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

Part 1: General Information

1.1 Introduction

1.1.1 Programme Title

BEng (Hons) Scheme in Integrated Product Development (IPD) [Scheme Code: 05403]

1.1.2 Award Title

There are two awards operating under the IPD Scheme:

- BEng (Hons) in Product Analysis and Engineering Design (PAED) [JUPAS Programme Code: JS3428]
- BEng (Hons) in Product Engineering with Marketing (PEM) [JUPAS Programme Code: JS3404]

Students are admitted into one of the above two awards. After the common first and second years, they can apply for transfer of study to another award, subject to conditions including quota constraint, academic performance and interview performance.

1.1.3 Mode of Attendance

Full-time

1.1.4 Normal and Maximum Periods of Registration

Normal and maximum periods of registration for the scheme are presented in Table 1-1:

Table 1-1 Normal and Maximum Periods of Registration

Mode of Studies	Normal Duration of Studies	Maximum Period of Registration
Full-time	4 Years	8 Years

1.1.5 Total Credit Requirements for Graduation

There are 124 academic credits required for graduation and their details of their graduation requirements are presented in Section 2.11. In addition, students are required to complete 10 IC practical training credits and the Work-Integrated Education (WIE) credits mandated by The Hong Kong Polytechnic University (PolyU). IC training credits and WIE credits are not included in the 124 academic credits.

1.2 Host and Contributing Departments

The IPD Scheme is hosted by the Faculty of Engineering (FENG). The two awards operated under the scheme are hosted by:

- BEng (Hons) in Product Analysis and Engineering Design (PAED) – Department of Mechanical Engineering (ME)
- BEng (Hons) in Product Engineering with Marketing (PEM) – Department of Industrial and Systems Engineering (ISE)

This multi-disciplinary scheme integrates the strengths of ME, ISE, School of Design (SD), Department of Management and Marketing (MM), Department of Applied Physics (AP) and Industrial Centre (IC) to form a critical mass, making PolyU the preferred university to study integrated product development in the region.

1.3 Type and Level of Award

Successful launching of a new product to market requires the full integration of knowledge and technology related to product design and development: industrial design; engineering design and production design. Certainly, knowledge about the market and the use of appropriate marketing techniques are also important factors for the launching to be successful. Judging from the depth and width of the inter-disciplinary knowledge and skills required by the graduates, the scheme is provided at the honours degree level. In addition, because of the emphasis in application of engineering and management sciences to product design and development, the “BEng (Hons)” award deems most appropriate.

1.4 Mode of Study

The scheme curriculum that can be completed in the full-time mode within a normal duration of 8 semesters (equivalent to 4 years) is presented in Section 2.11.

1.5 Entrance Requirements

In addition to the general requirements for admissions to the honours degree programmes of the University, students applying for the IPD Scheme need to satisfy one of the following requirements ((a), (b) or (c)):

(a) Entry with HKDSE Qualifications:

General Entrance Requirements

4 core subjects and 1 elective subject with:

Level 3 – English Language and Chinese Language

Level 2 – Mathematics, Liberal Studies and one elective subject

Preferred Subjects

Preferred elective subject(s) for PEM – Physics, Biology, Chemistry, Combined Science or Information & Communication Technology;

Preferred elective subject(s) for PAED – Physics, Biology, Chemistry, Combined Science or Information & Communication Technology, Extended Modules of Mathematics

Flexibilities

1. Alternative Chinese will be accepted as meeting the Chinese Language requirement for those students who fulfill the requirement for taking Alternative Chinese as announced by EDB. Language related disciplines may require a higher grade for Alternative Chinese.
2. Other language subjects will be accepted as elective subjects. The minimum requirement is Grade E.
3. While relevant Applied Learning (ApL) subjects will be accepted as meeting the elective subject requirement, attainment at distinction level in those subjects will be required (PEM only)
4. Students not meeting the level requirement of the elective subject may be specially considered if they have attained Level 2 in one of the extended modules of Mathematics.

(b) Alternative Entry Route with Possible Credit Transfer:

In addition to satisfying the University general requirements for non-HKDSE admissions, sufficient backgrounds in mathematics, physics, engineering sciences, and language will be required. Students admitted via this category may apply for credit transfer in some subjects which will be considered on the basis of relevance and performance.

(c) Equivalent Qualifications:

The applicants should have qualifications equivalent to (a) or (b).

Part 2: Curriculum Design

2.1 Preamble

In order for Hong Kong to remain competitive in the export-led market, our industries need to switch their role from a low cost Original Equipment Manufacturer (OEM) to a high value-added Original Design Manufacturer (ODM), and then to an Original Brand Manufacturer (OBM) to maximize the profit margin. It is in particular important for them to have their own brand name of top quality products, much like the designer label of other well-developed countries, to maintain a strong competition in the international market. In order to achieve that, heavy emphasis should be placed on the added-value of products, which implies an increasingly urgent need for inter-disciplinary expertise of high-end product design and development.

Because of the huge demand of professionals to design and develop quality new products, there are currently some academic programmes offered in Hong Kong at various levels, with the main objective to produce graduates who are able to support the development and growth of this discipline. After assessing these programmes closely, ME and ISE identify an urgent need as well as an excellent opportunity for the PolyU to develop an inter-disciplinary IPD Scheme. On the one hand to support the PolyU's niche area in product design and development, and on the other hand, to produce all-round graduates to lead and support smooth operation and healthy growth of the discipline.

2.2 University Mission of PolyU

The Hong Kong Polytechnic University aspires to be a leading university that excels in professional education, applied research and partnership for the betterment of Hong Kong, the nation and the world. The PolyU's mission is stated as below:

- I. To nurture graduates who are critical thinkers, effective communicators, innovative problem solvers, lifelong learners and ethical leaders.
- II. To advance knowledge and the frontiers of technology to meet the changing needs of society.
- III. To support a University community in which all members can excel through education and scholarship.

2.3 Aims and Characteristics of the IPD Scheme

The IPD scheme aims to strengthen the PolyU's strategic niche area in product design and development. It is developed with the aims to align with the PolyU's endeavour to groom expertise for Hong Kong and the Pearl River Delta region, to expedite technology transfer and to make concrete contributions to the integrated product development discipline. The scheme's aims are achieved by nurturing a new breed of all-round product development professionals to support and even lead the continuing growth in prosperity of the manufacturing industry in the region.

It is also developed to spearhead the PolyU's foresight in developing inter-disciplinary academic programmes to better serve the community. The IPD scheme integrates the strengths of several departments to form a critical mass in making PolyU the preferred university in studying integrated product development in the region. Certainly, it is expected to become the most preferred undergraduate degree programme for the students who wish to develop their career as leading professionals in this discipline, and most essential in adding to the excellence of the University in the discipline of product design and development.

The IPD scheme is unique in Hong Kong and the Pearl River Delta region due to the following characteristics:

- **Synergize Technology with Design and Business**

PolyU plays very significant role in facilitating Hong Kong to become the design hub of Asia by launching academic programmes in product design and development. One of the two integral parts, product development, is strongly supported by the IPD Scheme.

In the development of the curriculum, a broad knowledge-base integrating with appropriate practical training is provided as the essential core for the students to master the state-of-the-art technology in developing quality products. Knowledge, techniques and skills in design (including industrial design) and business (including marketing) are also provided at the appropriate level to facilitate their full integration with technology.

Thus, graduates of the scheme can be innovative, knowledgeable and skillful to synergize product development with design and business in developing top quality new products to better serve the industry.

- **Inter-disciplinary Collaboration**

The IPD scheme spearheads to implement the University's excellent intention to promote inter-disciplinary collaboration between faculties/departments in the development and implementation of academic programmes. In the development of the curriculum, the two co-host departments, ME and ISE, have encouraged all the departments involved (SD, IC, MM and AP) to develop and contribute the most relevant subjects to the scheme.

Through an open and constructive mechanism, the departments involved are able to make their best contributions towards the scheme, instead of being given certain jobs essentially pre-determined by the two co-host departments.

By encouraging collaborations, the IPD scheme is facilitated by extensive resources and expertise from all of the departments involved, for example, the most up-to-date CAID/CAD/CAE/CAM/Virtual-manufacturing software of ME and ISE, the advanced prototyping facilities of ISE and IC, and the state-of-the-art laboratories of ME, ISE, SD and AP.

- **Outcome-Based-Approach**

The curriculum is developed and implemented with the Outcome-Based-approach (OBA). In this approach, Intended Learning Outcomes (ILOs) of the two awards operating under the IPD scheme (PAED and PEM) are first identified, which will be fully fulfilled by the curriculum built upon a combination of most suitable subjects. These subjects should be implemented through the most appropriate teaching and learning approaches. Details of the Outcome-Based-Approach in offering the IPD Scheme are explained in the following Section 2.4.

- **All-round Graduates in Integrated Product Development with Preferred Specialization**

In order for our graduates to be preferred by the employers, they must be immediately found useful but at the same time, able to develop themselves to play leading roles in the

discipline of product design and development. *In order to develop such all-roundedness for the graduates, a very well balance and integration between education and training is required.*

Thus, a broad knowledge-base consisting of engineering sciences, applied computer sciences and advanced technologies, together with certain important techniques and skills including communication and presentation, team-playing, management and self-learning is provided. The subjects, both core and elective, offered in the IPD scheme are developed to form a coherent curriculum with an emphasis on integration with a well-balanced manner. In addition, hands-on experience of the development of top quality new products is also provided to the students. The IC practical training, the projects mandated in every year of the study, and the WIE requirement are also important elements to fulfil this objective.

- **Development of two integrated awards to meet different student needs**

Another distinctive characteristic of the IPD scheme is the development of the two integrated awards (PAED and PEM) to meet different student needs. On the one hand, it provides sufficient common core subjects in the first two semesters for the students to build a solid and broad background on product design and development. On the other hand, making use of the last four semesters provides enough flexibility for them to develop their more preferred expertise: Product Analysis and Engineering Design or Product Engineering with Marketing.

2.3.1 Intended Learning Outcomes (ILO) of the IPD Scheme

Based on the specific aims and characteristics of the IPD Scheme, the following intended learning outcomes are developed:

1. In order to support the University's strategic niche area of product design, graduates of the IPD Scheme should be able to integrate technology with design and business, and apply to the areas of product design and development.
2. Graduates of the IPD Scheme should have acquired an excellent integration of knowledge, techniques, skills and hands-on experience in the designing and developing of quality new products and their launching to market.
3. Graduates of the IPD Scheme should have developed all the desired professional skills including self-learning, communication, team-playing, management, literature search and global outlook, such that they are able to develop their careers as professional engineers in product design and development.
4. Graduates of the IPD Scheme should be able to develop an awareness of professional ethics and social responsibilities to the community in designing and developing new products.
5. Graduates of the IPD Scheme should be able to acquire professional recognition from professional bodies including the Hong Kong Institution of Engineers.

The Intended Learning Outcomes of the IPD Scheme are developed to support the PolyU's mission as shown in the following Table 2-1:

Table 2-1 Matching the ILOs of the IPD Scheme with University Mission

		UNIVERSITY MISSION		
		I	II	III
ILOs of the IPD SCHEME	1	X	X	X
	2	X	X	
	3	X	X	X
	4	X		X
	5	X	X	

Both the PAED and PEM Awards operating under the IPD Scheme provide also the part-time mode for mature learners and graduates of relevant sub-degree programmes to pursue life-long learning.

