



**THE HONG KONG
POLYTECHNIC UNIVERSITY**
香港理工大學

DEPARTMENT OF INDUSTRIAL AND SYSTEMS ENGINEERING

**BACHELOR OF ENGINEERING (HONOURS) SCHEME
IN
PRODUCT AND INDUSTRIAL ENGINEERING
JUPAS Code: JS3557 / Scheme Code : 45498**

**Leading to the awards of
BEng (Hons) in Product Engineering with Marketing
Programme Code: 45498-PEM
BEng (Hons) in Industrial and Systems Engineering
Programme Code: 45498-ISE**

PROGRAMME REQUIREMENT DOCUMENT

(For 2020/21 cohort)

September 2020

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SECTION 1 - GENERAL INFORMATION

Programme Title	BEng (Hons) Scheme in Product and Industrial Engineering	
Award Title	BEng (Hons) in Product Engineering with Marketing (PEM)	BEng (Hons) in Industrial and Systems Engineering (ISE)
Mode of Study	Full-time	
Normal Duration	Normal Year 1 intake Full-time Mode: 4 Years Senior Year Intake Full-time Mode: 2 Years	
Total Credit Requirements for Graduation	Normal Year 1 intake: Normally 124 credits* + 10 IC Training credits Senior Year intake: Normally 64 credits* + 6 IC Training credits <small>*exact number of credits depends on the academic background of students</small>	
Medium of Instruction	The programme is delivered in English version	
Host Department	Department of Industrial and Systems Engineering (ISE)	
Contributing Departments	AF, AMA, AP, CLC, EIE, ELC, FENG, MM, IC	AF, AMA, AP, CLC, EIE, ELC, FENG, IC
Professional Recognition	The programme has been granted full accreditation by the Hong Kong Institution of Engineers (HKIE).	

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

SECTION 2 - OVERALL PROGRAMME AIMS AND INTENDED LEARNING OUTCOMES

2.1 UNIVERSITY MISSION

The design of this programme begins with the Mission Statement of the University stated below.

1. To pursue impactful research that benefits the world.
2. To nurture critical thinkers, effective communicators, innovative problem solvers and socially responsible global citizens.
3. To foster a University community in which all members can excel in their aspirations with a strong sense of belonging and pride.

2.2 RATIONALE AND PROGRAMME AIMS

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.

Rationale and Aims of ISE award

Industrial and Systems Engineering concerns the design, improvement, and installation of integrated systems of people, materials, information, equipment, energy, and environment. This enables better understanding of the complex problems of modern industrial and business operations, draws on specialized knowledge and skills in the mathematical, physical, and social sciences together with the principles and methods of engineering analysis and design to specify, predict, and evaluate the results to be obtained from such systems.

This programme provides students with integrated education at honours degree level to enable them to develop into competent professional engineers in the industrial and systems engineering discipline. On completion of this programme, students are expected to:

1. be versed in the activities that persons employed in the various engineering disciplines may be called upon to fulfill in the execution of their duties (through the first year), and particularly, in the area of industrial and systems engineering (through the latter years of the programme);
2. have the knowledge and understanding needed to identify and solve industrial and systems 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 numerical);
4. have an awareness of the responsibilities and ethics of professional engineers in the modern world, and be able to recognise the constraints imposed on the enterprise by economic and environmental factors;
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.

2.3 RELATIONSHIP BETWEEN UNIVERSITY MISSIONS AND THE PROGRAMME AIMS

		UNIVERSITY MISSIONS		
		1	2	3
PEM PROGRAMME AIMS	1	X	X	X
	2	X	X	
	3	X	X	X
	4		X	
	5	X	X	X

		UNIVERSITY MISSIONS		
		1	2	3
ISE PROGRAMME AIMS	1	X	X	X
	2	X	X	
	3	X	X	X
	4		X	
	5	X	X	X

2.4 INTENDED LEARNING OUTCOMES (ILOs) OF THE PROGRAMME

ILOs of PEM award

The attributes of graduates produced by this programme, as listed below, are aligned with the programme aims specified in 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.
2. To be able to apply knowledge, procedures (principles, techniques and methods), of engineering and, where appropriate, mathematics and science, to solve product

engineering problems, and to have sufficient understanding of their limitations so that they can select the most appropriate for a particular situation.

