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 2023/24 intake cohort

Contents

1. <u>GENERAL INFORMATION</u>

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 133 credits • 67 credits from Discipline Specific Requirements (DSR) • 30 credits from General University Requirements (GUR) • 36 credits from Secondary Major Requirements
Final Award	:	BSc (Hons) in Physics with a Secondary Major in AI and Data Analytics or Innovation and Entrepreneurship 物理學(榮譽)理學士 副主修人工智能及數據分析 / 創新及創業
Annual Intake Number	:	25

2. <u>STUDY ROUTE OPTIONS</u>

<u>"Major with a Secondary Major" Route</u>

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 or Innovation and Entrepreneurship after having satisfied all Discipline Specific Requirements, General University Requirements and Secondary Major Requirements. 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.

<u>"Major with a Secondary Major and a Minor" Route</u>

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

3.   OBJECTIVES AND PROGRAMME OUTCOMES

3.1   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.

3.2   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.

3.2.1.   Category A   Professional/academic knowledge and skills

The graduates should be able to:

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.

3.2.2. Category B Attributes for all-roundedness

PolyU aspires to develop all its students as all-round graduates with professional competence, and has identified a set of highly valued graduates attributes as the learning goals for students.

The graduates should (or are expected to) possess the following attributes:

Outcomes	Attributes	UILOs*
B1	be able to examine and critique the validity of information, arguments and different viewpoints, and to evaluate, synthesize and propose solutions to problems of a general nature based on logical reasoning, with innovative/creative ideas where appropriate;	CT/ IPS
B2a	be able to communicate clearly and effectively in English;	EC
B2b	be able to communicate clearly and effectively in Chinese, including Cantonese and Putonghua;	
B3	be able to collaborate smoothly with others as a leader or a team player, to demonstrate a sense of responsibility, accountability, team relationship and spirit, and ethical reasoning in professional and day-to-day contexts;	EL
B4	possess a desire for life-long learning and self-learning; and	LL
B5	Possess an understanding of different cultures and social development needs in local, national, and global contexts, and accept the responsibilities as professionals and citizens in such contexts.	SRGC

CT: Critical thinker; EC: Effective communicator; IPS: Innovative problem solver; LL: Lifelong learner'; EL: Ethical leader; SRGC: Socially responsible global citizen.

Learning Outcomes in this Category map to the UILOs of 'Critical thinker', 'Effective communicator', 'Innovative problem solver', 'Lifelong learner', 'Ethical leader' and 'Socially responsible global citizen' as indicated in the table above.

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.   ENTRANCE REQUIREMENTS

For those applying on the basis of HKDSE:

Four core subjects and one elective subject with:

Level 3: English Language and Chinese Language

Level 2: Mathematics, Liberal Studies and one elective subject

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.

5.   THE CREDIT-BASED PROGRAMME

5.1.   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.

5.2.   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.

5.3.   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).

6.   CURRICULUM

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

Stage/ Semester	Subject Code	Subject	Category	Compulsory / Elective	Pre-requisite	Credit
Year 1/ Sem 1	AP10005	Physics I	DSR	C		3
	ABCT1700/ ABCT1741	*Introduction to Chemistry/ General Chemistry I*	DSR	C		3
	AMA1110	Basic Mathematics I – Calculus and Probability & Statistics	AIDA	C		3
	AMA1600	Fundamentals of AI and Data Analytics	GUR	C		2
	MM1031	Introduction to Innovation and Entrepreneurship	GUR	C		1
		English I	GUR (LCR)	C		3
Year 1/ Sem 2	AP10006	Physics II	DSR	C		3
	AP10007	Applied Physics Laboratory	DSR	C		3
	ABCT1101/ ABCT1102	*Introductory Life Science/ General Biology*	DSR	C		3
	AMA1120	Basic Mathematics II – Calculus and Linear Algebra	DSR	C	AMA1110	3
	APSS1L01	Tomorrow's Leaders	GUR	C		3
		Chinese (GUR)	GUR (LCR)	C		3
		Healthy Lifestyle	GUR	C		0
					Credits for Year 1	*33*
Year 2/ Sem 1	AP20016	Electromagnetism and Waves	DSR	C		3
	AP20017	Mechanics and Robotic Motion	DSR	C	AP10005	3
	AMA2111	Mathematics I	AIDA	C	AMA1007/ AMA1101/ AMA1102/ AMA1120/ AMA1130/ AMA1500	3
	COMP1012	Programming Fundamentals and Applications	AIDA	C		3
	CLC2211P	Chinese Communication for Science Professionals	DSR	C		2
		CAR I (GUR)	GUR	C		3
Year 2/ Sem 2	AP20002	Materials Science	DSR	C		3
	AP20006	Quantum Mechanics for Scientists and Engineers	DSR	C	AP10006	3
	AMA1611	Data Analytics Fundamentals	AIDA	C		3
	COMP2013	Data Structures and Algorithms	AIDA	C	COMP1011 / COMP1012 / ENG2002 / LGT3109 and AMA1110 / AMA1501 / AMA2634 and AMA1751 / AMA2111	3
		English II	GUR (LCR)	C		3
		CAR II (GUR)	GUR	C		3
					Credits for Year 2	*35*

Stage/ Semester	Subject Code	Subject	Category	Compulsory/ Elective	Pre-requisite	Credit
Year 3/ Sem 1	AP30012	Thermal and Statistical Physics	DSR	C	AP20006	3
	AP30019	Data Analysis Techniques for Scientists	AIDA	C	COMP1012	3
	AP30020	From Semiconductor to Intelligent Devices	DSR	C		3
	AP30022	Scientific Instrumentation and Automation	DSR	C		3
	COMP4431	Artificial Intelligence	AIDA	C	COMP1012 / COMP2011 / ENG2002	3
	ELC3121	English for Scientific Communication	DSR	C	LCR English subjects	2
Year 3/ Sem 2	AP30011	Solid State Physics	DSR	C	AP20006	3
	AP30023	Sensors and Transducers for Internet of Things	DSR	C		3
	COMP4432	Machine Learning	AIDA	C		3
		1 DSR Elective Subject	DSR	E		3
		CAR III (GUR)	GUR	C		3
		Service-Learning (GUR)	GUR	C		3
					Credits for Year 3	**35**
Year 4/ Sem 1	AP40020	Integrated Capstone Project	AIDA	C		6
		2 DSR Elective Subjects	DSR	E		6
		2 AIDA Elective Subjects	AIDA	E		6
Year 4/ Sem 2	AP40017	Experiment X	DSR	C	AP30022	3
		2 DSR Elective Subjects	DSR	E		6
		CAR IV (GUR)	GUR	C		3
					Credits for Year 4	**30**
					Total:	**133**

Remarks:

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

DSR Elective Subjects

Subject Code	Subject Title
AP30010	Radiation Physics
AP30018	Acoustics Principles and Intelligent Applications
AP30021	Optical Design with AI
AP40014	Imaging: Detector, Display and Processing
AP40015	Intelligent Lighting
AP40016	Laser Processing and Applications
AP40018	Medical Imaging: Science and Analytics

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

Stage	Credits
Year 1	33
Year 2	35
Year 3	35
Year 4	30
Total	*133*

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 the 4 cluster areas]	12 credits
(g)	Healthy Lifestyle	Non-credit bearing
(h)	Discipline-Specific Requirement (DSR)	67 credits
(i)	AI and Data Analytics Requirements (AIDA)	36 credits
	Total	*133 credits*

