THE HONG KONG POLYTECHNIC UNIVERSITY

DEPARTMENT OF APPLIED PHYSICS

PROGRAMME REQUIREMENT DOCUMENT

OF

BACHELOR OF SCIENCE (HONOURS) IN ENGINEERING PHYSICS

(Code: 11439)
4-year curriculum intake cohort 2021/22

Contents

1. GENERAL INFORMATION

Programme Title	:	Bachelor of Science (Honours) in Engineering Physics [BSc (Hons) in EP]
Programme Code	:	11439
Host Department	:	Department of Applied Physics
Medium of Instruction	:	English
Mode of Study	:	Full-time
Duration	:	4 years (normal)
Entry Qualification	:	HKDSE (Hong Kong Diploma of Secondary Education) or equivalent
Requirements for Graduation	:	• At least 125 credits (Depending on the student's attainment of HKDSE) • University Graduation Requirements
Final Award	:	BSc (Hons) in Engineering Physics 工程物理學(榮譽)理學士學位
Annual Intake Number	:	25

2. STUDY ROUTE OPTIONS

"Single Discipline Major" Route

Students in this route will normally pursue four years of full-time study and graduate with an award of BSc (Hons) in EP after having satisfied all Programme requirements and University graduation requirements. Details about the single discipline major programme of BSc (Hons) in EP are given in later sections.

"Major/Minor" Route

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.

3. OBJECTIVES AND PROGRAMME OUTCOMES

3.1 Objectives

The principal aim of the Programme is to provide a programme of study at Honours Degree level, which will produce graduate physicists with a knowledge

of applied physics and of one or more areas of engineering appropriate to the needs of the employment sector requiring graduates who combine a balance of generic skills, a broad scientific base and a technical bias.

3.2 Programme outcomes

The Programme should lead to the following two categories of learning outcomes, referring to the intellectual abilities, knowledge, skills and attributes that an all-round preferred graduate should possess. These learning outcomes also correlate to the University's Institutional Learning Outcomes for Undergraduate Programmes (UILO)[1], as indicated below.

3.2.1 Category A Professional/academic knowledge and skills

The graduates should be able to:

A1	apply principles and laws in physics and in the selected area(s) of engineering to analyze scientific and technical/technological problems, particularly those at the interface between physics and engineering;
A2	apply the principles, methodologies and skills for experimental observation and interpretation for scientific and engineering purposes, especially in modern instrumentation, and materials science and technology;
A3	formulate scientific and engineering problems in suitable mathematical or computable forms, and be able to make good judgement on the appropriateness of approximations 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.

Learning Outcomes in this Category correlate with the UILO of 'Competent professional'.

[1] https://www.polyu.edu.hk/obe/02_2_Intended_Learning_Outcomes_for_PolyU_Graduates.php

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 B2b	be able to communicate clearly and effectively in English; be able to communicate clearly and effectively in Chinese, including Cantonese and Putonghua;	EC
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.

These outcomes will be achieved by using different teaching/learning methods and various assessment tools as well as a set of criterion-referenced assessment grades in each subject. Detailed subject syllabuses and assessment schemes are given in Appendix I.

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.

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 OF FULL-TIME BSC(HONS) IN ENGINEERING PHYSICS

Stage/ Semester	Subject Code	Subject	Credit	Compulsory / Elective	Pre-requisite
1/1	AP10005	Physics I [#]	3	C	
1/1 1/1	*ABCT1101* *ABCT1700* *ABCT1102* *ABCT1741*	*Introductory Life Science [#] Introduction to Chemistry [#]* *General Biology [#]* *General Chemistry I [#]*	3 3	C C	
1/1	AMA1007	Calculus and Linear Algebra [#]	3	C	
1/1	AP10000	Freshman Seminar – From Atoms to The Universe (GUR)	3	C	
1/1		English I (GUR)	3	C	
		Credits for Year 1, Semester 1	***15-18***		
1/2	AP10007	Applied Physics Laboratory	3	C	
1/2	AP10006	Physics II[#]	3	C	
1/2	AMA1006	Basic Statistics #	2	C	
1/2		English II (GUR)	3	C	
1/2		Chinese (GUR)	3	C	
1/2		Leadership and Intra-Personal Development (GUR)	3	C	
1/2		Healthy Lifestyle	0	C	
		Credits for Year 1, Semester 2	***17***		
2/1	AP20001/ AP20016	Electromagnetism/ Electromagnetism and Waves	3	C	AP10006
2/1	AP20003/ AP20017	Mechanics/ Mechanics and Robotic Motion	3	C	AP10005
2/1	AP20007/ ISE204	Fundamentals of Scientific Instrumentation/ Instrumentation and Product Testing	3	C	AP10001
2/1	AP20005/ COMP1012	Programming in Physics/ Programming Fundamentals and Applications	3	C	
2/1	AMA2882	Mathematics for Scientists and Engineers	4	C	
2/1		CAR I (GUR)	3	C	
		Credits for Year 2, Semester 1	***19***		
2/2	AP20002	Materials Science	3	C	
2/2	AP20006	Quantum Mechanics for Scientists and Engineers	3	C	AP10006
2/2	AP20008/ COMP2013	Waves/ Data Structures and Algorithms	3	C	AP10006/ COMP1011/COMP1012/ENG2002/LGT3109 & AMA1110/AMA1501/AMA2634 & AMA2111/AMA1751
2/2		CAR II (GUR)	3	C	
2/2	CLC2211P	Chinese Communication for Science Professionals	2	C	
		Credits for Year 2, Semester 2	***14***		
3/1	AP30012	Thermal and Statistical Physics	3	C	AP20006
3/1		CAR III (GUR)	3	C	
3/1	ELC3121	English for Scientific Communication (DSR Language)	2	C	LCR English
3/1		3 Electives [+]	9	E	
		Credits for Year 3, Semester 1	***17***		
3/2	AP30011	Solid State Physics	3	C	AP20006
3/2		Service-Learning (GUR)	3	C	
3/2		3 Electives [+]	9	E	
		Credits for Year 3, Semester 2	***15***		

