THE HONG KONG POLYTECHNIC UNIVERSITY

DEPARTMENT OF APPLIED PHYSICS

PROGRAMME REQUIREMENT DOCUMENT

OF

BACHELOR OF SCIENCE (HONOURS) IN PHYSICS
WITH A SECONDARY MAJOR IN AI & DATA ANALYTICS OR INNOVATION AND ENTREPRENEURSHIP

(CODE: 11443)
4-YEAR CURRICULUM FOR 2025/26 INTAKE COHORT

Contents

1. GENERAL INFORMATION

Programme Title	:	Bachelor of Science (Honours) in Physics with a Secondary Major in AI and Data Analytics or Innovation and Entrepreneurship [BSc (Hons) in Physics + AI & Data Analytics or Innovation & Entrepreneurship]
Programme Code	:	11443
Host Department	:	Department of Applied Physics
Medium of Instruction	:	English
Mode of Study	:	Full-time
Duration	:	4 years
Entry Qualification	:	HKDSE (Hong Kong Diploma of Secondary Education) or equivalent
Requirement for Graduation	:	Total 134 credits (with double counting) • 83 credits from Major and free electives (for AIDA) / 74 credits from Major and free electives (for IE) • 27 credits from General University Requirements (GUR) • 24 credits from Secondary Major Requirements (for AIDA) / 33 credits from Secondary Major Requirements (for IE)
Final Award	:	BSc (Hons) in Physics with a Secondary Major in Artificial Intellgence and Data Analytics / BSc (Hons) in Physics with a Secondary Major in Innovation and Entrepreneurship 物理學(榮譽)理學士 副主修人工智能及數據分析 / 物理學(榮譽)理學士 副主修創新及創業
Annual Intake Number	:	23

2. STUDY ROUTE OPTIONS

2.1 "Major with a Secondary Major" Route

Students in this route will normally pursue four years of full-time study and graduate with an award of BSc (Hons) in Physics with a Secondary Major in AI and Data Analytics (11443-XAI) or BSc (Hons) in Physics with a Secondary Major in Innovation and Entrepreneurship (11443-XIE) after having satisfied all Major subjects, General University Requirements (GUR), Secondary Major Requirements and free electives. While the details about the major programme of Physics are given in later sections, information about the Secondary Major is given in a separate document.

2.2 "Major with a Secondary Major and a Minor" Route

For the graduation requirements of the Minor programmes, students should refer to the relevant section of AR website or consult the programme-offering departments concerned.

2.3 "Exit Award" Route

For students who fail to fulfill the requirements of the "Major with a Secondary Major" route, the Department may consider granting the student an award of "BSc(Hons) in Physics". Students are required to consult and seek approval from the Programme Leader regarding the application for the "exit award". They are required to apply for the award of "BSc(Hons) in Physics" before the end of the add/drop period of the last semester of study.

2.4"Fast Track"

2.4.1 The Fast-track Integrated Bachelor's and Master's Degree Programmes are for high achieving undergraduate (Ug) students to complete their Bachelor's and Master's degrees at an accelerated pace and with reduced tuition fees. For details, please refer to this page.

Ug offering Department	**Ug Programme**	**Master Programme**	**Entry Path^**	**Fast-track Programme Link**
AP	BSc(Hons) in Physics [including Secondary Major in Innovation and Entrepreneurship (IE) or Artificial Intelligence and Data Analytics (AIDA)]	MSc in Medical Physics	Year 3	Link

^ *Attained a cumulative GPA (CGPA) of 3.30 or above at the end of Semester 2 of Year 2; and Recommended by the Programme Leader.*

2.4.2 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.

2.4.3 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.

2.4.4 Students are required to maintain a cumulative GPA of 3.30 at the end of Semester Two, unless Summer Term study is mandatory, to stay on the Fast-track Programme

3. POLYU INSTITUTIONAL LEARNING OUTCOMES

Graduate Attributes	Description
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.
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.
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.
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.
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.*

4. OBJECTIVES AND PROGRAMME OUTCOMES

4.1 Objectives

The principal aim of the Programme is to produce graduates with a mastery of science knowledge and AI-related skills, which could be adapted for formulating innovative solutions for scientific research task and manufacturing problems. Upon completion of the programme, the graduates are well-positioned to tackle real-life innovation and production challenges in the ever-changing society. They shall become innovative problem-solvers and effective communicator by playing a vital role in modern research and industrial settings. They will also serve the community at large and become ethical leaders and socially responsible global citizens.

4.2 Programme outcomes

The programme should lead to the following two categories of learning outcomes: the intellectual abilities, knowledge, skills, and attributes that an all-around preferred graduate should possess.

The graduates should be able to:

4.2.1 Category A Professional/academic knowledge and skills

A1	apply AI concepts, as well as physics and engineering principles, to analyse scientific and technical/technological problems;
A2	apply AI methodologies and skills, and scientific experimental and interpretation techniques, in innovations, modern instrumentation and manufacturing processes;
A3	formulate scientific and engineering problems in suitable mathematical or computable forms, and be able to make a good judgement on the appropriateness of approximations and models used and the derived results/answers;
A4	assimilate and implement new ideas resourcefully, so as to demonstrate entrepreneurial spirts and skills, and become more flexible and adaptable to function in different employment environments and to cope with advance and change; and
A5	develop a career in various professions, by making use of the broad-based foundation, and insights towards global trends and opportunities, acquired in the study.

4.2.2 Category B Attributes for all-roundedness

B1	be able to examine critically the validity of information, arguments and different viewpoints, and to evaluate, synthesize and propose creative solutions to problems of a general nature based on logical reasoning where appropriate;
B2	be able to communicate clearly and effectively, and collaborate smoothly with others, as a leader or a team player;
B3	be ready to demonstrate a sense of responsibility, accountability, team relationship and spirit, and ethical reasoning, and face future challenges in a professional with technical acumen.
B4	posses a desire, adaptability and resilience for life-long learning and self-learning; and
B5	be a social responsible leader with a strong sense of national pride and a global outlook;

While many of these graduate attributes can be developed through the curricular activities of this Programme, some (including communication skills, leadership and global outlook) are primarily addressed through co-curricular activities offered by faculties, departments, and various teaching and learning support units of the University. Students are encouraged to make full use of such opportunities to develop these attributes.