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 a new product that satisfy customer needs.
4. To be able to communicate (oral, written, graphical and numerate) effectively.
5. To be able to effectively work individually on their own initiative, and as members of a team.
6. To be aware of the responsibilities and ethics of professional engineers in the modern world and recognise the constraints imposed on the organisations by economic and environmental factors.
7. To possess the ability to engage in life-long learning.

ILOs of ISE award

The attributes of graduates produced by this programme, as listed below, are aligned with the programme aims specified in above, as well as the HKIE programme outcomes.

1. To be versed in the activities of various engineering disciplines, and in particular, industrial and systems engineering so as to be able to appreciate and interact with other engineering professionals during execution of their duties.
2. To be able to apply knowledge, procedures (principles, techniques and methods), of engineering and, where appropriate, mathematics and science, to solve industrial and systems engineering problems, and to have sufficient understanding of their limitations so that they can select the most appropriate for a particular situation.
3. To have gained some experience and developed the ability in applying their knowledge to formulate problems, identify areas in organisations where improvements are necessary, and devise and implement strategies to produce solutions.
4. To be able to communicate (oral, written, graphical and numerate) effectively.
5. To be able to effectively work individually on their own initiative, and as members of a team.
6. To be aware of the responsibilities and ethics of professional engineers in the modern world and recognise the constraints imposed on the enterprise by economic and environmental factors.
7. To possess the ability to engage in life-long learning.

2.5 RELATIONSHIP BETWEEN AIMS AND INTENDED LEARNING OUTCOMES (ILOs) OF THE PROGRAMME

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

		ILOs OF THE ISE PROGRAMME						
		1	2	3	4	5	6	7
ISE PROGRAMME AIMS	1	X						
	2		X	X		X		
	3				X			
	4						X	
	5							X

2.6 INSTITUTIONAL LEARNING OUTCOMES

PolyU is committed to nurturing competent professionals who are also critical thinkers, effective communicators, innovative problem solvers, lifelong learners, ethical leaders and socially responsible global citizens. The institutional learning outcomes for these attributes are provided as follows:

1. **Competent professional:** Graduates should be able to integrate and to apply in-depth discipline knowledge and specialised skills that are fundamental to functioning effectively as an entry-level professional (professional competence); understand the global trends and opportunities related to their professions (global outlook); and demonstrate entrepreneurial spirit and skills in their work, including the discovery and use of opportunities, and experimentation and novel ideas (entrepreneurship).
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, where appropriate, orally and in writing, in professional and day-to-day contexts.
4. **Innovative problem solver:** Graduates should be able to identify and define problems in professional and daily contexts, and produce innovative solutions to the problems.
5. **Lifelong learner:** Graduates should be able to recognise the need for continual learning and self-improvement, and be able to plan, manage and evaluate their own learning in pursuit of self-determined development goals.
6. **Ethical leader:** Graduates should have an understanding of leadership and be prepared to serve as a leader and a team player (leadership and teamwork); demonstrate self-

leadership and psychosocial competence in pursuing personal and professional development (intrapersonal competence); be capable of building and maintaining relationship and resolving conflicts in group work situations (interpersonal competence); demonstrate ethical reasoning in professional and day-to-day contexts (ethical reasoning).

7. **Socially responsible global citizen:** Graduates should have the capacity for understanding different cultures and social development needs in the local, national and global contexts (interest in culture and social development); and accept their responsibilities as professionals and citizens to society, their own nation and the world (social, national, and global responsibility).

2.7 RELATIONSHIP BETWEEN INTENDED LEARNING OUTCOMES (ILOs) OF THE PROGRAMME AND INSTITUTIONAL LEARNING OUTCOMES

		INSTITUTIONAL LEARNING OUTCOMES						
		1	2	3	4	5	6	7
ILOs OF PEM PROGRAMME	1	X						
	2	X	X					
	3				X			
	4			X				
	5			X				
	6						X	X
	7					X		

		INSTITUTIONAL LEARNING OUTCOMES						
		1	2	3	4	5	6	7
ILOs OF ISE PROGRAMME	1	X						
	2	X	X					
	3				X			
	4			X				
	5			X				
	6						X	X
	7					X		

2.8 COMPARISON TABLE BETWEEN THE STATED INTENDED LEARNING OUTCOMES (ILOs) OF THE PROGRAMME AND THE HKIE REQUIRED OUTCOMES