4/1	AP40004	Project (yearly subject)	2	C	
4/1		CAR IV (GUR)	3	C	
4/1		3 Electives [+]	9	E	
		Credits for Year 4, Semester 1	***14***		
4/2	AP40004	Project (yearly subject)	2	C	
4/2		3 Electives [+]	9	E	
		Credits for Year 4, Semester 2	***11***		
		Total:	**125**		

Remarks:

GUR - General University Requirements (please refer to p. 17)
CAR - Cluster Areas Requirement (please refer to p. 17 and Appendix V)
LCR - Language and Communication Requirements (please refer to p.17 and Appendix IV)
DSR - Discipline Specific Requirements

Notes:

 # Common subjects for Applied Sciences programmes

Broad Discipline common subjects			**Credit**	**Offered in Semester**	
Category A		B		1	2
Physics I [AP10005][#]			3	A & B	
Physics II [AP10006][#]			3	A & B	
Introduction to Chemistry [ABCT1700]	*or*	General Chemistry I [ABCT1741]	3	A&B	
Introductory Life Science [ABCT1101]	*or*	General Biology [ABCT1102]	3	A&B	
Calculus & Linear Algebra [AMA1007]*			3	A & B	
Basic Statistics [AMA1006]*			2	A & B	

Underpinning subject	**Credit**	**Offered in Semester**
Foundation Mathematics [AMA1100] * Students without Level 2 or above in HKDSE Mathematics Extended Module M1 or M2 will be required to take AMA1100 before taking AMA1006 and AMA1007.	2	1 & 2
Introduction to Physics [AP10001] [#] 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 & AP10006.	3	1 & 2

1. All applied science & mathematics students are required to complete one broad discipline common subject each in Physics, Chemistry, Biology, Calculus & Linear Algebra and Basic Statistics.
2. 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.

3. Students who have attained Level 3 or above in Chemistry and/or Biology, as a single Science subject or a component of the Combined Science (sub-score) are required to take the relevant subjects under Category B.
4. 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.
5. Students who have not achieved Level 2 or above in Extended Modules of Mathematics (M1 or M2) in HKDSE are required to complete AMA1100 before progressing to take AMA1006 and AMA1007. AMA1100 is an underpinning subject. The 2 credits earned by students will not be counted towards the number of credits required for graduation.
6. 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 & AP10006. AP10001 is an underpinning subject. The 3 credits earned by students will not be counted towards the number of credits required for graduation.
7. The Department will provide academic counseling to students upon their admission and before subject registration.

+ **Students may take no more than 4 free elective subjects, with subject level 3 or above, from other departments.**

Elective subjects offered by AP:

Under the normal programme pattern, students are recommended taking level 3 subjects in year 3 and level 4 subjects in year 4.

Elective subjects in Semester 1

- AP30001 Applied Acoustics <Pre-requisite: AP20003>
- AP30002 Computational Physics <Pre-requisite: AP20005>
- AP30009 Laser Principles and Applications *
- AP30013 Photonics Laboratory *
- AP30014 Science & Technology of Photovoltaics *<Pre-requisite: AP20006>
- AP30017 Medical Imaging: Science and Technology

- AP40001 Advanced Physics Laboratory <Pre-requisite: AP10007>
- AP40002 Display Technology *
- AP40011 Materials in Energy Conversion and Storage
- AP40012 Machine Learning in Physics <Pre-requisite: AP20005>
- AP40015 Intelligent Lighting

Elective subjects in Semester 2

- AP30003 Detectors and Imaging Devices * <Pre-requisite: AP20006>
- AP30004 Electromagnetic Fields <Pre-requisite: AP20001 and AP20008>
- AP30005 Advanced Scientific Instrumentation *
- AP30007 Optical Design *
- AP30010 Radiation Physics

- AP40003 Solid State Lighting *
- AP40005 Optoelectronic Packaging and Reliability *

- AP40006 Semiconductor Materials and Devices * <Pre-requisite: AP20002>
- AP40009 Advanced Photonics Laboratory* <Pre-requisite: AP30013>
- AP40010 Lighting Control Technology

*** Elective subjects for Optoelectronics stream**

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

Stage/Semester	Credits
Year 1, Semester 1	15-21
Year 1, Semester 2	14-20
Year 2, Semester 1	16
Year 2, Semester 2	17
Year 3, Semester 1	17
Year 3, Semester 2	15
Year 4, Semester 1	14
Year 4, Semester 2	11
Total	***125***