4.3 Relationship of Intended Learning Outcomes to Institutional Learning Outcomes

ILOs	**Institutional Learning Outcomes**
A5, B5	Socially responsible leaders with a strong sense of national pride and a global outlook
A1, A2, B3	Future-ready professionals who possess technical acumen
A3, B1	Critical thinkers and creative problem solvers
B2	Effective communicators and collaborators
A4, B4	Adaptable and resilient lifelong learners

5. ENTRANCE REQUIREMENTS

For those applying on the basis of HKDSE:

Level 3: English Language and Chinese Language
Level 2: Mathematics
Level 3 in 2 other elective subjects [can include Extended Modules of Mathematics (M1/M2)
Attained in Citizenship and Social Development[1]

Preference will be given to: a single physics subject/combined science with physics component.

For Entry with other Qualifications:

Details to be considered case by case by the Department and in lieu with the Updated Handbook of Academic Regulations and Procedures of the University governing the Admission Requirements.

6. THE CREDIT-BASED PROGRAMME

6.1. The Programme is operated under the credit-based system of the University and subject to the regulations of the system. This system provides flexibility in the curriculum as well as in the pace with which students can progress through the Programme.

6.2. Under the credit-based system, the University academic year consists of two teaching semesters, each of 13 weeks, plus a Summer Term of 7 weeks' duration. There are two weeks at the end of each semester and one week at the end of the Summer Term for examination purposes.

6.3. Each subject of the Programme has a value expressed in terms of credits. A grade point system is used for subject assessment. The Grade Point Average (GPA) is a measure of the overall performance of the subjects accumulated (see "Grading" sections).

[1] For HKDSE repeaters who took "Liberal Studies" in 2023/24 or before and have not taken "Citizenship and Social Development" in 2024/25 and thereafter, "Level 2" or above in "Liberal Studies" would be regarded as "Attained" in "Citizenship and Social Development" for fulfilling the general entrance requirement. However, "Liberal Studies" would not be recognized for meeting the elective requirement of the general entrance requirement in 2024/25 and thereafter. The level attainment of the subject would not be included in the admission score calculation.

7. CURRICULUM

All admitted students will embark on a Common Year One Curriculum comprising of 30 credits, which includes tailor-made Faculty Compulsory subjects (6 credits), Professionals in Society subject (3 credits), General University Requirement (GUR) subjects (15 credits) and Free Electives (6 credits).

From Year Two to Year Four, students are required to fulfil the Major subjects (68 credits for Physics + AIDA; 59 credits for Physics + IE), Secondary Major subjects (after double counting: 24 credits for Physics x AIDA; 33 credits for Physics x IE) and GUR subjects (12 credits).

7.1. CURRICULUM OF FULL-TIME BSC (HONS) IN PHYSICS + AI AND DATA ANALYTICS (AIDA)

Stage/ Sem	Subject Code	Subject	Category	Compulsory/ Elective	Pre-requisite	Credit
Year 1/ Sem 1	ELCXXXX	English LCR subject I	GUR	C		3
	APSS1L01	Tomorrow's Leaders	GUR	C		3
	FS1000	Science Professionals in Society	Major	C		3
	FS1001	Fundamentals of Modern Science	Major	C		3
		Free Elective 1	Free Elective	E		3
Year 1/ Sem 2	ELCXXXX	English LCR subject II	GUR	C		3
	COMP1004	Introduction to Artificial Intelligence and Data Analytics	GUR	C		2
	MM1031	Introduction to Innovation and Entrepreneurship	GUR	C		1
	AMA1616	Quantitative Skills and Experimental Design for Scientists	Major & AIDA	C		3
		Free Elective 2	Free Elective	E		3
		CAR (GUR)	GUR	C		3
		Healthy Lifestyle	GUR	C		0
					Credits for Year 1	**30**
Year 2/ Sem 1	AMA1606	Basic Statistics	Major & AIDA	C		3
	AMA1131	Calculus	Major	C		3
	AP10005	Physics I	Major	C		3
	AP10006	Physics II	Major	C		3
	AP20002	Materials Science	Major	C		3
	COMP1012	Programming Fundamentals and Applications	Major & AIDA	C		3
Year 2/ Sem 2	AP10007	Applied Physics Laboratory	Major	C		3
	AP20006	Quantum Mechanics for Scientists and Engineers	Major	C	AP10006	3
	AP20016	Electromagnetism and Waves	Major	C		3
	AP20017	Mechanics and Robotic Motion	Major	C	AP10005	3

	AMA2111	Mathematics I	Major & AIDA	C	AMA1007/ AMA1101/ AMA1102/ AMA1120/ AMA1130/ AMA1131/ AMA1500	3
	CLCXXXX	Chinese LCR subject	GUR	C		3
					Credits for Year 2	**36**
Year 3/ Sem 1	AP30012	Thermal and Statistical Physics	Major	C	AP20006	3
	AP30019	Data Analysis Techniques for Scientists	AIDA	C	COMP1012	3
	AP30020	From Semiconductor to Intelligent Devices	Major	C		3
	AP30022	Scientific Instrumentation and Automation	Major	C		3
	DSAI2201 (COMP2013)	Data Structures and Algorithms	AIDA	C	COMP1011 / COMP1012 / ENG2002 / LGT3109 and AMA1110 / AMA1501 / AMA2634 and AMA1751 / AMA2111	3
	COMP4431	Artificial Intelligence	AIDA	C	COMP2011 / COMP2013/ DSAI2201	3
Year 3/ Sem 2	AP30011	Solid State Physics	Major	C	AP20006	3
	DSAI4203 (COMP4432)	Machine Learning	AIDA	C		3
		Service-Learning (GUR)	GUR	C		3
		Major Elective 1	Major	E		3
		Major Elective 2	Major	E		3
	ELC3121	English for Scientific Communication	Major	C	LCR English subjects	2
					Credits for Year 3	**35**
Year 4/ Sem 1	AP30023	Designing Sensing Systems for Internet of Things in Smart Cities	Major	C		3
	AP40020	Integrated Capstone Project	AIDA	C		6
		Major Elective 3	Major	E		3
		Major Elective 4	Major	E		3
		CAR (GUR)	GUR	C		3
Year 4/ Sem 2	AP40017	Experiment X	Major	C	AP30022	3
	AP40020	Integrated Capstone Project	AIDA	C		--
		AIDA Elective 1	AIDA	E		3
		AIDA Elective 2	AIDA	E		3
		Major Elective 5	Major	E		3
		CAR (GUR)	GUR	C		3
					Credits for Year 4	**33**
					Total	**134**

Remarks:
AIDA - AI and Data Analytics Requirements
CAR - Cluster Areas Requirements
Major - Major Requirements
GUR - General University Requirements
LCR - Language and Communication Requirements