2.4 Aims and Intended Learning Outcomes of PAED and PEM Awards

The IPD scheme consists of two awards: namely PAED and PEM. The aims and intended learning outcomes developed by both awards are to fully satisfy the IPD scheme’s aims and to achieve the IPD’s intended learning outcomes, which are aligned with the PolyU’s mission.

Even though sharing the same foundation of integrated product development, each award has slightly different focuses on the entire product design and development process therefore the aims and intended learning outcomes achieved by both awards are slightly different from each other.

2.4.1 Aims of PAED Award

In order to support the PolyU’s mission and to fulfill the IPD scheme’s aims, the PAED award is developed to achieve the following aims:

1. To synergize technology with design and business with an aim to fulfilling the PolyU’s strategic development of product design.
2. To provide graduates with excellent integration of knowledge, skills and hands-on experience in developing new products with superior quality including engineering design, industrial design, engineering sciences, simulation and analysis, prototyping and manufacture, management and marketing, via a coherent and well-balanced curriculum developed through collaboration between departments involved.
3. To produce preferred all-round graduates, who have developed all-roundedness knowledge and skills including self-learning, communication, team-playing, management, information search and global outlook, such that they are found immediately useful by the industry, and at the same time, will be able to develop themselves to play important roles in leading the local manufacturers to design and develop high-value-added new products with superior quality, in order to maintain the prosperity of Hong Kong.

4. To help graduates develop the ability to engage in life-long-learning and professional development and to acquire professional recognition from professional bodies including the Hong Kong Institution of Engineers.
5. To produce graduates who are aware of the global, societal, ethical and professional issues in the practice of product design and development.

The aims of the BEng (Hons) in Product Analysis and Engineering Design are designed to support the PolyU's mission as shown in the following Table 2-2:

Table 2-2 Matching the Aims of PAED Award with University Mission

		UNIVERSITY MISSION		
		I	II	III
AIMS of PAED AWARD	1	X	X	
	2	X	X	
	3	X	X	X
	4	X		X
	5	X		X

2.4.2 Intended Learning Outcomes of PAED Award

Graduates will be expected to achieve the following twelve intended learning outcomes of the PAED award upon completing the award satisfactory. These intended learning outcomes can be classified into two groups and are presented as below:

(I) Professional/academic knowledge and skills (PAK)

- (a) An ability to evaluate consumers' needs and market situation for a new product, and to identify and formulate a design problem by developing design specifications to achieve the planned goals.
- (b) An ability to generate, evaluate and select design concepts with creative design thinking, awareness of business consideration and efficient information search.
- (c) An ability to apply knowledge of arts, mathematics, sciences and engineering, via analytical, computational or experimental approaches, to analyze or predict the performance of a design in the life cycle of product development.
- (d) An ability to assess the impacts of human factors, materials, manufacturing processes, environmental issues, product safety and quality in the design and development of quality products.
- (e) An ability to apply state-of-the-art technology and computer/IT tools related to product development.
- (f) An ability to appreciate the concept and trend in industrial design, and to identify market opportunity, and to understand the approach in generating new design concepts to meet the existing as well as potential market needs.

- (g) An ability to apply project management technique to ensure successful completion of a product development process.

(II) Professional outlook and workplace skills (POW)

- (a) A knowledge of contemporary issues and the broad education necessary to understand the impact of engineering design in a global and societal context.
- (b) An ability to function professionally in a multidisciplinary design team as the leader or team member.
- (c) An awareness of professional ethics and social responsibilities and the drive to achieve quality.
- (d) An ability to communicate effectively and present fluently in English, Chinese and multi-media.
- (e) Recognition of the need for and an ability to engage in life-long learning.

The intended learning outcomes of PAED award are supporting its five aims as indicated in the following Table 2-3:

Table 2-3 Matching the ILOs of PAED Award with its Aims

		ILOs OF PAED AWARD											
		PAKa	PAKb	PAKc	PAKd	PAKe	PAKf	PAKg	POWa	POWb	POWc	POWd	POWe
AIMS OF PAED AWARD	1	X	X	X	X	X	X		X				
	2	X	X	X	X	X	X	X	X	X		X	
	3		X		X	X		X	X	X		X	
	4					X			X		X		X
	5	X	X		X		X			X	X		

The Hong Kong Institution of Engineers (HKIE) adopts twelve desired learning outcomes for an engineering degree (Reference: Professional Accreditation Handbook (Engineering Degrees): Revised by Authority of the Accreditation Board of the HKIE, April 2011). A comparison between the desired learning outcomes for an engineering degree programme as proposed by the HKIE and the intended learning outcomes of PAED Award is given in the following Table 2-4:

Table 2-4 Matching Desired Learning Outcomes Proposed by HKIE and ILOs of the PAED Award

Learning Outcomes	Definition of Desired Learning Outcomes Proposed by HKIE	ILOs of PAED AWARD
1	An ability to apply knowledge of mathematics, science, and engineering appropriate to the degree discipline	PAKc; PAKd
2	An ability to design and conduct experiments, as well as to analyze and interpret data	PAKc
3	An ability to design a system, component, or process, to meet desired needs within realistic constraints, such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability	PAKa; PAKb; PAKc; PAKe
4	An ability to function on multi-disciplinary teams	POWb
5	An ability to identify, formulate, and solve engineering problems	PAKa; PAKc
6	An ability to understand professional and ethical responsibility	POWc
7	An ability to communicate effectively	POWd
8	An ability to understand the impact of engineering solutions in a global and societal context, especially the importance of health, safety and environmental considerations to both workers and the general public	POWa
9	An ability to stay abreast of contemporary issues	POWa
10	An ability to recognize the need for, and to engage in life-long learning	POWe
11	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice appropriate to the degree discipline	PAKc; PAKe
12	An ability to use the computer/IT tools relevant to the discipline with an understanding of their processes and limitations	PAKe

In addition to the desired programme learning outcomes as proposed by the HKIE, the PAED award proposes two additional intended learning outcomes as shown in the following Table 2-5:

Table 2-5 ILOs Proposed by PAED Award in Addition to Those of HKIE

Additional ILOs of PAED	Description of Additional Intended Learning Outcomes Proposed by PAED
PAKf	An ability to appreciate the concept and trend in industrial design, and to identify market opportunity, and to understand the approach in generating new design concepts to meet the existing as well as potential market needs
PAKg	An ability to apply project management technique to ensure successful completion of a product development process

2.4.3 Rationale and Aims of PEM Award

Product Engineering is concerned with the studies of product conception and specifications, technical design, design for product lifecycle, prototyping, materials and manufacturing processes, mould and die design, process design, quality assurance as well as outsourcing and their implications to a new product to be developed in terms of time-to-market, cost, environmental friendliness and quality. Marketing is concerned with attracting new customers by promising superior value and keeping and growing current customers by delivering satisfaction. The PEM award provides students with integrated education at honours degree level to enable them to develop into competent professionals in new product development. On completion of the PEM award, students are expected to:

1. have knowledge and understanding needed to perform duties of product development, in particular, the areas of product engineering and marketing;
2. demonstrate the ability to identify and solve product engineering problems both as individuals and as members of teams;
3. have been exposed to a range of academic activities of such style and content as will enable them to develop effective communication skills (oral, written, graphical and numerate);
4. have an awareness of professional ethics and social responsibilities to the community at large;
5. have been exposed to a range of activities that will enable them to seek, learn and apply information that is pertinent to the work they are undertaking.

Relationship between the PolyU's mission and the above aims of PEM award is presented in Table 2-6:

Table 2-6 Relationship between the Aims of PEM Award with University Mission

		UNIVERSITY MISSION		
		I	II	III
AIMS OF PEM AWARD	1	X	X	X
	2	X	X	
	3	X	X	X
	4	X	X	
	5	X	X	X

2.4.4 Intended Learning Outcomes of PEM Award

The intended learning outcomes of the PEM award, as listed below, are aligned with the aims of the award as specified above, as well as the HKIE programme outcomes.

1. To be versed in the activities of various engineering disciplines, and in particular, product engineering and marketing so as to be able to appreciate and interact with other professionals during execution of their duties situation. (Item 1 of 2.4.3 above).
2. To be able to apply knowledge, procedures (principles, techniques and methods), of engineering and, where appropriate, mathematics and science, to product engineering problems, and to have sufficient understanding of their limitations so that they can select the most appropriate for a particular situation. (Item 2 of 2.4.3 above).
3. To have gained some experience and developed the ability in analyzing the market situation and competition environment, identifying market needs and converting them into new product that satisfy customer needs. (Item 3 of 2.4.3 above).
4. To be able to communicate (oral, written, graphical and numerate) effectively. (Item 2 of item 2.4.3 above).
5. To be able to effectively work individually on their own initiative, and as members of a team (Item 4 of 2.4.3 above).
6. To be aware of the responsibilities and ethics of professional engineers in the modern world and recognize the constraints imposed on the organizations by economic and environmental factors. (Item 5 of 2.4.3 above).
7. To possess the ability to engage in life-long learning. (Item 5 of 2.4.3 above).

Relationship between aims and intended learning outcomes of the PEM award is shown in Table 2-7:

Table 2-7 Mapping the ILOs of PEM Award with its Aims

		ILOs OF PEM AWARD						
		1	2	3	4	5	6	7
AIMS OF PEM AWARD	1	X						
	2		X	X		X		
	3				X			
	4						X	
	5							X

Comparison is made between the intended learning outcomes of the PEM award and the learning outcomes as proposed by the HKIE for an engineering degree, and is presented in Table 2-8:

Table 2-8 Comparison between the Stated Intended Learning Outcomes of the PEM Award and the HKIE Required Outcomes

HKIE Criteria	HKIE Required outcomes of an engineering programme	ILOs of the PEM Award
a	An ability to apply knowledge of mathematics, science, and engineering appropriate to the degree discipline	1
b	An ability to design and conduct experiments, as well as to analyse and interpret data	3
c	An ability to design a system, component or process to meet desired needs within realistic constraints, such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	2, 3
d	An ability to function on multidisciplinary teams	5
e	An ability to identify, formulate, and solve engineering problems	2, 5
f	An ability to understand of professional and ethical responsibility	6
g	An ability to communicate effectively	4
h	An ability to understand the impact of engineering solutions in a global and societal context, especially the importance of health, safety and environmental considerations to both workers and the general public	6
i	An ability to stay abreast of contemporary issues	7
j	An ability to recognize the need for, and to engage in life-long learning	7
k	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice appropriate to the degree discipline	1
l	An ability to use the computer/IT tools relevant to the discipline with an understanding of their processes and limitations	2
	None HKIE required outcome An ability in analyzing the market situation and competition environment, identifying market needs	3

2.5 Institutional Learning Outcomes

It is PolyU's educational mission to nurture competent professionals who are also critical thinkers, effective communicators, innovative problem solvers, lifelong learners, and ethical leaders. The institutional learning outcomes for these attributes are provided as follows:

1. **Competent professional:** Graduates should be able to integrate and apply in practice the fundamental knowledge and skills required for functioning effectively as entry-level professionals.
2. **Critical thinker:** Graduates should be able to examine and critique the validity of information, arguments, and different viewpoints, and reach a sound judgment on the basis of credible evidence and logical reasoning.
3. **Effective communicator:** Graduates should be able to comprehend and communicate effectively in English and Chinese, orally and in writing, in professional and daily contexts.
4. **Innovative problem solver:** Graduates should be able to identify and define problems in professional and daily contexts, and produce creative and workable solutions to the problems.
5. **Lifelong learner:** Graduates should recognize the need for continual learning and self-development, and be able to plan, manage and improve their own learning in pursuit of self-determined development goals.
6. **Ethical leader:** Graduates should have an understanding of leadership and be prepared to lead a team, and should acknowledge their responsibilities as professionals and citizens to society and their own nation, and be able to demonstrate ethical reasoning in professional and daily contexts.