6.2. <u>CURRICULUM OF FULL-TIME BSC (HONS) IN PHYSICS+ INNOVATION AND ENTREPRENEURSHIP (IE)</u>

Stage/ Semester	Subject Code	Subject	Category	Compulsory / Elective	Pre-requisite	Credit
Year 1/ Sem 1	AP10005	Physics I	DSR	C		3
	ABCT1700/ ABCT1741	*Introduction to Chemistry/ General Chemistry I*	DSR	C		3
	AMA1110	Basic Mathematics I – Calculus and Probability & Statistics	DSR	C		3
	AMA1600	Fundamentals of AI and Data Analytics	GUR	C		2
	MM1031	Introduction to Innovation and Entrepreneurship	GUR	C		1
		English I	GUR (LCR)	C		3
Year 1/ Sem 2	AP10006	Physics II	DSR	C		3
	AP10007	Applied Physics Laboratory	DSR	C		3
	ABCT1101/ ABCT1102	*Introductory Life Science/ General Biology*	DSR	C		3
	AMA1120	Basic Mathematics II – Calculus and Linear Algebra	DSR	C	AMA1110	3
	APSS1L01	Tomorrow's Leaders	GUR	C		3
		Chinese (GUR)	GUR (LCR)	C		3
		Healthy Lifestyle	GUR	C		0
					Credits for Year 1	*33*
Year 2/ Sem 1	AP20016	Electromagnetism and Waves	DSR	C		3
	AP20017	Mechanics and Robotic Motion	DSR	C	AP10005	3
	AMA2111	Mathematics I	DSR	C	AMA1007/ AMA1101/ AMA1102/ AMA1120/ AMA1130/ AMA1500	3
	COMP1012	Programming Fundamentals and Applications	DSR	C		3
	CLC2211P	Chinese Communication for Science Professionals	DSR	C		2
		CAR I (GUR)	GUR	C		3
Year 2/ Sem 2	AP20002	Materials Science	DSR	C		3
	AP20006	Quantum Mechanics for Scientists and Engineers	DSR	C	AP10006	3
	MM2021	Management and Organisation	IE	C		3
	MM2901/ MM2902	Greater Bay Area (GBA) Summer Immersion Programme/ Field Study for Innovation Ecosystems	IE	C		3
		English II	GUR (LCR)	C		3
		CAR II (GUR)	GUR	C		3
					Credits for Year 2	*35*

Stage/ Semester	Subject Code	Subject	Category	Compulsory/ Elective	Pre-requisite	Credit
Year 3/ Sem 1	AP30012	Thermal and Statistical Physics	DSR	C	AP20006	3
	AP30020	From Semiconductor to Intelligent Devices	DSR	C		3
	AP30022	Scientific Instrumentation and Automation	DSR	C		3
	MM3161	Creativity, Innovation and Entrepreneurship	IE	C		3
	MM3162	Innovation and Entrepreneurship Colloquium	IE	C		3
	ELC3121	English for Scientific Communication	DSR	C	LCR English subjects	2
Year 3/ Sem 2	AP30011	Solid State Physics	DSR	C	AP20006	3
	AP30023	Sensors and Transducers for Internet of Things	DSR	C		3
	MM4393	Business Innovation Project	IE	C		3
		1 IE Elective Subject	IE	E		3
		CAR III (GUR)	GUR	C		3
		Service-Learning (GUR)	GUR	C		3
Year 3/ Summer Sem	AP40022	Company Attachment	IE	C		6
					Credits for Year 3	*41*
Year 4/ Sem 1	AP40021	Capstone Project	DSR	C		6
		4 IE Elective Subjects	IE	E		12
Year 4/ Sem 2	AP40017	Experiment X	DSR	C	AP30022	3
		CAR IV (GUR)	GUR	C		3
					Credits for Year 4	*24*
					Total:	**133**

Remarks:

CAR - Cluster Areas Requirements
DSR - Discipline Specific 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	From the list in Appendix	3 credits

Double counting arrangement is NOT applicable to 11443-XIE. Students who have completed MM2711 can only take it to fulfill either "IE Electives" or "General Electives" requirement of the Secondary Major in IE, but it cannot be taken to fulfill CAR N. In other

words, students are required to take another subject to fulfill the credit requirement for CAR N.

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

Stage	Credits
Year 1	33
Year 2	35
Year 3	41
Year 4	24
Total	*133*

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 the 4 cluster areas]	12 credits
(g)	Healthy Lifestyle	Non-credit bearing
(h)	Discipline-Specific Requirement (DSR)	67 credits
(i)	Innovation and Entrepreneurship Requirements (IE)	36 credits
	Total	*133 credits*

6.3. Fundamental Science Subjects

Broad Discipline common subjects		Credit	Offered in Semester	
Category A	B		1	2
Physics I [AP10005]#		3	1 & 2	
Introduction to Chemistry [ABCT1700] *or*	General Chemistry I [ABCT1741]	3	A&B	
Introductory Life Science [ABCT1101] *or*	General Biology [ABCT1102]	3	A&B	
Underpinning subject		**Credit**	**Offered in Semester**	
Introduction to Physics [AP10001]		3	1 & 2	

Students who have not attained Level 3 or above in Physics as a single Science subject or a component of the Combined Science (sub-score) in HKDSE, will be required to take AP10001 before taking AP10005.

1. The science subjects under Category A are designed for students who have <u>not</u> attained Level 3 or above in Chemistry and/or Biology <u>as a single Science subject or a component of the Combined Science (sub-score)</u> in HKDSE.
2. Students who have attained Level 3 or above in Chemistry and/or Biology, <u>as a single Science subject or a component of the Combined Science (sub-score)</u> are required to take the relevant subjects under Category B.
3. Students must retake a compulsory subject which they have failed. Those who fail Category B subjects and pursue for programmes which accept Category A subjects could take the relevant Category A subject as replacement. Academic Advisors will provide academic counseling to students on the appropriate subject to take/retake.
4. Students who have not achieved Level 3 or above in Physics as a single Science subject or a component of the Combined Science (sub-score) in HKDSE, are required to complete AP10001 before progressing to take AP10005. AP10001 is an underpinning subject. The 3 credits earned by students will not be counted towards the number of credits required for graduation.
5. The Department will provide academic counseling to students upon their admission and before subject registration.

7.   CURRICULUM MAP

7.1. **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	B2a	B2b	B3	B4	B5
AP10001 Introduction to Physics	A		I			I				I	
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 Sensors and Transducers for Internet of Things	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	A	R	A	R	
CLC2211P Chinese Communication for Science Professionals. (DSR Chinese)								R/A		R/A	
ELC3121 English for Scientific Communication (DSR Language)							R/A			R/A	
AMA2111 Mathematics I		R	R								

Programme outcomes / Subjects	A1	A2	A3	A4	A5	B1	B2a	B2b	B3	B4	B5
AMA1110 Basic Mathematics I – Calculus and Probability & Statistics		R	R								
AMA1611 Data Analytics Fundamentals		R/A	R/A								
ABCT1101 Introductory Life Science						I				I	
ABCT1102 General Biology						I				I	
ABCT1700 Introduction to Chemistry						I				I	
ABCT1741 General Chemistry I						I				I	
COMP1012 Programming Fundamentals and Applications	I	I	I/R			I			I/A		
COMP2013 Data Structures and Algorithms	R/A	R/A	R		I	R					
COMP4431 Artificial Intelligence	I/R	R/A	R			R					I
COMP4432 Machine Learning	R/A	R/A	R/A			R					I/R
AMA1600 Fundamentals of AI and Data Analytics										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	
CAR III (GUR)										R	
CAR IV (GUR)							A	A	A	R	I/A
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
DSR - Discipline Specific Requirements
IE - Innovation and Entrepreneurship Requirements
GUR - General University Requirements
LCR - Language and Communication Requirements

7.2. 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	B2a	B2b	B3	B4	B5
AP10001 Introduction to Physics	A		I			I				I	
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 Sensors and Transducers for Internet of Things	A		A	I	R	R					
AP40017 Experiment X		A		R/A	R	R			R		
AP40021 Capstone Project	A	A	A	A	A	R/A	A	R	A	R	
CLC2211P Chinese Communication for Science Professionals. (DSR Chinese)								R/A		R/A	
ELC3121 English for Scientific Communication (DSR Language)							R/A			R/A	
AMA1110 Basic Mathematics I – Calculus and Probability & Statistics		R	R								
AMA1120 Basic Mathematics II – Calculus and Linear Algebra		R	R								

Programme outcomes / Subjects	A1	A2	A3	A4	A5	B1	B2a	B2b	B3	B4	B5
AMA2111 Mathematics I		R	R								
COMP1012 Programming Fundamentals and Applications	I	I	I/R			I			I/A		
MM2021 Management and Organisation	I	I	I/A	I/A	I	I	R		I/A		
MM2901/ MM2902 Greater Bay Area (GBA) Summer Immersion Programme/ Field Study for Innovation Ecosystems				I/A	I/A	I	R	I	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
AMA1600 Fundamentals of AI and Data Analytics										I	I
MM1031 Introduction to Innovation and Entrepreneurship										I	I
ABCT1101 Introductory Life Science						I			I		
ABCT1102 General Biology						I			I		
ABCT1700 Introduction to Chemistry						I			I		
ABCT1741 General Chemistry I						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		
CAR IV (GUR)							A	A	A	R	I/A
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
DSR - Discipline Specific Requirements
IE - Innovation and Entrepreneurship Requirements
GUR - General University Requirements
LCR - Language and Communication Requirements

8.   REGISTRATION

8.1. Please read the following sections under "4. Programme Enrollment" 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

9.   NORMAL DURATION FOR COMPLETION OF THE PROGRAMME

  9.1   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.