Summary of the credit requirements for different subject areas

(a)	Language and Communication Requirements	9 credits
(b)	Freshman Seminar	3 credits
(c)	Leadership and Intra-Personal Development	3 credits
(d)	Service-Learning	3 credits
(e)	Cluster Areas Requirement (CAR)	12 credits
(f)	China Studies Requirement	(3 of the 12 CAR credits)
(g)	Healthy Lifestyle	Non-credit bearing
(h)	Discipline-Specific Requirement (DSR)	95 credits
	Total	***125 edits***

7. CURRICULUM MAP

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**	
AP20001/ AP20016 Electromagnetism/ Electromagnetism and Waves	**A**		**I**			**I**					
AP20002 Materials Science	**A**		**I**		**I**	**I**					
AP20003/ AP20017 Mechanics/ Mechanics and Robotic Motion	**A**		**I**			**I**					
AP10007 Applied Physics Laboratory	**A**	**A**	**I**		**I**	**I**	**I**		**I**	**I**	
AP20005/ COMP1012 Programming in Physics/ Programming Fundamentals and Applications			**A**		**I**	**I**				**I**	
AP20006 Quantum Mechanics for Scientists and Engineers	**A**		**A**			**I**					
AP20007/ ISE204 Fundamentals of Scientific Instrumentation/ Instrumentation and Product Testing	**A**	**R/A**	**R/A**		**I**				**I**		
AP20008/ COMP2013 Waves/ Data Structures and Algorithms	**A**		**R**			**I**					
AP30001 Applied Acoustics	**A**	**R**	**R**		**I**	**R**					
AP30002 Computational Physics	**A**	**R**	**A**		**R**	**R**					
AP30003 Detectors and Imaging Devices	**A**	**A**		**R**							
AP30004 Electromagnetic Fields	**R**		**R**			**R**					
AP30005 Advanced Scientific Instrumentation	**A**	**R**		**R**	**R**				**R**		
AP30007 Optical Design	**A**	**A**	**R**		**R**	**R**					
AP30009 Laser Principles and Applications	**A**		**R**		**R**	**R**					
AP30010 Radiation Physics	**A**	**R**	**R**		**R**	**R**					
AP30011 Solid State Physics	**A**		**R**			**R**					

Programme outcomes / Subjects	A1	A2	A3	A4	A5	B1	B2a	B2b	B3	B4	B5
AP30012 Thermal and Statistical Physics	**A**		**R**			**R**					
AP30013 Photonics Laboratory	**A**	**R**		**R**	**R**	**R**					
AP30014 Science & Technology of Photovoltaics	**A**	**R**		**R**	**R**	**R**					
AP30017 Medical Imaging: Science and Technology	**A**	**R**	**R**		**R**	**R**				**R**	
AP40001 Advanced Physics Laboratory		**A**		**R/A**	**R**	**R**			**R**		
AP40002 Display Technology	**A**	**A**			**R**	**R**					
AP40003 Solid State Lighting	**A**	**A**			**R**	**R**					
AP40004 Project (yearly subject)	**A**	**A**	**A**	**A**	**A**	**R/A**	**A**	**R**	**A**	**R**	
AP40005 Optoelectronic Packaging and Reliability	**A**	**A**			**R**	**R**					
AP40006 Semiconductor Materials and Devices	**A**	**A**			**R**	**R**					
AP40009 Advanced Photonics Laboratory		**A**		**R/A**	**R**	**R**			**R**		
AP40010 Lighting Control Technology	**A**	**A**			**R**	**R**					
AP40011 Materials in Energy Conversion and Storage	**A**	**I**	**A**	**R**	**R**	**A**				**I**	
AP40012 Machine Learning in Physics	**A**		**R/A**	**A**	**R**	**A**				**R**	
AP10000 Freshmen Seminar – From Atoms to the Universe (GUR)										**I**	**I**
English I (GUR)							**A**			**I**	
AMA1006 Basic Statistics		**I**	**I**								
AMA1007 Calculus and Linear Algebra		**I**	**I**								
AMA1100 Foundation Mathematics		**I**	**I**								
ABCT1101 Introductory Life Science						**I**				**I**	
ABCT1102 General Biology						**I**				**I**	
English II (GUR)							**A**			**R**	
CAR I (GUR)										**R**	
ABCT1700 Introduction to Chemistry						**I**				**I**	
ABCT1741 General Chemistry I						**I**				**I**	
Chinese (GUR)								**R**		**R**	
AMA2882 Mathematics for Scientists and Engineers		**R**	**R**								
CAR II (GUR)										**R**	
CLC2211P Chinese Communication for Science Professionals. (DSR Chinese)								**R/A**		**R/A**	
CAR III (GUR)										**R**	
ELC3121 English for Scientific Communication (DSR Language)							**R/A**			**R/A**	
Service-Learning (GUR)									**A**	**R**	**I/A**
Leadership and Intra-Personal Development (GUR)									**A**	**R**	**R**
CAR IV (GUR)							**A**	**A**	**A**	**R**	**I/A**

Remarks:

GUR - General University Requirements (please refer to p. 18)
CAR - Cluster Areas Requirement (please refer to p. 18 and Appendix V)
DSR - Discipline Specific 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 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.

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.