Table 2-9 and Table 2-10 illustrate the relationship between Intended Learning Outcomes of PAED and PEM awards and Institutional Learning Outcomes.

Table 2-9 Relationship between the Intended Learning Outcomes of the PAED Award and the Institutional Learning Outcomes

PAED	Institutional Learning Outcomes					
	1	2	3	4	5	6
PROGRAMME OUTCOMES						
PAK (a)	X	X				
PAK (b)	X	X		X		
PAK (c)		X		X	X	
PAK (d)		X			X	X
PAK (e)	X		X		X	
PAK (f)		X		X	X	X
PAK (g)				X	X	
POW (a)	X	X		X		
POW (b)			X		X	X
POW (c)						X
POW (d)			X			
POW (e)					X	

Table 2-10 Relationship between the Intended Learning Outcomes of PEM award and Institutional Learning Outcomes:

PEM	Institutional Learning Outcomes					
PROGRAMME OUTCOMES	1	2	3	4	5	6
1	X					
2	X	X				
3				X		
4			X			
5			X			
6						X
7					X	

2.6 General Approach to Teaching, Learning and Assessment

The specific learning outcomes expected to be achieved by a subject should be spelt out explicitly in its syllabus. On the one hand, the students are able to know the purpose of every subject before learning. On the other hand, the students can conduct a self-assessment to evaluate whether the specific learning outcomes of the subject have been achieved after the teaching. Some of the specific learning outcomes as specified in Sections 2.4.2 and 2.4.4 can be used directly or further expanded into more details to meet the particular nature of a subject.

The approaches used to achieve the specific learning outcomes, for example, lecture, tutorial, seminar, laboratory work, practical work, project work and case study should be described clearly in the syllabus of a subject. Function and justification of every approach adopted should also be explained.

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

The criteria-referenced assessment approach should be applied. Students' performance in a subject will be assessed by "how much" and "how good" that the specific criteria as specified in its syllabus can be achieved. Assessment should not be made on a relative basis.

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

Students' performance in a subject can be assessed by continuous assessment and/or examinations, at the discretion of the individual subject offering Department. Where both continuous assessment and examinations are used, the weighting of each in the overall subject grade shall be clearly stated in the definitive programme document. The subject offering

Department can decide whether students are required to pass both the continuous assessment and examination components, or either component only, in order to obtain a subject pass, but this requirement (to pass both, or either, components) shall be specified in the Definite Programme Document. Learning outcome should be assessed by continuous assessment and/or examination appropriately, in line with the outcome-based approach. Continuous assessment may include tests, assignments, projects, laboratory work, field exercises, presentations and other forms of classroom participation. Continuous Assessment assignments which involve group work should nevertheless include some individual components therein. The contribution made by each student in continuous assessment involving a group effort shall be determined and assessed separately, and this can result in different grades being awarded to students in the same group.

2.7 General Assessment Regulations (GAR)

The General Assessment Regulations adopted in the IPD Scheme will be in line with the prevailing GAR of the University. Some regulations are extracted and presented in the following sections.

2.7.1 Progression/Academic Probation/Deregistration

The Board of Examiners (BoE) 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), determine whether each student is:

1. Eligible for progression towards an award; or
2. Eligible for an award; or
3. Required to be deregistered from the programme.

When a student has a Grade Point Average (GPA) lower than 2.0, he will be put on academic probation in the following semester. If a student is able to pull his GPA up to 2.0 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 transcript of studies.

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

1. The student has exceeded the maximum period of registration for that programme, as specified in the definitive programme document; or
2. The student’s GPA is lower than 2.0 for two consecutive semesters, and his Semester GPA in the second semester is also lower than 2.0; or
3. The student’s GPA is lower than 2.0 for three consecutive semesters.

A student may be deregistered from the programme enrolled before the time frame specified in the above conditions 2 or 3 if his academic performance is poor to the extent that the BoE deems that his chance of attaining a GPA of 2.0 at the end of the programme is slim or impossible.

Where there are good reasons, the BoE has the discretion to recommend allowing student who fall into categories as stated in the above conditions 2 or 3 to stay on the programme, and these recommendations should be presented to the Faculty Board for final decision.

Under the current procedures, a student can appeal against the decision of BoE to deregister him. If such an appeal was upheld by the Scheme BoE, the recommendation (to reverse the previous decision to deregister the student) should also be presented to the Faculty Board for final decision.

2.7.2 Retaking of Subjects

Students may retake any subject for the purpose of improving their grade without having to seek approval, but they must retake a compulsory subject which they have failed, i.e. obtained an F grade. Retaking of subjects is with the condition that the maximum study load of 21 credits per semester is not exceeded. Students wishing to retake passed subjects will be accorded a lower priority than those who are required to retake (due to failure in a compulsory subject) and can only do so if places are available.

The number of retakes of a subject is not restricted. Only the grade obtained in the final attempt of retaking (even if the retake grade is lower than the original grade for originally passed subject) will be included in the calculation of the Grade Point Average (GPA). If students have passed a subject but failed after retake, credits accumulated for passing the subject in a previous attempt will remain valid for satisfying the credit requirement for award. (The grades obtained in previous attempts will only be reflected in transcript of studies.)

In cases where a student takes another subject to replace a failed elective subject, the fail grade will be taken into account in the calculation of the GPA, despite the passing of the replacement subject.

2.7.3 Add/Drop of Subjects

Students are normally expected to follow the specified progression pattern. Any deviation will require approval from ME (for PAED award) or ISE (for PEM award).

A student can select elective subjects for his study on a semester basis through a subject registration system on web. Subject selection must be completed prior to the commencement of each semester. A student may apply for withdrawal of the registration on a subject after the add/drop period if he has a genuine need to do so. The application should be made to ME (for PAED award) or ISE (for PEM award) and will require the approval of both the subject lecturer and the host Department Award Leader concerned (or an alternate academic staff authorised by the programme host Department).

A student may choose not to study any subject in a semester. Application for zero subject enrolment in a semester should be made before the start of the semester and must not be later than the end of the add/drop period. Approval must be sought from ME (for PAED award) or ISE (for PEM award) to retain the study place. The semester with zero subject enrolment will also be counted towards the maximum period of registration for the scheme.

2.7.4 Credit Transfer and Exemption

A student may apply for credit transfer or exemption for a subject (including mandatory General University Requirement (GUR) subjects) if it has been studied in his recognized previous studies. All transferred credits will be counted towards meeting the requirements for

award, whereas the credits associated with an exempted subject will not be counted towards meeting the award requirements.

Applications for credit transfer/exemption should be made upon the initial enrolment on the scheme or before the end of the add/drop period of the semester concerned if the relevant credits are attained after admission. Application forms can be obtained from the Academic Secretariat (AS) and submitted to ME (for PAED award) or ISE (for PEM award).

2.7.5 Grading

Assessment grades shall be awarded on a criterion-referenced basis. A student's overall performance in a subject (including GUR subjects) shall be graded as shown in the following Table 2-11.

Table 2-11 Assessment Grades of a Subject

<i>Subject grade</i>	<i>Short description</i>	<i>Elaboration on subject grading description</i>
A+	Exceptionally Outstanding	The student's work is exceptionally outstanding. It exceeds the intended subject learning outcomes in all regards.
A	Outstanding	The student's work is outstanding. It exceeds the intended subject learning outcomes in nearly all regards.
B+	Very Good	The student's work is very good. It exceeds the intended subject learning outcomes in most regards.
B	Good	The student's work is good. It exceeds the intended subject learning outcomes in some regards.
C+	Wholly Satisfactory	The student's work is wholly satisfactory. It fully meets the intended subject learning outcomes.
C	Satisfactory	The student's work is satisfactory. It largely meets the intended subject learning outcomes.
D+	Barely Satisfactory	The student's work is barely satisfactory. It marginally meets the intended subject learning outcomes.
D	Barely Adequate	The student's work is barely adequate. It meets the intended subject learning outcomes only in some regards.
F	Inadequate	The student's work is inadequate. It fails to meet many of the intended subject learning outcomes.

'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.

A numeral grade point is assigned to each subject grade, as shown in the following Table 2-12.

Table 2-12 Conversion between Grade and Grade Point

<i>Grade</i>	<i>Grade Point</i>
A+	4.5
A	4
B+	3.5
B	3
C+	2.5
C	2
D+	1.5
D	1
F	0

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

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

where n = number of all subjects (inclusive of failed subjects) taken by the student up to and including the latest semester/term. 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:

1. Exempted subjects
2. Ungraded subjects
3. Incomplete subjects
4. Subjects for which credit transfer has been approved, but without any grade assigned*
5. 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 assessment, 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 reference point of time. GPA is an indicator of overall performance and is capped at 4.0.

**Subjects taken in PolyU or elsewhere and with grades assigned, and for which credit transfer has been approved, will be included in the GPA calculation.*

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

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

Along with the 'cumulative' GPA, a Weighted GPA will also be calculated, to give an indication to the BoE on the award classification which a student will likely to get if he makes steady progress on his academic studies. GUR subjects will be included in the calculation of weighted GPA for all programmes. Weighted GPA will be computed as follows:

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

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

n = number of all subjects counted in GPA calculation as set out in Page A-18, except those exclusions that any subjects passed after the graduation requirement has been met will not be taken into account of in the grade point calculation for award classification.

When a student has satisfied the requirements for award, an Award GPA will be calculated to determine his award classification. GUR subjects will be included in the calculation of award GPA for all programmes. For calculating the weighted GPA (and award GPA) to determine the Honours classification of students who satisfy the graduation requirements of Bachelor's degree awards, a University-wide standard weighting will be applied to all subjects of the same level, with a weighting of 2 for Level 1 and 2 subjects, a weighting of 3 for Level 3 and 4 subjects. Same as for GPA, Weighted GPA is capped at 4.0. The following is the subject level code adopted by the University:

Level Code	Explanation
0	= Pre-university level standard (and remedial subjects taken by new admittees to a 4-year degree programme, or some subjects offered to Higher Diploma students only)
1	= Standard comparable to year 1 of a 4-year degree programme
2	= Standard comparable to year 2 of a 4-year degree programme
3	= Standard comparable to year 3 of a 4-year degree programme
4	= Standard comparable to the final year of a 4-year degree programme
5	= Master's degree level
6	= Doctoral degree level

Example: The code "ENG1003" refers to a level-1 subject offered by Faculty of Engineering with the subject coding "003".

For students taking the Major/Minor option, a separate GPA will be calculated for their Major and Minor programmes. The Major GPA will be used to determine his award classification, which will be so reflected on the award parchment. The Minor GPA can be used as a reference for BoE to moderate the award classification for the Major.

For students who have completed a Major programme combined with free electives, their award classification will be determined by their Major GPA and the grades obtained for the free electives.

The derivation of GPA for award classification for the First Major and Second Major (particularly on the counting of subjects common to both Majors) will be decided by the Department offering the Major programme. Whilst only award parchment will be issued for the Double Majors, it will list both Majors and the award classifications, which can be different for the 2 Majors.