HKIE Criteria	HKIE Required Outcomes	ILOs of the PEM award	ILOs of the ISE award
a	An ability to apply knowledge of mathematics, science, and engineering appropriate to the degree discipline	1	2
b	An ability to design and conduct experiments, as well as to analyse and interpret data	3	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	2, 3

d	An ability to function on multidisciplinary teams	5	5
e	An ability to identify, formulate, and solve engineering problems	2, 5	3, 5
f	An ability to understand of professional and ethical responsibility	6	6
g	An ability to communicate effectively	4	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	6
i	An ability to stay abreast of contemporary issues	7	7
j	An ability to recognize the need for, and to engage in life-long learning	7	7
k	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice appropriate to the degree discipline	1	1
l	An ability to use the computer/IT tools relevant to the discipline with an understanding of their processes and limitations	2	2

2.9 CURRICULUM MAP THAT WE TEACH (T), GIVE STUDENTS PRACTICE (P) AND MEASURE (M) THE INTENDED LEARNING OUTCOMES (ILOs) OF THE PROGRAMME

PEM award

SUBJECT CODES	SUBJECT TITLES	ILOs OF THE PROGRAMME						
		1	2	3	4	5	6	7
AF3625	Engineering Economics			TP			TP	
AMA1110	Basic Mathematics I – Calculus and Probability and 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 Leader					TP		
CLC1104C/P	University Chinese				TP			
CLC3241P	Professional Communication in Chinese				TP			P
EIE2302 [#]	Electricity and Electronics		TP					
ELC1011	Practical English for University Studies				TP			

SUBJECT CODES	SUBJECT TITLES	ILOs OF THE PROGRAMME						
		1	2	3	4	5	6	7
ELC1012/3	English for University Studies				TP			
ELC2011	Advanced English Reading and Writing Skills				TP			
ELC2012	Persuasive Communication				TP			
ELC2013	English in Literature and Film				TP			
ELC2014	Advanced English for University Studies				TP			
ELC3531	Professional Communication in English for Engineering Students				TPM			P
ENG1003	Freshman Seminar for Engineering	TP	TP		P	P		
ENG2001⁺	Fundamentals of Materials Science and Engineering		TP					
ENG2003	Information Technology		TP			P		
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
IC2121	Appreciation of Manufacturing Technologies	TP	TP					
IC3103	Integrated Project	P	PM	P	P	PM	PM	P
ISE204	Instrumentation and Product Testing		TP		TP		TP	TP
ISE306	Tool Design	TP	TP	TP	P	P		
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		
ISE3007	Integrated Product Engineering Project I	T	TP	T	T	P	T	
ISE404	Total Quality Management	TP		T			T	
ISE418	Computer-Aided Product Design	T	TP		P	P	T	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

SUBJECT CODES	SUBJECT TITLES	ILOs OF THE PROGRAMME						
		1	2	3	4	5	6	7
ISE4009	Advanced Manufacturing Technology		TP		TP	P		P
MM1L01 [^]	Tango! Managing Self and Leading Others				TP	TP		
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	
MM4782	Sales and Distribution 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.

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

[^] Either one of two subjects.

ISE award

SUBJECT CODES	SUBJECT TITLES	ILOs OF THE PROGRAMME						
		1	2	3	4	5	6	7
AF3625	Engineering Economics			TP			TP	
AMA1110	Basic Mathematics I – Calculus and Probability and 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 Leader					TP		
CLC1104C/P	University Chinese				TP			
CLC3241P	Professional Communication in Chinese				TP			P
EIE2302	Electricity and Electronics		TP					
ELC1011	Practical English for University Studies				TP			
ELC1012/3	English for University Studies				TP			
ELC2011	Advanced English Reading and Writing Skills				TP			
ELC2012	Persuasive Communication				TP			
ELC2013	English in Literature and Film				TP			
ELC2014	Advanced English for University Studies				TP			
ELC3521	Professional Communication in English				TPM			P
ENG1003	Freshman Seminar for Engineering	TP	TP		P	P		
ENG2001 ⁺	Fundamentals of Materials Science and Engineering		TP					
ENG2003	Information Technology		TP			P		
ENG3003	Engineering Management	TP	TP			P		
ENG3004	Society and the Engineer	T	TP		TP	P	TPM	
ENG4001	Project Management		TP	TP	P	T		