  9.2   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.

  9.3   Students who have exceeded the normal duration of the programme for more than two years (four years for part-time articulation degree progarmmes offered by SPEED) 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.

  9.4   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.

10.   ASSESSMENT AND PROGRESSION

10.1 Assessment methods

10.1.1 Students' performance in a subject shall be assessed by continuous assessment, practical test and/or examinations. The weighting of each in the overall subject grade is stated in the respective subject description form.

10.1.2 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.

10.1.3 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.

10.1.4 At the beginning of each semester, each subject teacher should inform students of the details of the assessment methods to be used.

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

10.1.6 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 WIE component carries 1 training credit for a minimum placement duration of 120 working hours. A student is required to accrue at least one WIE training credit before graduation. 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.

10.2 Progression

10.2.1 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.

10.2.2. 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 10.5.2 below) is lower than 1.70 for two consecutive semesters <u>and</u> 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.

10.2.3. 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.

10.2.4. 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.

10.2.5. A student may be de-registered from the programme enrolled before the time frame specified in 10.2.2 (iii) or 10.2.2 (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.

10.2.6. 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.

10.3. Retaking of subjects

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

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

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

10.3.4. 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.[1]

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

10.3.6. 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.

10.3.7. 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.

10.4. Exceptional circumstances

10.4.1. *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 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). 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 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.

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

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[1] 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.

10.5. Grading

10.5.1. 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

10.5.2. 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:

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

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.

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

10.6. Misconducts

10.6.1. 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'. 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.

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

10.6.3   Students who have committed academic dishonesty 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. The proposed penalty will be discussed in both

Subject Assessment Review Panel (SARP) and/or Board of Examiners (BoE) meeting. Student will be allowed to appeal to the Head of Department using the regular appeal procedure as stipulated in the Student Handbook. 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.

11. FINAL AWARD

11.1. Graduation requirements

11.1.1. 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 133 credits
(Depending on the students attainment of HKDSE)

(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[1]	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 the 4 cluster areas]	12 credits
(g) Healthy Lifestyle	Non-credit bearing
	Total = 30 credits

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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 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.

       5. Language and Communication Requirements (Refer to Appendix V).

       6. Cluster Areas Requirements (Refer to Appendix VI).

11.1.2. 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 is able to fulfil all his graduation requirements, and after the add/drop period for that semester has ended.

11.2. Guidelines for award classification

11.2.1. Classification of awards is based on the final Weighted GPA (see the following paragraph). There is no automatic conversion between the Weighted GPA and the award classification. 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.

11.2.2. The Weighted Grade Point Average is defined as follows:

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

where W_i is the subject level weighting with

$$W_i = \begin{cases} 2 \text{ for level I and II subjects} \\ 3 \text{ for level III and IV subjects} \end{cases}$$

The Weighted GPA will also be ranged from 0.00 to 4.30..

    n = number of all subjects counted in GPA calculation as set out in Section 10.5.2, except those exclusion specified in Sections 11.2.2 to 11.2.3.

11.2.3. 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).

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

Honours	*Guidelines*

degrees	
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.

11.2.5. 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 Weighted GPA is less than 1.70, he/she may be considered for a Pass-without-Honours classification.

11.2.6. The following are the award GPA ranges for determining award classifications:

Honours Degrees	*ALL OTHER PROGRAMMES*	*AWARD GPA*
1st	Distinction	3.60 – 4.30
2:i	Credit	3.00 – 3.59
2:ii	Pass	2.40 – 2.99
3rd		1.70 – 2.39

11.3. Aegrotat award

11.3.1. 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.

11.3.2. 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.

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

11.3.4. 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.

12. STUDENT APPEALS

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

13. 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 "Student Handbook, Full-time and Part-time Studies" for the General Regulations of the University.

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

14. 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.

15. MAJOR/MINOR OPTION

For the graduation requirements of specific programmes of study (majors and minors), candidates should refer to the relevant section of AR website or consult the programme-offering departments concerned.

15.1. Graduation requirements

Students taking the Major/Minor route would be eligible for applying for graduation based on the following conditions.

(i)   Satisfy the requirements of the Major studies which are the same as the graduation requirements of the "Single Degree".

(ii)   Satisfy the requirements of the Minor studies.

15.2. Award for Major/Minor studies

15.2.1. For students who have completed a Major and a Minor programme, their award classification will be based on both their "Major GPA" and "Minor GPA".

15.2.2. "Major GPA" is derived in the same way as that for the "Single Degree".

15.2.3. "Minor GPA" is derived based on the 18 credits of Minor study. "Minor GPA" is unweighted.

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

15.2.5. In order to be eligible for a particular award classification, a student should have comparable standard of performance in both his/her Major and Minor studies.

15.2.6. In cases where the attainment of students in the Minor study warrants the granting of one classification lower than that the students deserve for his/her Major study, the Board of Examiners has the discretion to recommend the upper classification which reflects the performance on the Major study better.

16.   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
(DSR, AIDA & IE)**

Summary of the Subject Information (Compulsory Subjects)

Subject Code	Subject Name	Credit	Pre-requisite	Teaching Methods	Assessment Methods
AP10001	Introduction to Physics	3	Nil	Lecture, student-centered tutorial and e-learning	Continuous assessment and examination
AP10005	Physics I	3	Nil	Lecture, student-centered tutorial and e-learning	Continuous assessment and examination
AP10006	Physics II	3	Nil	Lecture, student-centered tutorial and e-learning	Continuous assessment and examination
AP10007	Applied Physics Laboratory	3	Nil	Laboratory	Continuous assessment, practical examination and written test
AP20002	Materials Science	3	Nil	Lecture, tutorial and laboratory	Continuous assessment and examination
AP20006	Quantum Mechanics for Scientists and Engineers	3	AP10006	Lecture, student-centered tutorial and e-learning	Continuous assessment and examination
AP20016	Electromagnetism and Waves	3	Nil	Lecture and tutorial	Continuous assessment and examination
AP20017	Mechanics and Robotic Motion	3	AP10005	Lecture, student-centered tutorial, e-learning and Laboratory	Continuous assessment and examination
AP30010	Radiation Physics	3	Nil	Lecture and tutorial	Continuous assessment and examination
AP30011	Solid State Physics	3	AP20006	Lecture, tutorial and e-learning	Continuous assessment and examination
AP30012	Thermal and Statistical Physics	3	AP20006	Lecture and tutorial	Continuous assessment and examination
AP30018	Acoustics Principles and Intelligent Applications	3	AP20017	Lecture, tutorial and Laboratory	Continuous assessment and examination
AP30019	Data Analysis Techniques for Scientists	3	COMP1012	Lecture and Laboratory	Continuous assessment and examination
AP30020	From Semiconductor to Intelligent Devices	3	Nil	Lecture, tutorial and Laboratory	Continuous assessment and examination
AP30021	Optical Design with AI	3	Nil	Lecture and laboratory	Continuous assessment and practical test
AP30022	Scientific Instrumentation and Automation	3	Nil	Lecture and Laboratory	Continuous assessment and practical test
AP40014	Imaging: Detector, Display and Processing	3	Nil	Lecture and Laboratory	Continuous assessment and examination
AP40015	Intelligent Lighting	3	Nil	Lecture and tutorial	Continuous assessment and examination
AP40016	Laser Processing and Applications	3	Nil	Lecture and tutorial	Continuous assessment and examination