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 and his/her Semester GPA in the second semester is also lower than 1.70; or

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

10.2.3 When a student falls within any of the categories as stipulated above, except for category (ii) 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. [1]

10.3.4 In case 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 Requirement (CAR) subject may need to take another subject from the same Cluster Area in order to fulfill this part of the GUR, since the original CAR subject may not be offered; in such cases, the fail grade for the first CAR subject will be taken into account in the calculation of the GPA, despite the passing of the second CAR subject.[2]

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.

[1] The retake count for students admitted in or before 2019/20 will be reset to "0" in 2020/21 when the revised regulations come into effect.
[2] 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.

10.4 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.

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+

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:

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

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

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

(i) Exempted subjects

(ii) Ungraded subjects

(iii) Incomplete subjects

(iv) Subjects for which credit transfer has been approved 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 II and III.

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 Honours 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 EP if he/she satisfies all the conditions listed below.

(i) Programme Requirement: at least 125 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 EP.
4. Satisfy the following General University Requirements (GUR):

(a) Language and Communication Requirements[2]	9 credits
(b) Freshman Seminar	3 credits
(c) Leadership and Intra-Personal Development	3 credits
(d) Service-Learning	3 credits
(e) Cluster Areas Requirement (CAR)	12 credits
(f) China Studies Requirement	(3 of the 12 CAR credits)
(g) Healthy Lifestyle	Non-credit bearing
	Total = 30 credits

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

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:

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

[2] 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.

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

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.

11.3 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 EP. 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 the university about the academic advising is https://www.polyu.edu.hk/sao/cws/academic-advising/academic-advising/what-is-academic-advising/, and the website of Departmental Academic Advising system is https://www.polyu.edu.hk/ap/study/academic-advising.

Appendix I: 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/undergraduate/

The Subject Description Forms of AMA's subjects can be found in AMA's website:
http://www.polyu.edu.hk/ama/listing_of_subjects/

Summary of the Subject Information

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
AP20001	Electromagnetism	3	AP10006	Lecture and student-centered tutorial	Continuous assessment and examination
AP20002	Materials Science	3	Nil	Lecture, tutorial and laboratory	Continuous assessment and examination
AP20003	Mechanics	3	AP10005	Lecture, tutorial and e-learning	Continuous assessment and examination
AP20005	Programming in Physics	3	Nil	Lecture and computer 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
AP20007	Fundamentals of Scientific Instrumentation	3	Nil	Lecture and lab session	Continuous assessment, practical test and examination
AP20008	Waves	3	AP10006	Lecture and tutorial	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, tutorial and laboratory	Continuous assessment and examination
AP30001	Applied Acoustics	3	AP20003	Lecture, tutorial and laboratory	Continuous assessment and examination
AP30002	Computational Physics	3	AP20005	Lecture and computer laboratory	Continuous assessment and examination
AP30003	Detectors and Imaging Devices	3	AP20006	Lecture, laboratory and presentation	Continuous assessment and examination
AP30004	Electromagnetic Fields	3	AP20001 AP20008	Lecture and laboratory	Continuous assessment and examination
AP30005	Advanced Scientific Instrumentation	3	Nil	Lecture and laboratory	Continuous assessment, practical examination and written test

Subject Code	Subject Name	Credit	Pre-requisite	Teaching Methods	Assessment Methods
AP30006	Metallurgy and Ceramics Science	3	AP20002	Lecture, tutorial and laboratory	Continuous assessment and examination
AP30007	Optical Design	3	Nil	Lecture and practical assignment	Continuous assessment and examination
AP30008	Polymers and Composites	3	Nil	Lecture, tutorial and laboratory	Continuous assessment and examination
AP30009	Laser Principles and Applications	3	Nil	Lecture and student-centered tutorial	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
AP30013	Photonics Laboratory	3	Nil	Laboratory	Continuous assessment, practical examination and written test
AP30014	Science & Technology of Photovoltaics	3	AP20006	Lecture, tutorial and laboratory	Continuous assessment, and examination
AP30015	Functional Materials	3	AP20002	Lecture and tutorial	Continuous assessment, and examination
AP30017	Medical Imaging: Science and Technology	3	Nil	Lecture and tutorial	Continuous assessment, and examination
AP40001	Advanced Physics Laboratory	3	AP10007	Laboratory	Continuous assessment, practical examination and written test
AP40002	Display Technology	3	Nil	Lecture, tutorial and laboratory	Continuous assessment and examination
AP40003	Solid State Lighting	3	Nil	Lecture and tutorial	Continuous assessment and examination
AP40004	Project	4	Nil	Presentation	Continuous assessment, project report and oral
AP40005	Optoelectronic Packaging and Reliability	3	Nil	Lecture, tutorial and laboratory	Continuous assessment and examination
AP40006	Semiconductor Materials and Devices	3	AP20002	Lecture, tutorial and laboratory	Continuous assessment and examination
AP40007	Simulation and Analysis of Optoelectronic Devices	3	AP20001	Lecture and laboratory	Continuous assessment and examination
AP40008	Simulation Methods in Nonlinear Science	3	AP20005	Lecture and computer laboratory	Continuous assessment and examination
AP40009	Advanced Photonics Laboratory	3	AP30013	Laboratory	Continuous assessment, practical examination and written test
AP40010	Lighting Control Technology	3	Nil	Lecture and tutorial	Continuous assessment and examination