SUBJECT CODES	SUBJECT TITLES	ILOs OF THE PROGRAMME						
		1	2	3	4	5	6	7
IC2105	Engineering Communication and Fundamentals	TP	TP		TP		T	T
IC2121	Appreciation of Manufacturing Technologies	TP	TP					
IC3103	Integrated Project	P	PM	P	P	PM	PM	P
ISE2001	Introduction to Enterprise Computing		TP					
ISE318	Industrial Engineering Techniques and Methods	T	TPM	TP	P	P		P
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		
ISE3001	Operations Research I	T	TP	TP	TP	P		
ISE3002	Planning of Production and Service Systems	TP	TP	TP	P		T	
ISE3004	Systems Modeling and Simulation	TP	TP	TP	P	P		P
ISE3006	Materials and Processes Selection		TPM		TP	P		
ISE404	Total Quality Management	TP		TP			T	
ISE418	Computer-Aided Product Design		TP	TP	TP	P		
ISE430	New Product Planning and Development	TP		TP	P	P		
ISE431	Engineering Costing and Evaluation		TPM	TP			TP	
ISE449	Mobile Technologies for Logistics Systems	T	TP		TP	TP		
ISE457	Business Process Management		TP	TP		TP		
ISE461	Green Legislation and Supply Chain Logistics	TP		TP			T	TP
ISE466	Enterprise Systems and Strategy	T	TP	TP	P	P	P	
ISE468	Managing Service Quality	TP	TP	P		P		P
ISE4003	Automation Technology		TP	TP	P	P		P
ISE4004	Enterprise Resources Planning	T	P	TP	P	P		TP
ISE4005	Eco-design and Manufacture	T	TP	TP	P	P	TP	P

SUBJECT CODES	SUBJECT TITLES	ILOs OF THE PROGRAMME						
		1	2	3	4	5	6	7
ISE4008	Individual Project	PM	PM	PM	TPM	PM		PM
ISE4009	Advanced Manufacturing Technology	TP	TP	TP	TP			P
MM1L01 [^]	Tango! Managing Self and Leading Others			P	TP	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.

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

[^] Either one of two subjects.

FEEDBACK PROCESS

The Departmental Undergraduate Programme Committee and the Programme Leader are the elements of a feedback system in programme management. Their responsibilities include examining the information received from the stakeholders, modifying the plan as appropriate, using appropriate measurement data to evaluate the intended learning outcomes of the programme as the process is implemented, and suggesting changes in the subject content, the extracurricular content or any other revisions needed to improve the programme when its performance falls short of the benchmarks.

SECTION 3 - ADMISSION TO THE PROGRAMME

FREQUENCY OF ADMISSION AND REGISTRATION

- 3.1 Students are admitted into the programme on an annual basis into Semester 1 of the academic year.

MINIMUM ENTRANCE REQUIREMENTS

- 3.2 Candidates applying with Hong Kong Diploma Secondary Education (HKDSE) or equivalent.
- Level 3 in HKDSE English Language and Chinese Language; and
 - Level 2 in Mathematics, Liberal Studies; and
 - Level 3 in 2 Other Elective subjects [can include Extended Modules of Mathematics (M1/M2)]

The following Applied Learning Subjects are recognized for meeting the University entrance requirement and admission score calculation:

- Accounting in Practice;
- Applied Business Research;
- Applied Psychology;
- Automotive Technology;
- Aviation Studies;
- Business Data Analysis;
- Computer Forensic Technology;
- Computer Game and Animation Design;
- Creative Advertising;
- Electrical and Energy Engineering;
- Entrepreneurship for SME;
- Health Care Practice;
- Innovation Product Design;
- Interior Design;
- Internet of Everything Application;
- Jewellery and Accessories Design;
- Jewellery Arts and Design;
- Law Enforcement in Hong Kong;
- Marketing and Online Promotion; and
- Practical Psychology.

CANDIDATES APPLYING WITH AN ASSOCIATE DEGREE OR HIGHER DIPLOMA

- 3.3 Candidates who hold an Associate Degree or Higher Diploma in a relevant discipline will be eligible to join the programme. The admission of such candidates will be at the discretion of the Programme Leader in conjunction with the Admissions Officer and the regulations regarding subject exemption and credit transfer arrangements stated in Section 6.8 – 6.18 will apply.

CANDIDATES APPLYING UNDER EXCEPTIONAL CIRCUMSTANCES

- 3.4 Candidates who hold equivalent qualifications to those stated above in 3.2 and 3.3 above are also eligible to join the programme.

