In 2020, the Government of the Hong Kong Special Administrative Region published the Hong Kong Smart City Blueprint 2.0 in which the Government put forward over 130 initiatives, many of them related to IoT. This Programme aims at training IoT professionals who will meet Hong Kong's the pressing manpower need in the emerging IoT area.

3.2 Programme Aims

This Programme aims at producing graduates with:

1. a wide range of professional knowledge and skills relevant to Electronic Systems and Internet-of-Things. These include artificial intelligence of things, robotics, sensor technologies, electronic devices, and their associated software to sense, measure, interpret, connect, and analyze data,
2. creativity and innovation,
3. adaptability to changing technology and society, and
4. all-round attributes.

3.3 Programme Outcomes

Intended Learning Outcomes of the BEng (Hons) in Electronic Systems and Internet-of-Things

On successful completion of the programme, students will be able to:

- Apply the fundamentals of science and engineering to the discipline of Electronic Systems and Internet-of-Things.
- Design and conduct experiments, as well as to evaluate the outcomes.
- Design systems, components and processes to meet given specifications and constraints.
- Identify, formulate and solve problems relevant to Electronic Systems and Internet-of-Things.
- Use modern engineering/IT tools appropriate to Electronic Systems and Internet-of-Things practice.
- Consider the contemporary issues, and understand the impact of engineering solutions in national, global and societal contexts.

- Collaborate with others on a multi-disciplinary team in an inclusive environment, fostering teamwork.
- Recognize social, professional and ethical responsibility.
- Communicate effectively.
- Recognize the need for and engage in life-long learning.

The Programme Outcomes are in line with the Programme Objectives and the mapping is shown in Table 3.3.1.

Programme Outcomes	Programme Aims			
	1	2	3	4
1	√		√	
2	√	√	√	
3	√	√	√	
4	√	√	√	
5	√		√	
6	√		√	√
7				√
8	√		√	√
9				√
10			√	√

Table 3.3.1   Mapping between Programme Objectives and Programme Outcomes

The Subject Learning Outcomes are designed to be in alignment with the Programme Outcomes. The Subject Learning Outcomes are given in each subject and they can be found in the Subject Description Form (SDF) in Appendix I.

Relationship between Institutional Learning Outcomes and Intended Learning Outcomes (ILO) of the programme is shown in Table 3.3.2.

Programme Outcomes	Institutional Learning Outcomes				
	1	2	3	4	5
1		√			
2			√		
3		√			
4			√		
5		√			
6	√				
7	√			√	
8	√	√			
9				√	
10					√

Table 3.3.2   Relationship between Institutional Learning Outcomes and Intended Learning Outcomes (ILO) of the programme

4 BSc (Hons) in Artificial Intelligence and Information Engineering

4.1 Rationale

Artificial Intelligence and Information engineering encompass vital technologies that support worldwide economic growth. With the increasing popularity of and technological advancement of artificial intelligence, products and services embedded with intelligent features are in great demand. It is envisioned that there is a great need for professionals who possess professional knowledge and skills relevant to information engineering and artificial intelligence, with a particular focus on machine perception and data science; as well as generic skills of problem-solving, creativity, innovation and adaptability to changing technology and society.

In 2020, LinkedIn published a report that ranks 15 emerging jobs; among them, AI is ranked the top. Demands on AI talents indeed spread across a wide range of industries, and the market for highly skilled AI workers is outpacing the supply. As published in Hong Kong Economic Journal in 2020, the sales value of AI business worthwhile was expected to be around US$60 million in 2021 and will steadily rise to US$110 million in 2024, which is an average of 20% annual growth. Such growth obviously will introduce a big demand for talent in the area. This Programme aims at training professionals in this emerging area to fulfil the needs of society.

4.2 Programme Aims

This Programme aims at producing graduates with:

1 a wide range of professional knowledge and skills relevant to Artificial Intelligence and Information Engineering. These include technological innovations in artificial intelligence and information engineering, focusing on machine perception and data science, as well as applications related to information engineering, such as computer vision, healthcare technology, bioinformatics, natural language processing, and automatics robotics,
2 creativity and innovation,
3 adaptability to changing technology and society, and
4 all-round attributes.

4.3 Programme Outcomes

Intended Learning Outcomes of the BSc (Hons) in Artificial Intelligence and Information Engineering

On successful completion of the programme, students will be able to:

1 Apply the fundamental of mathematics, science and engineering to the discipline of artificial intelligence and information engineering.
2 Design and conduct experiments, as well as to evaluate the outcomes.
3 Design systems, components and processes to meet given specifications and constraints.
4 Identify, formulate and solve problems relevant to artificial intelligence and information engineering.
5 Use modern engineering/IT tools appropriate to artificial intelligence and information engineering.
6 Consider the contemporary issues, and understand the impact of engineering solutions in national, global and societal contexts.

7   Collaborate with others on a multi-disciplinary team in an inclusive environment, fostering teamwork.

8   Recognize social, professional and ethical responsibility.

9   Communicate effectively.

10 Recognize the need for and engage in life-long learning.

The Programme Outcomes are in line with the Programme Objectives and the mapping is shown in Table 4.3.1.

Programme Outcomes	Programme Aims			
	1	**2**	**3**	**4**
1	√		√	
2	√	√	√	
3	√	√	√	
4	√	√	√	
5	√		√	
6	√		√	√
7				√
8	√		√	√
9				√
10			√	√

Table 4.3.1   Mapping between Programme Objectives and Programme Outcomes

The Subject Learning Outcomes are designed to be in alignment with the Programme Outcomes. The Subject Learning Outcomes are given in each subject and they can be found in the Subject Description Form (SDF) in Appendix I.

Relationship between Institutional Learning Outcomes and Intended Learning Outcomes (ILO) of the programme is shown in Table 4.3.2.

Programme Outcomes	Institutional Learning Outcomes				
	1	**2**	**3**	**4**	**5**
1		√			
2			√		
3		√			
4			√		
5		√			
6	√				
7	√			√	
8	√	√			
9				√	
10					√

Table 4.3.2   Relationship between Institutional Learning Outcomes and Intended Learning Outcomes (ILO) of the programme

5 BSc (Hons) in Information Security

5.1 Rationale

The recent advance in information and communication technologies (ICT) has brought people great convenience in their daily life. Information has become one of the most valuable assets to any country and any business which requires careful protection. To protect data security and privacy and to safeguard against the risk of potentially devastating security attacks and misuses have thus become a vital concern to all countries and organizations. With the cross-border, open-platform, highly-interconnected nature of the cyberworld, the impacts of security attacks and misuses are far-reaching, and would require integral effort from all parties involved in order to effectively combat these attacks.

In Hong Kong, since the pace of globalization continues to accelerate, supported by domestic consumption as well as the Mainland and Hong Kong Closer Economic Partnership Arrangement (CEPA), the manpower requirement in ICT will follow a growing trend in the long run. However, the further transition to knowledge society and the shifting of the ICT sector towards Cloud Computing and mobile communications requires ICT employees to acquire new skills and knowledge particularly in the area of information security. There is a need to launch relevant degree programmes to satisfy the urgent needs of the society. This programme will thus cover both large-scale and small-scale information security issues which are facing by individuals, organisations, and the society, and provide the necessary training to students so that they will be capable of preventing security threats and solving security problems in different settings.

5.2 Programme Aims

This Programme aims at producing graduates with:

1. a wide range of professional knowledge and skills relevant to Information Security,
2. creativity and innovation,
3. adaptability to changing technology and society, and
4. all-round attributes.

5.3 Programme Outcomes

Intended Learning Outcomes of the BSc (Hons) in Information Security

On successful completion of the programme, students will be able to:

- Apply the fundamentals of mathematics, science and engineering to the discipline of information security.
- Design and conduct experiments, as well as to evaluate the outcomes.
- Design systems, components, and processes to meet given specifications and constraints.
- Identify, formulate and solve problems relevant to Information Security.
- Use modern engineering/IT tools appropriate to Information Security practice.
- Consider the contemporary issues, and understand the impact of engineering solutions in national, global and societal contexts.
- Collaborate with others on a multi-disciplinary team in an inclusive environment, fostering teamwork.

- Understand professional, ethical, legal, security and social issues and responsibilities.
- Communicate effectively.
- Recognize the need for and engage in continuing professional development.

The Programme Outcomes are in line with the Programme Objectives and the mapping is shown in Table 5.3.1.

Programme Outcomes	Programme Aims			
	1	**2**	**3**	**4**
1	√		√	
2	√	√	√	
3	√	√	√	
4	√	√	√	
5	√		√	
6	√		√	√
7				√
8	√		√	√
9				√
10			√	√

Table 5.3.1   Mapping between Programme Objectives and Programme Outcomes

The Subject Learning Outcomes are designed to be in alignment with the Programme Outcomes. The Subject Learning Outcomes are given in each subject and they can be found in the Subject Description Form (SDF) in Appendix I.

Relationship between Institutional Learning Outcomes and Intended Learning Outcomes (ILO) of the programme is shown in Table 5.3.2.

Programme Outcomes	Institutional Learning Outcomes				
	1	**2**	**3**	**4**	**5**
1		√			
2			√		
3		√			
4			√		
5		√			
6	√				
7	√			√	
8	√	√			
9				√	
10					√

Table 5.3.2   Relationship between Institutional Learning Outcomes and Intended Learning Outcomes (ILO) of the programme

6   Curriculum

6.1   Summary of University Graduation Requirements

To be eligible for a Bachelor's Degree award under the 4-year full-time undergraduate curriculum, a student must:

(i)   Successfully complete a minimum of 120 academic credits (64 to 67 academic credits for Senior Year Intake) and 2 to 8 training credits*;

(ii)   Earn a cumulative GPA of 1.70 or above at graduation;

(iii)   Successfully complete the mandatory Work-Integrated Education (WIE) component;

(iv)   Satisfy the following General University Requirements (GUR):

Normal Year 1 Intake

(a) Language and Communication Requirements[1]	9 credits
(b) Artificial Intelligence and Data Analytics Requirement	2 credits
(c) Innovation and Entrepreneurship Requirement	1 credit
(c) Leadership Education and Development	3 credits
(d) Service-Learning	3 credits
(e) Cluster Areas Requirement (CAR) [3 credits each from CAR (A), CAR (M) and CAR (N)]	9 credits
(g) Healthy Lifestyle	Non-credit bearing
Total	**27 credits**

Senior Year Intake

(a) Language and Communication Requirements[1]	Normally not required[2]
(b) Service-Learning	3 credits
(c) Cluster Areas Requirement (CAR) [3 credits each from CAR(A)[3] and CAR(M)]	6 credits
(d) Essential Components of General Education	Non-credit bearing
Total	**9 credits**

(v)   Satisfy the residential requirement for at least one-third of the credits to be completed for the award; and

(vi)   Satisfy all requirements as defined and/or stipulated in the Programme Requirement Document and as specified by the University.

*   Please see Section 6.3 for the Specific Graduation Requirements.

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[1]   Non-Chinese speakers and those students whose Chinese standards are at junior secondary level or below will by default be exempted from the CAR - Chinese Reading and Writing Requirements and DSR – Chinese (for Senior Year intake students). However, students whose Chinese standards are at junior secondary level or below will still be required to take one Chinese LCR subject to fulfil their Chinese LCR.

[2]   This is normally not required. Only those students not meeting the equivalent standard of the Undergraduate Degree LCR (based on their previous studies in AD/HD programmes and their academic performance) will be required to take degree LCR subjects on top of the normal curriculum requirement.

[3]   Students are required to take a specially designed CAR(A) – English Language Subject with embedded English Reading and Writing Requirements.

There are subjects which are designed to fulfil the credit requirement of different types of subjects. Students passing these subjects will be regarded as having fulfilled the credit requirements of the particular types of subjects concerned. Nevertheless, the subject passed will only be counted once in fulfilling the credit requirements of the award, and the students will be required to take another subject in order to meet the total credit requirement of the programme concerned.

Level-0 subjects and training subjects (including clinical/field training) will not be counted to fulfill free elective requirement for graduation purpose.

Senior Year intakes admitted to the 4-year Undergraduate Degree programmes on the strength of the Associate Degree/Higher Diploma qualifications are required to complete at least 60 credits in order to be eligible for a Bachelor's degree. Exemption may be given for subjects already taken in the previous Associate Degree/Higher Diploma studies. In that case, students should take other electives (including free electives) instead to make up the total of 60 credits required.

A student is required to graduate as soon as he/she satisfies the graduation requirements as stipulated above. The student concerned is required to apply for graduation, in the semester in which he/she is able to fulfil all his/her graduation requirements, and after the add/drop period for that semester has ended.

Students taking the Major/Minor option

Students taking the Major/Minor option will be considered for an award when they have satisfied the requirements for both the Major and Minor studies (i.e., having a GPA of 1.70 or above) and have also submitted an application for graduation. If the 18 credits taken for the approved Minor study can meet the requirements for that Minor, the Major students may apply to graduate with a specific Minor, in addition to their Major. Otherwise, students will graduate with a Major only.

Subject to the approval by the Minor-offering Department, students may count up to 6 credits from their Major/GUR [including Language Communication Requirements (LCR) subjects at proficiency level] towards their chosen Minor. Nevertheless, students must take at least 6 credits from their chosen Minor programme in order to satisfy the residential requirement of their chosen Minor. In addition, to be eligible for the Major and Minor awards, the total number of credits taken by the students for their Major-Minor studies must not be lower than the credit requirement of the single discipline Major programme.

Students taking the Major/Secondary Major option

Students may count up to 12 credits of their Major/GUR subjects towards the Secondary Major. Nevertheless, students must take at least 12 credits from their chosen Secondary Major in order to satisfy the residential requirement of the chosen Secondary Major. Students who have completed more than 12 credits of subjects that are eligible for double counting will need to apply for graduation and indicate the subjects intended for double counting. Notwithstanding the above, students must meet the minimum credit requirements of the "X + Secondary Major" concerned, i.e., 132 credits.

6.2 General University Requirements (GUR)

(i)   Language and Communication Requirements (LCR)

English

All undergraduate students must successfully complete two* 3-credit English language subjects as stipulated by the University, according to their English language proficiency level (Table 6.2.1). These subjects are designed to suit students' different levels of English language proficiency at entry, as determined by their HKDSE score or the English Language Centre (ELC) entry assessment (when no HKDSE score is available, e.g., in the case of non-local students).

English language competence level	Practical English for University Studies (ELC1011)	English for University Studies (ELC1013)	Any LCR Proficient level elective subject in English (Table 6.2.2)
HKDSE Level 4 and above or equivalent	-	Subject 1	Subject 2
HKDSE Level 3 or equivalent	Subject 1	Subject 2	-

Table 6.2.1   English LCR Subjects (3 credits each)

LCR Proficient level elective subjects	Advanced English Reading and Writing Skills (ELC2011)
	Persuasive Communication (ELC2012)
	English in Literature and Film (ELC2013)
	Advanced English for University Studies (ELC2014)

Table 6.2.2   Proficient level elective subjects for HKDSE Level 4 students and above (or equivalent) (3 credits each)

* Students entering the University with specified attainment grades in certain public examinations can be given credit transfer or exemption for one or both LCR English subjects. For the subject exempted, students must take any other subject to make up the 3 credits. For the subject granted credit transfer, student do not need to take any other subject to make up the credits.

Chinese

All undergraduate students must successfully complete one* 3-credit Chinese language subject as stipulated by the University, according to their Chinese language proficiency level (Table 6.2.3).

Cantonese will be used as the Medium of Instruction (MoI) of a certain proportion of Chinese LCR subject. Students taking the Cantonese version of the subjects will be offered a 39 hour non-credit bearing e-Learning course in Putonghua (optional).

Subject Code	Subject Title	MoI
CLC1104C	University Chinese	Cantonese
CLC1104P	University Chinese	Putonghua

Table 6.2.3   Chinese LCR Subjects (3 credits each)

* Students entering the University with specified attainment grades in certain public examinations can be given credit transfer or exemption for the LCR Chinese subjects. For the subject exempted, students must take any other subject to make up the 3 credits. For the subject granted credit transfer, student do not need to take any other subject to make up the credits.

For non-Chinese speaking students or students whose Chinese standards are at junior secondary level or below:

Students of non-native Chinese language background, fulfilling any one of the following criteria with appropriate supporting certificate/document (if applicable), could be exempted from the Chinese LCR at the time of admission. You may use a Chinese LCR subject or free elective to fulfil the credit requirement. You are also exempted from fulfilling the CAR - Chinese Reading and Writing Requirements.

(i)   those with their first/native language as non-Chinese stated on the grade report of recognized tests (e.g. IELTS, TOEFL, etc.); OR

(ii)   those admitted with international qualifications without taking any Chinese subject(s) in their secondary/ high school; OR

(iii)   those taken Chinese B or Chinese AB(SL) in IB Diploma; OR

(iv)   NCS status shown on the official proof provided by their secondary school.

Otherwise, one subject from Table 6.2.4 below will be pre-assigned to you as Chinese LCR depending on your Chinese language proficiency and/or previous exam results. You might be given an assessment to ascertain that the pre-assigned subject is suitable for you.

Subject Code	Subject Title
CLC1151	Chinese I (for non-Chinese speaking students)
CLC1152	Chinese II (for non-Chinese speaking students)
CLC2151	Chinese III (for non-Chinese speaking students)
CLC2154	Chinese IV (for non-Chinese speaking students)
CLC2152	Chinese Literature – Linguistic and Cultural Perspectives (for non-Chinese speaking students)

Table 6.2.4   Chinese LCR Subjects for non-Chinese speakers or students whose Chinese standards are at junior secondary level or below (3 credits each)

For those Senior Year intake students who do not meet the equivalent standard of the Undergraduate Degree LCR (based on their previous studies in AD/HD programme and their academic performance) will be required to take degree LCR subjects on top of the normal curriculum requirement.