Subject Code	Subject Name	Credit	Pre-requisite	Teaching Methods	Assessment Methods
AP40018	Medical Imaging: Science and Analytics	3	Nil	Lecture and tutorial	Continuous assessment and examination
AP40017	Experiment X	3	AP30022	Lecture, tutorial and Laboratory	Continuous assessment, term project and practical test
AP40020	Integrated Capstone Project	6	Nil	Presentation	Continuous assessment, project report and project presentation
AP40021	Capstone Project	6	Nil	Presentation	Continuous assessment, project report and project presentation
AP40022	Company Attachment	6	LGT/MM3161	Direct Practice	Personal Reflection Journal; training Reports on Company Attachment, and Performance Assessment by Attachment Supervisor(s)
ABCT1101	Introductory Life Science	3	Nil	Lecture, tutorial and self-study	Written assessment and examination
ABCT1102	General Biology	3	ABCT1101	Lecture, tutorial, field trip and self-study	Written assessment, written assignment and examination
ABCT1700	Introduction to Chemistry	3	Nil	Lecture and tutorial	Continuous assessment and examination
ABCT1741	General Chemistry I	3	Nil	Lecture and tutorial	Continuous assessment and examination
AMA1110	Basic Mathematics I – Calculus and Probability & Statistics	3	Nil	Lecture and tutorial	Assignments, mid-term test and Examinations
AMA1120	Basic Mathematics II – Calculus and Linear algebra	3	AMA1110	Lecture and tutorial	Assessments, testes and examination
AMA1611	Data Analytics Fundamentals	3	Nil	Lecture and tutorial	Assessments/ testes, and examination
AMA2111	Mathematics I	3	AMA1007/ AMA1101/ AMA1102/ AMA1120/ AMA1130/ AMA1500	Lecture and tutorial	Assignment, quizzes and mid-term test, and Examination
COMP1012	Programming Fundamentals and Applications	3	Nil	Lecture and lab	Assignment, quizzes and project, and final examination
COMP2013	Data Structures and Algorithms	3	COMP1011 / COMP1012 / ENG2002 / LGT3109 and AMA1110 / AMA1501 /	Lecture and tutorial/ lab	Exercises and programming project, tests and examination

Subject Code	Subject Name	Credit	Pre-requisite	Teaching Methods	Assessment Methods
			AMA2634 and AMA1751 / AMA2111		
COMP4431	Artificial Intelligence	3	COMP1012 / COMP2011 / ENG2002	Class activities	Continuous assessment and examination
COMP4432	Machine Learning	3	Nil	Lecture/ tutorial/ lab	Continuous assessment and examination
MM2021	Management and Organisation	3	Nil	Lecture and tutorial	Continuous assessment and examination
MM2901/ MM2902	Greater Bay Area (GBA) Summer Immersion Programme/ Field Study for Innovation Ecosystems	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	3	Nil	Lecture and Seminars	Continuous assessment
MM3162	Innovation and Entrepreneurship Colloquium	3	Nil	Lectures	Personal Reflection on Sharing; Colloquium Participation; Group Project
MM4393	Business Innovation Project	3	Nil	Lectures, PolyU Lean Launchpad Programme	Personal Reflection Journal on Innovation and Entrepreneurship; Personal Learning Journal on LLP; LLP Project
CLC2211P	Chinese Communication for Science Professionals	2	Nil	Seminars and self-study	Assessment, class participation and examination
ELC3121	English for Scientific Communication	2	LCR English subjects	Seminar	Tests
APSS1L01	Tomorrow's Leaders	3	Nil	Lectures and experiential learning activities	Class Participation, Peer Assessment, Group Project and Individual Assignment

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/

Appendix II: 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 ABCT's subjects can be found in ABCT's website:
https://www.polyu.edu.hk/abct/study/undergraduate-programmes/list-of-all-subjects_ug/

The Subject Description Forms of AIDA's subjects can be found in COMP's website:
https://www.polyu.edu.hk/comp/docdrive/ug/AIDA/PRD_AIDA230731.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/

Subject Description Form

Subject Code	CLC2211P (2019-20 onward) CBS2211P (2018-19 and before)
Subject Title	Chinese Communication for Science Professionals 專業中文傳意（科學）
Credit Value	2
Level	2
Pre-requisite	Nil
Co-requisite	Nil
Exclusion	CLC2212P (Chinese Communication for Professionals of Applied Sciences)
Objectives	This subject aims at fostering students' communication skills and logical thinking abilities through trainings in reading, writing and speaking for the professional contact of Applied Science.
Intended Learning Outcomes *(Note 1)*	Upon completion of the subject, students will be able to: (a) develop analytical thinking skills for better organization and presentation of ideas; (b) consolidate the essential skills for writing fluent and organized articles in Chinese for daily communication and vocational purposes; (c) acquire the oral presentation skills for effective communication; (d) acquire the necessary methods for effective reading comprehension and critical thinking that would facilitate self-learning and life-long learning.
Subject Synopsis/ Indicative Syllabus *(Note 2)*	Indicative Contents: • Reading strategy and comprehension of texts general and professional for communication. • Structure of language and structure of ideas • Logical thinking and logical writings include expository writing and argumentative writing. • Organization of ideas and paragraphing letter, report, press release. • Accuracy and effectiveness in oral communications, presentation of power point proposal or working plan.

Teaching/Learning Methodology *(Note 3)*	• Interactive seminars with reading and writing exercises, teaching students various instructive Chinese communication skills, group discussion, presentation drills; • Pro-class self study is required with related reading and writing exercises; • Teacher's consultation will be offered to the students depending on their individual need.

Assessment Methods in Alignment with Intended Learning Outcomes *(Note 4)*						

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)			
		a	b	c	d
1). Assessment 1 (Chinese composition)	20%	√	√		√
2). Assessment 2 (Chinese proposal-Writing)	20%	√	√		√
3). Assessment 3 (Chinese proposal-Oral presentation & discussion)	20%		√	√	
4).Class participation	10 %	√	√	√	√
5). Quiz	30%	√	√		√
Total	100 %				

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

The assessment includes criterion-referenced based quizzes, oral presentation & discussion, writing & reading comprehension test. It will evaluate students' writing communication skills, oral communication skills, pronunciation, vocabulary, colloquial expression vs. formal expression, writing and speaking achievement. The major assessment items include:

• Oral presentation & discussion (assessing the ability to get stand in front of the audience to give a formal presentation which is expected to accurate, fluent, and in a rational & convincing way);

• Writing (assessing ability to realize the professional context and conventions written communication, and in expressing personal view accurately and clearly);

	• Reading (assessing ability to understand the theme and gist of an article quickly, and to judge the correctness and appropriateness of expressions for specific communication purpose, in particular contexts).	
Student Study Effort Required	Class contact:	
	▪ Lectures & Seminars	26 Hrs.
	Other student study effort:	
	▪ outside class practice	31 Hrs.
	▪ self-study	31 Hrs.
	Total student study effort	88 Hrs.
Reading List and References	司有和編著《科技寫作簡明教程》，安徽教育出版社，1984 胡裕樹主編《大學寫作》，復旦大學出版社，1985 林立、尹世超編著《科技語文》，冶金工業出版社，1986 胡建玉編《讀書技巧》江西科學技術出版社，1991 曾詳芹，韓雪屏主編《閱讀學原理》河南教育出版社，1992 陳建民《說話的藝術》，語文出版社，1994 李軍華《口才學》，華中理工大學出版社，1996 黃葵，俞君立編著《閱讀學基礎》，武漢大學出版社，1996 法定語文事務署《政府公文寫作手冊》，1996 周錫馥編著《中文應用寫作教程》，三聯書店(香港)有限公司，1996 香港城市大學語文學部編著《中文傳意寫作篇》，香港城市大學出版社，2001 香港城市大學語文學部編著《中文傳意基礎篇》，香港城市大學出版社，2001 盧丹懷、何寅、謝天振編著《中港應用文傳意大全》，香港商務印書館，2002 于成鯤、陳瑞端、金振邦等主編《科教文與社交文書寫作典範》，復旦大學出版社，2011