As assessment should be a matter of judgement, not merely a result of computation, the subject lecturer will have the discretion to assign a grade which is considered to reflect more appropriately the overall performance of the student in a subject to override the grade derived by the computer.

The following Tables 2-13 and 2-14 are guidelines for BoE's reference in determining award classifications and a set of indicators which can be used in helping to determine award classification.

Table 2-13 Criteria for Award

<i>Honours degrees</i>	Guidelines
1 st	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.
3 rd	The student has attained the 'essential minimum' required for graduation at a standard ranging from just adequate to just satisfactory.

**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.*

Table 2-14 Suggested Weighted GPA for Award

<i>Honours classification</i>	<i>Weighted GPA</i>
1 st	3.7 ⁺ - 4
2:i	3.2 ⁺ - 3.7
2:ii	2.3 ⁺ - 3.2
3 rd	2.0 - 2.3

Note: "+" sign denotes 'equal to and more than'; "-" sign denotes 'less than'.

Under exceptional circumstances, a student who has completed an Honours degree programme, but has not attained Honours standard, may be awarded a Pass-without-Honours degree. A Pass-without-Honours degree award will be recommended when the student has demonstrated a level of final attainment which is below the 'essential minimum' required for graduation with Honours from the programme in question, but when he 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.

2.7.6 Exceptional Circumstances

2.7.6.1 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 beyond his 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). If the late assessment cannot be completed before the commencement of the following academic year, the Faculty Board Chairman shall decide on an appropriate time for completion of the late assessment.

The student concerned is required to submit his 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 Lecturer concerned, in consultation with the Programme Leader.

2.7.6.2 Aegrotat Award

If a student is unable to complete the requirements of the programme in question for the award due to very serious illness, or other very special circumstances which are beyond his control, and considered by the BoE 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.

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 BoE. The student's exercise of this option shall be irrevocable.

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

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

2.7.6.3 Other Particular Circumstances

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

2.8 Work-Integrated Education (WIE)

Mandatory WIE should be in alignment with PolyU's strategic goal of providing value-added education leading to the development of all-round students with professional competence. This requires that the WIE activities should aim to achieve learning outcomes in the following:

- Professional knowledge and skills, and
- Attributes for all-roundedness.

Mandatory WIE activities should be structured as follow:

- There should be intended learning outcomes set for the workplace learning.
- Work experience should be purposefully designed to provide intentional learning aimed at the attainment of the intended outcomes, instead of leaving learning to occur incidentally as a side effect of work.
- Appropriate mechanisms of support provided by PolyU and workplace supervisors should be devised to ensure that effective learning does take place.

Mandatory WIE activities should be measured in terms of the following:

- Students should be required to document their workplace learning experience using instruments appropriate for demonstrating attainment of WIE learning outcomes, for example, reports, portfolios, etc.
- Assessment of the attainment of intended learning outcomes and the provision of student feedback should be built in.

Mandatory WIE activities are credit-bearing, but they are not included into the 124 academic credits required for graduation. The WIE components will **NOT** be counted towards GPA calculation. The minimum WIE duration is 2 weeks. Students will earn 1 credit for the completion of every 2 weeks of WIE activities.

In the IPD Scheme, mandatory WIE activities can be fulfilled by at least one of the following:

- Integrated into the final year PAED or PEM Capstone Project, which is industrial/commercial based. However, it is most important that the Capstone Project and WIE activities should be assessed separately. It is equally important that the WIE activities of students working in the same project team should be assessed individually as they can vary from student to student. In addition, duration of the WIE activities is not necessarily the same as that of the Capstone Project. In these cases the credit value of the project incorporating the WIE component will be counted in full towards the GPA calculation.
- Perform during a summer placement in industrial/commercial sector.
- Perform in a form proposed by the student and approved by ME/ISE.

In all cases, a plan for the WIE activities should be prepared by the student and his PolyU and workplace supervisors, and approved by ME/ISE before starting the activities. The plan should contain:

- The intended learning outcomes set for the workplace learning.
- The duration of WIE activities.
- Appropriate mechanisms of support provided by the PolyU and workplace supervisors to ensure that effective learning does take place.
- Method for the PolyU and workplace supervisors to monitor the student's progress and to provide timely feedback.
- Instrument for the student to demonstrate his attainment of WIE learning outcomes.

2.9 University Graduation Requirements for 4-year Full-time Undergraduate Degree

All candidates qualifying for a 4-year Full-time Undergraduate Degree offered from 2012/13 onward must meet:

1. the University Graduation Requirements, and
2. the specific graduation requirements of their chosen programme of study (Majors and Minors).

The minimum University Graduation Requirements are explained in the sections below. For the graduation requirements of specific programmes of study (majors and minors), candidates should refer to the relevant section of the Definitive Programme Document or consult the programme-offering departments concerned.

2.10 Summary of University Graduation Requirements

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

1. Complete successfully a minimum of 120 credits*.
2. Earn a cumulative GPA (or both a Major GPA** and Minor GPA** if applicable) of 2.00 or above at graduation.
3. Complete successfully the mandatory Work-Integrated Education (WIE) component as specified by their programme/Major.
4. Satisfy the residential requirement for at least one-third of the normal credit requirement for the award to be completed under the current enrolment at PolyU.
5. Satisfy the following GUR requirements:

(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
<i>Total = 30 credits</i>	

6. Satisfy any other requirements as specified in the Definitive Programme Document.

(a) Language and Communication Requirements (LCR)

English

All undergraduate students must successfully complete two 3-credit English language subjects as stipulated by the University (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). Students who are weaker in English at entry (with a HKDSE score of Level 3 with one or two sub-scores below Level 3) are required to take one or two extra credit-bearing English Language Enhancement subject(s) offered by ELC in their area(s) of weaknesses, as a pre-requisite for taking English LCR subjects****.

Students who can demonstrate that they have achieved a level beyond that of the LCR proficient level subjects as listed in Table 2 (based on an assessment by ELC) may apply for subject exemption or credit transfer of the LCR subject or subjects concerned.

Notes:

**This minimum only applies to students who are admitted through the normal route. Also, for passing a subject which is designed to fulfil the credit requirement of different types of subject, students will be regarded as having fulfilled the credit requirement of the particular types of subjects concerned. Nevertheless, the subject itself will only be counted once in the student's total credit requirements, and the students will be required to make up the total credit requirement by taking another subject.*

*** These requirements are applicable with effect from the 2012/13 cohorts of intakes, including students on Foundation Year programmes in 2011/12 who progress to stage 1 of FT undergraduate degree programmes in 2012/13. However, these are not applicable to students admitted to Senior Years in 2012/13 either on advanced standing or under the Senior Year quota.*

**** 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.*

*****With effect from 2013/14 cohort of intakes, the requirement for these students to take Language Enhancement subjects, as a pre-requisite for taking English/Chinese LCR subjects, will be abolished.*

Table 1: Framework of English LCR subjects

HKDSE	Subject 1	Subject 2	Extra Subject(s) Required
Level 5 or equivalent	Advanced English for University Studies (AEUS) 3 credits	Any LCR proficient level subject in English (see Table 2) 3 credits	NIL
Level 4 or equivalent	English for University Studies (EUS) 3 credits	Advanced English for University Studies (AEUS) 3 credits	NIL
Level 3 or equivalent	Practical English for University Studies (PEUS) 3 credits	English for University Studies (EUS) 3 credits	NIL
Level 3 with one or two sub-scores below Level 3 or equivalent	Practical English for University Studies (PEUS) 3 credits	English for University Studies (EUS) 3 credits	1 or 2 subjects from the ELC English Language Enhancement subjects (see Table 3) 2 credits each

Table 2: LCR Proficient level subjects in English

For students entering with HKDSE Level 5, or at an equivalent level or above	Advanced English Reading and Writing Skills	3 credits each
	Persuasive Communication	
	English in Literature and Film	

Table 3: ELC English Language Enhancement subjects

For students entering with HKDSE Level 3 with one or two sub-scores below Level 3	English Language Enhancement - Speaking Skills	2 credits each
	English Language Enhancement - Listening Skills	
	English Language Enhancement - Reading Skills	
	English Language Enhancement - Writing Skills	

Chinese

All undergraduate students are required to successfully complete one 3-credit Chinese language subject as stipulated by the University (Table 4). These Chinese subjects are designed to suit students' different levels of Chinese language proficiency at entry, as determined by their HKDSE score or the Chinese Language Centre (CLC) entry assessment (when no HKDSE score is available). Students who are weaker in Chinese at entry (with HKDSE sub-scores of Level 2) will be required to take one or two extra credit-bearing Chinese Enhancement subject(s) offered by CLC, in their area(s) of weakness, as a pre-requisite for taking the Chinese LCR subject*. Students can also opt to take additional Chinese LCR subjects (Table 7) in their free electives.

Students who are non-Chinese speakers (NCS), or whose Chinese standards are at junior secondary level or below, will also be required to take one LCR subject designed to suit their language background and entry standard as shown in Table 6.

Students who can demonstrate that they have achieved a level beyond that of the course "Advanced Communication Skill in Chinese" as listed in Table 4 (based on an assessment made by CLC) may apply for subject exemption or credit transfer of the LCR subject concerned.

Table 4: Framework of Chinese LCR subjects

	Required Subject	Extra Subject(s) Required
HKDSE Level 4 and 5 or equivalent	Advanced Communication Skills in Chinese (ACSC) 3 credits	NIL
HKDSE Level 3 or equivalent	Fundamentals of Chinese Communication (FCC) 3 credits	NIL
Level 3 with one or two sub-scores below Level 3	Fundamentals of Chinese Communication (FCC) 3 credits	1 or 2 subjects from the CLC Chinese Language Enhancement subjects (see Table 5) 2 credits each
For non-Chinese speakers or students whose Chinese standards are at junior secondary level or below	One subject from Table 6 below	NIL

** With effect from 2013/14 cohort of intakes, the requirement for these students to take Language Enhancement subjects, as a pre-requisite for taking English/Chinese LCR subjects, will be abolished.*

Table 5: CLC Chinese Language Enhancement subjects

HKDSE	Subject 1	Subject 2
For students entering with HKDSE result at Level 3 with one sub-score below Level 3	Basic Writing Skills 2 credits	Nil
For students entering with HKDSE result at Level 3 with two sub-scores below Level 3	Basic Writing Skills 2 credits	Speech Genres and Verbal Communication 2 credits

Table 6: Chinese LCR Subjects for non-Chinese speakers or students whose Chinese standards are at junior secondary level or below

Subject	Pre-requisite/exclusion	
Chinese I (for non-Chinese speaking students)	<ul style="list-style-type: none"> For non-Chinese speaking students at beginners' level 	3 credits each
Chinese II (for non-Chinese speaking students)	<ul style="list-style-type: none"> For non-Chinese speaking students; and Students who have completed Chinese I or equivalent 	
Chinese III (for non-Chinese speaking students)	<ul style="list-style-type: none"> For non-Chinese speaking students at higher competence levels; and Students who have completed Chinese II or equivalent 	
Chinese Literature – Linguistics and Cultural Perspectives (for non-Chinese speaking students)	<ul style="list-style-type: none"> For non-Chinese speaking students at higher competence levels 	

Table 7: Other LCR Electives in Chinese

Subject	Pre-requisite/exclusion	
Chinese and the Multimedia	<ul style="list-style-type: none"> For students entering with HKDSE level 4 or above; or students with advanced competence level as determined by the entry assessment; or Students who have completed “Fundamentals of Chinese Communication” 	3 credits each
Creative writing in Chinese	<ul style="list-style-type: none"> For students entering with HKDSE level 4 or above; or students with advanced competence level as determined by the entry assessment; or Students who have completed “Fundamentals of Chinese Communication” 	
Elementary Cantonese	For students whose native language is not Cantonese	
Putonghua in the Workplace	<ul style="list-style-type: none"> Students have completed “Fundamentals of Chinese Communication” or could demonstrate the proof with basic Putonghua 	

	proficiency <ul style="list-style-type: none"> • For students whose native language is not Putonghua 	
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Writing Requirement

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

Reading Requirement

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

A list of approved CAR subjects for meeting the Writing Requirement (with a “W” designation) and for meeting the Reading Requirement (with an “R” designation) is shown at: <https://www2.polyu.edu.hk/as/Polyu/GUR/index.htm>

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.