Writing Requirement

In addition to the LCR in English and Chinese explained above, all students must also, among the Cluster Areas Requirement (CAR) subjects they take (see Section (vi) below), pass <u>one</u> subject that includes the requirement for a substantial piece of writing in English and <u>one</u> subject with the requirement for a substantial piece of writing in Chinese.

Reading Requirement

All students must, among the CAR subjects they take, pass <u>one</u> subject that includes the requirement for the reading of an extensive text in English and <u>one</u> subject with the requirement for the reading of an extensive text in Chinese.

A list of approved CAR subjects for meeting the Writing Requirement and the Reading Requirement is shown at: https://www.polyu.edu.hk/cus/GURSubjects/

Non-Chinese speakers and those students whose Chinese standards are at junior secondary level or below will by default be exempted from the CAR - Chinese Reading and Writing Requirements and the DSR – Chinese (for Senior Year intake students).

Note: In addition to the LCR and Reading and Writing Requirements, students also have to complete 2 - 4 credits of discipline-specific language requirements (2 credits in English and 0 - 2 credits in Chinese) as specified in the curriculum requirements of their Major. Students who are non-Chinese speakers or those whose Chinese standards are at junior secondary level or below will be exempted from the DSR - Chinese. Students of this category can take a replacement subject of any level to make up for the credit requirement

(ii)   Artificial Intelligence and Data Analytics Requirement (GUR-AIDA)

All 4-year degree students must successfully complete <u>one</u> 2-credit subject in the area of Artificial Intelligence and Data Analytics, which is designed to (i) demonstrate an understanding of the foundational concepts of Artificial Intelligence and Data Analytics (AIDA); (ii) acquire basic skills in using AIDA technologies and applications; (iii) articulate examples of how the adoption AIDA could enhance their chosen disciplines; and (iv) demonstrate an awareness of global contemporary ethical issues and impact from AIDA applications in daily life.

Senior Year Intakes students are required to take the mandatory subject "Essential Components of General Education" for the e-module on GUR-AIDA.

(iii)   Innovation and Entrepreneurship Requirement (GUR-IE)

All 4-year degree students must successfully complete <u>one</u> 1-credit subject in the area of Innovation and Entrepreneurship, which is designed to (i) demonstrate an elementary understanding of innovation and entrepreneurship; (ii) appreciate the importance of innovation and entrepreneurship in local and global community; (iii) appreciate the applications and implications of the latest technologies on entrepreneurship and innovation in their chosen disciplines; and (iv) identify ethical issues in entrepreneurship and innovation.

Senior Year Intakes students are required to take the mandatory subject "Essential Components of General Education" for the e-module on GUR-IE.

(iv)   Leadership Education and Development (LEAD)

All 4-year degree students must successfully complete <u>one</u> 3-credit subject in the area of Leadership Education and Development, which is designed to enable students to (i) understand and integrate theories, research, and concepts on the basic qualities (particularly intrapersonal and interpersonal qualities including law abidance) of effective leaders, (ii) develop self-awareness and self-understanding, (iii) demonstrate self-leadership in pursuit of continual self-improvement, (iv) apply intrapersonal and interpersonal skills in daily lives, (v) appreciate the importance of intrapersonal and interpersonal qualities in effective leadership, particularly the connection of learning in the subject to one's professional development and personal growth, and (vi) recognise and accept their social responsibility as professionals and citizens to the society and the world.

Senior Year Intakes students are not required to complete this subject.

(v)   Service-Learning (SL)

All students must successfully complete <u>one</u> 3-credit subject designated to meet the Service-Learning Requirement, in which they are required to (a) participate in substantial community service or civic engagement activities that will benefit the service users or the community at large in a meaningful way, (b) apply the knowledge and skills acquired from their Major or other learning experiences at the University to the community service activities, and (c) reflect on their service learning experience in order to link theory with practice for the development of a stronger sense of ethical, social and national responsibility.

Service-Learning subjects are administered by the Service-Learning and Leadership Office (SLLO). For subject offering and further information, please visit the SLLO website: https://www.polyu.edu.hk/sllo/.

(vi)   Cluster Areas Requirements (CAR)

To expand students' intellectual capacity beyond their disciplinary domain and to enable them to tackle professional and global issues from a multidisciplinary perspective, all 4-year degree students are required to successfully complete at least <u>one</u> 3-credit subject in <u>each</u> of the following three Cluster Areas and among which students have to fulfil the Reading and Writing Requirements in Chinese and English (CR/CW and ER/EW):

- CAR (A): Human Nature, Relations and Development
- CAR (M): Chinese History and Culture
- CAR (N): Cultures, Organisations, Societies and Globalisation

Senior Year Intakes are required to complete one specially-designed CAR (A) - English Language subject (with embedded English Reading and Writing Requirements) within the first year of study and one CAR (M) subject, and fulfil the Reading and Writing Requirements in Chinese.

A list of CAR subjects under each of the four Cluster Areas is available at: https://www.polyu.edu.hk/cus/GURSubjects/.

(vii)   Healthy Lifestyle (HLS)

A Healthy lifestyle is the platform for all-round development. All 4-year degree students are required to successfully complete a non-credit-bearing programme on healthy lifestyle. Students are required to complete the following components: (a) sports training/participation, (b) e-learning modules, and (c) lectures/talks. The syllabus covers physical health, mental health, social health, spiritual health, values and priorities on healthy behaviour with reference to competing priorities in life, reflections on healthy living, and plans for self-improvement or maintaining of health behaviour.   Details of the programme can found at: https://www.polyu.edu.hk/cus/GURSubjects/HLS.php.

Senior Year Intakes students are not required to complete HLS.

(viii)   Essential Components of General Education

To allow Senior Year intakes students to acquire the basic knowledge of the following:

* Academic Integrity (OTAI)
* Artificial Intelligence and Data Analytics (AIDA)
* Innovation and Entrepreneurship (IE)
* National Education (NE)

All Senior Year Intakes students are required to take "Essential Components of General Education", and complete and pass the individual e-modules of the four components within **the** first year of study (Semesters 1 and 2). The "Online Tutorial on Academic Integrity" should be completed by Week 5 of Semester 1. 4-year degree students are not required to complete this subject.

6.3   Specific Graduation Requirements

BEng (Hons) in Electronic Systems and Internet-of-Things

<u>Normal Year 1 Intake</u>

(i)   Successfully complete a minimum of 120 academic credits composed of the following:

- 27 credits of General University Requirements (GUR) as set out in Section 6.2.

- 87 credits of Major Subjects, of which 75 credits from subjects categorised as Compulsory (COM) and 12 credits from subjects categorised as Elective (ELE) (at least 2 of these electives must be at Level 4 or above) as stated in Table 6.4.2.

- 6 credits of Free Electives

(ii)   Obtain a total of 8 training credits in Training (TRN) and complete the Work-Integrated Education (WIE) component as stated in Sections 6.8 and 6.9, respectively.

<u>Senior Year Intake</u>

(i)   Successfully complete a minimum of 67 academic credits composed of the following:

- 9 credits of General University Requirements (GUR) as set out in Section 6.2.

- 58 credits of Major Subjects, of which 46 credits from subjects categorised as Compulsory (COM) and 12 credits from subjects categorised as Elective (ELE) (at least 2 of these electives must be at Level 4 or above) as stated in Table 6.4.2.

(ii)   Obtain a total of 8 training credits in Training (TRN) and complete the Work-Integrated Education (WIE) component as stated in Sections 6.8 and 6.9, respectively.

BSc (Hons) in Artificial Intelligence and Information Engineering

<u>Normal Year 1 Intake</u>

(i)   Successfully complete a minimum of 120 academic credits composed of the following:

- 27 credits of General University Requirements (GUR) as set out in Section 6.2.

- 87 credits of Major Subjects, of which 72 credits from subjects categorised as Compulsory (COM) and 15 credits from subjects categorised as Elective (ELE) as stated in Table 6.4.3.

- 6 credits of Free Electives

(ii)   Obtain a total of 5 training credits in Training (TRN) and complete the Work-Integrated Education (WIE) component as stated in Sections 6.8 and 6.9, respectively.

<u>Senior Year Intake</u>

(i)   Successfully complete a minimum of 67 academic credits composed of the following:

- 9 credits of General University Requirements (GUR) as set out in Section 6.2.

- 58 credits of Major Subjects, of which 43 credits from subjects categorised as Compulsory (COM) and 15 credits from subjects categorised as Elective (ELE) as stated in Table 6.4.3.

(ii)   Obtain a total of 5 training credits in Training (TRN) and complete the Work-Integrated Education (WIE) component as stated in Sections 6.8 and 6.9, respectively.

BSc (Hons) in Information Security

Normal Year 1 Intake

(i)　　　Successfully complete a minimum of 120 academic credits composed of the following:

- 27 credits of General University Requirements (GUR) as set out in Section 6.2.

- 87 credits of Major Subjects, of which 75 credits from subjects categorised as Compulsory (COM) and 12 credits from subjects categorised as Elective (ELE) (at least 3 of these electives must be at Level 4 or above) as stated in Table 6.4.4.

- 6 credits of Free Electives

(ii)　　　Obtain a total of 4 training credits in Training (TRN) and complete the Work-Integrated Education (WIE) component as stated in Sections 6.8 and 6.9, respectively.

Senior Year Intake

(i)　　　Successfully complete a minimum of 64 academic credits composed of the following:

- 9 credits of General University Requirements (GUR) as set out in Section 6.2.

- 55 credits of Major Subjects, of which 40 credits from subjects categorised as Compulsory (COM) and 15 credits from subjects categorised as Elective (ELE) (at least 3 of these electives must be at Level 4 or above) as stated in Table 6.4.4.

(ii)　　　Obtain a total of 2 training credits in Training (TRN) and complete the Work-Integrated Education (WIE) component as stated in Sections 6.8 and 6.9, respectively.

6.4 Programme Specified Subjects

Students admitted to the Scheme through the Normal Year 1 entry route are required to complete a minimum of 120 academic credits to satisfy the degree requirements, while students admitted to the programme through Senior Year entry route are required to complete a minimum of 64/67 academic credits to satisfy the degree requirements. The exact minimum number of academic credits required will depend on the academic background of the students. The details of General University Requirements (GUR), Free Electives and Major Subjects are listed in Tables 6.4.1 – 6.4.4.

General University Requirements (GUR) & Free Electives for BEng (Hons) / BSc (Hons) Scheme in Information and Artificial Intelligence Engineering

Subject Code	Subject Title	Credit	Category#	
			Normal Year 1 Intake	Senior Year Intake
General University Requirements (GUR)				
-	Cluster Area Requirement: CAR (A)	3	COM	COM^
-	Cluster Area Requirement: CAR (M)	3	COM	COM
-	Cluster Area Requirement: CAR (N)	3	COM	-
-	Language and Communication Requirement I (LCR English I)	3	COM	*
-	Language and Communication Requirement II (LCR English II)	3	COM	*
-	Language and Communication Requirement III (LCR Chinese)	3	COM	*
EIE1005	Fundamental AI and Data Analytics (GUR-AIDA)	2	COM	-
MM1031	Introduction to Innovation and Entrepreneurship (GUR-IE)	1	COM	-
APSS1L01	Tomorrow's Leaders (LEAD)	3	COM	-
-	Service-Learning	3	COM	COM
-	Healthy Lifestyle	0	COM	-
EEE1Q01	Essential Components of General Education	0	-	COM
Free Electives				
-	Free Elective 1	3	COM	-
-	Free Elective 2	3	COM	-

Table 6.4.1   General University Requirements (GUR) & Free Electives

\#   Category: COM: Compulsory

^   Senior Year Intakes are required to complete one specially-designed CAR (A) - English Language subject (with embedded English Reading and Writing Requirements).

*   This is normally not required. Only those students not meeting the equivalent standard of the Undergraduate Degree LCR (based on their previous studies in AD/HD programmes and their academic performance) will be required to take degree LCR subjects on top of the normal curriculum requirement.

Major Subjects for BEng (Hons) in Electronic Systems and Internet-of-Things (BEng in ESIoT)

Subject Code	Subject Title	Credit	Category# Normal Year 1 Intake	Senior Year Intake
Major Subjects for BEng in ESIoT				
AMA1110	Basic Mathematics I – Calculus and Probability & Statistics	3	COM	-
AMA1120	Basic Mathematics II – Calculus and Linear algebra	3	COM	-
AMA2111	Mathematics I	3	COM	-
CLC3241P	Professional Communication in Chinese	2	-	COM
EIE1003	Foundations of Data Science	3	COM	-
EEE2011	Foundation Techniques in Artificial Intelligence	2	COM	-
EEE2012	Introduction to Internet of Things	2	COM	-
EIE2110	Basic Circuit Analysis and Electronics	3	COM	-
EIE2113	Introduction to Internet of Things	3	-	COM
EIE2211	Logic Design	3	COM	-
EIE3112	Database System	3	COM	COM
EIE3123	Dynamic Electronic Systems	3	COM	COM
EIE3124	Fundamentals of Machine Intelligence	3	COM	ELE~
EIE3128	IoT Workshop & Project	3	COM	COM
EIE3129	IoT Security	3	COM	COM
EIE3311	Computer System Fundamentals	3	COM	COM
EIE3312	Linear Systems	3	COM	ELE~
EIE3331	Communication Fundamentals	3	COM	COM
EIE3333	Data and Computer Communications	3	COM	COM
EIE3373	Microcontroller Systems and Interface	3	COM	COM
EIE4113	Wireless and Mobile Systems	3	COM	COM
EIE4126	Capstone Project	6	COM	COM
EIE3109	Mobile Systems and Application Development	3	ELE~ (Select any 4 electives; at least 2 electives at Level 4 or above)	ELE~ (Select any 4 electives; at least 2 electives at Level 4 or above)
EIE3127	Artificial Intelligence Enabled Internet of Things	3		
EIE3130	Network Security	3		
EIE3320	Object-Oriented Design and Programming	3		
EIE4100	Computer Vision and Pattern Recognition	3		
EIE4102	IP Networks	3		
EIE4104	Mobile Networking	3		
EIE4105	Multimodal Human Computer Interaction Technology	3		
EIE4108	Distributed Systems and Cloud Computing	3		
EIE4119	Mobile Device System Architecture	3		
EIE4122	Deep Learning and Deep Neural Networks	3		
EIE4123	Healthcare Technology	3		
EIE4124	Modern Robotics	3		
EIE4125	Power Conversion Technology for Energy Harvesting	3		
EIE4413	Digital Signal Processing	3		
EIE4432	Web Systems and Technologies	3		
EIE4435	Image and Audio Processing	3		
EIE4449	Optical Communication Systems and Networks	3		
ELC3531	Professional Communication in English for Engineering Students	2	COM	COM
ENG1004	Engineering Professionals in Society I	1	COM	-
ENG2002	Computer Programming	3	COM	-
ENG2003	Information Technology	3	COM	-
ENG3003	Engineering Management	3	COM	COM
ENG3004	Society and The Engineer	3	-	COM
ENG3006	Engineering Professionals in Society II	2	COM	-

Subject Code	Subject Title	Credit	Category#	
			Normal Year 1 Intake	Senior Year Intake
EEE2101	Basic Electronic System Training I	2	-	TRN
EEE2102	Basic Electronic System Training II	3	-	TRN
EEE2103	Applied Engineering Fundamentals	2	TRN	-
EEE2105	Basic Electronic Systems with AI	3	TRN	-
EIE3901	Multidisciplinary Manufacturing Project	3	TRN	TRN

Table 6.4.2 Major Subjects for BEng in ESIoT

Category: COM: Compulsory
                    ELE: Elective
                    TRN: Training

~ Students are required to select 4 technical electives and at least 2 technical electives must be at Level 4 or above.

Subject to the approval by the Programme Leader of BEng (Hons) in ESIoT, students may take at most one Level 5 subject per semester as a final-year technical elective during their final year of study. The total number of Level 5 subjects taken shall not exceed 2. Students can refer to the list of Level 5 subjects currently available on https://www.polyu.edu.hk/eee/study/information-for-current-students/subject-syllabi/.