PROGRAMME DECLARATION (NOT APPLICABLE TO SENIOR YEAR STUDENTS)

- 3.5 The BEng (Hons) Scheme in Product and Industrial Engineering is composed of two awards: BEng (Hons) in Product Engineering with Marketing and BEng (Hons) in Industrial and Systems Engineering. Students admitted to the scheme have the freedom to make their programme choice without quota restrictions. However, they should submit a reply form to the Department to declare their target award no later than the end of semester one in their second year of study.

MINOR STUDY (NOT APPLICABLE TO SENIOR YEAR STUDENTS)

- 3.6 Minor study will be a free choice by students and not mandatory. Normally, this option to study for a Minor will not be applicable to students who are admitted to the advanced stage of a programme, nor to students who are admitted to an articulation degree programme. On the other hand, students admitted on the basis of advanced standing may be allowed to study for a Minor, if so decided by the programme-host Department. This decision will be made at the time of admission, based on the merits of each individual case. (In this respect, students who are approved for transfer of study, deferment of study, or zero credit enrolment will be given the same allowance as for students admitted on the basis of advanced standing.) Each student is allowed to take not more than one Minor. Students who opt for Minor study will be subject to the following regulations:-

- (i) A Minor programme is a collection of subjects totalling 18 credits with at least 50% (9 credits) of the subjects at Level 3 or above. The subjects under a Minor should have a coherent theme introducing students to a focused area of study.
- (ii) Students interested in a Minor must submit their applications to and obtain approval from the Minor-offering Department, at the start of second year of study. Students should submit their applications to their Major Department, which will indicate its support or otherwise (since the taking of a Minor will increase the student's study load), before the Minor-offering Department makes a final decision on the application;
- (iii) Students are expected to complete their approved Minor as part of their graduation requirements. Students who wish to withdraw from a Minor need to apply for approval officially from the Minor offering department, before the end of the add/drop period of the last Semester of study;
- (iv) Students with approved Minor will be given a higher priority in taking the Minor subjects over the students who take the subjects as free-electives. 'Free electives' under the 4-year Ug degree programmes refers to any subjects (including CAR subjects) offered by the University, unless otherwise specified;
- (v) Subject to approval by the Minor-offering Department, students may count up to 6 credits from their Major/General University Requirement (GUR) [including Language Communication Requirement (LCR) subjects at proficiency level] towards their chosen Minor. Nevertheless, students must take at least 6 credits from their chosen Minor programme in order to satisfy the residential requirement of their chosen Minor. In addition, to be eligible for the Major and Minor awards, the total number of credits taken by the students for their Major-Minor studies must not be lower than the credit requirement of the single discipline Major programme.
- (vi) Only students with a Grade Point Average (GPA) of 2.5 or above can be considered for Minor study enrolment. The Minor-offering Department may set a quota (normally

capped at 10 students or 20% of the Major intake quota) and additional admission requirements for their Minor; and

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

A Minor-offering Department can admit students enrolled on Major programmes offered by other Departments and on its own Major programme(s). Enrolment of students from Major programmes outside the Department will be subject to the quota approved for the Minor although the Minor-offering Department can admit more students as long as the number does not exceed the approved quota by more than 20%, if there is a strong demand. As for admission of its own students, there is no limit on the number.

Notwithstanding 3.6 (iv) above, there is no guarantee that a clash-free timetable can be provided for all students who pursue Minor study. Minor-offering Departments will be responsible for ensuring that students enrolled on their Minors can take the requisite subjects and graduate within the normative study period.

DOUBLE MAJORS

3.7 Double Majors will provide an opportunity for the more capable students, who are interested in expanding their study beyond a single degree, to take a Second Major study. Students who opt for a double Major study will be subject to the following regulations:

- (i) Completion of Double Majors requires more than the normative study period of 4/5 years and extra credits on self-financed basis (i.e. higher tuition fee). The total credit requirements of a Double Major will depend on the degree of commonality between the 2 Majors. Apart from the 30 credits of GUR subjects, up to 1/3 of the Discipline-Specific Requirements (DSR) of the First Major which are common to the Second Major can be double-counted towards the Second Major.
- (ii) Students who wish to take a Second Major must obtain approval from the host Department of the first Major. They can then submit their applications to the second Major-offering department starting from their second year of study. Only students with a GPA of 3.0 above can be considered for admission to a Second Major, while Departments offering the Second Major can stipulate a higher GPA requirement if appropriate.
- (iii) Students enrolled in a second Major will be given priority in taking second Major subjects over the students who take the subjects as free electives.
- (iv) Students will be put on academic probation if they fail to obtain a GPA of 1.70 or above.
- (v) Students are required to obtain an overall GPA of at least 1.70, in order to satisfy the requirement for graduation with Double Majors. They will not be allowed to graduate with one of the 2 Majors.
- (vi) Students who wish to withdraw from a Second Major must obtain approval from the Department offering the Second Major, before the end of the add/drop period of the last Semester of study.
- (vii) Students will not be allowed to withdraw from a First Major and continue with the Second Major only.