Note: In addition to the LCR and Reading and Writing Requirements, students also have to complete 4 credits of discipline-specific language requirements (2 credits in English and 2 credits in Chinese) as specified in the curriculum requirements of their Major.

(b) Freshman Seminar

All students must successfully complete, normally in their first year of study, one 3-credit Freshman Seminar offered by their chosen Broad Discipline. The purpose is to (1) introduce students to their chosen discipline and enthuse them about their major study, (2) cultivate students’ creativity, problem-solving ability and global outlook, (3) give students an exposure to the concepts of, and an understanding of, entrepreneurship, and (4) engage students, in their first year of study, in desirable forms of university learning that emphasises self-regulation, autonomous learning and deep understanding.

A list of Freshman Seminars offered by the Broad Disciplines can be found at: <https://www2.polyu.edu.hk/as/Polyu/GUR/index.htm>

(c) Leadership and Intra-Personal Development

All students must successfully complete one 3-credit subject in the area of Leadership and Intra-Personal Development, which is designed to enable students to (1) understand and integrate theories, research and concepts on the qualities (particularly intra-personal and interpersonal qualities) of effective leaders in the Chinese context, (2) develop greater self-awareness and a better understanding of oneself, (3) acquire interpersonal skills essential for functioning as an effective leader, (4) develop self-reflection skills in their learning, and (5) recognise the importance of the active pursuit of knowledge on an intra-personal and interpersonal level and its relationship to leadership qualities.

A list of designated subjects for meeting the leadership and intra-personal development requirement is available at: <https://www2.polyu.edu.hk/as/Polyu/GUR/index.htm>

(d) Service-Learning

All students must successfully complete one 3-credit subject designated to meet the service-learning requirement, in which they are required to (1) participate in substantial community service or civic engagement activities that will benefit the service users or the community at large in a meaningful way, (2) apply the knowledge and skills acquired from their Major or other learning experiences at the University to the community service activities, and (3) reflect on their service learning experience in order to link theory with practice for the development of a stronger sense of ethical, social and national responsibility.

These subjects may take the form of:

- An open-to-all GUR service-learning subject
- A GUR service-learning subject targeted for a particular student group (e.g. a Broad Discipline), or
- A customised DSR subject (core or elective) within the Major/Minor with all the required features and components to meet the Service-Learning Requirement.

Students who have satisfied the Service-Learning Requirement via a customised DSR subject will be required to take another 3-credit subject to make up for the total credit requirement.

A list of designated subjects for meeting the service-learning requirement is available at: <https://www2.polyu.edu.hk/as/Polyu/GUR/index.htm>

(e) Cluster Areas Requirement (CAR)

To expand students' intellectual capacity beyond their disciplinary domain and to enable them to tackle professional and global issues from a multidisciplinary perspective, students are required to successfully complete at least one 3-credit subject in each of the following four Cluster Areas:

- Human Nature, Relations and Development
- Community, Organisation and Globalisation
- History, Culture and World Views
- Science, Technology and Environment

A list of CAR subjects under each of the four Cluster Areas is available at: <https://www2.polyu.edu.hk/as/Polyu/GUR/index.htm>

(f) China Studies Requirement

Of the 12 credits of CAR described in (e) above, students are required to successfully complete a minimum of 3 credits on CAR subjects designated as “China-related”. The purpose is to enable students to gain an increased understanding of China (e.g., its history, culture and society, as well as emerging issues or challenges).

A list of approved CAR subjects for meeting the China Studies Requirement is available at: <https://www2.polyu.edu.hk/as/Polyu/GUR/index.htm>

(g) Healthy Lifestyle

Healthy lifestyle is the platform for all-round development. All students are required to successfully complete a non-credit-bearing programme in healthy lifestyle offered by the Student Affairs Office. The programme will cover: (1) fitness evaluation, (2) concepts on

health and fitness, (3) sports skills acquisition, and (4) exercise practicum. More details can be found at: <http://www.polyu.edu.hk/sao/hlr>

Students on Articulation Degree Programmes and Senior Year Intakes to the 4-year UG degree programmes are not required to take the Health Lifestyle Programme. Full-time Advanced Standing students who are not holders of AD/HD are still required to take the Healthy Lifestyle Programme.

2.11 Normal Progression Pattern

In the University credit-based system, all academic programmes fit within a common framework, in which subjects of standard size (3 credits) are used as far as possible. The overall credit requirements consist of General University Requirements (GUR) and Discipline-Specific Requirements (DSR).

A total of 124 academic credits is required for graduation, which should be obtained from the following groups of subjects ((i), (ii), (iii) or (iv) and (v)). In addition, students should complete the scheduled IC practical training modules ((vi)) and the Work-Integrated Education (WIE) activities mandated by PolyU (Part 2 – Section 2.8), but these credits are not included into the above 124 academic credits.

Students are admitted into one of the two awards operating under the BEng (Hons) Scheme in Integrated Product Development. After the first four semesters, they can apply for transfer of study to another award, subject to conditions such as quota constraints, academic and interview performance.

These two awards are:

- BEng (Hons) in Product Analysis and Engineering Design (PAED)
- BEng (Hons) in Product Engineering with Marketing (PEM)

The scheme curriculum which can be completed within the normal duration of 8 semesters (equivalent to 4 years) is presented in Table 2-15.

Table 2-15 IPD Scheme Curriculum

(i) General University Requirements (Total: 30 credits):		
	Credits	
(a) Language and Communication Requirements	9	
(b) Freshman Seminar for Engineering	3	
(c) Leadership and Intra-Personal Development	3	
(d) Service-Learning	3	
(e) Cluster Areas Requirement (CAR)	12	
(f) China Studies Requirement	(3 of the 12 CAR credits)	
(g) Healthy Lifestyle	Non-credit bearing	
(ii) Common Core Subjects (Total: 46 credits):		
<p>These subjects are necessary for every student to form a broad knowledge-base. Their syllabuses are presented in Part 4.</p>		
Subject (Level)	Offering Department	Suggested Semester
<ul style="list-style-type: none"> • AMA1110 Basic Mathematics I – Calculus and Probability & Statistics (Level 1) • AP10005 Physics I (Level 1) • AMA1120 Basic Mathematics II – Calculus and Linear Algebra (Level 1) • AP10006 Physics II (Level 1) • ENG2003 Information Technology (Level 2) • AMA2111 Mathematics I (Level 2) • SD348 Introduction to Industrial Design (Level 3) • AF3625 Engineering Economics (Level 3) • MM2711 Introduction to Marketing (Level 2) • ME22002 Integrated Product Development Fundamentals (Level 2) • ENG3004 Society and the Engineer (Level 3) • ENG2001 Fundamentals of Materials Science and Engineering/Chemistry/Biology (Level 2) • ELC3521 Professional Communication in English (Level 3) • CBS3241P Professional Communication in Chinese* (Level 3) • ISE386 Integrated Design for Manufacture (Level 3) • ENG3003 Engineering Management (Level 3) 	<ul style="list-style-type: none"> AMA AP AMA AP FENG AMA SD AF MM ME FENG FENG ELC CBS ISE FENG 	<ul style="list-style-type: none"> 1 1 2 2 2 3 3 3 4 4 4 4 5/6 5/6 5/6 6/7

**This is the subject for meeting the discipline-specific Chinese language requirement. Students who are non-chinese speakers or those whose Chinese standards are at junior secondary level or below will be exempted from the discipline-specific Chinese language requirement. Students of this category can take a replacement subject of any level to make up for credit requirement.*

(iii) Subjects for PAED Award (Total: 42 credits):

These subjects are necessary for students taking the PAED award (syllabuses are presented in Part 4). In addition to the 12 Award core subjects, every student is also required to study 2 elective subjects (of which at least 1 should normally be ME subjects) from the pool of PAED award elective subjects. The application to study a maximum of one PEM award elective subject is normally allowed. A minimum class size of 15 students is suggested for every elective subject.

Subject (Level) – Each subject is of 3 credits	Offering Department	Suggested Semester
Award Core:		
• BME31125 Biomechanics (Level 2)	BME	5
• EE2901S Basic Electricity and Electronics (Level 2)	EE	5
• ME23001 Engineering Mechanics (Level 2)	ME	5
• SD3401 Designing for Humanities (Level 3)	SD	6
• ME34003 Thermofluid Mechanics (Level 3)	ME	6
• ME33001 Mechanics of Materials (Level 3)	ME	6
• ME31003 System Dynamics (Level 3)	ME	6
• ME42005 CAD/CAE Technologies for Product Development (Level 4)	ME	6
• ME41004 Mechatronics and Control (Level 4)	ME	7
• ME46001 Numerical Predictive Product Analysis (Level 4)	ME	7
• ME42006 Product Modeling and Prototyping (Level 4)	ME	8
• ME42007 Design for Product Safety and Reliability (Level 4)	ME	8
Award Elective (All are Level 4 subjects):		
• ENG4001 Project Management	FENG	7/8
• ME42002 Design for Packaging and No-assembly	ME	7/8
• ME42004 Development of Green Products	ME	7/8
• ME42001 Artificial Intelligence in Products	ME	7/8
• ME42003 Design for Six Sigma	ME	7/8
• ME43002 Nano- and Micro-Technology Applications to Product Development	ME	7/8
• ME43003 Product Testing Technology	ME	7/8
• SD4041 Design in Business for Engineering	SD	7/8
• SD4414 Design of Home and Personal Electronic Products	SD	7/8

(iv) Subjects for PEM Award (Total: 39 credits):

These subjects are necessary for students taking the PEM award (syllabuses are presented in Part 4). In addition to the 11 Award core subjects, every student is also required to study any 2 elective subjects (of which at least 1 should be from the pool of PEM award elective subjects). The application to study a maximum of one elective subject from the PAED award is normally allowed. A minimum class size of 15 students is suggested for every elective subject.