Subject Code	Subject Title	Credit	Category of Subjects
EEE508	VLSI Technology and Design	3	ELE
EEE531	Spoken Language Technologies	3	ELE
EIE509	Satellite Communications – Technology and Applications	3	ELE
EIE511	VLSI System Design	3	ELE
EIE515	Advanced Optical Communication Systems	3	ELE
EIE522	Pattern Recognition: Theory & Applications	3	ELE
EIE529	Digital Image Processing	3	ELE
EIE546	Video Technology	3	ELE
EIE553	Security in Data Communication	3	ELE
EIE558	Speech Processing and Recognition	3	ELE
EIE560	Microelectronics Processing and Technologies	3	ELE
EIE563	Digital Audio Processing	3	ELE
EIE566	Wireless Communications	3	ELE
EIE567	Wireless Power Transfer Technologies	3	ELE
EIE568	IoT - Tools and Applications	3	ELE
EIE569	Sensor Networks	3	ELE
EIE571	Photonic System Analysis	3	ELE
EIE572	Information Photonics	3	ELE
EIE573	Mobile Edge Computing	3	ELE
EIE575	Vehicular Communications and Inter-Networking Technologies	3	ELE
EIE577	Optoelectronic Devices	3	ELE
EIE579	Advanced Telecommunication Systems	3	ELE
EIE580	RF and Microwave Integrated Circuits for Communication System Applications	3	ELE
EIE587	Channel Coding	3	ELE
EIE589	Wireless Data Network	3	ELE

Major Subjects for BSc (Hons) in Artificial Intelligence and Information Engineering (BSc in AIIE)

Subject Code	Subject Title	Credit	Category#	
			Normal Year 1 Intake	Senior Year Intake
Major Subjects for BSc in AIIE				
AMA1110	Basic Mathematics I – Calculus and Probability & Statistics	3	COM	-
AMA1120	Basic Mathematics II – Calculus and Linear algebra	3	COM	-
CLC3241P	Professional Communication in Chinese	2	-	COM
DSAI2201	Data Structure and Algorithms	3	COM	-
DSAI4205	Big Data Analytics	3	COM	COM
EIE1003	Foundations of Data Science	3	COM	-
EEE2011	Foundation Techniques in Artificial Intelligence	2	COM	-
EEE2012	Introduction to Internet of Things	2	COM	-
EIE2105	Digital and Computer Systems	3	COM	-
EIE2113	Introduction to Internet of Things	3	-	COM
EIE3109	Mobile Systems and Application Development	3	COM	COM
EIE3112	Database System	3	COM	-
EIE3124	Fundamentals of Machine Intelligence	3	COM	COM
EIE3312	Linear System	3	COM	COM
EIE3320	Object-Oriented Design and Programming	3	COM	-
EIE3333	Data and Computer Communications	3	COM	COM
EIE3343	Computer Systems Principles	3	COM	COM
EIE3360	Integrated Project	3	COM	COM
EIE4102	IP Networks	3	COM	COM
EIE4127	Capstone Project	6	COM	COM
EIE4432	Web Systems and Technologies	3	COM	-
EIE3127	Artificial Intelligence Enabled Internet of Things	3	ELE~ (Select any 5 electives)	ELE~ (Select any 5 electives)
EIE3129	IoT Security	3		
EIE3130	Network Security	3		
EIE4100	Computer Vision and Pattern Recognition	3		
EIE4104	Mobile Networking	3		
EIE4105	Multimodal Human Computer Interaction Technology	3		
EIE4108	Distributed Systems and Cloud Computing	3		
EIE4121	Machine Learning in Cyber-Security	3		
EIE4122	Deep Learning and Deep Neural Networks	3		
EIE4123	Healthcare Technology	3		
EIE4428	Multimedia Communications	3		
EIE4431	Digital Video Production and Broadcasting	3		
EIE4435	Image and Audio Processing	3		
EIE4449	Optical Communication Systems and Networks	3		
ELC3531	Professional Communication in English for Engineering Students	2	COM	COM
ENG1004	Engineering Professionals in Society I	1	COM	-
ENG2002	Computer Programming	3	COM	-
ENG2003	Information Technology	3	COM	-
ENG3003	Engineering Management	3	COM	COM
ENG3004	Society and The Engineer	3	-	COM
ENG3006	Engineering Professionals in Society II	2	COM	-
EEE2103	Applied Engineering Fundamentals	2	TRN	-
EEE2104	AI Application Development	3	TRN	-
EIE2903	Internet and Multimedia Product Development	5	-	TRN

Table 6.4.3   Major Subjects for BSc in AIIE

Category: COM: Compulsory
ELE: Elective
TRN: Training

~ Students are required to select <u>5</u> technical electives.

Subject to the approval by the Programme Leader of BSc (Hons) in AIIE, students may take at most one Level 5 subject per semester as a final-year technical elective during their final year of study. The total number of Level 5 subjects taken shall not exceed 2. Students can refer to the list of Level 5 subjects currently available on https://www.polyu.edu.hk/eee/study/information-for-current-students/subject-syllabi/.

Subject Code	Subject Title	Credit	Category of Subjects
EEE531	Spoken Language Technologies	3	ELE
EIE522	Pattern Recognition: Theory and Applications	3	ELE
EIE529	Digital Image Processing	3	ELE
EIE546	Video Technology	3	ELE
EIE553	Security in Data Communication	3	ELE
EIE558	Speech Processing and Recognition	3	ELE
EIE563	Digital Audio Processing	3	ELE
EIE573	Mobile Edge Computing	3	ELE

Major Subjects for Bachelor of Science (Honours) in Information Security (BSc in IS)

Subject Code	Subject Title	Credit	Category#	
			Normal Year 1 Intake	Senior Year Intake
Major Subjects for BSc in IS				
AMA1110	Basic Mathematics I – Calculus and Probability & Statistics	3	COM	-
AMA1120	Basic Mathematics II – Calculus and Linear algebra	3	COM	-
CLC3241P	Professional Communication in Chinese	2	–	COM
COMP2012	Discrete Mathematics	3	COM	-
COMP2432	Operating Systems	3	COM	-
DSAI2201	Data Structure and Algorithms	3	COM	-
COMP3311	Applied Cryptography	3	COM	-
COMP3334	Computer Systems Security	3	COM	COM
COMP3335	Database Security	3	COM	-
COMP3511	Legal Aspects and Ethics of Computing	2	COM	-
COMP3512	Legal Aspects, Professionalism and Ethics of Computing	3	-	COM
COMP4442	Service and Cloud Computing	3	COM	COM
EEE2011	Foundation Techniques in Artificial Intelligence	2	COM	-
EIE2105	Digital and Computer Systems	3	COM	-
EIE3130	Network Security	3	COM	COM
EIE3112	Database System	3	COM	-
EIE3117	Integrated Project	3	COM	COM
EIE3333	Data and Computer Communications	3	COM	COM
EIE3343	Computer Systems Principles	3	COM	COM
EIE4113	Wireless and Mobile Systems	3	COM	COM
EIE4432	Web Systems and Technologies	3	COM	COM
COMP4127	Information Systems Audit and Control	3	ELE~ (Select any 2 electives from COMP/ DSAI)	ELE~ (Select any 5 electives; at least 2 from COMP/ DSAI and 2 from EEE)
COMP4334	Principles and Practice of Internet Security	3		
COMP4512	Intellectual Property Protection and Management	3		
DSAI4201	Data Protection and Security	3		
DSAI4202	E-Payment and Cryptocurrency	3		
DSAI4204	Data Mining and Data Warehousing	3		
EIE3129	IoT Security	3	ELE~ (Select any 2 electives from EEE)	
EIE4114	Digital Forensics for Crime Investigation	3		
EIE4116	Surveillance Studies and Technologies	3		
EIE4118	Intrusion Detection and Penetration Test	3		
EIE4121	Machine Learning in Cyber-Security	3		
COMP4913	Capstone Project	6	COM (Select any 1 subject out of these 2 subjects)	COM (Select any 1 subject out of these 2 subjects)
EIE4117	Capstone Project			
ELC3531	Professional Communication in English for Engineering Students	2	COM	COM
ENG1004	Engineering Professionals in Society I	1	COM	-
ENG2002	Computer Programming	3	COM	-
ENG2003	Information Technology	3	COM	-
ENG3003	Engineering Management	3	COM	COM
ENG3006	Engineering Professionals in Society II	2	COM	-
EEE2103	Applied Engineering Fundamentals	2	TRN	-
EIE3189	Summer Internship	2	TRN/WIE	TRN/WIE

Table 6.4.4   Major Subjects for BSc in IS

[#] Category: COM: Compulsory
                ELE: Elective
                TRN: Training
                WIE: Work-Integrated Education

~ Normal Year 1 students are required to select <u>4</u> technical electives. Senior Year Intake students are required to select <u>5</u> technical electives.

Subject to the approval by the Programme Leader of BSc (Hons) in IS, students may take at most one Level 5 subject per semester as a final-year technical elective during their final year of study. The total number of Level 5 subjects taken shall not exceed 2. Students can refer to the list of Level 5 subjects currently available on https://www.polyu.edu.hk/eee/study/information-for-current-students/subject-syllabi/.

Subject Code	Subject Title	Credit	Category of Subjects
EEE514	Quantum Communication	3	ELE
EIE553	Security in Data Communication	3	ELE
EIE568	IoT - Tools and Applications	3	ELE

6.5 Progression Pattern for Normal Study Duration

BEng (Hons) in Electronic Systems and Internet-of-Things (Normal Year 1 Intake)

Year 1 (31 academic credits + 2 training credits)			
Semester 1 (13 or 16 credits + 1 training credit)		**Semester 2** (15 or 18 credits + 1 training credit)	
AMA1110	Basic Mathematics I – Calculus and Probability & Statistics (3)	AMA1120	Basic Mathematics II – Calculus and Linear Algebra (3)^
ELCXXXX	English LCR Subject 1 (3)~	APSS1L01	Tomorrow's Leaders (3)
ENG2003	Information Technology (3)^	EIE1005	Fundamental AI and Data Analytics (2)
MM1031	Introduction to Innovation and Entrepreneurship (1)	ELCXXXX	English LCR Subject 2 (3)~
		ENG1004	Engineering Professionals in Society I (1)
		ENG2002	Computer Programming (3)
One CAR and One Free Elective should be taken in Year 1			
CAR I	Cluster-Area Requirement subject 1 (3)	Free Elective 1 (3)	
EEE2103 Applied Engineering Fundamentals (2 training credits)			
Healthy Lifestyle (non-credit bearing)			
Year 2 (31 academic credits + 3 training credits)			
Semester 1 (13 or 16 credits + 1.5 training credits)		**Semester 2** (15 or 18 credits + 1.5 training credits)	
AMA2111	Mathematics I (3)	CLC1104P	Chinese LCR Subject (3)^%
EIE1003	Foundations of Data Science (3)	EIE2211	Logic Design (3)
EIE2110	Basic Circuit Analysis and Electronics (3)	EIE3124	Fundamentals of Machine Intelligence (3)
EEE2011	Foundation Techniques in Artificial Intelligence (2)	EIE3312	Linear Systems (3)
EEE2012	Introduction to Internet of Things (2)		
One CAR and One Free Elective should be taken in Year 2			
CAR II	Cluster-Area Requirement subject 2 (3)	Free Elective 2 (3)	
EEE2105 Basic Electronic Systems with AI (3 training credits)			
Year 3 (30 academic credits + 3 training credits)			
Semester 1 (15 credits + 1.5 training credit)		**Semester 2** (15 credits + 1.5 training credit)	
EIE3311	Computer System Fundamentals (3)	EIE3112	Database System (3)
EIE3331	Communication Fundamentals (3)	EIE3123	Dynamic Electronic Systems (3)
EIE3333	Data and Computer Communications (3)	EIE3128	IoT Workshop & Project (3)
EIE3373	Microcontroller Systems and Interface (3)	EIE4113	Wireless and Mobile Systems (3)
CAR III	Cluster-Area Requirement subject 3 (3)	Technical Elective 1 (3)*	
EIE3901 Multidisciplinary Manufacturing Project (3 training credits)			
Year 4 (28 academic credits)			
Semester 1 (13.5 or 16.5 credits)		**Semester 2** (11.5 or 14.5 credits)	
EIE3129	IoT Security (3)	ELC3531	Professional Communication in English for Engineering Students (2)
ENG3003	Engineering Management (3)	ENG3006	Engineering Professionals in Society II (2)
Three Technical Elective should be taken in Year 4			
Technical Elective 2 (3)*		Technical Elective 3 (3)*	
		Technical Elective 4 (3)*	
EIE4126 Capstone Project (6)			
Service-Learning (3)@			

Table 6.5.1   Progression Pattern of BEng (Hons) in ESIoT for Normal Year 1 Intake

Total credits required for graduation: 120 academic credits + 8 training credits

~ Students will take these subjects based on their English Language results in HKDSE or other public examinations (see Section 6.2 (i)).

^ Students are required to take two Faculty Electives among AMA1120 Basic Mathematics II, ENG2003 Information Technology or AP10005 Physics I/AP10006 Physics II in Year 1. AMA1120 and ENG2003 are the Major subjects of the programme and will be pre-assigned for students in Year 1. If students opt to take AP10005/AP10006, AP10005/AP10006 will be recognised as a Free Elective within the programme.

% Students of non-native Chinese language background, fulfilling any one of the following criteria with appropriate supporting certificate/document (if applicable), could be exempted from the Chinese LCR at the time of admission. You may use a Chinese LCR subject or free elective to fulfil the credit requirement. You are also exempted from fulfilling the CAR - Chinese Reading and Writing Requirements.

    (i)   those with their first/native language as non-Chinese stated on the grade report of recognized tests (e.g. IELTS, TOEFL, etc.); OR
    (ii)   those admitted with international qualifications without taking any Chinese subject(s) in their secondary/ high school; OR
    (iii) those taken Chinese B or Chinese AB(SL) in IB Diploma; OR
    (iv) NCS status shown on the official proof provided by their secondary school.

Otherwise, one subject will be pre-assigned to you as Chinese LCR depending on your Chinese language proficiency and/or previous exam results. You might be given an assessment to ascertain that the pre-assigned subject is suitable for you (see Section 6.2 (i)).

* Students are required to complete four Technical Electives from Table 6.5.2 and at least two Technical Electives must be at Level 4 or above. The Department reserves the right of NOT offering all the electives in each year.

@ Students are encouraged to take this subject at an earlier stage of study.

Technical Elective*			
Semester 1		**Semester 2**	
EIE3127	Artificial Intelligence Enabled Internet of Things	EIE3109	Mobile Systems and Application Development
EIE3130	Network Security	EIE4102	IP Networks
EIE3320	Object-Oriented Design and Programming	EIE4105	Multimodal Human Computer Interaction Technology
EIE4100	Computer Vision and Pattern Recognition	EIE4108	Distributed Systems and Cloud Computing
EIE4104	Mobile Networking	EIE4125	Power Conversion Technology for Energy Harvesting
EIE4119	Mobile Device System Architecture	EIE4413	Digital Signal Processing
EIE4122	Deep Learning and Deep Neural Networks	EIE4449	Optical Communication Systems and Networks
EIE4432	Web Systems and Technologies		
EIE4435	Image and Audio Processing		
Semester 1 or Semester 2			
EIE4123	Healthcare Technology	EIE4124	Modern Robotics

Table 6.5.2

* Students are required to complete four Technical Electives and at least two Technical Electives must be at Level 4 or above. Students should seek prior approval for enrolling on Level 5 subjects. The Department reserves the right of NOT offering all the electives in each year.

BSc (Hons) in Artificial Intelligence and Information Engineering (<u>Normal Year 1 Intake</u>)

Year 1 (31 academic credits + 2 training credits)			
Semester 1 (13 or 16 credits + 1 training credit)		**Semester 2** (15 or 18 credits + 1 training credit)	
AMA1110	Basic Mathematics I – Calculus and Probability & Statistics (3)	AMA1120	Basic Mathematics II – Calculus and Linear Algebra (3)^
ELCXXXX	English LCR Subject 1 (3)~	APSS1L01	Tomorrow's Leaders (3)
ENG2003	Information Technology (3)^	EIE1005	Fundamental AI and Data Analytics (2)
MM1031	Introduction to Innovation and Entrepreneurship (1)	ELCXXXX	English LCR Subject 2 (3)~
		ENG1004	Engineering Professionals in Society I (1)
		ENG2002	Computer Programming (3)
One CAR and One Free Elective should be taken in Year 1			
CAR I	Cluster-Area Requirement subject 1 (3)	Free Elective 1 (3)	
EEE2103 Applied Engineering Fundamentals (2 training credits)			
Healthy Lifestyle (non-credit bearing)			
Year 2 (31 academic credits + 3 training credits)			
Semester 1 (17 academic credits + 1.5 training credits)		**Semester 2** (14 academic credits + 1.5 training credits)	
CLC1104P	Chinese LCR Subject (3)‰	EIE3112	Database System (3)
DSAI2201	Data Structures and Algorithms (3)	EIE3124	Fundamentals of Machine Intelligence (3)
EIE1003	Foundations of Data Science (3)	EIE3312	Linear Systems (3)
EIE2105	Digital and Computer Systems (3)	ELC3531	Professional Communication in English for Engineering Students (2)
EEE2011	Foundation Techniques in Artificial Intelligence (2)		
One CAR and One Free Elective should be taken in Year 2			
CAR II	Cluster-Area Requirement subject 2 (3)	Free Elective 2 (3)	
EEE2104 AI Application Development (3 training credits)			
Year 3 (29 academic credits)			
Semester 1 (14 credits)		**Semester 2** (15 credits)	
EEE2012	Introduction to Internet of Things (2)	EIE3109	Mobile Systems and Application Development (3)
EIE3320	Object-Oriented Design and Programming (3)	EIE3360	Integrated Project (3)
EIE3333	Data and Computer Communications (3)	Technical Elective 1 (3)*	
EIE3343	Computer Systems Principles (3)	Technical Elective 2 (3)*	
EIE4432	Web Systems and Technologies (3)	Service-Learning (3)@	
Year 4 (29 academic credits)			
Semester 1 (15 credits)		**Semester 2** (14 credits)	
DSAI4205	Big Data Analytics (3)	EIE4102	IP Networks (3)
ENG3003	Engineering Management (3)	ENG3006	Engineering Professionals in Society II (2)
One CAR and Three Technical Elective should be taken in Year 4			
Technical Elective 3 (3)*		Technical Elective 5 (3)*	
Technical Elective 4 (3)*		CAR III	Cluster-Area Requirement subject 3 (3)
EIE4127 Capstone Project (6)			

Table 6.5.3   Progression Pattern of BSc (Hons) in AIIE for Normal Year 1 Intake

Total credits required for graduation: 120 academic credits + 5 training credits

~   Students will take these subjects based on their English Language results in HKDSE or other public examinations (see Section 6.2 (i)).