Subject Description Form

Subject Code	ELC3121
Subject Title	English for Scientific Communication
Credit Value	2
Level	3
Pre-requisite	LCR English subjects
Objectives	This subject aims to develop the English language and communication skills required by students to report and discuss scientific and technical studies in a range of written texts. The subject also aims to improve and develop their English language proficiency within a framework of scientific contexts. In striving to achieve the two interrelated objectives, attention will be given to developing the core competencies identified by the University as vital to the development of effective life-long learning strategies and skills.
Intended Learning Outcomes *(Note 1)*	Upon completion of the subject, students will be able to: a. critique and synthesise sources in scientific and technical articles and reports, and b. report scientific information in writing to different audiences. To achieve the above outcomes, students are expected to use language and text structure appropriate to the context, select information critically, and present and support stance and opinion.
Subject Synopsis/ Indicative Syllabus *(Note 2)*	This syllabus is indicative. The balance of the components, and the corresponding weighting, will be based on the specific needs of the students. **Written reports of scientific information** Critiquing and synthesising sources; employing appropriate language, structure and style in a range of scientific writing for a variety of audiences; maintaining cohesion and coherence in scientific texts.
Teaching/Learning Methodology *(Note 3)*	The study method is primarily seminar-based. Activities include teacher input as well as individual and group work involving drafting and evaluating texts, mini-presentations, discussions and simulations. Students will be referred to information on the Internet and the ELC's Centre for Independent Language Learning. Learning materials developed by the English Language Centre are used throughout this course. Additional reference materials will be recommended as required.

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)	
		a	b
1. First version of two technical texts for two different audiences	50%	✓	✓
2. Final version of two technical texts for two different audiences	50%	✓	✓
Total	100 %		

Assessment Methods in Alignment with Intended Learning Outcomes

(Note 4)

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

This subject adopts the method of 100% continuous assessment. Students' writing skills are evaluated through assessment tasks related to the learning outcome areas. Students are assessed on the accuracy and the appropriacy of the language used in fulfilling the assessment tasks, as well as the selection and organisation of ideas.

Students will be assessed on technical texts targeted at different intended readers, including experts and non-experts in science and technology. This facilitates assessment of students' ability to select content and use language and style appropriate to the purposes and intended readers.

A process writing approach will be used to raise students' awareness of the importance of drafting and editing in the writing process, and to assess their ability to edit texts based on feedback on the first version.

Student Study Effort Expected

Class contact:	
Seminars	26 Hrs.
Other student study effort:	
Classwork-related, assessment-related, and self-access work	52 Hrs.
Total student study effort	78 Hrs.

Reading List and References

Required reading

Course materials prepared by the English Language Centre

Recommended readings

Behrens, L. & Rosen, L. J. (2010). *A sequence for academic writing* (4th ed.). New York: Longman.

Graff, G., Birkenstein, C and Durst, R. (2008). *They say/I say: The moves that matter in academic writing*. New York: W. W. Norton.

Ingre, D. (2003). *Technical writing: Essentials for the successful professional.* Mason, OH: Thomson.

Johnson, S. & Scott, J. (2009). *Study and communication skills for the biosciences*. Oxford: Oxford University Press.

Mulvaney, M. K. & Jolliffe, D. A. (2005). *Academic writing: Genres, samples, and resources*. New York: Pearson Longman.

Pickett, N.A., Laster, A.A. & Staples, K.E. (2001). *Technical English: Writing, reading, and speaking* (8th ed.). New York, NY: Longman.

VanAlstyne, J.S. & Tritt, M.D. (2002). *Professional and technical writing strategies: Communicating in technology and science.* Upper Saddle River, NJ: Prentice Hall.

Subject Description Form

Subject Code	APSS1L01
Subject Title	Tomorrow's Leaders
Credit Value	3
Level	1

GUR Requirements Intended to Fulfill	This subject intends to fulfill the following requirement(s) :
	
	☐ **Healthy Lifestyle**
	☐ **Freshman Seminar**
	☐ **Languages and Communication Requirement (LCR)**
	☒ **Leadership and Intra-Personal Development**
	☐ **Service-Learning**
	☐ **Cluster-Area Requirements (CAR)**
	    ☐ Human Nature, Relations and Development
	    ☐ Community, Organization and Globalization
	    ☐ History, Cultures and World Views
	    ☐ Science, Technology and Environment
	☐ **China-Studies Requirement**
	    ☐ Yes or ☐ No
	☐ **Writing and Reading Requirements**
	    ☐ English or ☐ Chinese

Pre-requisite / Co-requisite/ Exclusion	Nil
Assessment Methods	(see table below)

100% Continuous Assessment	Individual Assessment	Group Assessment
1. Class Participation	20%	--
2. Group Project	--	30%
3. Term Paper	50%	--

- The grade is calculated according to the percentage assigned;
- The completion and submission of all component assignments are required for passing the subject; and
- Student must pass all component(s) if he/she is to pass the subject.

Objectives	The course is designed to enable students to learn and integrate theories, research and concepts of the basic personal qualities (particularly intrapersonal and interpersonal qualities) of effective leaders. This subject also intends to

	help students develop and reflect on their intrapersonal qualities, interpersonal qualities and connection of learning to oneself. Finally, the subject cultivates students' appreciation of the importance of intrapersonal and interpersonal qualities in effective leadership.
Intended Learning Outcomes *(Note 1)*	Upon completion of the subject, students will be able to: a. understand and integrate theories, research and concepts on the basic qualities (particularly intrapersonal and interpersonal qualities) of effective leaders; b. develop self-awareness and self-understanding c. demonstrate self-leadership in pursuit of continual self-improvement; d. apply intrapersonal and interpersonal skills in daily lives; e. 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; f. recognize and accept their responsibility as professionals and citizens to the society and the world
Subject Synopsis/ Indicative Syllabus *(Note 2)*	1. An overview of the personal attributes of effective leaders: roles of intrapersonal and interpersonal qualities in effective leadership and university graduates' employability in the service economy. 2. Self-leadership in effective leaders; the importance of self-understanding and self-management; life-long learning and leadership. 3. Social emotional competence I (intrapersonal domain): awareness and understanding of emotions; emotional management, roles of emotional awareness and management in effective leadership and career development. 4. Social emotional competence II (interpersonal domain): social awareness, relationship management, the application of social emotional competence in daily lives and in effective leadership. 5. Resilience and stress-coping: stresses faced by youth; resilience and life adversities; coping with life stresses; role of resilience in effective leadership. 6. Morality and integrity: moral competence; role of morality in effective leadership; ethical leadership; importance of moral competence in different professions. 7. Spirituality: connectedness to others, personal beliefs and values, meaning of life, spirituality and professional development, role of spirituality in effective leadership; spiritual practices in daily lives. 8. Cultural competence and global citizenship: cultual competence in a globalized world, global citizenship and effective leadership, responsibilites of university students as both professionals and citizens of the society. 9. Effective communication: basic communication skills, importance of effective communication to daily life and leadership, care and compassion in effective leadership. 10. Team building: theories, concepts, skills and blocks of team building, role of team building in effective leadership, application of team building in different professions.

Teaching/Learning Methodology *(Note 3)*	Students taking this course are expected to be sensitive to their own behavior in intrapersonal and interpersonal contexts. Intellectual thinking, reflective learning, experiential learning and collaborative learning are emphasized in the course. Case studies on successful and fallen leaders will also be covered in the course. The teaching/learning methodology includes: 1. Lectures (including e-learning modules) 2. Experiential classroom activities; 3. Group project presentation; 4. Written assignment.