Major Elective Subjects

Subject Code	Subject Title
AP30010	Radiation Physics
AP30018	Acoustics Principles and Intelligent Applications
AP30019	Data Analysis Techniques for Scientists
AP30021	Optical Design with AI
AP40012	Machine Learning in Physics
AP40013	Energy Conversion And Storage With Machine Learning
AP40014	Imaging: Detector, Display and Processing
AP40015	Intelligent Lighting
AP40016	Laser Processing and Applications
AP40018	Medical Imaging: Science and Analytics
AP40023	Materials Modelling by Density Functional Theory

Summary of the suggested credit distribution in each semester and each year

Stage	Credits
Year 1	30
Year 2	36
Year 3	35
Year 4	33
Total	***134***

Summary of the credit requirements for different subject areas

(a)	Language and Communication Requirements	9 credits
(b)	Artificial Intelligence and Data Analytics (GUR-AIDA) Requirement	2 credits
(c)	Innovation and Entrepreneurship (GUR-IE) Requirement	1 credit
(d)	Leadership Education and Development (LEAD)	3 credits
(e)	Service-Learning	3 credits
(f)	Cluster Areas Requirements (CAR) [3 credits from each of CAR A, M and N]	9 credits
(g)	Healthy Lifestyle	Non-credit bearing
(h)	Major	77 credits
(h)	Free Elective	6 credits
(i)	AI and Data Analytics Requirements (AIDA)	24 credits
	Total	***134 credits***

7.2. CURRICULUM OF FULL-TIME BSC (HONS) IN PHYSICS+ INNOVATION AND ENTREPRENEURSHIP (IE)

Stage/ Sem	Subject Code	Subject	Category	Compulsory / Elective	Pre-requisite	Credit
Year 1/ Sem 1	ELCXXXX	English LCR subject I	GUR	C		3
	APSS1L01	Tomorrow's Leaders	GUR	C		3
	FS1000	Science Professionals in Society	Major	C		3
	FS1001	Fundamentals of Modern Science	Major	C		3
		Free Elective 1	Free Elective	E		3
Year 1/ Sem 2	ELCXXXX	English LCR subject II	GUR	C		3
	COMP1004	Introduction to Artificial Intelligence and Data Analytics	GUR	C		2
	MM1031	Introduction to Innovation and Entrepreneurship	GUR	C		1
	AMA1616	Quantitative Skills and Experimental Design for Scientists	Major	C		3
		Free Elective 2	Free Elective	E		3
		CAR (GUR)	GUR	C		3
		Healthy Lifestyle	GUR	C		0
					Credits for Year 1	**30**
Year 2/ Sem 1	AMA1606	Basic Statistics	Major	C		3
	AMA1131	Calculus	Major	C		3
	AP10005	Physics I	Major	C		3
	AP10006	Physics II	Major	C		3
	AP20002	Materials Science	Major	C		3
	COMP1012	Programming Fundamentals and Applications	Major	C		3
Year 2/ Sem 2	AP10007	Applied Physics Laboratory	Major	C		3
	AP20006	Quantum Mechanics for Scientists and Engineers	Major	C	AP10006	3
	AP20016	Electromagnetism and Waves	Major	C		3
	AP20017	Mechanics and Robotic Motion	Major	C	AP10005	3
	CLCXXXX	Chinese LCR subject	GUR	C		3
	MM2021	Management and Organisation	IE	C		3
Year 2/ Summer Sem	MM2901/ MM2902	Greater Bay Area (GBA) Summer Immersion Programme/ Field Study for Innovation Ecosystems	IE	C		3
					Credits for Year 2	**39**
Year 3/ Sem 1	AP30012	Thermal and Statistical Physics	Major	C	AP20006	3
	AP30020	From Semiconductor to Intelligent Devices	Major	C		3
	AP30022	Scientific Instrumentation and Automation	Major	C		3
	AMA2111	Mathematics I	Major	C	AMA1007/ AMA1101/ AMA1102/ AMA1120/ AMA1130/ AMA1131/	3

					AMA1500	
	MM3161	Creativity, Innovation and Entrepreneurship	IE	C		3
	MM3162	Innovation and Entrepreneurship Colloquium	IE	C		3
Year 3/ Sem 2	AP30011	Solid State Physics	Major	C	AP20006	3
	MM4393	Business Innovation Project	IE	C		3
	ELC3121	English for Scientific Communication	Major	C	LCR English subjects	2
		Service-Learning (GUR)	GUR	C		3
	MM2711	Introduction to Marketing (CAR N)	IE/ GUR	E/ C		3
Year 3/ Summer Sem	AP40022	Company Attachment	IE	C	MM3161	6
					Credits for Year 3	**38**
Year 4/ Sem 1	AP30023	Designing Sensing Systems for Internet of Things in Smart Cities	Major	C		3
	AP40021	Capstone Project	Major	C		6
		IE Elective 1	IE	E		3
		IE Elective 2	IE	E		3
Year 4/ Sem 2	AP40017	Experiment X	Major	C	AP30022	3
	A40021	Capstone Project	Major	C		-
		IE Elective (Discipline-specific electives) 1	IE	E		3
		IE Elective (Discipline-specific electives) 2	IE	E		3
		CAR (GUR)	GUR	C		3
					Credits for Year 4	**27**
					Total	**134**

Remarks:

CAR - Cluster Areas Requirements
Major - Major Requirements
IE - Innovation and Entrepreneurship Requirements
GUR - General University Requirements
LCR - Language and Communication Requirements

IE Elective Subjects

Students are required to take elective subjects from the areas below.

Types of Elective	Areas	Credits
IE Electives	Area: Accounting and Finance	6 credits from any areas
	Area: Innovation and Technology Management	
	Area: Management	
	Area: Marketing	
Discipline-specific electives	BME34143 ENG4001	6 credits
General Electives	3 credits from General electives or IE electives or Discipline-specific electives (Please refer to the subject information in Appendix)	3 credits

Summary of the suggested credit distribution in each semester and each year

Stage	Credits
Year 1	30
Year 2	39
Year 3	38
Year 4	27
Total	***134***

Summary of the credit requirements for different subject areas

(a)	Language and Communication Requirements	9 credits
(b)	Artificial Intelligence and Data Analytics (GUR-AIDA) Requirement	2 credits
(c)	Innovation and Entrepreneurship (GUR-IE) Requirement	1 credit
(d)	Leadership Education and Development (LEAD)	3 credits
(e)	Service-Learning	3 credits
(f)	Cluster Areas Requirements (CAR) [3 credits from each of CAR A, M and N]	9 credits
(g)	Healthy Lifestyle	Non-credit bearing
(h)	Major	68 credits
(i)	Free electives	6 credits
(i)	Innovation and Entrepreneurship Requirements (IE)	33 credits
	Total	***134 credits***

8. CURRICULUM MAP

8.1 CURRICULUM MAP OF FULL-TIME BSC(HONS) IN PHYSICS+ AI AND DATA ANALYTICS REQUIREMENTS (AIDA)

This curriculum map gives a holistic view of the programme to which each intended learning outcome will be taught and assessed in the programme (see "Objectives" and "Programme outcomes" sections.)