SELECTION PROCEDURE

- 3.8 The admission procedures will be coordinated by the Admissions Officer. Candidates applying with HKDSE or equivalent will be selected on the basis of their qualifications and academic achievement. Candidates applying without HKDSE or equivalent will be selected on the basis of academic achievement and by interview and/or admission test. However, preference may be given to industry sponsored candidates and those with relevant experience in industry.

SECTION 4 - CURRICULUM STRUCTURE

- 4.1 The curriculum structure are illustrated on progression pattern for normal students and senior year students on page 4-6 to 4-11 and page 4-12 to 4-15 respectively.

GENERAL UNIVERSITY REQUIREMENTS (GUR)

- 4.2 Normal students are required to complete 30 credits of GUR subjects which are language and communications requirements, freshman seminar, leadership and intra-personal development, service-learning, cluster areas requirement, China studies requirement and healthy lifestyle. It is further explained in Appendix I. Senior year students are required to complete 9 credits of GUR which are cluster areas requirement, China studies requirement and service-learning. It is also further explained in Appendix II.

COMPULSORY AND ELECTIVE SUBJECTS

PEM award

- 4.3 The PEM programme has been planned with the primary aim of producing PEM graduates capable of fulfilling what we visualise as being their duties on employment and in large measure, the curriculum content has been designed to achieve this obligation. By virtue of the fact that PEM is by its nature, a broad discipline, most of the subjects in the curriculum are compulsory and provide a balance devoted to both areas. This, to some extent, restricts the scope for flexibility of students to pursue subject of their own particular interest yet still being retained under the broad spectrum of this programme. However, some choice has been made available by including a number of elective subjects at level 4. There are three electives which would normally be taken from Year 2 to Year 4.
- 4.4 The 6-credit *Capstone Project (ISE445)* provides students with a vehicle to work independently on a specific task of their choice under the supervision of an academic staff member.

ISE award

- 4.5 The ISE programme has been planned with the primary aim of producing ISE graduates capable of fulfilling what we visualise as being their duties on employment and in large measure, the curriculum content has been designed to meet this obligation. However, ISE is by its nature, a very broad discipline, most of the subjects in the curriculum are compulsory so as to provide a balance devoted to design, technology and management. This, to some extent restricts the scope for flexibility of students to pursue subjects of their own particular interest yet still being retained under the broad spectrum of ISE. However, some choice has been made available by including a number of elective subjects at Level 4. There are two elective areas “Product Technology” and “Operations Management” which would normally be taken during Year 4. If so, as a guideline, he/she will take the TWO specific electives in the chosen elective area. In this way, apart from being able to specialize on a particular elective area, his/her interest in subjects contained in other elective areas can also be accommodated.
- 4.6 *Integrative Studies in Product and Process Design (ISE3008)* is taken in semester 1 and 2 of Year 3 of the programme. The subject is student-centered and a group project based. The student’s interest is stimulated through a problem-based learning approach. Case studies, seminars/lectures and guided studies are used. Task activities begin with an analysis of a newly proposed product from the marketing perspective. Students are required to conduct detailed

product and parts design. Analysis techniques and methodologies are applied to study the product in terms of parts, material, manufacturing processes, tooling, environment and cost.