Assessment Methods in Alignment with Intended Learning Outcomes *(Note 4)*								

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)					
		a	b	c	d	e	f
1. Class Participation^	20%	✓	✓	✓	✓	✓	✓
2. Group Project*	30%	✓	✓	✓	✓	✓	✓
3. Term Paper^	50%	✓	✓	✓		✓	
Total	100 %						

*assessment is based on group effort
^assessment is based on individual effort

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

1. <u>Assessment of Class Participation (20%)</u>: It is expected that both online and classroom activities and preparation for lectures can help students understand the subject matter and oneself, develop social skills, connect learning to oneself and promote an appreciation of the importance of intrapersonal and interpersonal leadership qualities. Hence, marks for class participation (including the participation in e-learning modules) and preparation for lectures will be given. Students will be assessed by: a) preparation for class (e.g., complete e-learning modules, online assignment, and dig up materials before class), b) participation in class and online learning activities (e.g., completion of worksheets and sharing in class, participation in online discussion forum) and c) volunteering to answer questions and join discussions. Also, students will be invited to rate the performance and learning of other group members in an honest and authentic manner. The marks will reflect the mastery of knowledge, self-reflection and quality of interpersonal skills (such as collaboration

with other members and contribution to the group) of the group members. Peer assessment will contribute to marks in class participation.

2. <u>Assessment of Group Project (30%)</u>: Group project presentation can give an indication of the students' understanding and integration of theories and concepts on personal qualities in effective leadership, personal and group reflections, interpersonal skills and degree of recognition of the importance of active pursuit of knowledge covered in the course.

3. <u>Assessment of Term Paper (50%)</u>: Individual paper can give an indication of the students' understanding and integration of theories and concepts on the personal qualities in effective leadership, self-assessment, self-reflection, connection of the subject matter to oneself and degree of recognition of the importance of active pursuit of knowledge covered in the course.

Based on the implementation of this subject in the past seven academic years (2012-2019), evaluation findings consistently showed that this subject was able to achieve the intended learning outcomes in the students. The positive evaluation findings are documented as follows:

Leung, H. (2016). Levels of reflection on teaching a leadership and positive youth development subject. *International Journal on Disability and* Human *Development 15*(2), 211-220.

Leung, H., Shek, D. T. L., & Mok, B. P. W. (2016). Post-lecture subjective outcome evaluation of a university subject on leadership and intrapersonal development. *International Journal of Child and Adolescence Health, 9*(2), 223-234.

Li, X., & Shek, D. T. (2020). Objective outcome evaluation of a leadership course utilising the positive youth development approach in Hong Kong. *Assessment & Evaluation in Higher Education, 45*(5), 741-757.

Ma, C. M. S., Shek, D. T. L., Li, P. P. K., Mok, B. P. W. & Leung, E. Y. K. (2016). Qualitative evaluation of a leadership and intrapersonal development subject for university students in Hong Kong. *International Journal of Child and Adolescent Health, 9*(2), 217-224.

Shek, D. T. L. (2012). Development of a positive youth development subject in a university context in Hong Kong. *International Journal on Disability and Human Development, 11*(3), 173-179.

Shek, D. T. L. (2013). Promotion of holistic development in university students: A credit-bearing subject on leadership and intrapersonal development. *Best Practices in Mental Health, 9*(1), 47-61.

Shek, D. T. L., Fok, H. K., Leung, C. T. L., & Li, P. P. K. (2016). Qualitative evaluation of a credit-bearing leadership subject in Hong Kong. *International Journal of Child and Adolescent Health, 9*(2), 173-183.

Shek, D. T. L., & Leung, J. T. Y. (2014) Perceived benefits of a university subject on leadership and intrapersonal development. *International Journal on Disability and Human Development.*doi:10.1515/ijdhd-2014-0345

Shek, D. T. L., & Ma, C. M. S. (2014). Do university students change after taking a subject on leadership and intrapersonal development? *International Journal on Disability and Human Development.* doi:10.1515/ijdhd-2014-0341

Shek, D. T. L., Sun, R. C. F., Tsien-Wong, T. B. K., Cheng, C. T., & Yim H. Y. (2013). Objective outcome evaluation of a leadership and intrapersonal development subject for university students. *International Journal on Disability and Human Development,* 12(2), 221-227.

Shek, D. T. L., & Wu, F. K. Y. (2014). The role of teachers in youth development: Reflections of students. *International Journal on Disability and Human Development.* doi:10.1515/ijdhd-2014-0344

Shek, D. T. L., Wu, F. K. Y., Leung, C. T. L., Fok, H. K., & Li, P. P. K. (2016). Focus group evaluation of a subject on leadership and intrapersonal development in Hong Kong. *International Journal of Child and Adolescent Health, 9*(2), 185-194.

Shek, D. T. L., & Yu, L. (2014). Post-course subjective outcome evaluation of a subject on leadership and intrapersonal development for university students in Hong Kong. *International Journal on Disability and Human Development.* doi:10.1515/ijdhd-2014-0342

Shek, D. T. L., & Yu, L. (2016). Student feedback on a subject on leadership and intrapersonal development for university students in Hong Kong. *International Journal on Disability and Human Development, 15*(3), 339-345

Yu. L., Shek, D. T. L., & Leung, E. Y. K. (2016). Post-lecture evaluation of a university subject on leadership and intrapersonal development. *International Journal of Child and Adolescent Health, 9*(2),155-164.

Student Study Effort Expected	Class contact:	
	▪ Lectures and experiential/online learning activities	39 Hrs.
	Other student study effort:	
	▪ Group project preparation	20 Hrs.
	▪ Reading and writing term paper	76 Hrs.
	Total student study effort	135 Hrs.
Reading List and References	**Basic References** Catalano, R. F., Berglund, M. L., Ryan, J. A. M., Lonczak, H. S., & Hawkins, J. D. (2002). Positive youth development in the United States: Research findings on evaluations of positive youth development programs. *Prevention and Treatment, 5*(15), 1-106. Dalton, J., & Crosby, P. (2007). Being and having: Shouldn't excellence in higher education (and people) be a measure of what one does rather than what one has? *Journal of College and Character, 9*(1), 1-5. Davies, L. (2006). Global citizenship: abstraction or framework for action? Educational review, 58(1), 5-25.	

Gilley, A., Gilley, J. W., McConnell, C. W., & Veliquette. A. (2010). The competencies used by effective managers to build teams: An empirical study. *Advances in Developing Human Resources, 12*(1), 29-45.

Goleman, D. (1995). *Emotional Intelligence: Why it can matter more than IQ.* New York: Bantam Books.

Houghton, J. D., & Yoho, S. K. (2005). Toward a contingency model of leadership and psychological empowerment: When should self-leadership be encouraged? *Journal of Leadership and Organizational Studies, 11*(4), 65-84.

Kim, Y. H., Chiu, C. Y., & Zou, Z. M. (2010). Know thyself: Misperceptions of actual performance undermine achievement motivation, future performance, and subjective well-being. *Journal of Personality and Social Psychology*, *99*(3), 395-409.

Kohlberg, L. (1964). Development of moral character and moral ideology. In M. L. Hoffman, & L. W. Hoffman (Eds.), *Review of child development research* (pp. 381-431). New York: Russell Sage Foundation.

Lau, P. S. Y., & Wu, F. K. Y. (2012). Emotional competence as a positive youth development construct: A conceptual review. *The Scientific World Journal, 2012*, 8 pages. doi:10.1100/2012/975189

Marsh, H. W. (1990). A multidimensional, hierarchical self-concept: Theoretical and empirical justification. *Educational Psychological Review, 2*(2), 77-172.

Masten, A. S., & Obradović, J. (2006). Competence and resilience in development. *Annals of the New York Academy of Sciences, 1094*(1), 13-27.

Rockstuhl, T., Seiler, S., Ang, S., Van Dyne, L., & Annen, H. (2011). Beyond general intelligence (IQ) and emotional intelligence (EQ): The role of cultural intelligence (CQ) on cross-border leadership effectiveness in a globalized world. *Journal of Social Issues, 67*(4), 825-840.