The following indicators (I, R, A) in the relevant boxes show the treatment of the programme outcome in a subject:

I (Introduced) That the learning leading to the particular intended outcome is introduced in that subject.

R (Reinforced) That the learning leading to the particular intended outcome is reinforced in that subject.

A (Assessed) That the performance which demonstrates the particular intended outcome is assessed in that subject

Programme outcomes / Subjects	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**
AP10005 Physics I	**A**		**I**			**I**			**I**	
AP10006 Physics II	**A**		**I**			**I**			**I**	
AP10007 Applied Physics Laboratory	**A**	**A**	**I**		**I**	**I**	**I**	**I**	**I**	
AP20002 Materials Science	**A**		**I**		**I**	**I**				
AP20006 Quantum Mechanics for Scientists and Engineers	**A**		**A**			**I**				
AP20016 Electromagnetism and Waves	**A**		**R**			**R**				
AP20017 Mechanics and Robotic Motion	**A**		**I**			**I**				
AP30011 Solid State Physics	**A**		**R**			**R**				
AP30012 Thermal and Statistical Physics	**A**		**R**			**R**				
AP30019 Data Analysis Techniques for Scientists	**R/A**	**R/A**		**I**	**I**	**I**				
AP30020 From Semiconductor to Intelligent Devices	**A**		**R**			**R**				
AP30022 Scientific Instrumentation and Automation	**A**	**A**		**R/A**	**R**	**R**				
AP30023 Designing Sensing Systems for Internet of Things in Smart Cities	**A**		**A**	**I**	**R**	**R**				
AP40017 Experiment X		**A**		**R/A**	**R**	**R**		**R**		
AP40020 Integrated Capstone Project	**A**	**A**	**A**	**A**	**A**	**R/A**	**R/A**	**A**	**R**	
ELC3121 English for Scientific Communication (DSR Language)							**R/A**		**R/A**	
AMA2111 Mathematics I		**R**	**R**							
~~**Programme outcomes**~~	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**

Subjects										
AMA1606 Basic Statistics		**R**	**R**							
AMA1616 Quantitative Skills and Experimental Design for Scientists		**I/R**	**I/R**							
AMA1131 Calculus		**R**	**R**							
COMP1012 Programming Fundamentals and Applications	**I**	**I**	**I/R**			**I**		**I/A**		
DSAI2201 (COMP2013) Data Structures and Algorithms	**R/A**	**R/A**	**R**		**I**	**R**				
COMP4431 Artificial Intelligence	**I/R**	**R/A**	**R**			**R**				**I**
DSAI4203 (COMP4432) Machine Learning	**R/A**	**R/A**	**R/A**			**R**				**I/R**
COMP1004 Introduction to Artificial Intelligence and Data Analytics	**I**								**I**	**I**
FS1000 Science Professionals in Society				**I/R**	**R**		**R**	**I/R**	**I/R**	**R**
FS1001 Fundamentals of Modern Science	**I**				**I**	**R**	**R**		**I**	**R**
MM1031 Introduction to Innovation and Entrepreneurship									**I**	**I**
English I (GUR)							**A**		**I**	
English II (GUR)							**A**		**R**	
Chinese (GUR)							**R**		**R**	
CAR I (GUR)									**R**	
CAR II (GUR)									**R**	
CAR III (GUR)									**R**	
Service-Learning (GUR)								**A**	**R**	**I/A**
APSS1L01 Tomorrow's Leaders (GUR)								**A**	**R**	**I/A**

Remarks:

AIDA - AI and Data Analytics Requirements
CAR - Cluster Areas Requirements
Major - Major Requirements
GUR - General University Requirements
LCR - Language and Communication Requirements

8.2 CURRICULUM MAP OF FULL-TIME BSC(HONS) IN PHYSICS + INNOVATION AND ENTREPRENEURSHIP (IE)

This curriculum map gives a holistic view of the programmed to which each intended learning outcome will be taught and assessed in the programme (see "Objectives" and "Programme outcomes" sections.)

The following indicators (I, R, A) in the relevant boxes show the treatment of the programme outcome in a subject:

I (Introduced) That the learning leading to the particular intended outcome is introduced in that subject.

R (Reinforced) That the learning leading to the particular intended outcome is reinforced in that subject.

A (Assessed) That the performance which demonstrates the particular intended outcome is assessed in that subject

Programme outcomes / Subjects	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5
AP10005 Physics I	**A**		**I**			**I**			**I**	
AP10006 Physics II	**A**		**I**			**I**			**I**	
AP10007 Applied Physics Laboratory	**A**	**A**	**I**		**I**	**I**	**I**	**I**	**I**	
AP20002 Materials Science	**A**		**I**		**I**	**I**				
AP20006 Quantum Mechanics for Scientists and Engineers	**A**		**A**			**I**				
AP20016 Electromagnetism and Waves	**A**		**R**			**R**				
AP20017 Mechanics and Robotic Motion	**A**		**I**			**I**				
AP30011 Solid State Physics	**A**		**R**			**R**				
AP30012 Thermal and Statistical Physics	**A**		**R**			**R**				
AP30020 From Semiconductor to Intelligent Devices	**A**		**R**			**R**				
AP30022 Scientific Instrumentation and Automation	**A**	**A**		**R/A**	**R**	**R**				
AP30023 Designing Sensing Systems for Internet of Things in Smart Cities	**A**		**A**	**I**	**R**	**R**				
AP40017 Experiment X		**A**		**R/A**	**R**	**R**		**R**		
AP40021 Capstone Project	**A**	**A**	**A**	**A**	**A**	**R/A**	**R/A**	**A**	**R**	
ELC3121 English for Scientific Communication (DSR Language)							**R/A**		**R/A**	
Programme outcomes / Subjects	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**
AMA2111 Mathematics I		**R**	**R**							
AMA1606 Basic Statistics		**R**	**R**							
AMA1616 Quantitative Skills and Experimental Design for		**I/R**	**I/R**							