^   Students are required to take two Faculty Electives among AMA1120 Basic Mathematics II, ENG2003 Information Technology or AP10005 Physics I/AP10006 Physics II in Year 1. AMA1120 and ENG2003 are the Major subjects of the programme and will be pre-assigned for students in Year 1. If students opt to take AP10005/AP10006, AP10005/AP10006 will be recognised as a Free Elective within the programme.

%   Students of non-native Chinese language background, fulfilling any one of the following criteria with appropriate supporting certificate/document (if applicable), could be exempted from the Chinese LCR at the time of admission. You may use a Chinese LCR subject or free elective to fulfil the credit requirement. You are also exempted from fulfilling the CAR - Chinese Reading and Writing Requirements.

   (i)   those with their first/native language as non-Chinese stated on the grade report of recognized tests (e.g. IELTS, TOEFL, etc.); OR
   (ii)   those admitted with international qualifications without taking any Chinese subject(s) in their secondary/ high school; OR
   (iii)   those taken Chinese B or Chinese AB(SL) in IB Diploma; OR
   (iv)   NCS status shown on the official proof provided by their secondary school.

   Otherwise, one subject will be pre-assigned to you as Chinese LCR depending on your Chinese language proficiency and/or previous exam results. You might be given an assessment to ascertain that the pre-assigned subject is suitable for you (see Section 6.2 (i)).

*   Students are required to complete five Technical Electives from Table 6.5.4. The Department reserves the right of NOT offering all the electives in each year.

@   Students are encouraged to take this subject at an earlier stage of study.

Technical Elective*	
Semester 1	**Semester 2**
EIE3127 Artificial Intelligence Enabled Internet of Things	EIE4105 Multimodal Human Computer Interaction Technology
EIE3129 IoT Security	EIE4108 Distributed Systems and Cloud Computing
EIE3130 Network Security	EIE4121 Machine Learning in Cyber-Security
EIE4100 Computer Vision and Pattern Recognition	EIE4431 Digital Video Production and Broadcasting
EIE4104 Mobile Networking	EIE4449 Optical Communication Systems and Networks
EIE4122 Deep Learning and Deep Neural Networks	
EIE4428 Multimedia Communications	
EIE4435 Image and Audio Processing	
Semester 1 or Semester 2	
EIE4123 Healthcare Technology	

Table 6.5.4

*   Students are required to complete five Technical Electives. Students should seek prior approval for enrolling on Level 5 subjects. The Department reserves the right of NOT offering all the electives in each year.

BSc (Hons) in Information Security (<u>Normal Year 1 Intake</u>)

Year 1 (31 academic credits + 2 training credits)	
Semester 1 (13 or 16 credits + 1 training credit)	**Semester 2** (15 or 18 credits + 1 training credit)
AMA1110 Basic Mathematics I – Calculus and Probability & Statistics (3)	AMA1120 Basic Mathematics II – Calculus and Linear Algebra (3)^
ELCXXXX English LCR Subject 1 (3)~	APSS1L01 Tomorrow's Leaders (3)
ENG2003 Information Technology (3)^	EIE1005 Fundamental AI and Data Analytics (2)
MM1031 Introduction to Innovation and Entrepreneurship (1)	ELCXXXX English LCR Subject 2 (3)~
	ENG1004 Engineering Professionals in Society I (1)
	ENG2002 Computer Programming (3)
One CAR and One Free Elective should be taken in Year 1	
CAR I Cluster-Area Requirement subject 1 (3)	Free Elective 1 (3)
EEE2103 Applied Engineering Fundamentals (2 training credits)	
Healthy Lifestyle (non-credit bearing)	
Year 2 (29 academic credits)	
Semester 1 (14 academic credits)	**Semester 2** (15 academic credits)
CLC1104P Chinese LCR Subject (3)%	COMP2432 Operating Systems (3)
COMP2012 Discrete Mathematics (3)	COMP3311 Applied Cryptography (3)
DSAI2201 Data Structures and Algorithms (3)	EIE3112 Database System (3)
EIE2105 Digital and Computer Systems (3)	EIE3333 Data and Computer Communications (3)
EEE2011 Foundation Techniques in Artificial Intelligence (2)	CAR II Cluster Area Requirement subject 2 (3)
Year 3 (30 academic credits + 2 training credits)	
Semester 1 (18 credits)	**Semester 2** (16 credits)
COMP3335 Database Security (3)	COMP3334 Computer Systems Security (3)
EIE3130 Network Security (3)	COMP3511 Legal Aspects and Ethics of Computing (3)
EIE3343 Computer Systems Principles (3)	EIE3117 Integrated Project (3)
EIE4432 Web Systems and Technologies (3)	ELC3531 Professional Communication in English for Engineering Students (2)
CAR III Cluster Area Requirement subject 3 (3)	ENG3006 Engineering Professionals in Society II (2)
	Free Electives (2)
Semester 3: EIE3189 Summer Internship (2 training credits)	
Year 4 (30 academic credits)	
Semester 1 (15 credits)	**Semester 2** (15 credits)
ENG3003 Engineering Management (3)	COMP4442 Service and Cloud Computing (3)
Technical Elective 1 (3)*	EIE4113 Wireless and Mobile Systems (3)
Technical Elective 2 (3)*	Technical Elective 3 (3)*
Service-Learning (3)@	Technical Elective 4 (3)*
COMP4913 Capstone Project / EIE4117 Capstone Project (6)	

Table 6.5.5   Progression Pattern of BSc (Hons) in IS for Normal Year 1 Intake

Total credits required for graduation: 120 academic credits + 4 training credits

~ Students will take these subjects based on their English Language results in HKDSE or other public examinations (see Section 6.2 (i)).

^ Students are required to take two Faculty Electives among AMA1120 Basic Mathematics II, ENG2003 Information Technology or AP10005 Physics I/AP10006 Physics II in Year 1. AMA1120 and ENG2003 are the Major subjects of the programme and will be pre-assigned for students in Year 1. If students opt to take AP10005/AP10006, AP10005/AP10006 will be recognised as a Free Elective within the programme.

% Students of non-native Chinese language background, fulfilling any one of the following criteria with appropriate supporting certificate/document (if applicable), could be exempted from the Chinese LCR at the time of admission. You may use a Chinese LCR subject or free elective to fulfil the credit requirement. You are also exempted from fulfilling the CAR - Chinese Reading and Writing Requirements.

(i) those with their first/native language as non-Chinese stated on the grade report of recognized tests (e.g. IELTS, TOEFL, etc.); OR
(ii) those admitted with international qualifications without taking any Chinese subject(s) in their secondary/ high school; OR
(iii) those taken Chinese B or Chinese AB(SL) in IB Diploma; OR
(iv) NCS status shown on the official proof provided by their secondary school.

Otherwise, one subject will be pre-assigned to you as Chinese LCR depending on your Chinese language proficiency and/or previous exam results. You might be given an assessment to ascertain that the pre-assigned subject is suitable for you (see Section 6.2 (i)).

* Students are required to complete four Technical Electives from Table 6.5.6. Two Technical Electives must be from COMP/DASI and two Technical Electives must be from EEE. The Department reserves the right of NOT offering all the electives in each year.

@ Students are encouraged to take this subject at an earlier stage of study.

Technical Elective*			
Semester 1		**Semester 2**	
COMP4334	Principles and Practice of Internet Security	COMP4127	Information Systems Audit and Control
COMP4512	Intellectual Property Protection and Management	DSAI4201	Data Protection and Security
DSAI4202	E-Payment and Cryptocurrency	EIE4116	Surveillance Studies and Technologies
DSAI4204	Data Mining and Data Warehousing	EIE4118	Intrusion Detection and Penetration Test
EIE3129	IoT Security	EIE4121	Machine Learning in Cyber-Security
EIE4114	Digital Forensics for Crime Investigation		

Table 6.5.6

* Students are required to complete four Technical Electives. Two Technical Electives must be from COMP/DASI and two Technical Electives must be from EEE. Students should seek prior approval for enrolling on Level 5 subjects. The Department reserves the right of NOT offering all the electives in each year.

6.6 Progression Pattern for Senior Year Students

BEng (Hons) in Electronic Systems and Internet-of-Things (<u>Senior Year Intake</u>) [Note 1]

Year 1 (33 academic credits + 5 training credits)	
Semester 1 (18 credits + 3 training credits)	**Semester 2** (15 credits + 2 training credits)
EIE2113 Introduction to Internet of Things (3)	EIE3112 Database System (3)
EIE3311 Computer System Fundamentals (3)	EIE3123 Dynamic Electronic Systems (3)
EIE3331 Communication Fundamentals (3)	EIE3128 IoT Workshop & Project (3)
EIE3333 Data and Computer Communications (3)	EIE4113 Wireless and Mobile Systems (3)
EIE3373 Microcontroller Systems and Interface (3)	Technical Elective 1 (3) [Note 3]
CAR A – English Language Cluster Area Requirement subject in CAR A - English Language (3) [Note 2]	
EEE2101 Basic Electronic System Training I (3 training credits)	EEE2102 Basic Electronic System Training II (2 training credits)
EEE1Q01 Essential Components of General Education (non-credit bearing)	
Year 2 (34 academic credits + 3 training credits)	
Semester 1 (18 credits + 1.5 training credits)	**Semester 2** (16 credits + 1.5 training credits)
EIE3129 IoT Security (3)	CLC3241P Professional Communication in Chinese (2)
ENG3003 Engineering Management (3)	ELC3531 Professional Communication in English for Engineering Students (2)
Technical Elective 2 (3) [Note 3]	ENG3004 Society and the Engineer (3)
Service-Learning (3) [Note 4]	Technical Elective 3 (3) [Note 3]
CAR M Cluster Area Requirement subject in CAR M (3) [Note 2]	Technical Elective 4 (3) [Note 3]
EIE3901 Multidisciplinary Manufacturing Project (3 training credits)	
EIE4126 Capstone Project (6)	

Table 6.6.1   Progression Pattern of BEng (Hons) in ESIoT for Senior Year Intake

Total credits required for graduation: 67 academic credits [Note 1,5] + 8 training credits

Note 1: This is an example only, which shows a possible study pattern for graduates with relevant Higher Diploma/Associate Degree from a recognized institution. The exact study pattern for senior year intakes varies from student to student depending on the approved subjects transferred.

Note 2: The study pattern for the subjects is indicative only. Students may take these subjects according to their own schedule. However, <u>CAR A – English Language should be completed in the first year of study</u>, including non-mandatory summer semester. Students also need to fulfil the Chinese reading and writing requirements (CR/CW), if such requirements have not been fulfilled in previous studies.

Note 3: Students are required to complete four Technical Electives from Table 6.5.2 and at least <u>two</u> Technical Electives must be at <u>Level 4 or above</u>. The Department reserves the right of NOT offering all the electives in each year.

Note 4: Students are encouraged to take this subject at an earlier stage of study.

Note 5: The credits required and progression pattern presented above are for students who have been given credit transfer of the 9 credits Undergraduate Degree LCR subjects based upon their previous studies. Students not meeting the equivalent standard of the Undergraduate Degree LCR will be required to take the required subjects. Details on the Undergraduate Degree LCR subjects are given in Section 6.2 (i).

BSc (Hons) in Artificial Intelligence and Information Engineering (<u>Senior Year Intake</u>) Note 1

Year 1 (35 academic credits + 5 training credits)			
Semester 1 (17 credits)		**Semester 2 (18 credits)**	
CLC3241P	Professional Communication in Chinese (2)	EIE3109	Mobile Systems and Application Development (3)
DSAI4205	Big Data Analytics (3)	EIE3124	Fundamentals of Machine Intelligence (3)
EIE2113	Introduction to Internet of Things (3)	EIE3312	Linear Systems (3)
EIE3333	Data and Computer Communications (3)	EIE3360	Integrated Project (3)
EIE3343	Computer Systems Principles (3)	Technical Elective 1 (3) Note 3	
CAR A – English Language	Cluster Area Requirement subject in CAR A - English Language (3) Note 2	Service-Learning (3)	
EEE1Q01 Essential Components of General Education (non-credit bearing)			
Semester 3: EIE2903 Internet and Multimedia Product Development (5 training credits)			
Year 2 (32 academic credits)			
Semester 1 (18 credits)		**Semester 2 (14 credits)**	
ENG3003	Engineering Management (3)	EIE4102	IP Networks (3)
Technical Elective 2 (3) Note 3		ELC3531	Professional Communication in English for Engineering Students (2)
Technical Elective 3 (3) Note 3		ENG3004	Society and the Engineer (3)
Technical Elective 4 (3) Note 3		Technical Elective 5 (3) Note 3	
CAR M	Cluster Area Requirement subject in CAR M (3) Note 2		
EIE4127 Capstone Project (6)			

<u>Table 6.6.2   Progression Pattern of BSc (Hons) in AIIE for Senior Year Intake</u>

Total credits required for graduation: 67 academic credits Note 1,4 + 5 training credits

Note 1: This is an example only, which shows a possible study pattern for graduates with relevant Higher Diploma/Associate Degree from a recognized institution. The exact study pattern for senior year intakes varies from student to student depending on the approved subjects transferred.

Note 2: The study pattern for the subjects is indicative only. Students may take these subjects according to their own schedule. However, <u>CAR A – English Language should be completed in the first year of study</u>, including non-mandatory summer semester. Students also need to fulfil the Chinese reading and writing requirements (CR/CW), if such requirements have not been fulfilled in previous studies.

Note 3: Students are required to complete five Technical Electives from Table 6.5.4. The Department reserves the right of NOT offering all the electives in each year.

Note 4: The credits required and progression pattern presented above are for students who have been given credit transfer of the 9 credits Undergraduate Degree LCR subjects based upon their previous studies. Students not meeting the equivalent standard of the Undergraduate Degree LCR will be required to take the required subjects. Details on the Undergraduate Degree LCR subjects are given in Section 6.2 (i).

BSc (Hons) in Information Security (<u>Senior Year Intake</u>) [Note 1]

Year 1 (34 academic credits + 2 training credits)	
Semester 1 (18 credits)	**Semester 2** (16 credits)
EIE3130 Network Security (3)	CLC3241P Professional Communication in Chinese (2)
EIE3333 Data and Computer Communications (3)	COMP3334 Computer Systems Security (3)
EIE3343 Computer Systems Principles (3)	COMP3512 Legal Aspects, Professionalism and Ethics of Computing (3)
EIE4432 Web Systems and Technologies (3)	EIE3117 Integrated Project (3)
CAR A – English Language Cluster Area Requirement subject in CAR A - English Language (3) [Note 2]	ELC3531 Professional Communication in English for Engineering Students (2)
CAR M Cluster Area Requirement subject in CAR M (3) [Note 2]	Technical Elective 1 (3) [Note 3]
EEE1Q01 Essential Components of General Education (non-credit bearing)	
Semester 3: EIE3189 Summer Internship (2 training credits)	
Year 2 (30 academic credits)	
Semester 1 (15 credits)	**Semester 2** (15 credits)
ENG3003 Engineering Management (3)	COMP4442 Service and Cloud Computing (3)
Technical Elective 2 (3) [Note 3]	EIE4113 Wireless and Mobile Systems (3)
Technical Elective 3 (3) [Note 3]	Technical Elective 4 (3) [Note 3]
Service-Learning (3) [Note 4]	Technical Elective 5 (3) [Note 3]
COMP4913 Capstone Project / EIE4117 Capstone Project (6)	

<u>Table 6.6.3</u>   Progression Pattern of BSc (Hons) in IS for Senior Year Intake

Total credits required for graduation: 64 academic credits [Note 1,5] **+ 2 training credits**

Note 1: This is an example only, which shows a possible study pattern for graduates with relevant Higher Diploma/Associate Degree from a recognized institution. The exact study pattern for senior year intakes varies from student to student depending on the approved subjects transferred.

Note 2: The study pattern for the subjects is indicative only. Students may take these subjects according to their own schedule. However, <u>CAR A – English Language should be completed in the first year of study</u>, including non-mandatory summer semester. Students also need to fulfil the Chinese reading and writing requirements (CR/CW), if such requirements have not been fulfilled in previous studies.

Note 3: Students are required to complete five Technical Electives from Table 6.5.6. Two Technical Electives must be from COMP/DASI and two Technical Electives must be from EEE. The Department reserves the right of NOT offering all the electives in each year.

Note 4: Students are encouraged to take this subject at an earlier stage of study.

Note 5: The credits required and progression pattern presented above are for students who have been given credit transfer of the 9 credits Undergraduate Degree LCR subjects based upon their previous studies. Students not meeting the equivalent standard of the Undergraduate Degree LCR will be required to take the required subjects. Details on the Undergraduate Degree LCR subjects are given in Section 6.2 (i).

Curriculum Map

Table 6.6.4 illustrates how the subjects support the Programme Outcomes of BEng (Hons) in Electronic Systems and Internet-of-Things through teaching activities (T), practice on the part of students (P), and measurements (M).