Subject (Level) – Each subject is of 3 credits	Offering Department	Suggested Semester
<p>Award Core:</p> <ul style="list-style-type: none"> • ISE309/EIE2302 Mechatronics for Products/ Electricity and Electronics (Level 3/2) • ISE204 Instrumentation and Product Testing (Level 2) • MM3761 Marketing Research (Level 3) • ISE369 Quality Engineering (Level 3) • ISE306 Tool Design (Level 3) • ISE430 New Product Planning and Development (Level 4) • ISE4005 Eco-design & Manufacture (Level 4) • ISE418 Computer-Aided Product Design (Level 4) • MM4732 Global Marketing (Level 4) • MM4711 Business to Business Marketing (Level 4) • ISE330 Product Safety and Reliability (Level 3) 	<p>ISE/EIE</p> <p>ISE</p> <p>MM</p> <p>ISE</p> <p>ISE</p> <p>ISE</p> <p>ISE</p> <p>ISE</p> <p>ISE</p> <p>MM</p> <p>MM</p> <p>ISE</p>	<p>5</p> <p>5</p> <p>5</p> <p>6</p> <p>6</p> <p>7</p> <p>7</p> <p>7</p> <p>7</p> <p>7</p> <p>7</p> <p>8</p> <p>8</p>
<p>Award Elective (All are Level 4 Subjects):</p> <ul style="list-style-type: none"> • ISE404 Total Quality Management • ISE419 Advanced Mould and Die Design • ISE4007 Design for Soft Products and New Services • ISE4009 Advanced Manufacturing Technology • ISE4013 Product Innovation and Intellectual Property • MM4721 Marketing Management in China • MM4781 Sales Management • SD4041 Design in Business for Engineering • SD4463 Sustainable Product Design 	<p>ISE</p> <p>ISE</p> <p>ISE</p> <p>ISE</p> <p>ISE</p> <p>MM</p> <p>MM</p> <p>SD</p> <p>SD</p>	<p>7/8</p> <p>7/8</p> <p>8</p> <p>7/8</p> <p>7/8</p> <p>7/8</p> <p>7/8</p> <p>7/8</p> <p>7/8</p>

(v) **Projects (Total: 6 credits for PAED award; 9 credits for PEM award):**

Projects are available for PAED and PEM awards. Group or individual project can be used. A project group normally consists of 3 students to facilitate teamwork. Report, presentation and prototype may normally be required.

The Capstone Project for PAED and PEM awards gives the students an opportunity for integrating their acquired knowledge and skills. In the final year, students should conduct a capstone project relevant to the selected award (PAED or PEM), which is an open-ended real-life project that facilitates a full integration of the curriculum or an experience of the whole product development process. *The PAED Capstone Project is a group project whereas the PEM Capstone Project will be conducted on an individual basis.*

Technical competency as well as people competency should normally be the major criteria to be assessed. The criteria and method of assessment are clearly described in Part 4. IC would provide assistance to facilitate the fabrication of prototypes in these projects. In addition, the WIE credits may also be fulfilled by conducting the capstone project.

For PEM award, the project “Integrated Product Engineering Project” aims to develop PEM students’ ability in applying and integrating the engineering theories and practices acquired from the related subjects.

Subject (Level)	Number of Credit	Offering Department	Suggested Semester(s)
• ISE3007 Integrated Product Engineering Project I(Level 3)	3	ISE	5
• ISE445 Capstone Project (Level 4)	6	ISE	7 & 8
• ME49003 Capstone Project (Level 4)	6	ME	7 & 8

(vi) Practical Training Modules (They are not included into the 124 academic credits but compulsory to complete before graduation):

The following compulsory practical training modules are provided within the first six semesters (syllabuses are presented in Part 4). It is aimed to provide the students with a total of 10 weeks (with a nominal of 36 hours per week) practical training. IC training credits will be graded and included in the GPA calculation. However, they will be excluded from the calculation of award classification. But students must pass all IC training modules in order to be eligible for award.

Subject (Level)	Offering Department	Suggested Semester(s)
<ul style="list-style-type: none"> • IC2105 Engineering Communication and Fundamentals (Level 2) 	IC	1 & 2
<ul style="list-style-type: none"> • IC348 Appreciation of Manufacturing Processes (Level 3) 	IC	3 & 4
<ul style="list-style-type: none"> • IC349 Integrated Manufacturing Project (Level 3) <p>OR</p>	IC	5 & 6
<ul style="list-style-type: none"> • IC3102 Integrated Product Engineering Project II (Level 3) 	IC	6

The specified progression pattern of the full-time mode within the normal duration of 8 semesters (equivalent to 4 years) is recommended in the following Table 2-16, but this is not compulsory.

Students are required to fulfill the General University Requirements (GURs) as detailed in Table 2-15 (i) subject to a maximum study load per semester. **The study pattern for the GUR subjects in Table 2-16 is indicative only (with the exception of Freshman Seminar). Students may take these subjects according to their own schedule.**

Table 2-16 Specified Progression Pattern of the Full-time Mode

(Common Year for BEng (Hons) in PAED and PEM)

(Total credits required for graduation: 124 + 10 IC training credits)

1st Year (33 Credits+4 IC training credits)	
Semester I (18 Credits)	Semester II (15 Credits)
LCR I (3)	LCR II (3)
CAR I (3)	CAR II (3)
Freshman Seminar for Engineering (ENG1003) (3)	Information Technology (ENG2003) (3)
Basic Mathematics I – Calculus and Probability & Statistics (AMA1110) (3)	Basic Mathematics II – Calculus and Linear Algebra (AMA1120) (3)
Physics I (AP10005) (3)	Physics II (AP10006) (3)
Leadership and Intra-personal Development (3)	--
Healthy Lifestyle (0)	
Engineering Communication and Fundamentals (IC2105) (4 IC training credits)	

2nd Year (30 Credits+ 3 IC training credits)	
Semester I (15 Credits)	Semester II (15 Credits)
CAR III (3)	CAR IV (3)
LCR III (3)	Introduction to Marketing (MM2711) (3)
Engineering Economics (AF3625) (3)	Integrated Product Development Fundamentals (ME22002) (3)
Introduction to Industrial Design (SD348) (3)	Fundamentals of Materials Science and Engineering (ENG2001) / Chemistry*/ Biology* (3)
Mathematics I (AMA2111) (3)	Society and the Engineer (ENG3004) (3)
Appreciation of Manufacturing Processes (IC348) (3 IC training credits)	

**The following CAR subjects are adopted as options for the areas of 'Biology' and 'Chemistry' :*

Chemistry – Chemistry and Modern Living (ABCT1301), Chemistry and Sustainable Development (ABCT1302)

Biology – Biotechnology and Human Health (ABCT1303), Introductory Life Science(ABCT1101), Bionic Human and the Future of Being Human (BME11101)

Curriculum for BEng (Hons) in PAED Award (3rd and 4th Years)

(Total credits required for graduation: 124 + 10 IC training credits)

3rd Year (34 Credits+ 3 IC training credits)	
Semester I (16 Credits)	Semester II (18 Credits)
Biomechanics (BME31125) (3)	Designing for Humanities (SD3401) (3)
Service Learning (3)	Thermofluid Mechanics (ME34003) (3)
Basic Electricity and Electronics (EE2901S) (3)	System Dynamics (ME31003) (3)
Engineering Mechanics (ME23001) (3)	Mechanics of Materials (ME33001) (3)
Professional Communication in Chinese (CBS3241P) (2)	CAD/CAE Technologies for Product Development (ME42005) (3)
Professional Communication in English (ELC3521) (2)	Integrated Design for Manufacture (ISE386)(3)
Integrated Manufacturing Project (IC349) (3 IC training credits)	

4th Year (27 Credits)	
Semester I (15 Credits)	Semester II (12 Credits)
Engineering Management (ENG3003) (3)	Product Modeling and Prototyping (ME42006) (3)
Mechatronics and Control (ME41004) (3)	Design for Product Safety and Reliability (ME42007) (3)
Numerical Predictive Product Analysis (ME46001) (3)	Elective Subject II (3)
Elective Subject I (3)	--
Capstone Project (ME49003) (6)	

Curriculum for BEng (Hons) in PEM Award (3rd and 4th Years)

(Total credits required for graduation: 124 + 10 IC training credits)

3rd Year (31 Credits+3 training credits)	
Semester I (15 Credits)	Semester II (16 Credits)
Instrumentation and Product Testing (ISE204) (3)	Engineering Management (ENG3003) (3)
Mechatronics for Products (ISE309) / Electricity and Electronics (EIE2302) (3)	Professional Communication in English (ELC3521) (2)
Integrated Design for Manufacture (ISE386) (3)	Professional Communication in Chinese (CBS3241P) (2)
Marketing Research (MM3761) (3)	Quality Engineering (ISE369) (3)
Integrated Product Engineering Project I (ISE3007) (3)	Tool Design (ISE306) (3)
–	Service Learning (3)
–	Integrated Product Engineering Project II (IC3102) (3 IC training credits)

4th Year (30 Credits)	
Semester I (15 Credits)	Semester II (15 Credits)
New Product Planning and Development (ISE430) (3)	Business to Business Marketing (MM4711) (3)
Global Marketing (MM4732) (3)	Elective I* (3)
Eco-design & Manufacture (ISE4005) (3)	Elective II* (3)
Computer-Aided Product Design (ISE418) (3)	Product Safety & Reliability (ISE330) (3)
Capstone Project (ISE445) (6)	

*Electives	Select any TWO from the following subjects
	<ul style="list-style-type: none"> • Total Quality Management (ISE404) • Advanced Mould and Die Design (ISE419) • Design for Soft Products and New Services (ISE4007) • Advanced Manufacturing Technology (ISE4009) • Product Innovation and Intellectual Property (ISE4013) • Marketing Management in China (MM4721) • Sales Management (MM4781) • Design in Business for Engineering (SD4041) • Sustainable Product Design (SD4463)

Additional Subject Requirement for Physics

Students who do not have Level 2 or above in HKDSE Physics subjects (or Combined Science with a component in Physics) are required to take the following additional subject:-

Introduction to Physics (AP10001) (3 credits)

Double Fulfilment of DSR and CAR

Some DSR subjects are also designated as CAR subjects under the four cluster areas. They are the same subjects designated with different subject codes. Upon passing them, you will fulfill the requirements of both DSR and CAR. However, credits will not be counted twice. For example, if you have taken MM2711, you have fulfilled the CAR B requirement and earned only 3 credits instead of 6 credits. So you may need to take other subjects to make up the total credit requirement of the award. The list of subjects that fulfill both DSR and CAR of PAED and PEM awards operating under the IPD Scheme are shown below:

DSR Subjects	CAR Subjects	Cluster Area	Subject Title
MM2711	MM2B05	CAR – B	Introduction to Marketing
ABCT1101	ABCT1D04	CAR – D	Introductory Life Science
ABCT1301	ABCT1D01	CAR – D	Chemistry and Modern Living
ABCT1302	ABCT1D02	CAR – D	Chemistry and Sustainable Development
ABCT1303	ABCT1D03	CAR – D	Biotechnology and Human Health
BME1101	BME1D01	CAR – D	Bionic Human and the Future of Being Human

2.12 Curricula for Senior Year Intakes

The normal study pattern of the senior year curricula and the credits for graduation requirement for PAED and PEM award are presented in Table 2-17 and Table 2-18 respectively.