Scientists										
AMA1131 Calculus		**R**	**R**							
COMP1012 Programming Fundamentals and Applications	**I**	**I**	**I/R**			**I**		**I/A**		
COMP1004 Introduction to Artificial Intelligence and Data Analytics		**R/A**	**R/A**							
FS1000 Science Professionals in Society				**I/R**	**R**		**R**	**I/R**	**I/R**	**R**
FS1001 Fundamentals of Modern Science	**I**				**I**	**R**	**R**		**I**	**R**
MM2021 Management and Organisation	**I**	**I**	**I/A**	**I/A**	**I**	**I**	**R**	**I/A**		
MM2711 Introduction to Marketing				**I**	**I**	**R**	**R**		**R**	
MM2901/ MM2902 Greater Bay Area (GBA) Summer Immersion Programme/ Field Study for Innovation Ecosystems				**I/A**	**I/A**	**I**	**R**	**I/A**	**I**	**I/A**
MM3161 Creativity, Innovation and Entrepreneurship				**R/A**	**R/A**	**I**	**R**	**R**	**R**	**R**
MM3162 Innovation and Entrepreneurship Colloquium				**R/A**	**R/A**	**I**	**R**	**R/A**		**I**
MM4393 Business Innovation Project				**R/A**	**R/A**	**I**	**R**	**R/A**	**I**	**I**
AP40022 Company Attachment				**R/A**	**R/A**	**I**	**R**	**R/A**	**I**	**I**
MM1031 Introduction to Innovation and Entrepreneurship									**I**	**I**
English I (GUR)							**A**		**I**	
English II (GUR)							**A**		**R**	
Chinese (GUR)							**R**		**R**	
CAR I (GUR)									**R**	
CAR II (GUR)									**R**	
Service-Learning (GUR)								**A**	**R**	**I/A**
APSS1L01 Tomorrow's Leaders (GUR)								**A**	**R**	**I/A**

Remarks:

CAR - Cluster Areas Requirements
Major - Major Requirements
IE - Innovation and Entrepreneurship Requirements
GUR - General University Requirements
LCR - Language and Communication Requirements

9. REGISTRATION

9.1 Please read the following sections under "4. Enrollment and Student Records" and "5. Subject Registration" of the PolyU's Student Handbook [which can be obtained on the Academic Registry's website].

4. Programme Enrollment
- F. Leave of Absence
- H. Deferment of Study
- I. Zero Subject Enrolment and Retention of Study Place
- K. Student Status
- L. Withdrawal of Study

5. Subject Registration
- A. Subject Registration
- B. Subject Exemption and Credit Transfer
- C. Retaking of Failed Subjects
- D. Unqualified Subjects
- E. Add / Drop of Subjects and Change of Subject Groups
- F. Taking Additional Subjects
- G. Withdrawal of Subjects

10. NORMAL DURATION FOR COMPLETION OF THE PROGRAMME

10.1 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.

10.2 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. Applications for extension of study period beyond one year and up to two years will require the approval from Faculty Board Chairman[2].

10.3 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.

10.4 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.

[2] The Head of Department concerned may extend the normal duration of students with special educational needs for up to two years, based on the recommendations from SAO. Further extension will follow the prevailing regulations.

11. ASSESSMENT AND PROGRESSION

11.1 Assessment methods

11.1.1 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.

11.1.2 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.

11.1.3 For any subject offered by a servicing department (with subject code not beginning with 'AP'), a student must satisfy requirements that may be stipulated by the servicing department concerned in order to achieve an overall passing grade.

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

11.1.5 The Board of Examiners is appointed to deal with special cases arising from assessment and classification of awards.

11.1.6 Assessment of Work-Integrated Education (WIE)

The objective of the assessment is to determine to what extent the student has achieved the intended learning outcomes of the WIE component. The WIE learning outcomes are as follow:

- achieve goals or tasks as specified by the employer in a working environment;
- be able to analyze, evaluate, synthesize and propose solutions to problems of a general nature;
- be able to communicate and collaborate effectively with others;

- possess a global outlook (for an overseas placement) or deepen the understanding of Mainland (for placement in Mainland); and become experienced in adapting to real working environment.

The minimum placement duration is 120 working hours. Students are strongly encouraged to finish their WIE requirement by the end of the summer of year 3. The component is not counted towards GPA calculation nor award classification. The students themselves should seek for WIE placements themselves or via job postings advertised by Student Affairs Office as long as the students obtain approval from the department. Some staff in the department may provide WIE placements from projects and work placements in collaboration with external organizations.

The following is the WIE assessment method.

(i) Report
Upon completion of the placement, the student is required to submit a report summarizing his/her work experience and the learning outcomes that have been achieved.

(ii) Performance Evaluation
At the end of the WIE placement, the workplace supervisor will provide a performance evaluation by answering a set of questions related to the achievement of intended WIE learning outcomes. The student's supervisor from AP will also give assessment at the end of the placement.

(iii) Overall Assessment
Based on the report submitted by the student and the performance evaluation, a Pass grade will be given upon satisfactory completion of the intended WIE learning outcomes; otherwise a failure grade will be given.

(iv) Attend Training Workshops
Students are also required to attend at least 5 hours of career or workplace-related training workshops in order to complete the WIE. The WIE indicator would be changed to “Fulfilled” if students have earned at least 120 working hours and attended 5 hours of training.

11.2 Progression

11.2.1 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 de-registered from the programme.

11.2.2 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, 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 (see Section 11.5.2 below) 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.

11.2.3 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.

11.2.4 When a student has a 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 examination result notification but not in the transcript of studies.

11.2.5 A student may be de-registered from the programme enrolled before the time frame specified in 11.2.2 (iii) or 11.2.2 (iv) above if his/her academic performance is poor to the extent that the Board of Examiners deems that his/her change of attaining a GPA of 1.70 at the end of the programme is slim or impossible.

11.2.6 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.

11.2.7 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 the Academic Appeals Committee (AAC) for final decision. Views of Faculties/School/Departments will be sought and made available to AAC for reference.

11.3 Retaking of subjects

11.3.1 Students may only retake a subject which they have failed (i.e. Grade F or S or U).

11.3.2 Retaking of subjects is with the condition that the maximum study load of 21 credits per semester is not exceeded.

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

11.3.4 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, undergraduate or sub-degree students who fail a Cluster Area Requirements (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[3].