BEng (Hons) in Electronic Systems and Internet-of-Things

	Programme Outcomes									
	1	2	3	4	5	6	7	8	9	10
A. GENERAL UNIVERSITY REQUIREMENTS (GUR)										
Language and Communication Requirements (LCR)										
LCR - English - ELCXXXX (2 Subjects)									TP	
LCR - Chinese - CLCXXXX (1 Subject)									TP	
Cluster-Area Requirements (CAR) (3 Subjects)										
CAR - Cluster-Area Requirement Subjects								TP	TP	TP
Other Requirements										
AIDA - Artificial Intelligence and Data Analytics									TP	
IE – Introduction to Innovation and Entrepreneurship									TP	
LEAD - Leadership Education and Development							TP		TP	
SL - Service-Learning								TP		
B. DISCIPLINE – SPECIFIC REQUIREMENTS (MAJOR)										
Compulsory – Mathematics and Basic Sciences Subjects										
AMA1110 Basic Mathematics I – Calculus and Probability & Statistics			TP	TP						T
AMA1120 Basic Mathematics II –Calculus and Linear algebra			TP	TP						T
AMA2111 Mathematics I			TP	TP						T
Compulsory – Engineering Subjects										
EIE1003 Foundations of Data Science	TPM			TP						
EIE1005 Fundamental AI and Data Analytics	TP	TP				TP				TP
EEE2011 Foundation Techniques in Artificial Intelligence	TP				TP				TP	
EEE2012 Introduction to Internet of Things	T				TPM					TM
EIE2110 Basic Circuit Analysis and Electronics	TP	TPM		TPM				TP		
EIE2211 Logic Design	T	P	P	TP	P					
EIE3112 Database System	T				T				TP	
EIE3123 Dynamic Electronic Systems	TPM		TPM	TP	TP		P			
EIE3124 Fundamentals of Machine Intelligence	TP			TP	TP				P	
EIE3128 IoT Workshop & Project	T	P	P	PM	P			M	M	PM
EIE3129 IoT Security				PM		TM		TM	P	
EIE3311 Computer System Fundamentals	T	P	T							
EIE3312 Linear Systems	TP	TP	TP	T	P					T
EIE3331 Communication Fundamentals	T	TP	TP	T	TP				T	
EIE3333 Data and Computer Communications	T	TP		T	TP				T	
EIE3373 Microcontroller Systems and Interface	TM	PM		PM	P				P	
EIE4113 Wireless and Mobile Systems	TPM	TPM			TP	TP				
ENG2002 Computer Programming			TP	TP	TP					
ENG2003 Information Technology				TP	TP					

	Programme Outcomes									
	1	2	3	4	5	6	7	8	9	10
A. GENERAL UNIVERSITY REQUIREMENTS (GUR)										
Compulsory – Language and Complementary Studies										
ELC3531 Professional Communication in English for Engineering Students									TPM	
ENG1004 Engineering Professionals in Society I						TP	TP	TP	TP	
ENG3003 Engineering Management						T	TPM	T	TPM	
ENG3006 Engineering Professionals in Society II						TPM	TPM	TPM	TP	
Compulsory – Capstone Project										
EIE4126 Capstone Project	TPM	TPM	TPM	TPM	TPM	TPM	TP		TPM	TPM
Compulsory – Industrial Centre Training and Training through Work Experience										
EEE2103 Applied Engineering Fundamentals	TP				TP			TP		TP
EEE2105 Basic Electronic Systems with AI	TP				TP			TPM		TPM
EIE3901 Multidisciplinary Manufacturing Project			TPM		TP		TPM			
Work-Integrated Education (WIE)	PM			PM	PM	PM	PM	PM	PM	PM
Elective – Engineering Subjects (Select Any 4)										
EIE3109 Mobile Systems and Application Development			TP		TP					
EIE3127 Artificial Intelligence Enabled Internet of Things	T			P		TM				TM
EIE3130 Network Security		P				T	P			TM
EIE3320 Object-Oriented Design and Programming	T		TPM	TP	P		P			
EIE4100 Computer Vision and Pattern Recognition	T	T	T	T	TPM		T			T
EIE4102 IP Networks	T				TPM	T				T
EIE4104 Mobile Networking	T			TPM	TP	T				T
EIE4105 Multimodal Human Computer Interaction Technology	TP				TPM					
EIE4108 Distributed Systems and Cloud Computing	TP		TP	T	TPM				TP	
EIE4119 Mobile Device System Architecture				T	TP					TP
EIE4122 Deep Learning and Deep Neural Networks	TP				TP					
EIE4123 Healthcare Technology	T			P		TM	P	TM	P	
EIE4124 Modern Robotics	TM	PM			P				P	TM
EIE4125 Power Conversion Technology for Energy Harvesting	T		TPM		P	T			P	T
EIE4413 Digital Signal Processing	TM	P	TPM	T	P					T
EIE4432 Web Systems and Technologies	T		TP					TPM		TPM
EIE4435 Image and Audio Processing	TM	P		P			P			
EIE4449 Optical Communication Systems and Networks	T	TP	T	TM			T		T	

Table 6.6.4   Alignment of Subjects with Programme Intended Learning Outcomes

Table 6.6.5 illustrates how the subjects support the Programme Outcomes of BSc (Hons) in Artificial Intelligence and Information Engineering through teaching activities (T), practice on the part of students (P), and measurements (M).

BSc (Hons) in Artificial Intelligence and Information Engineering

	Programme Outcomes									
	1	2	3	4	5	6	7	8	9	10
A. GENERAL UNIVERSITY REQUIREMENTS (GUR)										
Language and Communication Requirements (LCR)										
LCR - English - ELCXXXX (2 Subjects)									TP	
LCR - Chinese - CLCXXXX (1 Subject)									TP	
Cluster-Area Requirements (CAR) (3 Subjects)										
CAR - Cluster-Area Requirement Subjects						TP		TP	TP	TP
Other Requirements										
AIDA - Artificial Intelligence and Data Analytics									TP	
IE - Innovation and Entrepreneurship									TP	
LEAD - Leadership Education and Development							TP		TP	
SL - Service-Learning							TP		TP	
B. DISCIPLINE – SPECIFIC REQUIREMENTS (MAJOR)										
Compulsory – Mathematics and Basic Sciences Subjects										
AMA1110 Basic Mathematics I – Calculus and Probability & Statistics				TP	TP					
AMA1120 Basic Mathematics II – Calculus and Linear Algebra				TP	TP					
EIE1003 Foundations of Data Science	TP				TP	TP	TP	TP	TP	
Compulsory – Engineering Subjects										
DSAI2201 Data Structures and Algorithms	TP	TP								
DSAI4205 Big Data Analytics	TP	TP	TP	TP	TP				TP	
EIE1005 Fundamental AI and Data Analytics	TP	TP			TP					TP
EEE2011 Foundation Techniques in Artificial Intelligence	TP				TP				TP	
EEE2012 Introduction to Internet of Things	TP				TP					TP
EIE2105 Digital and Computer Systems	TP			T						
EIE3312 Linear Systems				T	P				T	T
EIE3109 Mobile Systems and Application Development		T	T		T	TP				
EIE3112 Database System	T				TP				TP	
EIE3124 Fundamentals of Machine Intelligence	TP				TPM				TP	
EIE3320 Object-Oriented Design and Programming	TM	TPM	TPM	TP	P					
EIE3333 Data and Computer Communications	T				TP				T	
EIE3343 Computer Systems Principles	P			T						T
EIE3360 Integrated Project	TPM			TPM	TPM	M	PM		PM	TPM
EIE4102 IP Networks	T				TP					T
EIE4432 Web Systems and Technologies	T				TP		PM			T
ENG2002 Computer Programming	TP			TP	TP					T
ENG2003 Information Technology				TP	TP	TP				
Compulsory – Capstone Project										
EIE4127 Capstone Project	PM	PM	PM	PM	PM	PM			PM	PM

	Programme Outcomes									
	1	2	3	4	5	6	7	8	9	10
Compulsory – Industrial Centre Training and Training through Work Experience										
EEE2103 Applied Engineering Fundamentals				T	T	T	T	T		
EEE2104 AI Application Development				TP	TP	T	TP	T		
Work-Integrated Education (WIE)	PM			PM	PM	PM	PM	PM	PM	PM
Compulsory – Language and Complementary Subjects										
ELC3531 Professional Communication in English for Engineering Students									TPM	
ENG1004 Engineering Professionals in Society I						TP	TP	TP	T	
ENG3003 Engineering Management						TM	T	TM	T	
ENG3006 Engineering Professionals in Society II						TPM	TPM	TPM	TP	
Elective – Engineering Subjects (Select Any 5)										
EIE3127 Artificial Intelligence Enabled Internet of Things	TP			TPM	TPM	TP				TPM
EIE3129 IoT Security				TPM	TPM			TPM	TP	
EIE3130 Network Security		P				T	P			TM
EIE4100 Computer Vision and Pattern Recognition	TP	T	T	T	T		T			T
EIE4104 Mobile Networking	T				TP					TM
EIE4105 Multimodal Human Computer Interaction Technology	TP				TP	TP				
EIE4108 Distributed Systems and Cloud Computing	TP	TP	TP	T	P	TP			TP	
EIE4121 Machine Learning for Cyber-security	TP				TPM				PM	
EIE4122 Deep Learning and Deep Neural Networks		TPM	TPM	TPM		TPM				
EIE4123 Healthcare Technology	TPM	TP	TP	TP			TPM	TPM	TPM	
EIE4428 Multimedia Communications	T			TPM						T
EIE4431 Digital Video Production and Broadcasting	TPM			T	TPM					T
EIE4435 Image and Audio Processing		TM	TM	TM			T			
EIE4449 Optical Communication Systems and Networks	TPM	TPM	TP	TPM			TPM		TPM	

Table 6.6.5   Alignment of Subjects with Programme Intended Learning Outcomes

Table 6.6.6 illustrates how the subjects support the Programme Outcomes of BSc (Hons) in Information Security through teaching activities (T), practice on the part of students (P), and measurements (M).

BSc (Hons) in Information Security

	Programme Outcomes									
	1	2	3	4	5	6	7	8	9	10
A. GENERAL UNIVERSITY REQUIREMENTS (GUR)										
Language and Communication Requirements (LCR)										
LCR - English - ELCXXXX (2 Subjects)									TP	
LCR - Chinese - CLCXXXX (1 Subject)									TP	
Cluster-Area Requirements (CAR) (3 Subjects)										
CAR - Cluster-Area Requirement Subjects								TP	TP	TP
Other Requirements										
AIDA - Artificial Intelligence and Data Analytics									TP	
IE - Innovation and Entrepreneurship									TP	
LEAD - Leadership Education and Development							TP		TP	
SL - Service-Learning							TP		TP	
B. DISCIPLINE – SPECIFIC REQUIREMENTS (MAJOR)										
Compulsory – Mathematics and Basic Sciences Subjects										
AMA1110 Basic Mathematics I – Calculus and Probability & Statistics				TP	TP					
AMA1120 Basic Mathematics II –Calculus and Linear Algebra				TP	TP					
COMP2012 Discrete Mathematics	TM			TP						
Compulsory – Computer Science and Engineering Subjects										
COMP2432 Operating Systems	TP			TP						
COMP3334 Computer Systems Security		TPM		TPM		T				TP
COMP3335 Database Security			TPM	TPM		T	TP			
COMP3311 Applied Cryptography	T			T						
COMP4442 Service and Cloud Computing		TPM		TPM	TPM					
DSAI2201 Data Structures and Algorithms	TPM	TP								
EEE2011 Foundation Techniques in Artificial Intelligence	TP				TP				TP	
EIE2105 Digital and Computer Systems	T	P		T						
EIE3112 Database System	T				T	TP				
EIE3117 Integrated Project		TP	TP	TP	T	TP	TM		TP	TM
EIE3130 Network Security				TP			TPM	TPM		
EIE3333 Data and Computer Communications	T	TP		T					T	
EIE3343 Computer Systems Principles		P		T						T
EIE4113 Wireless and Mobile Systems				T	TP	TM				
EIE4432 Web Systems and Technologies	T				TP		TP			T
ENG2002 Computer Programming			TP	TP	TP					
ENG2003 Information Technology				TP		TP				
Compulsory – Complementary Studies										
COMP3511 Legal Aspects and Ethics of Computing								TPM	PM	TPM
ELC3531 Professional Communication in English for Engineering Students									TPM	
ENG1004 Engineering Professionals in Society I						TP	TP	TP	T	
ENG3003 Engineering Management						TPM	T	TPM	T	
ENG3006 Engineering Professionals in Society II						TPM	TPM	TP	TP	

	Programme Outcomes									
	1	2	3	4	5	6	7	8	9	10
Compulsory – Capstone Project (Select Any 1)										
COMP4913 Capstone Project	PM	PM	PM	PM	PM	PM			PM	PM
EIE4117 Capstone Project	PM	PM	PM	PM	PM	PM			PM	PM
Compulsory – Training through Work Experience										
EEE2103 Applied Engineering Fundamentals				T	T	T	T	T		
EIE3189 Summer Internship			PM			PM	PM	PM	PM	
Elective - Computer Science and Engineering Subjects (Select Any 2)										
COMP4127 Information Systems Audit and Control			TPM		TPM	TP	TP	TPM		
COMP4334 Principles and Practice of Internet Security		TPM		TP				PM		
COMP4512 Intellectual Property Protection and Management					TPM	TM		TPM		TPM
DSAI4201 Data Protection and Security	TM		TM	T	TM	T	PM			
DSAI4202 E-Payment and Cryptocurrency	T		TM	T	TM	T	PM			
DSAI4205 Data Mining and Data Warehousing	T			T	TP					TP
Elective - Computer Science and Engineering Subjects (Select Any 2)										
EIE3129 IoT Security				TP	TP			TP	TP	
EIE4114 Digital Forensics for Crime Investigation				TM		T			TPM	
EIE4116 Surveillance Studies and Technologies	TM	T			TP	T		T		
EIE4118 Intrusion Detection and Penetration Test				TP	TM	T			T	
EIE4121 Machine Learning in Cyber-Security	TP				TPM				PM	

Table 6.6.6 Alignment of Subjects with Programme Intended Learning Outcomes

6.7 Capstone Project

The Capstone Project is considered to be of great importance. This is reflected in the number of credits it carries, being 6 credits which are equivalent to two standard-sized subjects. Furthermore, the result of the Capstone Project will be very important when the Board of Examiners considers the award classification of a student. Normally, the Board of Examiners will expect a very good grade for the Capstone Project when a student is to be awarded a high Honours classification.

One of the important features of the Capstone Project is "learning by doing". It is intended to be a platform for the students to develop their intellectual and innovative abilities and to give them the opportunities to integrate and apply the knowledge and analytical skills gained in previous stages of study. It should also provide students with opportunities to develop their problem-solving skills and communication skills. The process from conceptualization to final implementation and testing, through problem identification and the selection of appropriate solutions will be practised by the students.

(i)   Project Management

Normally each student will be assigned one project under the supervision of an academic staff member so that he/she will work independently to achieve the project objectives. In other cases, several students may work on different aspects of a large-scale project.

The assignment of projects is expected to be completed by the month of June preceding the beginning of the final year of study. Guidelines for Capstone Project are given to students at the beginning of the final year.

(ii)   Project Assessment

Assessment of the Capstone Project focuses on three main areas: project reports, oral presentations and work done over the whole project period. Assessment will be done by the project supervisor and an assessor. The Project Management Team, which is composed of the Programme Leader and staff members from teaching sections, will oversee the overall standard of assessment of the projects. The Project Management Team will also oversee the daily operation, such as fixing the dates of project report submission, oral presentation, demonstration, etc.

6.8 Industrial Centre (IC) Training

Industrial Centre (IC) Training is a practical training element to provide a chance for the students to develop hands-on experience in various engineering domains in order to prepare for a career in the engineering profession.

Students must pass all IC Training subjects. IC Training is graded in the normal manner from A+ to F and will be counted in the evaluation of the Grade Point Average (GPA). However, they will not be counted towards Weighted GPA or Award GPA. The assessment method of Industrial Centre Training is based on 100% continuous assessment. The assessment components are workshop reports, competency in practical works, and appreciation tests. To complete the IC Training successfully, students must demonstrate good professional attributes, including responsible attitude in training, excellent attendance with active learning, exercising best practice and care in equipment and tools while observing all safety codes. Details of the assessment scheme are available from Industrial Centre.

6.9   Work-Integrated Education

WIE is a mandatory component of the programme. There can be several routes or options for the students to pursue Work-Integrated Education (WIE). These options include the One-year Internship Scheme (OIS), industrial projects, summer internship and other workplace training opportunities provided by the University or found by students themselves, etc.

1.   Credits Requirement

Students of BEng (Hons) in Electronic Systems and Internet-of-Things and BSc (Hons) in Artificial Intelligence and Information Engineering are required to complete a minimum of 2 weeks of Work-Integrated Education (WIE) during the study period. Students of BSc (Hons) in Information Security who successfully complete the 4 weeks of Summer Internship (EIE3189) will fulfil the WIE requirement simultaneously. WIE training credits will not be counted towards the Grade Point Average (GPA) or the Weighted GPA (WGPA). After assessing the training performance, a Pass or a Fail grade will be awarded to the student on his/her WIE component.

2.   Intended Learning Outcomes of WIE

Since WIE can take different forms and be applied to different kinds of job, the learning outcomes to be achieved vary depending on the job nature and its duration engaged by the student. However, based on the experience gained, WIE can bring a lot of advantages to students' learning both in the profession-specific areas and in their all-round development. The intended learning outcomes of WIE are elaborated in the following paragraph.

On successful completion of the WIE component, the students will be able to:

- Apply knowledge and skills learned from the Programme on the job in a broad context of networking and multimedia profession.
- Recognize the operation and requirement of real-life business, leading to the development of entrepreneurship, global outlook, professional ethics, social and cultural understanding.
- Recognize the expectation of employers, hence leading to better employability.
- Develop their all-round attributes such as interpersonal skills and leadership.
- Develop their critical and creative thinking, and problem-solving skills while taking into account various real-life constraints, helping them to pursue life-long learning and continuing professional development.

3.   WIE Options

WIE component under the Programme can be in many forms, including One-year Internship Scheme (OIS), industrial project, summer internship and other job opportunities.