Table 2-17 Normal study pattern of the senior year curriculum for PAED award

(Total credits required for graduation: 64 + 6 IC training credits)

1st Year (34 Credits+ 3 IC training credits)	
Semester I (16 Credits)	Semester II (18 Credits)
Introduction to Industrial Design (SD348) (3)	Designing for Humanities (SD3401) (3)
Society and the Engineer (ENG3004) (3)	Thermofluid Mechanics (ME34003) (3)
Service Learning [^] # (3)	System Dynamics (ME31003) (3)
CAR I# (3)	Mechanics of Materials (ME33001) (3)
Professional Communication in Chinese (CBS3241P) (2)	CAD/CAE Technologies for Product Development (ME42005) (3)
Professional Communication in English (ELC3521) (2)	Integrated Design for Manufacture (ISE386)(3)
IC348 Appreciation of Manufacturing Processes (3 training credits)	
Summer Term	
IC349 Integrated Manufacturing Project (3 training credits)	

2nd Year (30 Credits)	
Semester I (15 Credits)	Semester II (15 Credits)
Engineering Management (ENG3003) (3)	Product Modeling and Prototyping (ME42006) (3)
Mechatronics and Control (ME41004) (3)	Design for Product Safety and Reliability (ME42007) (3)
Numerical Predictive Product Analysis (ME46001) (3)	Elective Subject II (3)
Elective Subject I (3)	CAR II # (3)
ME49003 Capstone Project (6)	

Remarks: Those students not meeting the equivalent standard of the Undergraduate Degree LCR (based on their previous studies in AD/HD programme and their academic performance) will be required to take degree LCR subjects on top of the normal curriculum requirement.

[^]Prior to its full implementation, students can choose to take a 3-credit free elective subject in lieu of service learning subject in 2014/15 in order to fulfil the graduation requirements.

General University Requirements (GUR) The pattern for GUR subjects are indicative only. Students may take these subjects according to their own schedule.

Discipline Specific Requirements (DSR) Subjects		Credits
I) Compulsory		49
CBS3241P	Professional Communication in Chinese	(2)
ELC3521	Professional Communication in English	(2)
ENG3003	Engineering Management	(3)
ENG3004	Society and the Engineer	(3)
ISE 386	Integrated Design for Manufacture	(3)
ME31003	System Dynamics	(3)
ME33001	Mechanics of Materials	(3)
ME34003	Thermofluid Mechanics	(3)
ME41004	Mechatronics and control	(3)
ME42005	CAD/CAE technologies for product development	(3)
ME42006	Product Modeling and prototyping	(3)
ME42007	Design for product Safety and Reliability	(3)
ME46001	Numerical Predictive Product Analysis	(3)
ME49003	Capstone Project	(6)
SD3401	Designing for Humanities	(3)
SD348	Introduction to Industrial Design	(3)
II) Elective Students are required to complete two 3-credit elective subjects from the elective pool.		6
III) Training		6
IC348	Appreciation of Manufacturing Process	(3)
IC349	Integrated Manufacturing Project	(3)
Total DSR credits		55 + 6 training credits

Table 2-18 Normal study pattern of the senior year curriculum for PEM award

(Total credits required for graduation: 64 + 6 IC training credits)

Year 1 (34 Credits + 6 IC training credits)	
Semester I (18 Credits + 1.5 IC)	Semester II (16 Credits + 4.5 IC)
CAR I# (3)	CAR II# (3)
Quality Engineering (ISE369) (3)	Professional Communication in English (ELC3521) (2)
Integrated Design for Manufacture (ISE386) (3)	Professional Communication in Chinese (CBS3241P) (2)
Marketing Research (MM3761) (3)	Engineering Management (ENG3003) (3)
Society and the Engineer (ENG3004) (3)	Tool Design (ISE306) (3)
-	Service Learning [^] # (3)
Integrated Product Engineering Project I (ISE3007) (3)	Integrated Product Engineering Project II (IC3102) (3 IC training credits)
Appreciation of Manufacturing Processes (IC348) (3 IC training credits)	

Year 2 (30 Credits)	
Semester I (15 Credits)	Semester II (15 Credits)
New Product Planning and Development (ISE430) (3)	Business to Business Marketing (MM4711) (3)
Global Marketing (MM4732) (3)	Elective I* (3)
Eco-design & Manufacture (ISE4005) (3)	Elective II* (3)
Computer-Aided Product Design (ISE418) (3)	Product Safety & Reliability (ISE330) (3)
Capstone Project (ISE445) (6)	

Remarks: *Those students not meeting the equivalent standard of the Undergraduate Degree LCR (based on their previous studies in AD/HD programme and their academic performance) will be required to take degree LCR subjects on top of the normal curriculum requirement.*

[^]Prior to its full implementation, students can choose to take a 3-credit free elective subject in lieu of service learning subject in 2014/15 in order to fulfil the graduation requirements.

General University Requirements (GUR) The pattern for GUR subjects are indicative only. Students may take these subjects according to their own schedule.

*Electives	Select any TWO from the following subjects
	<ul style="list-style-type: none"> • Total Quality Management (ISE404) • Advanced Mould and Die Design (ISE419) • Design for Soft Products and New Services (ISE4007) • Advanced Manufacturing Technology (ISE4009) • Product Innovation and Intellectual Property (ISE4013) • Sales Management (MM4781) • Marketing Management in China (MM4721) • Design in Business for Engineering (SD4041) • Sustainable Product Design (SD4463)

2.13 Curriculum Map

A curriculum map is provided in Tables 2-19 (for PAED award) and Table 2-20 (for PEM award). The specific learning outcomes achieved by every subject of the award are listed clearly, such that all the specific learning outcomes as specified in Section 2.4 can be shown to be fully fulfilled by the curriculum built upon a combination of most suitable subjects as shown in Section 2.11.

**Table 2-19 ILOs Achieved by PAED Award
(T – TEACH; P – PRACTICE; M – MEASURED)**

I) General University Requirements (GUR) Subjects

		PROGRAMME OUTCOMES											
		PAK							POW				
		a	b	c	d	e	f	g	a	b	c	d	e
COURSE/MODULE/SUBJECT NUMBERS	LCR English I											TP	
	LCR English II											TP	
	LCR Chinese											TP	
	Leadership							T					
	Service-learning				TP		TP			T	T		
	Freshman Seminar										T		T
	CAR I - IV								T				T

II) Discipline-specific Requirements (DSR) Subjects

		PROGRAMME OUTCOMES											
		PAK						POW					
		a	b	c	d	e	f	g	a	b	c	d	e
COURSE/MODULE/SUBJECT NUMBERS	Faculty Common												
	AF3625	T	T				T		T	T		T	T
	AMA1110	T	T	T									
	AMA1120	T	T	T									
	AMA2111	T	T	T									
	AP10005			T									
	AP10006			T									
	CBS3241P											TPM	
	ELC3521											TPM	
	ENG2001	T	T	P					T				
	ENG2003	T	T	P		T			T			TPM	
	ENG3003					T		TP M	T	T	T	T	
	ENG3004							TP	TM	T	TM	T	T
	Award Core												
	ME22002	TP	TP				TP	TP		TP	TP	TP	TP
	MM2711	T		T		TP	T						
	ISE386	T	TP	TP	P	P	TP		T	T		P	P
	SD348	T	TP	TP	TP	P	TP	TP	TP	TP		TP	
	SD3401					P	TP		TP				
	EE2901S			T		TP							T
	BME31125		TP	TP	T								
	ME23001		TP	TP M		P				TP		T	
	ME31003		TP	TP M								T	
	ME33001			TP M	TP								
	ME34003	TP	TP	TP M		TP			TP			TP	
	ME41004		TP	TP		PM						P	
	ME42005		TP	TP	TP	TP M	TP	TP					
	ME42006		TP M	TP	TP	TP	TP M	TP					
ME42007	TP		TP	TP M	TP	TP	TP	TP M	M		P		
ME46001			TP	TP	TP						P		
ME49003	TP M	TP M	TP	TP M	TP	TP M	TP	TP	TP M	TP	TPM	TPM	

III) Elective Subjects

		PROGRAMME OUTCOMES											
		PAK						POW					
		a	b	c	d	e	f	g	a	b	c	d	e
	ENG4001							TP M		TP		TP	T
	ME42001		TP	TP		TP						P	
	ME42002	TP	TP	TP	TP	TP	TP			TP		P	
	ME42003	TP			TP	TP						P	
	ME42004	TP		TP	P		TP					P	
	ME43002			TP	P	TP						P	TP
	ME43003		TP	TP		TP				TP			TP
	SD4041	TP	TP				T		TP			TP	
SD4414	TP	TP	T	T				T			TP	T	

IV) Training Subjects

		PROGRAMME OUTCOMES											
		PAK						POW					
		a	b	c	d	e	f	g	a	b	c	d	e
COURSE/MODULE/ SUBJECT NUMBERS	IC2105	TP	TP	TP		TP	TP	TP					
	IC348				P	P	P	PM					
	IC349				PM	P	P	P		PM		P	
	WIE								P	P	p	p	p

- *Definition of the Intended Learning Outcomes of the PAED Award are shown in Section 2.4.2.*

Table 2-20 Curriculum Map that We Teach (T), Give Students Practice (P) and Measure (M) the Intended Learning Outcomes of the PEM Award

SUBJECT CODES	SUBJECT TITLES	ILOs OF THE PEM AWARD (Section 2.4.4)						
		1	2	3	4	5	6	7
CBS1101P@	Fundamentals of Chinese Communication				TP			
CBS1102P@	Advanced Communication Skills in Chinese				TP			
CBS3241P	Professional Communication in Chinese				TP			P
ELC1011#	Practical English for University Studies				TP			
ELC1012/3#	English for University Studies				TP			
ELC1014#	Advanced English for University				TP			
ELC2011#	Advanced English Reading and Writing Skills				TP			
ELC2012#	Persuasive Communication				TP			
ELC2013#	English in Literature and Film				TP			
ELC3521	Professional Communication in English				TPM			P
AMA1110	Basic Mathematics I – Calculus and Probability & Statistics		TP					
AMA1120	Basic Mathematics II – Calculus and Linear Algebra		TP					
AMA2111	Mathematics I		TP					
AP10005	Physics I		TP					
AP10006	Physics II		TP					
APSS1L01	Tomorrow’s Leaders					TP		

EIE2302[^]	Electricity & Electronics		TP					
ENG1003	Freshman Seminar for Engineering	TP	TP		P	P		
ENG2001⁺	Fundamentals of Materials Science and Engineering		TP					
ENG2003	Information Technology		TP			P		
AF3625	Engineering Economics			TP			TP	
ENG3003	Engineering Management	TP	TP			P		
ENG3004	Society and the Engineer	T	TP		TP	P	TPM	
IC2105	Engineering Communication and Fundamentals	TP	TP		TP		T	T
IC348	Appreciation of Manufacturing Processes	TP	TP					
IC3102	Integrated Product Engineering Project II	P	PM	P	P	PM	P	P
ISE3007	Integrated Product Engineering Project I	T	TP	T	T	P	T	
ISE204	Instrumentation and Product Testing		TP		TP		TP	TP
ME22002	Integrated Product Development Fundamentals		TP	TP			T	
ISE306	Tool Design	TP	TP	TP	P	P		
ISE309[^]	Mechatronics for Products		TP					
ISE330	Product Safety and Reliability	T	T	P	P		T	P
ISE369	Quality Engineering	T	TP					
ISE386	Integrated Design for Manufacture	T	TP		P	P		
ISE404	Total Quality Management	TP		T			T	

ISE418	Computer-Aided Product Design	T	TP		P	P	T	P
ISE419	Advanced Mould and Die Design	TP	TP		P	P		
ISE430	New Product Planning and Development	TPM		TPM	P	P		
ISE445	Capstone Project	PM	PM	PM	TPM	PM		PM
ISE4005	Eco-design and Manufacture	T	TP	TP	P	P	TP	P
ISE4007	Design for Soft Products and New Services	T	TP	TP	P	P	T	P
ISE4009	Advanced Manufacturing Technology		TP		TP	P		P
ISE4013	Product Innovation and Intellectual Property		TP		P	P		T
MM2711	Introduction to Marketing	T		TP	P	P	T	
MM3761	Marketing Research		TP	TP	P	P		
MM4711	Business to Business Marketing			TP	P	P	T	
MM4721	Marketing Management in China			TP	P	P		
MM4732	Global Marketing			TP	P	P	TP	
MM4781	Sales Management			TP	P	P		
SD348	Introduction to Industrial Design		TP	TP	TP	TP	TP	T
SD4041	Design in Business for Engineering	TP		TP		P		
SD4463	Sustainable Product Design	TP		TP		P	TP	
Work Integrated Education (WIE)						PM		PM

GUR subjects of service-learning, cluster area requirement (CAR), and healthy lifestyle not directly linked with the outcomes are not included.