11.3.5 Students need to complete Form AR160 and return it to the programme offering departments for the second retake of a failed subject.

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

11.3.7 In relation to 10.3.6 above, 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.

11.4 Exceptional circumstances

11.4.1 *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

[3] 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/School 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.

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 will not receive a grade for the subject prior to his/her completion of the assessment component(s).

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.

11.4.2 Other particular circumstances*: A student's particular circumstances may influence the procedures for assessment but not the standard of performance expected in assessment.*

11.5 Grading

11.5.1 Assessment grades shall be awarded on a criterion-referenced basis. A student's overall performance in a subject is graded as follows:

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.

Notes:
- Marking rubrics aligned with these Grade Descriptors need not include all aspects of the grade descriptor.
- Marking rubrics aligned with these Grade Descriptors may include other aspects aligned with particular subject matter or field of study requirements but are not included in the grade descriptor.

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+

The grade points assigned to subject grades attained by students from 2020/21 are as follows:

Grade	***Grade Point for grades attained from 2020/21***
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

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

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

where n = number of all subjects (inclusive of failed subjects) taken by the student up to and including the latest semester/term, but for subjects which have been retaken, only the grade 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 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.

11.5.3 The codes to denote overall subject assessment and for final assessments are included in Appendices II and III.

11.6 Misconducts

11.6.1 The Department regards academic integrity as most essential. Acts of dishonesty in assessments and examinations will be seriously treated. Offenders may be brought up to Student Discipline Committee for action as appropriate.

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

(ii) Students who are found guilty of academic dishonesty 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/ non-compliance 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.

(iii) 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.

11.6.2 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 is subject to disciplinary action.

11.6.3 Students who have committed academic dishonesty or non-compliance with examination reulations 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 Honors degree, they will be downgraded to a Pass-without-Honours. The minimum of downgraded overall result will be kept at a Pass. In rare circumstances where both the Student Discipline Committee and Board of Examiners of a Department consider that there are strong justifications showing the offence be less serious, the requirement for lowering the award classification can be waived.

12. FINAL AWARD

12.1 Graduation requirements

12.1.1 A student would be eligible for award of a BSc (Hons) in Physics (with a Secondary Major in AIDA/ IE) if he/she satisfies all the conditions listed below.

(i) Programme Requirement: at least 134 credits

(ii) University Graduation Requirements:

1. Earn a cumulative GPA (or both a Major GPA and Minor GPA if applicable) of 1.70 or above at graduation.
2. Complete successfully the mandatory Work-Integrated Education (WIE) component as specified by the major programme.
3. Satisfy the residential requirement for at least 1/3 of the credits to

be completed for the award of BSc (Hons) in Physics (with a Secondary Major in AIDA/IE).

4. Satisfy the following General University Requirements (GUR):

(a) Language and Communication Requirements[4]	9 credits
(b) Artificial Intelligence and Data Analytics (GUR-AIDA) Requirement	2 credits
(c) Innovation and Entrepreneurship (GUR-IE) Requirement	1 credit
(d) Leadership Education and Development (LEAD)	3 credits
(e) Service-Learning	3 credits
(f) Cluster Areas Requirements (CAR) [3 credits from each of CAR A, M and N]	9 credits
(g) Healthy Lifestyle	Non-credit bearing
	Total = 27 credits

5. Language and Communication Requirements (Refer to Appendix V).
6. Cluster Areas Requirements (Refer to Appendix VI).

12.1.2 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.

12.2 Guidelines for award classification

12.2.1 The Board of Examiners shall exercise its judgement in coming to its conclusions as to the award for each student, and where appropriate, may use other relevant information.

12.2.2 The Weighted Grade Point Average will be computed as follows:

[4] Non-Chinese speakers and those students whose Chinese standards are at junior secondary level or below will by default be exempted from the DSR - Chinese and CAR - Chinese Reading and Writing requirements. However, this group of students would still be required to take one Chinese LCR subject to fulfil their Chinese LCR. From the 2024/25 intake cohort onwards, students who fulfil the following criteria are exempted from the CLCR 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 seconeary school.

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

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

N = number of all subjects counted in GPA calculation as set out in Section 11.5.2, except those exclusion specified in Sections 12.2.3.

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.

12.2.3 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 calculations for award classification. However, if a student attempts more elective subjects than those required for graduation in or before the semester in which he/she becomes eligible for award, the elective subjects, except for subject 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).

12.2.4 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 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.

12.2.5 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 only under exceptional circumstances, when the student has demonstrated a level of final attainment which is below the 'essential minimum' required for graduation with Honours from

the Programme, 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.

12.2.6 The following 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

12.3 Aegrotat award

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

12.3.2 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.

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

12.3.4 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.

13. STUDENT APPEALS

Please refer to the section of 'I. Academic Appeals" under '6. Assessment' in the 'Student Handbook'. It is available in Academic Registry's website.

14. UNIVERSITY REGULATIONS

The regulations in this document are only for those which apply specifically to the BSc (Hons) in Physics (with a Secondary Major in AIDA/ IE). Students should consult the current issue of the "Hong Kong Polytechnic University Student Handbook" for the General Regulations of the University.

(Should discrepancy between the contents of this document and University regulations arise, University regulations will always prevail.)

15. AMENDMENTS

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

16. MAJOR/MINOR OPTION

16.1 Graduation requirements

16.1.1 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.

16.1.2 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.

16.2 Award for Major/Minor studies

16.2.1 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.

16.2.2 "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.

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

16.2.4 The "Major GPA" and the "Minor GPA" will be presented separately to the Board of Examiners for consideration.

16.2.5 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.