One-year Internship Scheme (OIS)

The OIS lasts for 1 year. Under the OIS, the students will pursue Year 1, Year 2 and Year 3 study in full time (or Year 1 for Senior Year Intake), and then engage in industrial training in Year 4 (or Year 2 for Senior Year Intake). After the industrial training year, the students will pursue their final-year study in full time again. Normally the students will graduate at the end of Year 5 (or Year 3 for Senior Year Intake) after having satisfied all programme requirements. Students who would like to join the OIS are required to submit an application to the Department prior to the commencement of the industrial training. They can choose to take subject(s) in a semester during the industrial training year but they will be required to pay a flat tuition fee.

Industrial Project (for BEng (Hons) in ESIoT and BSc (Hons) in AIIE only)

Industrial projects are Capstone Projects working with the industry. Students working on an industrial project will pursue the project in a company for a certain period. The students will work with a real-life project in the real working environment.

Summer Internship (for BSc (Hons) in IS only)

By taking EIE3189 Summer Internship, students will work in an ICT-related organization during summer months. Students can learn the operation and requirements of real-life ICT industry, and have the chance to apply the knowledge and skills learned from the Programme to a broad context and an ICT profession.

Other Job Opportunities

It is possible that students find jobs for themselves to work during the summer vacation or semester breaks. This kind of job opportunity will be judged by the Department whether it is helpful to the students in achieving the intended learning outcomes of WIE. The students and the Academic Advisor/WIE Coordinators will work collaboratively with regard to the job selection and the subsequent training contents. The Department will constantly monitor the progress. At the end of the training, an assessment will be made on the achievement of learning outcomes.

4.   Guidelines for Operation and Supervision of WIE

The Department adopts a set of strategies to support students' learning in the workplace. The followings are the details of the operation at different stages.

Preparation

The Department will actively align with the industry to get WIE placement opportunities for students. It is important for students to be fully aware of the benefits brought by WIE. Students will be asked to attend employment seminars as early as possible. Through this type of arrangement, students in all years will be well prepared for job hunting and employment in advance. Students will also be able to realize the benefits for engaging in WIE and the importance of taking an active role in completing the training with the best effort.

Operation

There will be WIE Coordinators overseeing all matters related to WIE activities under the Programme. The WIE Coordinators are the academic staff members of the Department responsible for the organization and operation of WIE activities. To guide the students and monitor their progress in taking the WIE, each student will be assigned an academic advisor from the Department. The student and his/her Academic Advisor will jointly plan the WIE details, such as job selection, training plan, logging of activities, reporting, and assessment.

In the case that the student finds job placement(s) on his/her own, the Academic Advisor will work with the student to design the learning outcomes if the placement is suitable to be recognized as a WIE activity. The Academic Advisor will make frequent contacts with the student and, if appropriate, the employer to monitor the progress of the student.

Each student will be guided by his/her Academic Advisor when conducting the WIE training. The student's work will be monitored continuously and an assessment will be given when the WIE placement is completed.

Assessment of the WIE Component(s)

The objective of assessment is to determine what the student has achieved through WIE. The actual type of work and duration will vary from case to case. Hence, an assessment framework is set out in the following as a general guideline.

- *Continuous Assessment*

  The Academic Advisor may visit the student during the training period so that the Academic Advisor and the employer will be able to discuss the student's performance together. This will give better feedback on the student's performance before the training is completed.

- *Report*

  After the training is completed, the student is required to submit a report to the Academic Advisor. The details to be contained in the report should be commensurate with the training duration. It contains a brief reflective writing on the training received, the objectives that have been achieved, and the experience gained. The student may also conduct a self-evaluation on his/her own performance. The report must be endorsed by the student's employer before its submission.

- *Employer Evaluation*

  At the end of the training period, the employer will provide an evaluation of the student's performance, assessing the student's work and all-round development.

- *Overall Assessment*

  An overall assessment of the student's performance will be made by the Academic Advisor by considering all the assessment components as stated in Section 7.9 (iv). A pass grade will be given to the student upon satisfactory completion of the WIE component; otherwise, a failure grade will be given.

7   Management and Operation

7.1   Administration

The daily operation of the programme, such as general administration of admission, registrations, student records, preparation for Board of Examiners meetings and documentations, is overseen by the Scheme/Programme Leader and the administrative team of the Department. All enquiries regarding registration and general administration from students on the programme should be made to the General Office as the first contact point.

The Departmental Programmes Committee (DPC), in which the Head of Department and the Scheme/Programme Leaders of all programmes offered by the Department are members, discusses and reviews the programme structure, syllabi content, high-level integration and future directions of the programme. The Departmental Learning and Teaching Committee (DLTC) advises on matters related to teaching methods and learning quality and cultivates the positive mentality toward teaching and learning among teaching staff and students. WIE/Career Liaison Officer and Student-Exchange Coordinator are appointed by the Department to provide students with advice and assistance.

7.2   Student-Staff Consultative Group (SSCG)

The Student-Staff Consultative Group consists of Student Representatives together with the Scheme/Programme Leader. The Committee is normally chaired by the Scheme/Programme Leader and meets at least twice a year. Issues to be kept under consideration include: student workload, teaching methods, balance between subject areas, training matters and other areas of mutual concern.

7.3   Academic Advising

While the Scheme/Programme Leader is available for the operation of the programme, general enquiries and counselling, Academic Advisors are in place to offer more personal contacts and to look after students' needs.

The Academic Advisors, usually an academic staff member, is assigned to each newly admitted student and he/she will be with the students till graduation. Academic Advisors provide continuous and individual counselling and help guide the students through various difficulties, if any, which might affect their studies. A specific staff member from the General Office will work closely with the Scheme/Programme Leaders and the Academic Advisors. All academic requirements and regulations related to academic programmes offered by the department as well as the GUR requirements will be provided to the students.

8   Academic Regulations on Admission, Registration and Assessment

The admission, registration and assessment arrangements described below are in accordance with the University policies and regulations for all 4-year full-time undergraduate degree programmes and articulation degree programmes.

8.1   Admission

Students in UGC-funded degree programmes will be recruited on a yearly basis.

8.2   Re-admission

Students who have been required to withdraw on grounds of academic failure or have been de-registered, and those who have discontinued their studies without completing the proper procedures for official withdrawal, shall not be considered for re-admission to the same scheme/programme/stream in the following academic year.

8.3   Transfer of study within the University

Students who have not completed their programmes of study may apply to transfer to another programme, and may be admitted, provided that the total period of registration will not exceed the normal duration of the original or new study programme, whichever is longer. Unless exceptionally approved by Academic Planning and Regulations Committee (APRC) Chairman, year one new students will only be considered for transfer to another programme offered in the same mode of study, starting from their second semester of registration.

Students who are currently on a UGC-funded programme and wish to transfer to another PolyU full-time UGC-funded programme of the same level should submit an application for transfer of study, instead of a new application in the non-JUPAS application period.

All applications for transfer of study will be considered in competition with other new applications.

8.4   Concurrent Enrolment

Students are not permitted to enrol concurrently on two full-time UGC-funded programmes, whether or not one of the programmes is offered by another institution.

In addition, students are not allowed to enrol concurrently on more than one programme (regardless of the mode of study), including those offered by another institution, without permission from the Head(s) of Department concerned, except for programmes which do not lead to any formal award.

8.5   Normal Duration for Completion of the Programme

Students should complete the programme within the normal duration of the programme as specified in the Programme Requirement Document. Those who exceed the normal duration of the programme will be de-registered from the programme unless prior approval has been obtained from relevant authorities. The study period of a student shall exclude deferment granted for justifiable reasons, and the semester(s) when the student has been approved to undertake internship. Any semester in which the students are allowed to take zero subject will be counted towards their total period of registration.

Students who have been registered for the normal duration of the programme may request extension of their studies for up to one year with the approval of the relevant Heads of Department/Deans of Independent School. Applications for extension of study period beyond one year and up to two years will require the approval from Faculty/School Board Chairman.

Students who have exceeded the normal duration of the programme for more than two years and have been de-registered can submit an appeal to the Academic Appeals Committee to request further extension. If the appeal fails, the student shall be de-registered.

To enable student sportsmen to manage their participation in trainings/competitions and academic studies, the normal duration for completion of programmes for students admitted via the OSRS will automatically be extended for two years. Further extension will follow the prevailing regulations.

8.6 Validity Period of Subject Credits

The validity period of subject credits earned is eight years from the year of attainment, i.e., the year in which the subject is completed. Credits earned from previous study should remain valid at the time when the student applies for credit transfer.

8.7 Residential Requirement

In order to be considered for a PolyU award, a student must complete at least 1/3 of the normal credit requirement for the award he/she is currently enrolled, unless the professional bodies concerned stipulate otherwise. This 1/3 requirement is also applicable to Minor programme and Secondary Major. Students must take at least 6 credits from their chosen Minor programme or at least 12 credits from their chosen Secondary Major in order to satisfy the residential requirement of their chosen Minor or Secondary Major.

8.8 Subject Registration and Withdrawal

In addition to programme registration, students need to register for the subjects at specified periods prior to the commencement of the semester. An add/drop period will also be scheduled for each semester/term. Students may apply for withdrawal of their registration on a subject after the add/drop period and before the commencement of the examination period if they have a genuine need to do so. The application should be made to the relevant programme offering Department and will require the approval of both the subject teacher and the host Department Programme Leader concerned. Applications submitted after the commencement of the examination period will not be considered. For approved applications of subject withdrawal, the tuition fee paid for the subject will be forfeited and the withdrawal status of the subject will be shown in the assessment result notification and transcript of studies, but will not be counted in the calculation of the GPA.

The pre-requisite requirements of a subject must have been fulfilled before a student registers for that subject. However, the subject offering Department has the discretion to waive the pre-requisite requirements of a subject, if deemed appropriate. If the pre-requisite subject concerned forms part of the requirements for award, the subject has to be passed in order to satisfy the graduation requirements for the programme concerned, despite the waiving of the pre-requisite.

Subject to the maximum study load of 21 credits per semester and the availability of study places, students are allowed to take additional subjects on top of the prescribed credit

requirement for award before they become eligible for graduation. Students will be allowed to take additional subjects for broadening purpose, after they fulfil the graduation requirements and for the following semester. However, they will still be subject to the maximum study load of 21 credits per semester and the availability of places in the subjects concerned, and their enrolment will be arranged as subject-based students only and be subject to the rules on 'Admission of Subject-based Students', except that graduates from UGC-funded programmes will not be restricted to taking only subjects from a self-financed programme.

8.9 Study Load

For students following the progression pattern specified for their programme, they have to take the number of credits and subjects, as specified in this Programme Requirement Document, for each semester. Students cannot drop those subjects assigned by the department unless prior approval has been given by the department.

The normal study load is 15 credits in a semester for full-time study. The maximum study load to be taken by a student in a semester is 21 credits, unless exceptional approval is given by the Head of the programme offering department. For such cases, students should be reminded that the study load approved should not be taken as the grounds for academic appeal.

To help improve the academic performance of students on academic probation, these students will be required to take a reduced study load in the following semester (Summer Term excluded). The maximum number of credits to be taken by the students varies according to the policies of individual Departments and will be subject to the approval of the authorities concerned.

Students are not allowed to take zero subject in any semester, including the mandatory summer term as required by some programmes, unless they have obtained prior approval from the programme offering department; otherwise they will be classified as having unofficially withdrawn from their programme. Students who have been approved for zero subject enrolment (i.e., taking zero subject in a semester) are allowed to retain their student status and continue using campus facilities and library facilities. Any semester in which the students are allowed to take zero subject will nevertheless be counted towards the total period of registration.

Students who have obtained approval to pace their studies and students on programmes without any specified progression pattern who wish to take more than the normal load of 15 credits in a semester should seek advice from the Department concerned before the selection of subjects.

8.10 Subject Exemption

Students may be exempted from taking any specified subjects, including mandatory GUR subjects, if they have successfully completed similar subjects previously in another programme or have demonstrated the level of proficiency/ability to the satisfaction of the subject offering Department. Subject exemption is normally decided by the subject offering Department. However, for applications which are submitted by students who have completed an approved student exchange programme, the subject exemption is to be decided by the programme offering Department in consultation with the subject offering Departments. If students are exempted from taking a specified subject, the credits associated with the exempted subject will not be counted towards meeting the award requirements. It will therefore be necessary for the students to consult the programme offering Department and take another subject in order to satisfy the credit requirement for the award.

8.11 Credit Transfer

Students may be given credits for recognised previous studies including mandatory General University Requirements (GUR) subjects, and the credits will be counted towards meeting the requirements for award/degree. Transferred credits may not normally be counted towards more than one degree. The granting of credit transfer is a matter of academic judgment.

Credit transfer may be done with or without the grade being carried over; the former should normally be used when the credits were gained from PolyU. Credit transfer with the grade being carried over may be granted for subjects taken from outside the University, if deemed appropriate, and with due consideration to the academic equivalence of the subjects concerned and the comparability of the grading systems adopted by the University and the other approved institutions. Subject credit transfer is normally decided by the subject offering Department. However, for applications which are submitted by students who have completed an approved student exchange programme, the decision will be made by the programme offering Department in consultation with the subject offering Departments.

Normally, not more than 50% of the credit requirement for award may be transferable from approved institutions outside the University. For transfer of credits from programmes offered by PolyU, normally not more than 67% of the credit requirement for award can be transferred. In cases where both types of credits are being transferred (i.e. from programmes offered by PolyU and from approved institutions outside the University), not more than 50% of the credit requirement for award may be transferred. However, for students admitted to an Articulation Degree or Senior Year curriculum, which is already a reduced curriculum, they should not be given credit transfer for any required GUR subjects, and are required to complete at least 60 credits in order to be eligible for a Bachelor's award.

With applications for transfer of credits earned through study under an approved exchange programme, students should seek approval on their study plan and credit transferability from the programme offering Department before they start the exchange programme. In order to overcome possible problems associated with subject-to-subject mappings, block credit transfer rather than subject-by-subject credit transfer can be given.

All credit transfers approved will take effect in the semester for which they are approved. A student who applies for transfer of credits for a particular semester will only be eligible for graduation at the end of that semester (even if the granting of credit transfer will immediately enable the student to satisfy the credit requirement for the award).

For credit transfer of retaken subjects, the grade attained in the last attempt should be taken in the case of credit transfer with grade being carried over. Students applying for credit transfer for a subject taken in other institutions are required to declare that the subject grade used for claiming credit transfer was attained in the last attempt of the subject in their previous studies. If a student fails in the last attempt of a retaken subject, no credit transfer should be granted, despite the fact that the student may have attained a pass grade for the subject in the earlier attempts.

Students should not be granted credit transfer for a subject which they have attempted and failed in their current study unless the subject was taken by the student as an exchange-out student in his/her current programme.

8.12 Deferment of Study

Students may apply for deferment of study if they have a genuine need to do so such as illness or posting to work outside Hong Kong. Approval from the Department offering the programme is required. The deferment period will not be counted towards the total period of registration.

Application for deferment of study from students who have not yet completed the first year of a full-time programme will only be considered in exceptional circumstances.

Where the period of deferment of study begins during a stage for which fees have been paid, no refund of such fees will be made.

Students who have been approved for deferment are not entitled to enjoy any campus facilities during the deferment period.

8.13 General Assessment Regulations

Students progress by credit accumulation, i.e., credits earned by passing individual subjects can be accumulated and counted towards the final award.

A 'level' in a programme indicates the intellectual demand placed upon students and may characterise each subject with respect to its recommended sequencing within that programme. Upper level subjects should normally build on lower level subjects. Pre-requisite requirements, if any, must therefore be spelt out on a subject basis.

A 'subject' is defined as a discrete section of the programme which is assigned a separate assessment. A list of subjects, together with their level and weightings, shall be published in the Programme Requirement Document.

The language of assessment for all programmes/subjects shall be English, unless approval is given for it to be otherwise.

8.14 Principles of Assessment

Assessment *of* learning and assessment *for* learning are both important for assuring the quality of student learning. Assessment *of* learning is to evaluate whether students have achieved the intended learning outcomes of the subjects that they have taken and have attained the overall learning outcomes of the academic programme at the end of their study at a standard appropriate to the award. Appropriate methods of assessment that align with the intended learning outcomes should be designed for this purpose. The assessment methods will also enable the teacher to differentiate students' different levels of performance within the subject. Assessment *for* learning is to engage students in productive learning activities through purposefully designed assessment tasks.

Assessment will also serve as feedback to students. The assessment criteria and standards should be made explicit to students before the start of the assessment to facilitate student learning, and feedback provided should link to the criteria and standards. Timely feedback should be provided to students so that they are aware of their progress and attainment for the purpose of improvement.

The ultimate authority in the University for the confirmation of academic decisions is the Senate, but for practical reasons, the Senate has delegated to the Faculty/School Boards the authority to confirm the decisions of Boards of Examiners provided these are made within the framework of the General Assessment Regulations. Recommendations from Board of Examiners which fall outside these Regulations shall be ratified by the APRC and reported to the Senate as necessary.

8.15 Assessment Methods

Students' performance in a subject can be assessed by continuous assessment and/or examinations, at the discretion of the individual subject offering department. Where both continuous assessment and examinations are used, the weighting of each in the overall subject grade shall be clearly stated in the Programme Requirement Document. The subject offering department can decide whether students are required to pass both the continuous assessment and examination components, or either component only, in order to obtain a subject pass, but this requirement (to pass both, or either, components) shall be specified in the Programme Requirement Document. Learning outcome should be assessed by continuous assessment and/or examination appropriately, in line with the outcome-based approach.