@ Either one of these two subjects

Either two of these subjects

^ Either one of these two subjects

+ It may be replaced by a level one chemistry or biology subject.

2.14 Study Options

The total credit requirement for graduation for PAED/PEM award is 124. Students are allowed to take more elective subjects beyond GUR and DSR until the total number of credits reaches 150 without incurring a higher tuition rate. Students can use these extra electives for fulfilling the requirements of a particular combination of study options, for taking advanced electives, or for further broadening purposes. For senior year intake students, they would not be given an option to study for a minor.

Students taking the Major/Minor option will be considered for an award when they have satisfied the requirements for both the Major and Minor studies (i.e. having a GPA of 2.0 or above for the Major programme, Minor programme and overall) and have also submitted an application for graduation. If the 18 credits taken for the approved Minor study can meet the requirements for that Minor, the Major students may apply to graduate with a specific Minor, in addition to their Major. Otherwise, students will graduate with a Major only. Subject to approval by the Minor-offering Department, students may count up to 6 credits from their Major/GUR [including Language Communication Requirements (LCR) subjects at proficiency level] towards their chosen Minor.

Students taking the Double Majors option are required to obtain an overall GPA of at least 2.0 for each of the 2 Majors, in order to satisfy the requirement for graduation with Double Majors. They will not be allowed to graduate with one of the 2 Majors. The total credit requirement of Double Majors will depend on the degree of commonality between the two Majors. Apart from the 30 credits of GUR subjects, up to 1/3 of the DSR of the first Major which are common to the second Major can be double-counted towards the second Major.

Part 3: Programme Management, Resource and Support

3.1 Programme Operation and Management

The IPD Scheme is hosted by the Faculty of Engineering (FENG). It consists of two awards: PAED and PEM.

The day-to-day administration for the students and the awards would primarily fall under the respective responsibility of ME and ISE. ME is responsible for the operation and management of PAED Award, while ISE is responsible for the PEM Award. The Faculty Office would look after and provide support in Year 1 and Year 2 which requires the administration on a Scheme basis. The relevant committees, working groups, and their membership and people responsible are listed as below.

3.1.1 Scheme Committee

The Scheme Committee is responsible for the overall academic operation, quality assurance and management of the scheme. It is also responsible for the development and routine updating of the academic content of the scheme. The composition of the Scheme Committee is shown in Table 3-1.

Table 3-1 Composition of the Scheme Committee

<i>Chairman</i>
Dean of The Faculty of Engineering
<i>Deputy Chairman</i>
Leader of PAED Award [ME] Leader of PEM Award [ISE]
<i>Ex-officio Members</i>
Head of Department [ME] Head of Department [ISE]
<i>Members</i>
Subject Representatives (4 nominations each from ISE and ME) Representatives from major contributing departments (one nomination from each department) Student Representatives
<i>Secretary and Deputy Secretary</i>
Administrative Officer/Executive Officer [FENG] Administration Officer/Executive Officer [ME] Administrative Officer/Executive Officer [ISE]

Student Representatives are elected annually for appointment to the Scheme Committee. The Committee is directly responsible to relevant committees of ME and ISE for all matters related to development and quality assurance of teaching and learning.

3.1.2 Scheme Executive Group

The day-to-day operation of the scheme will be carried out by the Scheme Executive Group, which consists of the Scheme Chairman and Deputy Scheme Chairmen. The Group reports back to the Scheme Committee.

3.1.3 Student-Staff Consultative Group

The Student-Staff Consultative Group consists of Student Representatives and the Scheme Executive Group. The Group is normally chaired by the Scheme Chairman. It meets on a need basis and should normally meet at least once every semester to discuss student workload, teaching and learning methods, balance between subjects areas, training matters and other areas of mutual concern, and to report and make recommendations to the Scheme Committee when necessary.

The following composition of the Student-Staff Consultative Group applies to those enrolled on Year One and Year Two of the Scheme. As from Year Three Semester 1 onwards, Student-Staff Consultative Group would be conducted on an award basis individually by ISE and ME for their students.

Table 3-2 Composition of the Student-Staff Consultative Group

<i>Chairman</i>
Scheme Chairman
<i>Members</i>
Deputy Scheme Chairmen Student Representatives: (2 Class Representatives each from Year One/Year Two)
<i>By invitation</i>
Subject Lecturers concerned
<i>Secretary</i>
Staff from FENG Faculty Office

3.1.4 Assessment Results and Board of Examiners

Subject Lecturers have sole responsibilities for marking students' coursework and examinations scripts, grading them, finalising the results and informing each student of his results, in respect of the subject they teach. In this regard, Subject Lecturers will be accountable to the Head of the subject offering Department, to ensure that the scripts are correctly marked and graded, and to avoid administrative errors at all times. To ensure consistency and uniformity for a common subject taught by different Subject Lecturers, meetings can be arranged amongst them before the examination papers are set or before the marking is done.

Subject Assessment Review Panel (SARP) may also be formed by the Head of the Department offering the subjects to review and finalise the subject grades for submission to the BoE. Each Department may form one SARP to take care of all subjects it offers.

The authority for approving the overall results of students rests with the BoE. One week after all the subject results have been finalised, the BoE shall confirm the overall results of students on the programme/scheme, including award classifications for final year students and de-registration cases.

The ultimate authority in the University for the confirmation of academic decisions is the Senate, but for practical reasons, the Senate has delegated to the Faculty Board the authority to confirm the decisions of the BoE provided these are made within the framework of the General Assessment Regulations. Recommendations from the BoE which fall outside these Regulations shall be ratified by the Academic Regulations Committee (ARC) and reported to the Senate.

The BoE will meet at the end of each semester. The meeting will be convened by the Office of the Faculty of Engineering for Year One and Year Two and by ME (for PAED award) and ISE (for PEM award) as from Year Three onwards. The BoEs for the PAED and the PEM awards will include the Award Leader of the sister award as Observer. The BoE is responsible for making decision on:

1. the classification of awards to be granted to each student on completion of the scheme;
2. de-registration cases; and
3. cases with extenuating circumstance.

Since this is an inter-disciplinary scheme hosted by FENG, the composition of its BoE is as shown in Table 3-3.

Table 3-3 Membership of the Board of Examiners (BoE)

<i>Chairman</i>
Dean of The Faculty of Engineering
<i>Deputy Chairman</i>
Leader of PAED Award [ME] Leader of PEM Award [ISE]
<i>Members</i>
Head of Department [ME] or Delegate Head of Department [ISE] or Delegate Subject Representatives Representatives from major contributing departments
<i>Secretary and Deputy Secretary</i>
Administrative Officer/Executive Officer [FENG] Administration Officer/Executive Officer [ME] Administrative Officer/Executive Officer [ISE]

3.1.5 Academic Advising

Academic advising at PolyU aims to help students to make informed and intelligent academic decisions/choices about their study at PolyU that suit their intellectual, professional and personal goals. It is instrumental to promoting student success, and plays a vital role in enhancing students' overall learning experience at PolyU. The specific objectives are:

- To build up an early connection between the students and their home departments, and to promote their sense of affiliation to the department and the University,
- To provide students with accurate information about the academic regulations and requirements regarding their Major/programme, as well as the GUR,
- To assist students to explore their interests, abilities and values on academic pursuits, and formulate appropriate intellectual, professional and personal goals,
- To provide advice and guidance to students that enables them to develop and pursue a study plan for their 4 years of study appropriate for meeting their intellectual, professional and personal goals,
- To connect students to resources, opportunities and support within and outside the University that enhance their educational experiences and success.

Every student will be assigned an Academic Advisor from ME or ISE Department. The Academic Advisors, as front-line advisors to students, are responsible for providing students with relevant and current information about curriculum and programme requirements, advising students of the suitable combination of subjects before subject registration in each semester, giving academic advice to students related to their studies, assisting students in solving problems encountered in their studies, and referring students to other offices and units for relevant information or support.

ME and ISE Department should assign a non-academic staff to take up the role of an “Undergraduate Secretary”. The Undergraduate Secretary have the necessary knowledge to advise students on all issues related to academic requirements and regulations related to all academic programmes offered by the department as well as the GUR requirements. The person should be readily available to students to answer any questions related to the curriculum.

At the institutional level, the office of General University Requirement is set up with experienced academic advisors and administrative staff to provide academic advising for students, particularly on requirements and subject choices in relation to the GUR. Other responsibilities of the office include:

- Working with the CoGUR to provide the overall coordination and management of GUR offerings, ensuring that students can fulfill their GUR requirements in a timely manner,
- Providing updated information on GUR requirements to staff and students, and offering training and support for departmental academic advisors and Undergraduate Secretaries,
- Overall coordination and quality assurance of academic advising at PolyU.

Effective academic advising requires an active participation of student advisees in the processes. It is important that students understand it is their responsibilities to:

- Understand the academic regulations and requirements of their chosen Major/programme, as well as the GUR requirements,
- Actively obtain information, and seek out advisors and resources on a regular basis and as needed,
- Take the final responsibility for making decisions and choices regarding their academic study based on the information and advice given.

3.2 Staff Development, Research, Consultancy and Related Activities

ME and ISE are actively engaged in research and consultancy work in the area of product design and development. Their outcomes are used to underpin the development of curriculum and to facilitate the teaching and learning of the scheme. Appropriate staff development activities to facilitate the teaching and learning, in particular related to the student-learning-outcomes approach, are also conducted actively by both Departments.

Details of these activities are presented in the following documents:

- Annual Report of Department of Mechanical Engineering
- Laboratory Facilities of Department of Mechanical Engineering
- Annual Report of Department of Industrial and Systems Engineering
- Laboratory Facilities of Department of Industrial and Systems Engineering

3.3 Resource Support for the Scheme

As the IPD scheme is fully funded by the UGC, thus, both ME and ISE have sufficient resources (staffing and non-staffing resources) to facilitate the smooth operation and healthy development of the scheme.

Part 4: Subject Descriptions

The Subject Description Forms for all the subjects (all GUR subjects except for Freshman Seminar are excluded) as specified in Section 2 – Table 2-15 are provided. Each of them contains the items related to the subject, e.g. title and code, number of credits obtained after satisfactory completion, offering department(s), subject category (compulsory or elective), level, hours assigned for different teaching and learning activities, pre-requisites, co-requisites and/or exclusions, objectives, learning outcomes achieved after satisfactory completion of the subject, teaching and learning approaches aligned with the Outcome-Based-Approach, assessment methods aligned with the Outcome-Based-Approach, syllabus, textbooks/reference books/reading list. The detailed Subject Description Forms are given in the following section.