17. ACADEMIC ADVISING SYSTEM

To help students understand the nature of academic advising at PolyU, a guide to academic advising is available. The guide includes the following topics:

- The meaning and nature of academic advising
- Making the most of university learning experience
- Policies on academic advising at PolyU
- Infrastructure and procedures for academic advising at PolyU
- Roles and responsibilities of academic advisors and students in academic advising
- Strategies leading to academic success
- Student preparation for academic advising
- Evaluation of academic advising

The website of Departmental Academic Advising system is
https://www.polyu.edu.hk/ap/study/academic-advising/

Appendix I: Summary of Subject Information (Major, AIDA & IE)

Summary of the Subject Information (Compulsory Subjects)

Subject Code	Subject Name	Category	Credit	Pre-requisite	Teaching Methods	Assessment Methods
AP10005	Physics I	Major	3	Nil	Lecture and tutorial	Continuous assessment and examination
AP10006	Physics II	Major	3	Nil	Lecture and tutorial	Continuous assessment and examination
AP10007	Applied Physics Laboratory	Major	3	Nil	Lecture and laboratory	Continuous assessment, practical examination and written test
AP20002	Materials Science	Major	3	Nil	Lecture, tutorial and laboratory	Continuous assessment and examination
AP20006	Quantum Mechanics for Scientists and Engineers	Major	3	AP10006	Lecture andtutorial	Continuous assessment and examination
AP20016	Electromagnetism and Waves	Major	3	Nil	Lecture and tutorial	Continuous assessment and examination
AP20017	Mechanics and Robotic Motion	Major	3	AP10005	Lecture, tutorial and Laboratory	Continuous assessment and examination
AP30011	Solid State Physics	Major	3	AP20006	Lecture, tutorial	Continuous assessment and examination
AP30012	Thermal and Statistical Physics	Major	3	AP20006	Lecture and tutorial	Continuous assessment and examination
AP30019	Data Analysis Techniques for Scientists	AIDA	3	COMP1012/ AP20005	Lecture and Laboratory	Continuous assessment and examination
AP30020	From Semiconductor to Intelligent Devices	Major	3	Nil	Lecture, tutorial and laboratory	Continuous assessment and examination
AP30022	Scientific Instrumentation and Automation	Major	3	Nil	Lecture, tutorialand laboratory	Continuous assessment and practical test
AP30023	Designing Sensing Systems for Internet of Things in Smart Cities	Major	3	Nil	Lecture, tutorial and laboratory	Continuous assessment and Course Project
AP40017	Experiment X	Major	3	AP30022	Lecture, tutorial and laboratory	Continuous assessment, practical test and written test
AP40020	Integrated Capstone Project	AIDA	6	Nil	Guided study	Continuous assessment, project report and project presentation

Subject Code	Subject Name	Category	Credit	Pre-requisite	Teaching Methods	Assessment Methods
AP40021	Capstone Project	Major for IE	6	Nil	Guided study	Continuous assessment, project report and project presentation
AP40022	Company Attachment	IE	6	LGT/MM3161	Direct Practice	Personal Reflection Journal; training Reports on Company Attachment, and Performance Assessment by Attachment Supervisor(s)
AMA1131	Calculus	Major	3	Nil	Lecture and tutorial	Coursework and final examination
AMA1606	Basic Statistics	Major	3	Nil	Lecture and tutorial	Assignments/Test and examination
AMA1616	Quantitative Skills and Experimental Design for Scientists	Major & AIDA	3	Nil	Lecture, tutorial and computer demonstration	Mid-term quiz, assignment, group project and examination
AMA2111	Mathematics I	Major & AIDA	3	AMA1007/ AMA1101/ AMA1102/ AMA1120/ AMA1130/AMA1131/ AMA1500	Lecture and tutorial	Homework, quizzes and mid-term test, and Examination
APSS1L01	Tomorrow's Leaders	GUR	3	Nil	Lectures and experiential/ online learning activities	Class Participation, Group Project, Term Paper, Academic Integrity online module & assignment and Quiz on law abidance & HK National Security Law
COMP1012	Programming Fundamentals and Applications	Major & AIDA	3	Nil	Lecture and lab	Quizzes, project and final examination
COMP1004	Introduction to Artificial Intelligence and Data Analytics	GUR	2	Nil	Lecture/Seminar	Exercises, e-Learning module, assignments, project, and quizzes
COMP4431	Artificial Intelligence	AIDA	3	COMP2011 / COMP2013/ DSAI2201	Lecture, tutorial and lab	Continuous assessment and final examination
DSAI2201	Data Structures and Algorithms	AIDA	3	COMP1011/ COMP1012/ ENG2002/LGT3109 & AMA1110/ AMA1501/ AMA2634 &	Lecture/Tutorial/Lab	Written assignments, programming assignments, quizzes and examination

Subject Code	Subject Name	Category	Credit	Pre-requisite	Teaching Methods	Assessment Methods
				AMA1751/ AMA2111		
DSAI4203	Machine Learning	AIDA	3	Nil	Lecture/Tutorial/Lab	Assignments, Tests/Quizzes, Project and Examination
ELC3121	English for Scientific Communication	Major	2	LCR English subjects	Seminar	Scientific report for specialists, Scientific article for non-specialists and Milestone Achievements
FS1000	Science Professionals in Society	Major	3	Nil	Lecture/Seminar	Class participation, In-class quizzes and Group video presentation
FS1001	Fundamentals of Modern Sciences	Major	3	Nil	Lecture and tutorials	Continuous assessment and Final exam
MM1031	Introduction to Innovation and Entrepreneurship	GUR	1	Nil	Online introductory session & video modules and self-study & preparation	Quizzes, participation in discussion forum and reflection
MM2021	Management and Organisation	IE	3	Nil	Lecture and tutorial	Continuous assessment and examination
MM2901/ MM2902	Greater Bay Area (GBA) Summer Immersion Programme/ Field Study for Innovation Ecosystems	IE	3	Nil	Lecture & sharing; Workshop & Field Study, Site visit	Participation in Lecture, Sharing and Site Visit; Individual Reflection Journals; Group Project and Presentation
MM3161	Creativity, Innovation and Entrepreneurship	IE	3	Nil	Lecture and Seminars	Continuous assessment
MM3162	Innovation and Entrepreneurship Colloquium	IE	3	Nil	Lectures	Personal Reflection on Sharing; Colloquium Participation; Group Project
MM4393	Business Innovation Project	IE	3	Nil	Lectures, Innovation Project via KTEO	Personal Reflection Journal on Lecture, Personal Learning Journal on Innovation Journey and Innovation Project

Summary of the Subject Information (AIDA)

Students may refer to the link below for details:

https://www.polyu.edu.hk/comp/study/ug-programmes/aida/curriculum/

Summary of the Subject Information (IE)

Students may refer to the link below for details:

https://www.polyu.edu.hk/mm/study/undergraduate-programmes/secondary-major-in-innovation-and-entrepreneurship/programme-structure/

Subject Description Forms

The Subject Description Forms of AP's subjects can be found in AP's website:
https://www.polyu.edu.hk/ap/study/subject-list/bachelor-programme/

The Subject Description Forms of AMA's subjects can be found in AMA's website:
https://www.polyu.edu.hk/ama/study/subject-library/

The Subject Description Forms of AIDA's subjects can be found in COMP's website:
PRD_AIDA (2025-26 intake onwards).pdf