Continuous assessment may include tests, assignments, projects, laboratory work, field exercises, presentations and other forms of classroom participation. Continuous Assessment assignments which involve group work should nevertheless include some individual components therein. The contribution made by each student in continuous assessment involving a group effort shall be determined and assessed separately, and this can result in different grades being awarded to students in the same group.

Assessment methods and parameters of subjects shall be determined by the subject offering department.

At the beginning of each semester, the subject teacher should inform students of the details of the methods of assessments to be used, within the assessment framework as specified in the Programme Requirement Document.

8.16 Progression / Academic Probation / Deregistration

The Board of Examiners shall, at the end of each semester (except for Summer Term unless there are students who are eligible to graduate after completion of Summer Term subjects or the Summer Term study is mandatory for the programme), determine whether each student is

(i)   eligible for progression towards an award; or

(ii)   eligible for an award; or

(iii)   required to be deregistered from the programme.

When a student has a Grade Point Average (GPA) lower than 1.70, he/she will be put on academic probation in the following semester. If a student is able to pull his/her GPA up to 1.70 or above at the end of the semester, the status of "academic probation" will be lifted. The status of "academic probation" will be reflected in the assessment result notification but not in the transcript of studies.

A student will have 'progressing' status unless he/she falls within any one of the following categories, which may be regarded as grounds for deregistration from the programme:

(i)   the student has reached the final year of the normal period of registration for that programme, as specified in the Programme Requirement Document, unless approval has been given for extension; or

(ii)   the student has reached the maximum number of retakes allowed for a failed compulsory subject; or

(iii)   the student's GPA is lower than 1.70 for two consecutive semesters and his/her Semester GPA in the second semester is also lower than 1.70; or

(iv)   the student's GPA is lower than 1.70 for three consecutive semesters.

When a student falls within any of the categories as stipulated above, except for category (i) with approval for extension, the Board of Examiners shall de-register the student from the programme without exception.

A student may be de-registered from the programme enrolled before the time frame specified at (iii) or (iv) above if his/her academic performance is poor to the extent that the Board of Examiners deems that his/her chance of attaining a GPA of 1.70 at the end of the programme is slim or impossible.

The progression of students to the following academic year will not be affected by the GPA obtained in the Summer Term, unless Summer Term study is mandatory for all students of the programme and constitutes a requirement for graduation, and is so specified in the Programme Requirement Document.

If the student is not satisfied with the de-registration decision of the Board of Examiners, he/she can lodge an appeal. All such appeal cases will be referred directly to Academic Appeals Committee (AAC) for final decision. Views of Faculties/Schools/Departments will be sought and made available to AAC for reference.

8.17 Retaking of Subjects

Students may only retake a subject which they have failed (i.e. Grade F or S or U). Retaking of subjects is with the condition that the maximum study load of 21 credits per semester is not exceeded.

The number of retakes of a subject should be restricted to two, i.e., a maximum of three attempts for each subject is allowed.

In cases where a student takes another subject to replace a failed elective subject, the fail grade will be taken into account in the calculation of the GPA, despite the passing of the replacement subject. Likewise, students who fail a Cluster Area Requirement (CAR) subject may need to take another subject from the same Cluster Area in order to fulfill this part of the GUR, since the original CAR subject may not be offered; in such cases, the fail grade for the first CAR subject will be taken into account in the calculation of the GPA, despite the passing of the second CAR subject. [Note]

Students need to submit a request to the Faculty/School Board for the second retake of a failed subject.

Students who have failed a compulsory subject after two retakes and have been de-registered can submit an appeal to the Academic Appeals Committee (AAC) for a third chance of retaking the subject.

In case AAC does not approve further retakes of a failed compulsory subject or the taking of an equivalent subject with special approval from the Faculty, the student concerned would be de-registered and the decision of the AAC shall be final within the University.

Note: In these circumstances when students do not have a choice to retake a failed subject, such as when the failed subject has been phased out, a 'tie-subject' arrangement can be made with the approval of the Faculty Board. Under the arrangement, another appropriate subject can be taken as equivalent to the subject which is not offered. Upon passing the equivalent subject, the fail grade of the original subject will be replaced by the latest grade of the retake subject and the failure grade of the original subject will not be taken into account in the calculation of the GPA.

8.18 Absence from an assessment component

If a student is unable to complete all the assessment components of a subject, due to illness or other circumstances which are beyond his/her control and considered by the subject offering Department as legitimate, the Department will determine whether the student will have to complete a late assessment and, if so, by what means. This late assessment shall take place at the earliest opportunity, and normally before the commencement of the following academic year (except that for Summer Term, which may take place within 3 weeks after the finalisation of Summer Term results). If the late assessment cannot be completed before the commencement of the following academic year, the Faculty/School Board Chairman shall decide on an appropriate time for completion of the late assessment.

The student concerned is required to submit his/her application for late assessment in writing to the Head of Department offering the subject, within five working days from the date of the examination, together with any original supporting documents. Approval of applications for late assessment and the means for such late assessments shall be given by the Head of Department offering the subject or the subject teacher concerned, in consultation with the Programme Leader. Verification of the supporting documents with the issuing authority may be conducted by the subject offering Department as part of the approval process.

8.19 Aegrotat Award

If a student is unable to complete the requirements of the programme in question for the award due to very serious illness, or other very special circumstances which are beyond his/her control, and considered by the Board of Examiners as legitimate, the Faculty/School Board will determine whether the student will be granted an aegrotat award. Aegrotat award will be granted under very exceptional circumstances.

A student who has been offered an aegrotat award shall have the right to opt either to accept such an award, or request to be assessed on another occasion to be stipulated by the Board of Examiners; the student's exercise of this option shall be irrevocable.

The acceptance of an aegrotat award by a student shall disqualify him from any subsequent assessment for the same award.

An aegrotat award shall normally not be classified, and the award parchment shall not state that it is an aegrotat award. However, the Board of Examiners may determine whether the award should be classified, provided that they have adequate information on the students' academic performance.

8.20 Grading

Assessment grades shall be awarded on a criterion-referenced basis.   A student's overall performance in a subject shall be graded as follows from 2020/21 onwards:

Subject grade	Short description	Elaboration on subject grading description
A+ A A-	Excellent	Demonstrates excellent achievement of intended subject learning outcomes by being able to skillfully use concepts and solve complex problems. Shows evidence of innovative and critical thinking in unfamiliar situations, and is able to express the synthesis or application of ideas in a logical and comprehensive manner.
B+ B B-	Good	Demonstrates good achievement of intended subject learning outcomes by being able to use appropriate concepts and solve problems. Shows the ability to analyse issues critically and make well-grounded judgements in familiar or standard situations, and is able to express the synthesis or application of ideas in a logical and comprehensive manner.
C+ C C-	Satisfactory	Demonstrates satisfactory achievement of intended subject learning outcomes by being able to solve relatively simple problems. Shows some capacity for analysis and making judgements in a variety of familiar and standard situations, and is able to express the synthesis or application of ideas in a manner that is generally logical but fragmented.
D+ D	Pass	Demonstrates marginal achievement of intended subject learning outcomes by being able to solve relatively simple problems. Can make basic comparisons, connections and judgments and express the ideas learnt in the subject, though there are frequent breakdowns in logic and clarity.
F	Fail	Demonstrates inadequate achievement of intended subject learning outcomes through a lack of knowledge and/or understanding of the subject matter. Evidence of analysis is often irrelevant or incomplete.

'F' is a subject failure grade, whilst all others ('D' to 'A+') are subject passing grades. No credit will be earned if a subject is failed.

Indicative descriptors for modifier grades

Main Grade (solid)	The student generally performed at this level, indicating mastery of the subject intended learning outcomes at this level.
+ (exemplary)	The student consistently performed at this level and exceeded the expectations of this level in some regards, but not enough to claim mastery at the next level.
- (marginal)	The student basically performed at this level, but the performance was inconsistent or fell slightly short in some regards.

Note: The above indicative descriptors for modifier grades are not applicable to the pass grades D and D+

A numeral grade point is assigned to each subject grade. The grade points assigned to subject grades attained by students from 2020/21 are as follows:

Grade	Grade Point for grades attained
A+	4.3
A	4.0
A-	3.7
B+	3.3
B	3.0
B-	2.7
C+	2.3
C	2.0
C-	1.7
D+	1.3
D	1.0
F	0.0

At the end of each semester/term, a Grade Point Average (GPA) will be computed as follows, and based on the grade point of all the subjects:

$$ GPA = \frac{\sum_{n=1}^{N} \text{Subject Grade Point}_n \times \text{Subject Credit Value}_n}{\sum_{n=1}^{N} \text{Subject Credit Value}_n} $$

> where N = number of all subjects (inclusive of failed subjects) taken by the student up to and including the latest semester/term. For subjects which have been retaken, only the grade point obtained in the final attempt will be included in the GPA calculation

In addition, the following subjects will be excluded from the GPA calculation:

(i)   Exempted subjects

(ii)   Ungraded subjects

(iii)   Incomplete subjects

(iv)   Subjects for which credit transfer has been approved, but without any grade assigned

(v)   Subjects from which a student has been allowed to withdraw (i.e., those with the code 'W')

Subject which has been given an "S" code, i.e., absent from all assessment components, will be included in the GPA calculation and will be counted as "zero" grade point. GPA is thus the unweighted cumulative average calculated for a student, for all relevant subjects taken from the start of the programme to a particular point of time. GPA is an indicator of overall performance, and ranges from 0.00 to 4.30 from 2020/21.

All training credits will be counted in the GPA calculation but not in the WGPA calculation.

8.21   Different types of GPA

GPA's will be calculated for each Semester including the Summer Term. This <u>Semester GPA</u> will be used to determine students' eligibility to progress to the next Semester alongside with the 'cumulative GPA'. However, the Semester GPA calculated for the Summer Term will not be used for this purpose, unless the Summer Term study is mandatory for all students of the programme concerned and constitutes part of the graduation requirements.

The GPA calculated after the second Semester of the students' study is therefore a <u>'cumulative' GPA</u> of all the subjects taken so far by students, and without applying any level weighting.

Along with the 'cumulative' GPA, a <u>weighted GPA</u> will also be calculated, to give an indication to the Board of Examiners on the award classification which a student will likely get if he/she makes steady progress on his/her academic studies.

When a student has satisfied the requirements for award, an <u>award GPA</u> will be calculated to determine his/her award classification.

For students taking the Major/Minor study route, a separate GPA will be calculated for their Major and Minor programmes. The <u>Major GPA</u> will be used to determine their award classification, which will be so reflected on the award parchment. The <u>Minor GPA</u> can be used as a reference for Board of Examiners to moderate the award classification for the Major.

For students taking the Major/Secondary Major study route, there is no separate "Secondary Major GPA". The Major GPA is the weighted GPA of all subjects contributing to the Major and Secondary Major.

The calculation methods of the different types of GPA are further explained in the table below.

Types of GPA	Purpose	Rules for GPA calculation
GPA	Determine Progression/ Graduation	(1) All academic subjects taken by the student throughout his/her study, both inside and outside the programme curriculum, are included in the GPA calculation. (2) For training subjects, including WIE and Clinical/Field subjects, departments can decide whether to include them in the GPA calculation. (3) For retake subjects, only the last attempt will be taken in the GPA calculation. (4) Level weighting, if any, will be ignored.
Semester GPA	Determine Progression	Similar to the rules for GPA as described above, except that only subjects taken in that Semester, including retaken subjects, will be included in the calculation.
Weighted GPA	To give an interim indication on the likely Award GPA	(1) Similar to the rules for GPA, except that only subjects inside the programme curriculum concerned will be included in the calculation. Subjects outside the programme curriculum will be excluded.

		(2) Departments can decide whether the training subjects are to be counted towards the Weighted GPA.
		(3) For retake subjects, only the last attempt will be taken in the Weighted GPA calculation.
		(4) A weighting of 2 for Level 1 and 2 subjects, and a weighting of 3 for Level 3 and above, will be included in the calculation to determine the Honours classifications for Bachelor's degree programmes.
		(5) The weighted GPA will be the same as the Award GPA unless a student has taken more subjects than required.
Major/Minor GPA	For reference and determination of award classification	*Major (including the Major/Secondary Major option) /Minor GPA*
		(1) Only subjects inside the curriculum of the Major/Minor Programmes will be taken in the Major/Minor GPA calculation.
		(2) Departments can decide whether the training subjects, are to be counted towards the Major/Minor GPA.
		(3) For retake subjects, only the last attempt will be taken in the Major/Minor GPA calculation.
		(4) Up to 6 credits from the Major/GUR [including Language Communication Requirements (LCR) subjects at proficiency level] can be counted towards the chosen Minor. Nevertheless, students must take at least 6 credits from their chosen Minor programme in order to satisfy the residential requirement of their chosen Minor. In addition, to be eligible for the Major and Minor awards, the total number of credits taken by the students for their Major-Minor studies must not be lower than the credit requirement of the single discipline Major programme.
		Major GPA
		Level weighting will be included in the calculation of Major GPA.
		Minor GPA
		Level weighting will <u>not</u> be included in the calculation of Minor GPA.
Award GPA	For determination of award classification	If the student has not taken more subjects than required, the Award GPA will be as follows:
		(1) For single Major: Award GPA = Weighted GPA
		(2) For Major/Minor programmes: Award GPA = Major GPA
		(3) For programmes without level weighting: Award GPA = GPA
		If the student has taken more subjects than required, refer to Section 8.23 below.

8.22 Guidelines for Award Classification

The Weighted GPA will be used as a guide to help determine award classifications.

Weighted GPA will be computed as follows:

$$\text{Weighted GPA} = \frac{\sum_{n=1}^{N} \text{Subject Grade Point}_n \times \text{Subject Credit Value}_n \times W_n}{\sum_{n=1}^{N} \text{Subject Credit Value}_n \times W_n}$$

where W_n = weighting to be assigned according to the level of the subject

N = number of all subjects counted in GPA calculation

For calculating the weighted GPA (and award GPA) to determine the Honours classification of students who satisfy the graduation requirements of Bachelor's degree awards, a University-wide standard weighting will be applied to all subjects of the same level, with a weighting of 2 for Level 1 and 2 subjects and a weighting of 3 for Level 3 and above subjects. Same as for GPA, Weighted GPA ranges from 0.00 to 4.30 from 2020/21.

Any subjects passed after the graduation requirement has been met or subjects taken on top of the prescribed credit requirements for award shall not be taken into account in the grade point calculation for award classification. However, if a student attempts more elective subjects (or optional subjects) than those required for graduation in or before the semester in which he/she becomes eligible for award, the elective subjects (or optional subjects), except for subjects which are selected by students to fulfill the free electives requirement for graduation, with a higher grade/contribution shall be included in the grade point calculation (i.e., the excessive subjects attempted with a lower grade/contribution, including failed subjects, will be excluded).

For students who have completed a Major (including the Major/Secondary Major option)/Minor programme, a single classification will be awarded and their award classification will mainly be based on the "Major GPA", but it can be moderated by the Board of Examiners with reference to the "Minor GPA". For students who have completed a Major programme combined with free electives, their award classification will be determined by their "Major GPA" which includes grades obtained for the free electives, if appropriate.

"Major GPA" is derived based on all subjects of the Major programme, as well as the Secondary Major programme, if any, including those meeting the mandatory General University Requirements (GUR) and programme-specific language requirement, but not necessarily including the training credits.

"Minor GPA" is derived based on the 18 credits of specific Minor programme. "Minor GPA" is unweighted.

The "Major GPA" and the "Minor GPA" will be presented separately to the Board of Examiners for consideration. The guidelines for determining award classification are applicable to programmes with Major (including the Major/Secondary Major option)/Minor studies.

Where a student has a high GPA for his/her Major (including the Major/Secondary Major option) but a lower GPA for his/her Minor, he/she will not be 'penalised' in respect of his/her award classification, which is attached to the Major. On the other hand, if a student has a lower GPA for his/her Major (including the Major/Secondary Major option) than his/her GPA for the Minor, the Board of Examiners may consider recommending a higher award classification for the student for ratification by the APRC via the Faculty/School Board.

8.23 Classification of Awards

For Honours degree programmes, the awards will be classified as follows:

- First Class Honours
- Second Class Honours (Division 1)
- Second Class Honours (Division 2)
- Third Class Honours

The following are guidelines for Boards of Examiners' reference in determining award classifications:

Honours Degrees	Guidelines
1st	The student's performance/attainment is outstanding, and identifies him/her as exceptionally able in the field covered by the programme in question.
2:i	The student has reached a standard of performance/attainment which is more than satisfactory but less than outstanding.
2:ii	The student has reached a standard of performance/attainment judged to be satisfactory, and clearly higher than the 'essential minimum' required for graduation.
3rd	The student has attained the 'essential minimum' required for graduation at a standard ranging from just adequate to just satisfactory.

Under exceptional circumstances, a student who has completed an Honours degree programme, but has not attained Honours standard, may be awarded a Pass-without-Honours degree. A Pass-without-Honours degree award will be recommended, when the student has demonstrated a level of final attainment which is below the 'essential minimum' required for graduation with Honours from the programme in question, but when he/she has nonetheless covered the prescribed work of the programme in an adequate fashion, while failing to show sufficient evidence of the intellectual calibre expected of Honours degree graduates. For example, if a student in an Honours degree programme has a Grade Point Average (GPA) of 1.70 or more, but his/her Weighted GPA is less than 1.70, he/she may be considered for a Pass-without-Honours classification. A Pass-without-Honours is an unclassified award, but the award parchment will not include this specification.

Students who have committed academic dishonesty or non-compliance with examination regulations will be subject to the penalty of the lowering of award classification by one level. For undergraduate students who should be awarded a Third class Honours degree, they will be downgraded to a Pass-without-Honours. The minimum of downgraded overall result will be kept at a Pass.