Subject Code	Subject Name	Credit	Pre-requisite	Teaching Methods	Assessment Methods
AP40011	Materials in Energy Conversion and Storage	3	Nil	Lecture and tutorial	Continuous assessment and examination
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
AMA1006	Basic Statistics	2	AMA1100	Lecture and tutorial	Assignments/test and examination
AMA1007	Calculus and Linear Algebra	3	AMA1100	Lecture, tutorial and exercise	Test/assignments and examination
AMA1100	Foundation Mathematics - an introduction to Algebra and Differential Calculus	2	Nil	Lecture and tutorial	Homework, quizzes, mid-term test and examination
AMA2882	Mathematics for Scientists and Engineers	4	Nil	Lecture and tutorial	Continuous assessment and examination
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
AP10000	Freshman Seminar atom to the Universe	3	Nil	Lecture, tutorial, group discussion and tour	Project, presentation, tour/seminar
APSS1L01	Tomorrow’s Leaders	3	Nil	Lectures and experiential learning activities	Class Participation, Peer Assessment, Group Project and Individual Assignment
COMP1012	Programming Fundamentals and Applications	3	Nil	Lecture and laboratory	Continuous assessment and examination
COMP2013	Data Structures and Algorithms	3	COMP1011/ COMP1012/ ENG2002/LGT3109 & AMA1110/AMA1501/AMA2634 & AMA2111/AMA1751	Lecture, tutorial and laboratory	Exercises, Programming Project, Test, Examination
ISE204	Instrumentation and Product Testing	3	AP10001	Lecture, tutorial, laboratory and case study	Quizzes, Laboratory exercises / Case study, Mid-term test and Final examination

Subject Description Form

Subject Code	ABCT1101
Subject Title	Introductory Life Science
Credit Value	3
Level	1
Pre-requisite/ Co-requisite/ Exclusion	No pre-requisite
Objectives	In this subject, students will be introduced to the very basic background knowledge and concepts in biology, together with some recent advances in biotechnology. The main aim of this subject is to arouse students' interest in biological developments so that they can appreciate the impact of biotechnology.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: (a) have a basic understanding of the biological world (b) appreciate the importance of the biological world to human (c) appreciate the recent biotechnological advancement and their impacts
Subject Synopsis/ Indicative Syllabus	Contact Hours The different forms of biological organisms: (1) Viruses, Bacteria, Protozoa, Algae, Fungi, Plants, Animals 1 Hr (2) The involvement of these different organisms in our daily life 1 Hr (3) The importance of ecology and biodiversity to human 1 Hr The cell: (1) The building blocks of biological organisms 1 Hr (2) Structure and functions 2 Hrs (3) Different types of cells 1 Hr (4) Cell division and proliferation 2 Hrs The heredity: (1) The genetic material 1 Hr (2) The genetic information in the form of genes 2 Hrs (3) The expression of the genetic information 2 Hrs (4) The passing of genetic information to offspring 2 Hrs The organization and functions of complex biological organisms: (1) The structure and functions of plants 1 Hr (2) The importance of plants to human 1 Hr (3) The structure and functions of animals – human as an example 1 Hr (4) Organization of tissues, organs and functional systems in human 5 Hrs Modern biotechnology: (1) Major developments: (a) *In vitro* fertilization 1 Hr (b) Gene cloning 2 Hrs

	(c) GM foods 2 Hrs (d) GM organisms 2 Hrs (e) Gene therapy 1 Hr (f) Stem cell therapy 1 Hr (g) Human genome project 2 Hrs (h) Human cloning 1 Hr (2) Their impacts on our life, present and future, and the environment 2 Hrs (3) Ethical, social and legal issues 4 Hrs
Teaching/Learning Methodology	In the Lectures, the basic concepts and knowledge will be delivered to the students. These knowledge and concepts will be further enhanced through tutorial exercises, discussions and debates during tutorials, and through assessments.
Assessment Methods in Alignment with Intended Learning Outcomes	See table below

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)		
		a	b	c
(1) Written assessment I	15	✓	✓	
(2) Written assessment II	20	✓	✓	
(3) Written assignment	15	✓	✓	✓
(4) End of subject exam	50	✓	✓	✓
Total	100			

Each student will be required to read broadly and to complete a written assignment in which an understanding of some of the major concepts and knowledge has to be demonstrated. In this written assignment, a student will also need to express his/her critical evaluation of the impacts of a new development in biotechnology. This assignment will be in the form of a critical review essay.

A student will also need to take two tests (Written assessments I & II) which will gauge their learning outcomes at two separate stages of the subject. These assessments will also allow students to get feedbacks on their performance and how well they are achieving the learning outcomes.

There will also be an end of subject assessment which will assess all of the four learning outcomes. This will most likely be in the form of an examination.