The Subject Description Forms of IE's subjects can be found in MM' website:
https://www.polyu.edu.hk/mm/study/undergraduate-programmes/secondary-major-in-innovation-and-entrepreneurship/progamme-requirement-document/

Appendix II: Codes for Overall Subject Assessment

Codes to Denote Overall Subject Assessments

Codes	***Interpretation***	**Remarks**
I^	Assessment to be completed	An incomplete grade must be converted to a regular grade normally in the following academic year at the latest.
N	Assessment is not required	—
P	Pass an ungraded subject	This code applies to an ungraded subject, such as industrial training.
U	Fail an ungraded subject	This code applies to an ungraded subject, such as industrial training.
M	Pass with Merit	The adoption or otherwise of this code to other subjects adopting a "Pass/Fail" grading system would be subject to the decision of individual Departments. The grade "Pass with Merit" can be awarded when the student's work exceeds the subject learning outcomes in the majority of regards.
L	Subject to be continued in the following semester	This code applies to subjects like "Project" which may consist of more than 1 part (denoted by the same subject code) and for which continuous assessment is deemed appropriate.
S	Absent from all assessment components	—
W	Withdrawn from subject	Dropping of subjects after the add/drop period is normally not allowed. Requests for withdrawal from subjects after the add/drop period and prior to examination will only be considered under exceptional circumstances. This code is given when a student has obtained exceptional approval from Department to withdraw from a subject after the "add/drop" period and prior to examination; otherwise, a failure grade (grade F) should be awarded.
Z	Exempted	—
T	Transfer of credit	—
#Δ	Disqualification of result due to academic dishonesty/non-compliance with examination regulations	This code applies to failure (i.e. F and U grades) arising from disqualification of subject result due to academic dishonesty/non-compliance with examination regulations. The code will be removed subsequently when the student leaves the University.
%+	Disqualification of result due to academic dishonesty	This code applies to failure (i.e. F and U grades) arising from disqualification of subject result due to academic dishonesty. The code will be removed subsequently when the student leaves the University.
@+	Disqualification of result due to non-compliance with examination regulations	This code applies to failure (i.e. F and U grades) arising from disqualification of subject result due to non-compliance with examination regulations. The code will be removed subsequently when the student leaves the University.

^ For cases where students fail marginally in one of the components within a subject, the BoE can defer making a final decision until the students concerned have completed the necessary remedial work to the satisfaction of the subject examiner(s). The students can be assigned an 'I' code in this circumstance. The remedial work must not take the form of re-examination.

Δ For cases before 2019/20

+ For cases from 2019/20.

Note: Subjects with the assigned codes I, N, P, U, M, L, W, Z and T (if the subject is without grade transferred) will be omitted in the calculation of the GPA. A subject assigned code S will be taken as zero in the calculation.

Appendix IIIV: Codes for Final Assessment

Codes for Final Assessment

Final assessment code	***Interpretation***	
	Honours Degree Programmes	***All other programmes***
A	First Class Honours	Pass with distinction
B	Second Class (Division 1) Honours	Pass with credit
C	Second Class (Division 2) Honours	----
D	Third Class Honours	----
K	Pass without Honours	Pass
E	Required to be de-registered from the programme because of failure to meet requirements	
J	University award not applicable, e.g. exchange-in students	
N	Suspension of study due to disciplinary action	
T	Eligible to progress	
U	Expulsion due to disciplinary action	
W	Required to be de-registered from the programme because of withdrawal/absence	
X	Pending fulfilment of requirements for award	

Appendix IV: Different Types of GPA, and their Calculation Methods

Different types of GPA, and their calculation methods

Types of GPA	Purpose	Rules for GPA calculation
GPA	Determine Progression/ Graduation	(1) All academic subjects taken by the student throughout his 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 subjects, 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.

Types of GPA	**Purpose**	**Rules for GPA calculation**
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. (Ref. Section 16.1) 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.

^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. 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.

Types of GPA	Purpose	Rules for GPA calculation
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 12.2.3

* 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". 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. (Ref 16.2.5)

Appendix V: Language and Communication Requirements (LCR)

English

All undergraduate students must successfully complete two 3-credit English language subjects[1] as stipulated by the University, according to their English language proficiency level (Table 1).

Table 1: English LCR subjects (3 credits each)

English language competence level/ Subject	***ELC1011 Practical English for University Studies***	***ELC1012/ ELC1013 English for University Studies***	**Any LCR Proficient level elective subject in English (Table 2)**
HKDSE Level 4 and above or equivalent	--	Subject 1	Subject 2
HKDSE Level 3 or equivalent	Subject 1	Subject 2	--

Table 2:Proficient level elective subjects for DSE Level 4 students and above (or equivalent) (3 credits each)

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

[1] 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. For details, please consult your Programme Offering Department.

Chinese

All undergraduate students are required to successfully complete one 3-credit Chinese language subject[2] as stipulated by the University, according to their Chinese language proficiency level (Table 3). **All Chinese-speaking students will be required to take the same Chinese LCR subject.**

Table 3: Chinese LCR subjects (3 credits each)

Categories of students	Required subject
For Chinese speaking students	CLC1104P/C University Chinese (Cantonese or Putonghua version)

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

For students admitted from 2018/19 to 2023/24

Depending on your Chinese Language Centre entry assessment result, one subject from Table 4 will be **pre-assigned** to you as Chinese LCR. You are also **exempted from the Chinese Reading and Writing Requirements of CAR**.

Table 4: Chinese LCR subjects for non-Chinese speakers or students whose Chinese standards are at junior secondary level or below

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)

For students admitted from 2024/25

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 CLCR** at the time of admission. You may use a CLCR subject or free elective to fulfil the credit requirement. You are also **exempted from fulfilling the CR/CW of CAR.**

[2] 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 other subject to make up the credits. For details, please consult your Programme Offering Department.

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

Otherwise, one subject from Table 4 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.

Appendix VI: Cluster Areas Requirements

Cluster-Area Requirements (CAR) for students

Students have to choose and successfully complete a total of 9 credits from CAR subjects according to their own interests, with 3 credits from each of CAR A, M and N:

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

Reading and Writing Requirements in CAR

In order to fulfill the "Reading" requirement, a subject must include a reading of an extensive text (100,000 words or 200 pages). In order to fulfill the "Writing" requirement, a subject must include an extensive piece of writing (approximately 2,500 words for English and 2,000 – 3,000 characters for Chinese).

Students who are non-Chinese speakers or those whose Chinese standards are at junior secondary level or below will be, by default, exempted from the Reading and Writing Requirements in Chinese.