Rycek, R. F., Stuhr, S. L., McDermott, J., Benker, J., & Swartz, M. D. (1998). Adolescent egocentrism and cognitive functioning during late adolescence. *Adolescence, 33*(132), 745-749.

Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist, 55*(1), 5-14.

Shek, D. T. L. (2010). Nurturing holistic development of university students in Hong Kong: Where are we and where should we go? *The Scientific World Journal, 10*, 563-575.

Shek, D. T. L. (2012). Spirituality as a positive youth development construct: A conceptual review. *The Scientific World Journal*, *2012*, 8 pages. doi:10.1100/2012/458953

Shek, D. T. L., & Leung, H. (2016a). Developing self-leadership and responsibility and moving away from egocentrism. *International Journal on Disability and Human Development,15*(2)*,* 157-164*.*

Shek, D. T. L., & Leung, H. (2016b). Resilience as a focus of a subject on leadership and intrapersonal development. *International Journal on Disability and Human Development,15*(2)*,* 149-155*.*

Shek, D. T. L., & Leung, J. T. Y. (2016). Developing social competence in a subject on leadership and intrapersonal development. *International Journal on Disability and Human Development,15*(2)*,* 165-173*.*

Shek. D. T. L., & Ho, W. W. L. (2016). Nurturing moral competence in university students via a credit-bearing subject. *International Journal on Disability and Human Development,15*(2)*,* 181-186.

Shek. D. T. L., & Ho, W. W. L. (2016). Spirituality as a key positive youth development construct for university students. *International Journal on Disability and Human Development,15*(2)*,* 175-180.

Shek, D. T. L. & Ma, C. M. S. (2016). Emotional competence: A key leadership competence for university students. *International Journal on Disability and Human Development, 15*(2)*,* 127-134.

Shek, D. T. L., & Wu, F. K. Y. (2016). Clear and positive identity as an attribute of an effective leader. *International Journal on Disability and Human Development, 15*(2)*,* 143-148.

Shek, D. T. L., & Yu, L. (2016). Cognitive competence: A key positive youth development construct for university students. *International Journal on Disability and Human Development, 15*(2)*,* 135-142.

Supplementary References

Adler, R. B., Rosenfeld, L. B., & Proctor II, R. F. (2010). *Interply: The process of interpersonal communication.* New York: Oxford University Press.

Bandura, A. (1986). *Social foundations of thought and action.* New Jersey: Prentice-Hall.

Bass, B. M., & Steidlmeier, P. (1999). Ethics, character, and authentic transformational leadership behavior. *Leadership Quarterly, 10*(2), 181-217.

Brown, M. E., Treviño, L. K., & Harrison, D. A. (2005). Ethical leadership: A social learning theory perspective for construct development and testing. *Organizational Behavior and Human Decision Processes, 97*(2), 117-134.

Cao, L., & Nietfeld, J. L. (2007). College students' metacognitive awareness of difficulties in learning the class content does not automatically lead to adjustment of study strategies. *Australian Journal of Educational and Developmental Psychology, 7,* 31-46.

Cheung, C. K., & Lee, T. Y. (2010). Contributions of moral education lectures and moral discussion in Hong Kong secondary schools. *Social Psychology of Education: An International Journal*, *13*(4), 575-591.

Davey, M., Eaker, D. G., & Walters, L. H. (2003). Resilience processes in adolescents: Personality profiles, self-worth, and coping. *Journal of Adolescent Research, 18*(4), 347-362.

Govier, I. (2000). Spiritual care in nursing: A systematic approach. *Nursing Standard, 14*(17), 32-36.

Kumru, A., & Thompson, R. A. (2003). Ego identity status and self-monitoring behavior in adolescents. *Journal of Adolescent Research, 18*(5), 481-495.

Luthans, F., Vogelgesang, G. R., & Lester, P. B. (2006). Developing the psychological capital of resiliency. *Human Resource Development Review, 5*(1), 25-44.

Neck, C. P., & Houghton, J. D. (2006). Two decades of self-leadership theory and research: Past developments, present trends, and future possibilities. *Journal of Managerial Psychology, 21*(4), 270-295.

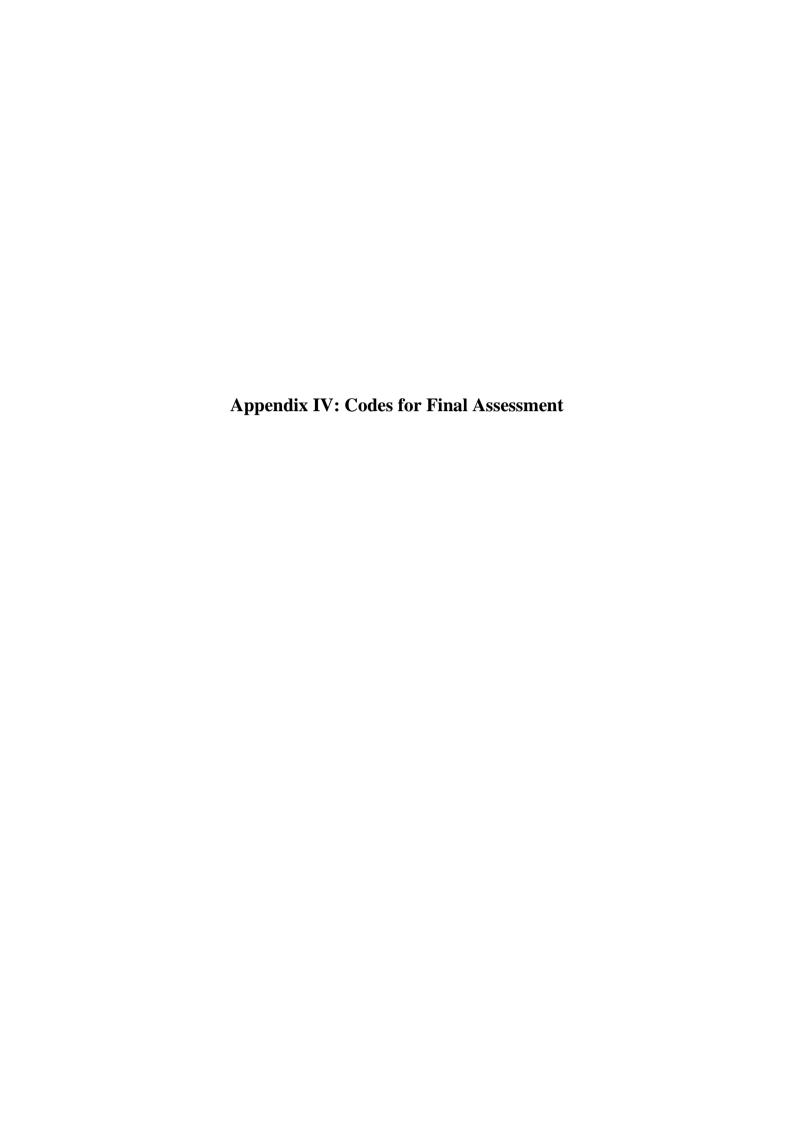|	Rose-Krasnor, L. (1997). The nature of social competence: A theoretical review. *Social Development*, *6*(1), 111-135.