Student Study Effort Expected	Class contact:	
	• Lectures	28 h
	• Tutorials	14 h
	Other student study effort:	
	• Self Study	66 h

	Total student study effort	108 h
Reading List and References		

Subject Description Form

Subject Code	ABCT1102
Subject Title	General Biology
Credit Value	3
Level	1
Pre-requisite / Co-requisite/ Exclusion	Pre-requisite: ABCT 1101, or Level 3 or above in HKDSE Biology as a full subject or as a component in a Combined Science subject
Objectives	In this subject, students will learn the basic knowledge and concepts in various areas of biology at the university entry level. It underpins all the other subjects in biological or health fields.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: (a) have a basic understanding of the structure and functions of the cell (b) have a basic understanding of genetics and inheritance (c) have a basic understanding of the structure and function of animals (d) have a basic understanding of the structure and function of plants (e) appreciate the importance of evolution and biological diversity
Subject Synopsis/ Indicative Syllabus	Contact Hours THE CELL: Molecules and structure of the cell 2 Hrs Activities inside the cell 2 Hrs Harvesting chemical energy in the cell 2 Hrs Photosynthesis: Harvesting light energy and producing food 2 Hrs CELLULAR REPRODUCTION AND GENETICS Reproduction and inheritance at the cellular level 2 Hrs Patterns of inheritance 2 Hrs Molecular biology of the gene 2 Hrs Gene control 2 Hrs DNA technology and genomics 2 Hrs EVOLUTION AND BIOLOGICAL DIVERSITY The origin and evolution of microbial life: Prokaryotes and protests 1 Hr Plants, fungi, and the colonization of Land 1 Hr Invertebrate diversity 1 Hr Vertebrate diversity 1 Hr

	ANIMALS: FORM AND FUNCTION Unifying concepts of animal structure and function 1 Hr Nutrition and digestion 2 Hr Gas exchange and circulation 2 Hr Control of body temperature and water balance 2 Hrs Hormones and the endocrine system 2 Hr Reproduction 2 Hr Control systems in plants 1 Hr ECOLOGY The biosphere 1 Hr Behavioral adaptations to the environment 1 Hr Population ecology 1 Hr Communities and ecosystems 1 Hr Conservation biology 1 Hr
Teaching/Learning Methodology	Lectures Tutorials with exercises and discussions mini-project Self Study
Assessment Methods in Alignment with Intended Learning Outcomes	See table below

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)				
		a	b	c	d	e
1.Written assessment I	20%	✓	✓			✓
2.Written assessment II	20%	✓	✓	✓	✓	✓
3.Written assignment	10%	✓	✓	✓	✓	✓
4. End of subject exam	50%	✓	✓	✓	✓	✓
Total	100 %					

Student Study Effort Expected	Class contact:	
	▪ Lectures	28Hrs.
	▪ Tutorials	13Hrs.
	Other student study effort:	
	▪ Self Study	72Hrs.
	Total student study effort	111Hrs.
Reading List and References	**Text book:** Campbell Biology: Concepts and Connections, 7/E Jane B. Reece, Martha R. Taylor, Eric J. Simon, Jean L. Dickey Pearson 2012	

	Reference: Essentials of Biology, 3/E Sylvia S. Mader McGraw-Hill 2012

Subject Description Form

Subject Code	ABCT1700
Subject Title	Introduction to Chemistry
Credit Value	3
Level	1
Pre-requisite / Co-requisite/ Exclusion	No pre-requisite. This subject is intended for students who has DO NOT have background in NSS Chemistry
Objectives	This is a one-semester introductory course of Chemistry for non-majors. This course surveys the fundamental concepts in chemistry for understanding structure and properties of the material universe. Principles will be illustrated with application to daily life.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: (a) understand the core concepts of chemistry; (b) describe chemical structures and events using standard representations; (c) apply and incorporate the chemical principles and knowledge learned to solve chemical problems and to appreciate modern applications in real life.
Subject Synopsis/ Indicative Syllabus	**Foundation:** atoms, molecules and ionic compounds, masses of atoms, stoichiometry, naming of chemical compounds, physical properties of compounds, Periodic table **Chemical Reactions**: Chemical equations, major reaction types, enthalpy of chemical processes **Atoms:** Light, electrons, quantum numbers and atomic orbitals, electronic configurations; general periodic trends in properties among elements. **Chemical Bonding**: Nature of chemical bonding, ionic bond, covalent bond, valence bond theory and hybridization; resonance; molecular shape by VSEPR method, bond polarity, intermolecular forces. **Chemistry of Carbon:** Naming of compounds containing carbon chains and rings. Isomerism, regioisomers and optical isomers. Major functional groups: alkanes, alkenes, alcohols, aldehydes, ketones, arboxylic acids and esters. Major reactions and properties of functional groups.
Teaching/Learning Methodology	**Lecture**: the fundamental principles of chemistry will be explained. Examples will be used to illustrate the concepts and ideas in the lecture. Take-home problem sets will be given, and the students are encouraged to solve the problems before seeking assistance. **Tutorials:** students present their solutions on a set of problems in the tutorials. Students should try the problems before seeking assistance. These problem sets provide them opportunities to apply the knowledge gained from the lecture. They also help the students consolidate and familiarize with what they have learned. Furthermore, students

<table>
<tr><td></td><td>can develop a deeper understanding of the subject through group discussion and self-study.</td></tr>
<tr><td>Assessment Methods in Alignment with Intended Learning Outcomes</td><td>
<table>
<tr><td rowspan="2">Specific assessment methods/tasks</td><td rowspan="2">% weighting</td><td colspan="3">Intended subject learning outcomes to be assessed
(Please tick as appropriate)</td></tr>
<tr><td>a</td><td>b</td><td>c</td></tr>
<tr><td>(1) Written examination</td><td>50</td><td>✓</td><td>✓</td><td>✓</td></tr>
<tr><td>(2) Continuous assessment</td><td>50</td><td>✓</td><td>✓</td><td>✓</td></tr>
<tr><td>Total</td><td>100</td><td colspan="3"></td></tr>
</table>