The followings are the award GPA ranges for determining award classifications:

Honours Degrees	Award GPA
1st	3.60 – 4.30
2:i	3.00 – 3.59
2:ii	2.40 – 2.99
3rd	1.70 – 2.39

Decisions by the Boards of Examiners on award classifications to be granted to each student on completion of the programme shall be ratified by the Faculty/School Board (of Examiners). For cases the decisions of which do not conform to the above indicative GPA range, they should be referred, by the Faculty/School Board (of Examiners), to the APRC for ratification.

8.24 Examination result announcements, transcripts, testimonials and references

At the end of each semester, where appropriate, examination results are announced online for individual students' checking. It provides information on subjects taken and grades attained, the Grade Point Average (GPA) for all subjects, and the overall result up to and including the latest semester. The announcement serves as an official notification of the student's academic performance.

A formal Transcript of Studies will be issued by the University, upon request, to any student registered on a programme offered by the University, and it will include the following information:

(i)   name and student number;

(ii)   title of the programme(s) on which enrolled, or from which graduated;

(iii)   medium of instruction for the programme (applicable only to programmes which are delivered in Chinese and for which both Chinese and English versions are offered);

(iv)   a full academic record, giving subjects taken and grades attained, and the Grade Point Average (GPA) for all subjects (this shall include any practical training undertaken, which fulfill the training credit requirement of the programme concerned);

(v)   credit requirement of the student if different from the normal credit requirement of the programme;

(vi)   where relevant, the final award(s) (including information on the Secondary Major and/or Minor award, if appropriate), with classification and year of award;

(vii)   a statement indicating that the student has completed the Work-integrated Education (WIE) activities / Healthy Lifestyle / e-learning course in Putonghua (offered as an option with effect from the 2018/19 intake cohort), as appropriate; and

(viii) information on the partner institution, if the award is for a dual degree/joint programme with another institution and leads to a dual/joint award.

Students may request for a testimonial which is a certification of their studies at the University, but without details on subjects and subject results.

Students may also request for references direct from academic staff members concerned.

8.25 Recording of disciplinary actions in students' records

With effect from Semester One of 2015/16, disciplinary actions against students' misconducts will be recorded in students' records.

Students who are found guilty of academic dishonesty or non-compliance with examination regulations will be subject to the penalty of having the subject result concerned disqualified and be given a failure grade with a remark denoting 'Disqualification of result due to academic dishonesty/noncompliance with examination regulations'. The remark will be shown in the students' record as well as the assessment result notification and transcript of studies, until their leaving the University.

Students who have committed disciplinary offences (covering both academic and non-academic related matters) will be put on 'disciplinary probation'. The status of 'disciplinary probation' will be shown in the students' record as well as the assessment result notification, transcript of studies and testimonial during the probation period, until their leaving the University. The disciplinary probation is normally one year unless otherwise decided by the Student Discipline Committee.

The University reserves the right to withhold the issuance of any certificate of study to a student/graduand who has unsettled matters with the University, or subject to is disciplinary action.

Appendix II

Secondary Major in Artificial Intelligence and Data Analytics (AIDA)

1   Rationale for AIDA

Data has been characterised as the new oil; it is valuable only if it can be refined into a form that drives profitable and productive activity. Artificial intelligence and data analytics (AIDA) are undoubtedly the most prevailing technologies to carry out such a refinement process and are the most important driving forces in our data-driven society today. Through the rapid technological developments of the 21st Century, big data has become available, and with remarkable success in the past decade. AIDA is thus becoming a de-facto standard approach to enrich business, advance technology and achieve breakthroughs in virtually all fields. Therefore, it is essential for students to possess expertise in AIDA and other underpinning technologies.

PolyU is fully aware of the opportunities and challenges brought about by the new economy and the Fourth Industrial Revolution, and believes that it is indispensable for the next generation of workforce to possess expertise in AIDA and other underpinning technologies such as robotics, the Internet-of-Things (IoT), and blockchain, to name a few.

2   Aims and Objectives for AIDA

The AIDA Secondary Major is designed in response to the rapidly developing fields of artificial intelligence and data analytics that are currently gaining unprecedented traction in industry as well as generating demand for qualified professionals in the job market. By integrating within the major discipline of the student, this secondary major aims to produce the next generation of graduates skilled with AI computational thinking and data analytics acumen in their chosen discipline to meet the needs of society, help improve efficiencies and augment human capabilities.

This secondary major comprises interdisciplinary and integrated programmes to equip students with a strong foundation in computer science, statistics and mathematics, so as to nurture them to make use of AIDA techniques to solve contemporary problems in a discipline of their choice.

Each academic programme offering the option of this secondary major will incorporate a block of AIDA subjects (such as programming, mathematics, statistics, big data, AI and machine learning) into the study of the academic programme focusing on a particular discipline or domain. Students will complete their study within the normal programme duration and graduate with their respective bachelor's degree, equipped with technical skills related to AIDA, coupled with the domain knowledge from a block of subjects either specially designed, or chosen from the corresponding academic programme, in addition to the GUR subjects. An Integrated Capstone Project (ICP) will be included, with the aim of developing the capabilities of a student in analysing and solving complex and potential real-life problems, as well as training them in skills related to systematic development and documentation of a significant piece of work.

3   Programme's Intended Learning Outcomes (PILOs)

On successful completion of this secondary major in AIDA, students will be able to:

1. Understand the fundamentals of AIDA, and have the ability to apply them.
2. Design AIDA systems, components and processes to meet given specifications and constraints.
3. Identify, formulate and solve problems relevant to AIDA.
4. Use modern IT tools appropriate to AIDA practice.
5. Know the contemporary issues, and understand the impact of AIDA solutions in a global and societal context.

4   Selection Mechanism

Studying a Secondary Major is a free choice by students and not mandatory. Only students with a Cumulative GPA of 2.70 or above may be considered for Secondary Major enrolment. Students must apply to and obtain approval from their programme offering Department, no later than the commencement of the second year of study, to be admitted to the Secondary Major.

5   Programme Structure and Curriculum

5.1   Credit Requirement for Secondary Major in AIDA

Credit requirement for the graduation of BEng (Hons) in Electronic Systems & Internet-of-Things plus the Secondary Major in Artificial Intelligence and Data Analytics.

Major in Electronic Systems & Internet-of-Things Requirements	87 academic credits (Compulsory: 75 credits and Elective: 12 credits)
Training Requirements	8 training credits
Secondary Major Requirements	36 academic credits*
General University Requirements	27 academic credits
Free Elective	6 academic credits
Total Credit Requirements	156 academic credits and 8 training credits

*   Secondary Major Requirements included 12 double counted credits and 12 double fulfilment credits for both Major in ESIoT and Secondary Major in AIDA.

5.2   Programme Structure

The programme structure of the Secondary Major in Artificial Intelligence and Data Analytics (AIDA) is as follows:

Artificial Intelligence and Data Analytics (AIDA)	Credits
Core	30
Mathematics I for AIDA	(3)
Mathematics II for AIDA	(3)
Programming I: Programming Fundamentals	(3)
Programming II: Data Structures and Algorithms	(3)
Fundamentals of Data Analytics	(3)
Machine Learning	(3)
Artificial Intelligence	(3)
DSR-AIDA Bridging Subject	(3)
Integrated Capstone Project	(6)
Electives	6
Total	**36**

5.3 Progression Pattern

BEng (Hons) in Electronic Systems & Internet-of-Things with a Secondary Major in Artificial Intelligence and Data Analytics

Year 1 (31 academic credits + 2 training credits)			
Semester 1 (13 or 16 credits + 1 training credit)		**Semester 2** (15 or 18 credits + 1 training credit)	
AMA1110	Basic Mathematics I – Calculus and Probability & Statistics (3)*	AMA1120	Basic Mathematics II – Calculus and Linear Algebra (3)^
ELCXXXX	English LCR Subject 1 (3)	APSS1L01	Tomorrow's Leaders (3)
ENG2003	Information Technology (3)^	EIE1005	Fundamental AI and Data Analytics (2)
MM1031	Introduction to Innovation and Entrepreneurship (1)	ELCXXXX	English LCR Subject 2 (3)
		ENG1004	Engineering Professionals in Society I (1)
		ENG2002	Computer Programming (3)**
One CAR and One Free Elective should be taken in Year 1			
CAR I	Cluster-Area Requirement subject 1 (3)	Free Elective 1 (3)	
EEE2103 Applied Engineering Fundamentals (2 training credits)			
Healthy Lifestyle (non-credit bearing)			
Year 2 (34 academic credits + 3 training credits)			
Semester 1 (16 credits + 1.5 training credits)		**Semester 2** (18 credits + 1.5 training credits)	
AMA2111	Mathematics I (3)*	CLC1104P	Chinese LCR Subject (3)
EIE1003	Foundations of Data Science (3)*	DSAI2201	Data Structures and Algorithms (3)
EIE2110	Basic Circuit Analysis and Electronics (3)	EIE2211	Logic Design (3)
EEE2011	Foundation Techniques in Artificial Intelligence (2)	EIE3124	Fundamentals of Machine Intelligence (3)*
EEE2012	Introduction to Internet of Things (2)	EIE3312	Linear Systems (3)
One CAR and One Free Elective should be taken in Year 2			
CAR II	Cluster-Area Requirement subject 2 (3)	Free Elective 2 (3)	
EEE2105 Basic Electronic Systems with AI (3 training credits)			
Year 3 (36 academic credits + 3 training credits)			
Semester 1 (16.5 credits + 1.5 training credits)		**Semester 2** (19.5 credits + 1.5 training credits)	
COMP4431	Artificial Intelligence (3)	EIE3112	Database System (3)
EIE3311	Computer System Fundamentals (3)	EIE3123	Dynamic Electronic Systems (3)
EIE3331	Communication Fundamentals (3)	EIE3128	IoT Workshop & Project (3)
EIE3333	Data and Computer Communications (3)	EIE4113	Wireless and Mobile Systems (3)
EIE3373	Microcontroller Systems and Interface (3)	EIE3127	Artificial Intelligence Enabled Internet of Things (3)** (Technical Elective 1)+
		Elective for AIDA 1 (3)	
Service-Learning (3)			
EIE3901 Multidisciplinary Manufacturing Project (3 training credits)			
Year 4 (31 academic credits)			
Semester 1 (18 credits)		**Semester 2** (13 credits)	
EIE3129	IoT Security (3)	ELC3531	Professional Communication in English for Engineering Students (2)
ENG3003	Engineering Management (3)	ENG3006	Engineering Professionals in Society II (2)
Three Technical Elective and One Elective for AIDA should be taken in Year 4			
Technical Elective 2 (3)+		Technical Elective 4 (3)+	
Technical Elective 3 (3)+		Elective for AIDA 2 (3)	
CAR III	Cluster-Area Requirement subject 3 (3)		
EIE4128 Integrated Capstone Project (6)**			

Table 5.3.1   Progression Pattern for BEng (Hons) in Electronic Systems & Internet-of-Things with a Secondary Major in Artificial Intelligence and Data Analytics

Total Credits Required for Graduation: 132 academic credits + 8 training credits

Remarks:

AIDA Subjects

* Double counted subjects for both Major in ESIoT and Secondary Major in AIDA (not exceeding 12 credits):

(a) AMA1110 Basic Mathematics I – Calculus and Probability & Statistics (3)
(b) AMA2111 Mathematics I (3)
(c) EIE1003 Foundations of Data Science (3)
(d) EIE3124 Fundamentals of Machine Intelligence (3)

** Double fulfilment subjects for both Major in ESIoT and Secondary Major in AIDA:

(a) ENG2002 Computer Programming (3)
(b) EIE3127 Artificial Intelligence Enabled Internet of Things (3)
(c) EIE4128 Integrated Capstone Project (6)

^ Students are required to take two Faculty Electives among AMA1120 Basic Mathematics II, ENG2003 Information Technology or AP10005 Physics I/AP10006 Physics II in Year 1. AMA1120 and ENG2003 are the Major subjects of the programme and will be pre-assigned for students in Year 1. If students opt to take AP10005/AP10006, AP10005/AP10006 will be recognised as a Free Elective within the programme.

+ Students are required to complete four Technical Electives. One of the technical electives must be EIE3127 Artificial Intelligence Enabled Internet of Things (3 credits) as the DSR-AIDA Bridging Subject and at least two technical electives must be at Level 4 or above.

5.4 List of Core and Elective Subjects for Secondary Major in AIDA

Below are the tables summarising the core and elective subjects.

Core Subjects	Subject code and title	Credits
Mathematics I for AIDA:	AMA1110 Basic Mathematics I – Calculus and Probability & Statistics	3
Mathematics II for AIDA:	AMA2111 Mathematics I	3
Programming I: Programming Fundamentals:	ENG2002 Computer Programming	3
Programming II: Data Structures and Algorithms:	DSAI2201 Data Structures and Algorithms	3
Fundamentals of Data Analytics:	EIE1003 Foundations of Data Science	3
Machine Learning:	EIE3124 Fundamentals of Machine Intelligence	3
Artificial Intelligence:	COMP4431 Artificial Intelligence	3
DSR-AIDA Bridging Subject:	EIE3127 Artificial Intelligence Enabled Internet of Things	3
Integrated Capstone Project:	EIE4128 Integrated Capstone Project	6

Table 5.4.1   Core Subjects

List of Electives (AIDA)

AAE4009	Data Science and Data-driven Optimisation in Airline and
AAE4011	Airport Operations
AMA3201	Artificial Intelligence in Unmanned Autonomous Systems
AMA3602	Computational Methods
AMA3640	Applied Linear Models for Finance Analytics
AMA3820	Statistical Inference
AMA4602	Operations Research Methods
AMA4650	High Dimensional Data Analysis
AMA4670	Forecasting and Applied Time Series Analysis
AMA4688	Simulation
AMA4840	Decision Analysis
AMA4850	Optimization Methods
AP40012	Machine Learning in Physics
AP40013	Energy Conversion and Storage with Machine Learning
BME34145	AIDA for Health Care and Smart Ageing
BME44144	AIDA for Biosignal Processing and Medical Imaging
BRE368	AI and Data Analytics for Smart Construction
BSE458	Building Performance Diagnosis and Management
BSE4610	Building Informatics
CBS3410	Python for Language Analytics
CBS4702	Advanced Topics in Quantitative Language Studies
CBS4703	Social Media and Social Network Analysis
CBS4704	Workshop on Language Analytics
CBS4844	Machine Aided Translation
CBS4954	Statistics for Language Studies
CBS4958	Fundamentals of Computational Linguistics
CBS4962	Corpus and Language Technology for Language Studies
COMP4436	Artificial Intelligence of Things
COMP4442	Service and Cloud Computing
CSE30313	Machine Learning Practice in Smart Mobility
DSAI4205	Big Data Analytics
EE3013	Transportation Data Analytics
EE4014	Intelligent Systems Applications in Electrical Engineering
EIE4121	Machine Learning in Cyber-security
EIE4122	Deep Learning and Deep Neural Networks
ENGL4022	Quantitative Literacy for Language Professionals
ENGL4026	Language and Social Data Analytics
HTI3990	Big Data Analytics for Bioinformatics and Genomic Medicine
HTI4990	AIDA in Clinical Diagnosis and Radiotherapy
HTM4350	Big Data Analytics in Hospitality, Tourism and Events
HTM4364	Social Media and Digital Marketing Analytics
ISE3011	Applied Quality and Reliability with AIDA
ISE3017	Applied AIDA in Operations Research and Management
SFT403FI	Smart Textiles for Wearable Applications
SFT412FB	Fashion Market Intelligence
SFT303AF	AI in Fashion Business
LSGI3220	Building Information Modelling & 3D GIS
LSGI3801	GeoAI
LSGI3802	Spatial Data Science
LSGI3803	Spatial Data Analytics and Mining
LSGI3804	Urban Big Data Analytics
LSGI3805	Urban Sensing for Smart City
ME41006	Perceptual Robotics
ME42001	Artificial Intelligence in Products
ME42011	Fundamentals of Robotics
SD4772	Interactive Media and Marketing

Table 5.4.2   Electives

6   Subject Description Forms

The latest subject description forms can be viewed at
https://www.polyu.edu.hk/comp/study/ug-programmes/aida/curriculum/

The departments reserve the right to revise and update the syllabi whenever appropriate and deemed necessary.

7   Award Classification

For students who have completed a Major (including the Major/Secondary Major option)/Minor programme, a single classification will be awarded and their award classification will mainly be based on the "Major GPA", but it can be moderated by the Board of Examiners with reference to the "Minor GPA". For students who have completed a Major programme combined with free electives, their award classification will be determined by their "Major GPA" which includes grades obtained for the free electives, if appropriate.

"Major GPA" is derived based on all subjects of the Major programme, as well as the Secondary Major programme, if any, including those meeting the mandatory General University Requirements (GUR) and programme-specific language requirement, but not necessarily including the training credits.

"Minor GPA" is derived based on the 18 credits of specific Minor programme. "Minor GPA" is unweighted.

The "Major GPA" and the "Minor GPA" will be presented separately to the Board of Examiners for consideration. The guidelines for determining award classification are applicable to programmes with Major (including the Major/Secondary Major option)/Minor studies.

Where a student has a high GPA for his/her Major (including the Major/Secondary Major option) but a lower GPA for his/her Minor, he/she will not be 'penalised' in respect of his/her award classification, which is attached to the Major. On the other hand, if a student has a lower GPA for his/her Major (including the Major/Secondary Major option) than his/her GPA for the Minor, the Board of Examiners may consider recommending a higher award classification for the student for ratification by the APRC via the Faculty/School Board.

Aug 2025