Appendix III: Codes for Overall Subject Assessment

(a)   Grades/codes to denote overall subject assessments (and subject components*, if deemed appropriate)
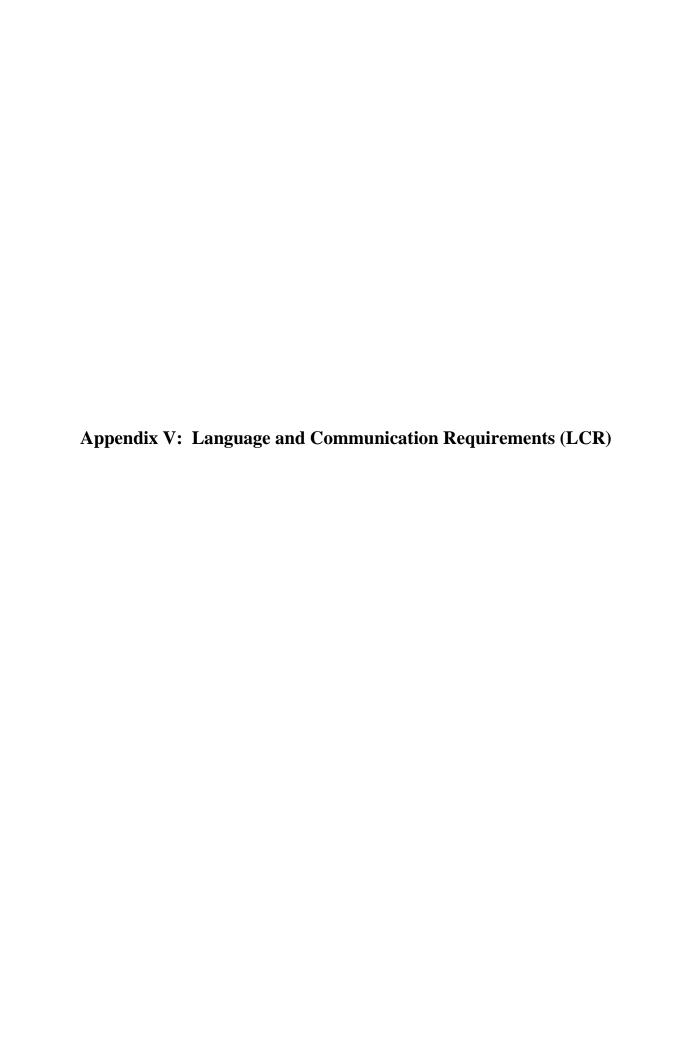
Codes	Interpretation	Remarks
I#	Assessment to be completed	An incomplete grade must be converted to a regular grade normally in the following academic year at the latest.
N	Assessment is not required	
P	Pass on an ungraded subject	This code applies to an ungraded subject, such as industrial training.
U	Fail on an ungraded subject	This code applies to an ungraded subject, such as industrial training.
M	Pass with Merit	This code applies to all General Education subjects. 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	-

#For cases where students fail marginally in one of the components within a subject, the Board of Examiners 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.

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 IV: Codes for Final Assessment

Final assessment code	Interpretation
A	1st Class Hons
B	2nd Class (Division 1) Hons
C	2nd Class (Division 2) Hons
D	3rd Class Hons
K	Pass without Hons
E	Required to be de-registered 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 because of withdrawal/absence.
X	Pending fulfilment of requirements for award.

Appendix V: Language and Communication Requirements (LCR)

English

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

Table 1: Framework of English LCR subjects

English language competence level/ Subject	*Practical English for University Studies*	*English for University Studies*	**Any LCR Proficient level elective subject in English (Table B)**
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) (each 3 credits)

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

Chinese

All undergraduate students are required to successfully complete <u>one</u> 3-credit Chinese language subject as stipulated by the University, according to their Chinese language proficiency level (Table 3).

Table C: Chinese LCR subjects

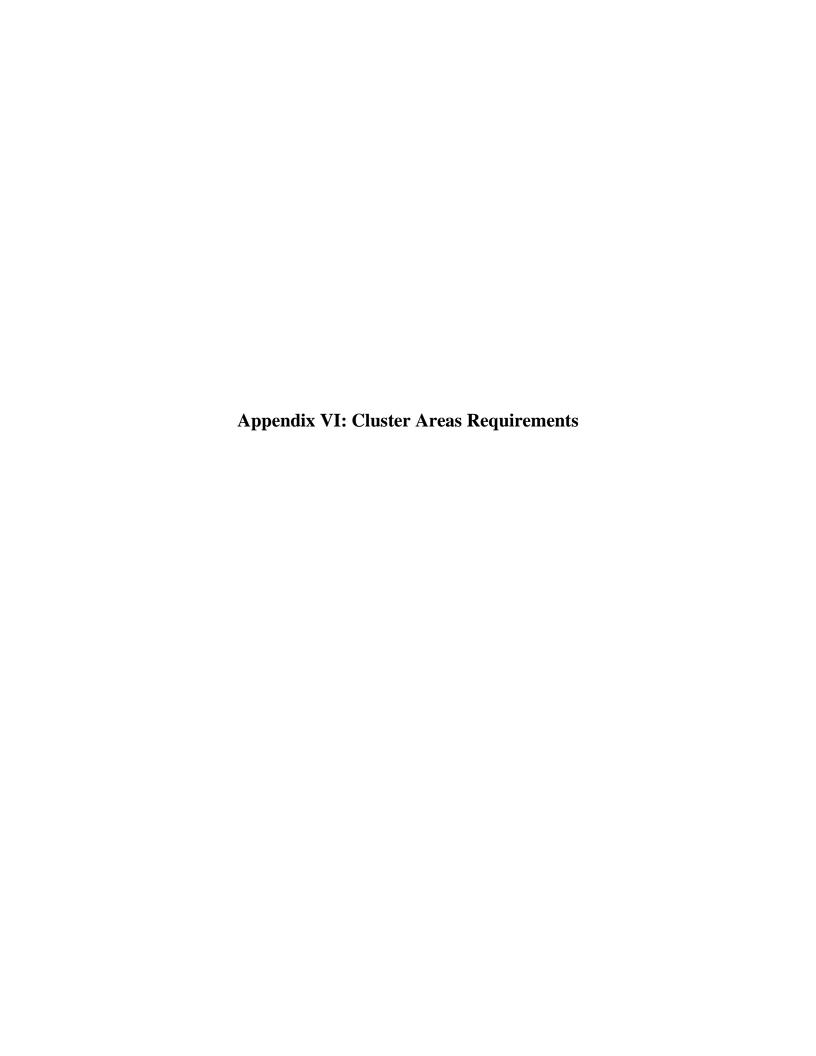| Categories of students	Required subject
For Chinese speaking students	University Chinese (Cantonese or Putonghua version)
For non-Chinese speakers or students whose Chinese standards are at junior secondary level or below	One subject from Table D below

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

Subject (3 credits)	Pre-requisite/exclusion
Chinese I (for non-Chinese speaking students)	For non-Chinese speaking students at beginners' level
Chinese II (for non-Chinese speaking students)	• For non-Chinese speaking students; and • Students who have completed Chinese I or equivalent
Chinese III (for non-Chinese speaking students)	• For non-Chinese speaking students at higher competence levels; and • Students who have completed Chinese II or equivalent
Chinese IV (for Non-Chinese speaking students)	• For non-Chinese students at intermediate competence levels; and • Students who have completed Chinese III or equivalent
Chinese Literature – Linguistics and Cultural Perspectives (for non-Chinese speaking students)	For non-Chinese speaking students at higher competence levels

Reading and Writing Requirements

See relevant information under the Cluster-Area Requirements in Appendix VI. 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.

Appendix VI: Cluster Areas Requirements

Cluster-Area Requirements (CAR) for students

Students have to choose and successfully complete a total of 12 credits from CAR subjects according to their own interests, with 3 credits to be selected from each of the following 4 cluster areas:

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

Reading and Writing Requirements in CAR

Students are required to fulfill "English Reading and Writing (ER/EW) Requirements" and "Chinese Reading and Writing (CR/CW) Requirements". Some of the CAR subjects carry language labels ("ER/EW" and "CR/CW") which will enable students to fulfil the additional language requirements of CAR subjects. Students are required to complete at least one 3-credit subject in each of the four Cluster Areas, among which you have to fulfil the Reading and Writing Requirements in Chinese and English (CR/CW and ER/EW).

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.

Double Fulfilment of DSR and CAR

ABCT1101 "Introductory Life Science" & AP10001 "Introduction to Physics" are also designated as CAR subjects under Cluster Area Requirement **CAR-D**. Students passing ABCT1101 "Introductory Life Science" & AP10001 "Introduction to Physics" will be regarded as having fulfilled the credit requirements of the DSR. They are required to take another subject in **Cluster Area D** in order to meet the graduation requirement.