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

Assignments, quizzes and examinations are used to assess student’s learning in key physical concepts in atomic structure, chemical bonding, and chemical reactions. Homework assignments (e.g. end-of-chapter exercises and online assignments) would reinforce student’s knowledge in these key topics and practice for their numerical skills and problem-solving skill through analysis of experimental data.
</td></tr>
<tr><td>Student Study Effort Expected</td><td>
<table>
<tr><td>Class contact:</td><td></td></tr>
<tr><td>• Lecture</td><td>26 h</td></tr>
<tr><td>• Tutorial</td><td>13 h</td></tr>
<tr><td>Other student study effort:</td><td></td></tr>
<tr><td>• Self study</td><td>50 h</td></tr>
<tr><td>• Problem assignments / homework</td><td>16 h</td></tr>
<tr><td>Total student study effort</td><td>105 h</td></tr>
</table>
</td></tr>
<tr><td>Reading List and References</td><td><u>Essential</u> (tentative)

Tro, Nivaldo Introductory Chemistry Pearson 2012</td></tr>
</table>

Subject Description Form

Subject Code	ABCT1741
Subject Title	General Chemistry I
Credit Value	3
Level	1
Pre-requisite	HKDSE Chemistry or Combined Science with Chemistry component Level 3; or ABCT1700 Introduction to Chemistry; or ABCT1D01 Chemistry and Modern Living.
Objectives	(1) To introduce a molecular perspective for understanding the natural world (2) To identify the fundamental principles underlying any physical and chemical changes of matters (3) To visualize the physical and chemical changes through the understanding of molecular behavior
Intended Learning Outcomes	Upon completion of the subject, students will be able to: (a) understand the macroscopic properties of the states of matters; (b) understand the basic principles of chemical energetics and equilibria; (c) apply and incorporate the chemical principles and knowledge learned to solve chemical problems and to appreciate modern applications in real life; (d) demonstrate the abilities in communication as well as skills in problem-solving and analytical thinking.
Contribution to Programme Outcomes (Refer to Part I Section 10)	Programme Outcome 1: Demonstrate an ability to apply knowledge of mathematics, science, and engineering appropriate to the Biomedical Engineering (BME) discipline. (Teach)
Subject Synopsis/ Indicative Syllabus	**Measurement in Chemistry:** Significant figures; SI units; substances and mixtures; solution and concentration; mole and Avogadro's number; chemical reactions and balanced equations; temperature scales **Principle of Chemical Equilibria**: law of chemical equilibrium and equilibrium constant; Le Chatelier principle **Acid-Base Equilibria in Aqueous Solutions:** Acid and Base concepts, Ionization of water; pH, pOH and pKw; acids and bases; polyprotic acids; buffers; solubility equilibria **Solubility and Complex-Ion Equilibria**: Solubility constants and solubility, common ion effects, precipitation, and equilibria involving complex ions **Structures and Reactions of Organic Compounds:** Organic compounds and structures, naming compounds, stereoiisomerisms; functional groups of organic compounds; nucleophilic substitution reactions addition reactions of alkenes; electrophilic aromatic substitution; .

<table>
<tr><td>Teaching/Learning Methodology</td><td>Lectures supplemented with guided reading will be used to introduce the key concepts of the topics. Home works or assignments would be given for students to enhance their learning. Tutorials will be arranged and students would be assigned in small groups for discussion.</td></tr>
<tr><td>Assessment Methods in Alignment with Intended Learning Outcomes</td><td>
<table>
<tr><td rowspan="2">Specific assessment methods/tasks</td><td rowspan="2">% weighting</td><td colspan="4">Intended subject learning outcomes to be assessed (Please tick as appropriate)</td></tr>
<tr><td>a</td><td>b</td><td>c</td><td>d</td></tr>
<tr><td>1.written examination</td><td>50%</td><td>√</td><td>√</td><td>√</td><td>√</td></tr>
<tr><td>2. continuous assessment</td><td>50%</td><td>√</td><td>√</td><td>√</td><td>√</td></tr>
<tr><td>Total</td><td>100 %</td><td colspan="4"></td></tr>
</table>
</td></tr>
<tr><td>Student Study Effort Expected</td><td>
<table>
<tr><td>Class contact:</td><td></td></tr>
<tr><td>▪ Lectures</td><td>26 Hrs.</td></tr>
<tr><td>▪ Tutorials</td><td>13 Hrs.</td></tr>
<tr><td>Other student study effort:</td><td></td></tr>
<tr><td>▪ Self-study</td><td>67 Hrs.</td></tr>
<tr><td>▪ Home work and assignments</td><td>20 Hrs.</td></tr>
<tr><td>Total student study effort</td><td>126 Hrs.</td></tr>
</table>
</td></tr>
<tr><td>Reading List and References</td><td><u>Essential reading</u>

Petrucci, Herring, Madura and Biossonnette, General Chemistry: Principle and Modern Applications, 11th edition, 2017, Pearson.

All students are encouraged to buy the textbook, which will be used as texts for the duration of level 1 and level 2 studies in General Chemistry courses</td></tr>
</table>

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.

<table>
<tr>
<td>Teaching/Learning Methodology

(Note 3)</td>
<td>

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.

</td>
</tr>
<tr>
<td>Assessment Methods in Alignment with Intended Learning Outcomes

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

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);

</td>
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</table>

<table>
<tr><td></td><td colspan="2">• 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).</td></tr>
<tr><td rowspan="6">Student Study Effort Required</td><td>Class contact:</td><td></td></tr>
<tr><td>▪ Lectures & Seminars</td><td>26 Hrs.</td></tr>
<tr><td>Other student study effort:</td><td></td></tr>
<tr><td>▪ outside class practice</td><td>31 Hrs.</td></tr>
<tr><td>▪ self-study</td><td>31 Hrs.</td></tr>
<tr><td>Total student study effort</td><td>88 Hrs.</td></tr>
<tr><td>Reading List and References</td><td colspan="2">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</td></tr>
</table>

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.

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
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 %		

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

<table>
<tr><td>Subject Code</td><td>APSS1L01</td></tr>
<tr><td>Subject Title</td><td>Tomorrow’s Leaders</td></tr>
<tr><td>Credit Value</td><td>3</td></tr>
<tr><td>Level</td><td>1</td></tr>
<tr><td>GUR Requirements Intended to Fulfill</td><td>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 Requirement (CAR)
☐ Human Nature, Relations and Development
☐ Community, Organization and Globalization
☐ History, Cultures and World Views
☐ Science, Technology and Environment
☐ China-Study Requirement
☐ Yes or ☐ No
☐ Writing and Reading Requirements
☐ English or ☐ Chinese</td></tr>
<tr><td>Pre-requisite / Co-requisite/ Exclusion</td><td>Nil</td></tr>
<tr><td>Assessment Methods</td><td>
<table>
<tr><td>100% Continuous Assessment</td><td>Individual Assessment</td><td>Group Assessment</td></tr>
<tr><td>1. Class Participation</td><td>20%</td><td>--</td></tr>
<tr><td>2. Group Project</td><td>--</td><td>30%</td></tr>
<tr><td>3. Term Paper</td><td>50%</td><td>--</td></tr>
</table>

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.

</td></tr>
</table>

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.
11. Law-abidance as a quality of leadership: basic concepts and theories related to law-abiding leadership and socially responsible leadership; importance of law-abiding leadership and socially responsible leadership to professionals and the general public; basic knowledge on national security and the Hong Kong National Security Law.

Note: For the topic on law abidance and the Hong Kong National Security Law, students are required to pass an online assessment with multiple-choice questions. Students can take the assessment with multiple attempts. The assessment does not carry any mark.

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%	✓	✓	✓		✓	
4. Quiz on law abidance and National Security Law	0%	✓	✓	✓	✓	✓	✓

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. Assessment of Class Participation (20%): 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. Assessment of Group Project (30%): 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. Assessment of Term Paper (50%): 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

<table>
<tr><td></td><td colspan="2">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.
4. Quiz on National Security Law: Students are required to pass a quiz with multiple choice questions. Students can have multiple attempts in taking the quiz.</td></tr>
<tr><td rowspan="6">Student Study Effort Expected</td><td>Class contact:</td><td></td></tr>
<tr><td>▪ Lectures and experiential/online learning activities</td><td>39 Hrs.</td></tr>
<tr><td>Other student study effort:</td><td></td></tr>
<tr><td>▪ Group project preparation</td><td>20 Hrs.</td></tr>
<tr><td>▪ Reading and writing term paper</td><td>76 Hrs.</td></tr>
<tr><td>Total student study effort</td><td>135 Hrs.</td></tr>
<tr><td>Reading List and References</td><td colspan="2">Basic References
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Appendix II: Grades and Codes for 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 III: 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 IV: Language and Communication Requirements (LCR)

English

All undergraduate students must successfully complete two 3-credit English language subjects as stipulated by the University, according to their English language proficiency level (Table 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 one 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	One subject from Table D below

are at junior secondary level or 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 Requirement in Appendix V. 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.

Appendix V: Cluster Areas Requirement

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
- Community, Organisation and Globalisation
- History, Culture and World Views
- Science, Technology and Environment

Reading and Writing Requirements

To enhance students' literacy skills in reading and writing, the Senate-approved framework also stipulates that students must, among the CAR subjects they take, pass one subject that includes the requirement for a substantive piece of writing in English (EW Requirement) and one subject with the requirement of a substantive piece of writing in Chinese (CW Requirement). Subjects approved for meeting the Writing Requirement will be given a "W' designation.

They must also, among the CAR subjects they take, pass one subject that includes the requirement for the reading of an extensive text in English (ER Requirement) and one subject with the requirement for the reading of an extensive text in Chinese (CR Requirement). Subjects approved for meeting the Reading Requirement will be given an "R" designation.

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.

China-Study Requirement

To enable students to develop a deeper understanding of China (i.e., its history, culture and society, as well as emerging issues or challenges), students are further required to complete at least 3 credits of CAR subjects which are designated as "China-related" from any of the four Cluster Areas.

Double Fulfilment of DSR and CAR

ABCT1101 Introductory Life Science is also designated as a CAR subject under Cluster Area Requirement **CAR-D**. This is the same subject, but designated with a different subject code. Students passing ABCT1101 Introductory Life Science 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.