INDUSTRIAL CENTRE BASED TRAINING

- 4.7 This is of 10 weeks duration and is undertaken in the University's Industrial Centre. The first 4 weeks compose of Engineering Drawing & CAD, Basic Scientific Computing, Basic Mechatronics Practices and Industrial Safety and are taken during the semester 1 & 2 of Year 1. It is followed by 3 weeks of integrated practical training, the Appreciation of Manufacturing Technologies, and 3 weeks of Integrated Project. Both subjects are taken during semester 1 & 2 of Year 2.
- 4.8 A variety of objectives are fulfilled by this training experience and these are listed below. However, all of these are but facets of one over-riding aim to create, within the time limitations, an environment of learning by doing under a holistic approach. Objectives of these training periods are:
- (i) to develop in the students "industrial safety consciousness" to familiarise them with safe work practices, acquaint them with the hazards of various engineering activities, and to develop a sense of responsibility for the safety of themselves and others;
 - (ii) to develop the students' ability to produce and interpret engineering drawings and specifications, and to give them an understanding of the importance of CAD/engineering documentation;
 - (iii) to give the students a broad acquaintance with and a grasp of ISE practices in engineering (and other) industries in order to integrate/relate their theoretical knowledge to the real industrial application;
 - (iv) to enable the students to appreciate the skills associated with processing of materials; in addition, to afford them an opportunity to appreciate, in a rudimentary manner, the extent to which good design can facilitate production and assembly in manufacturing industries;
 - (v) to enable the students to gain a holistic understanding of the selection of materials, production processes, typical mechatronics systems and design considerations of manufactured products and the complex interaction between them.
- 4.9 During the Industrial Centre based training period, students undertake specific subjects in the following areas in order to achieve the above mentioned objectives.
- (i) Engineering Communication and Fundamentals (IC2105) (during the semester 1 & 2 of Year 1);
 - (ii) Appreciation of Manufacturing Technologies (IC2121) (during the semester 1 of Year 2);
 - (iii) Integrated Project (IC3103) (during the semester 1 & semester 2 of Year 2).
Detail training subject descriptions of (i) to (iii) can be found in Section 9 – IC Training Subjects and Modules.

CAPSTONE PROJECT

- 4.10 The *Capstone Project (ISE445)* is carried out in the final year of the PEM programme. This subject is conducted using an integrated project-based learning approach. Students work on an individual project selected or proposed in the stream area of PEM. An academic supervisor is assigned to guide and monitor the progress of the project. There is a final project presentation and each student is required to submit a project report.

Throughout the duration of the project, supervisors make themselves available for discussions with their students at meetings arranged at mutually convenient times. To aid students in organizing their project in a systemic manner, students are required to submit a progress report, which provides detailed records of the various stages of project work.

The proposed project defined by the student and/or the supervisor should be in an area relevant to the discipline. The project will be used as a vehicle for the student to integrate his/her knowledge gained in the programme. In order to achieve the subject learning outcomes, it is not appropriate to have projects mainly focused on literature review or pure computer programming. Depends on the nature of the project, the work covers by the students may include the background and scope of the project; literature review, field works; experiments; data collection; case studies; methodology; discussion; and conclusion.

Upon completion of the subject, students will be able to

- (i) define a problem by understanding its background, then set the objectives and deliverables of a project that addresses a significant issue relevant to the goal pursued by the student;
- (ii) develop and implement the strategies and methodology to achieve the project objectives within a given set of constraints;
- (iii) communicate effectively with stakeholders of the project and work independently to achieve the project objectives and produce the deliverables;
- (iv) prepare, present, and defend a clear, coherent, and succinct project report.

THE INDIVIDUAL PROJECT

- 4.11 The *Individual Project (ISE4008)* is carried out in the final year of the ISE programme and is mostly industry-related. The project topic and supervisor will be chosen by the students towards the end of Year 3 so they can spend some time gathering information and undertake preliminary planning prior to the start of the final year of the programme. Students may also propose their project topic subject to approval by the supervisor. During their final year students are allocated one day per week for their project and normally spend at least one full day per week on this activity.

- 4.12 While the specific objectives to be met by the individual project may differ from one project to another, they should offer students the opportunities as specified below:

- (i) to seek for themselves the information from which to make a critical assessment of an understanding of a phenomenon and/or of the procedures available to achieve a desired objective;
- (ii) to be able to decide from the wealth of existing knowledge, that which is relevant to his particular undertaking thus to be able to select the knowledge or procedures most

appropriate to his specific purpose or to make appropriate amendments to the procedure so as to make it applicable;

- (iii) to define one (or more) problem from a given situation, thereafter to decide which (if there are more than one) are to be pursued, to assign them relative priorities and to develop strategies by which the problems may be solved;
- (iv) to implement these strategies, to re-define each problem as more is learned of its true nature;
- (v) to work with time and financial constraints, to take decisions on the basis of incomplete information, to prepare, submit and defend a coherent, succinct, ordered report.

WORK INTEGRATED EDUCATION (WIE)

4.13 Work Integrated Education (WIE) is defined as a structured and measurable learning experience which takes place in an organisational context relevant to a student's future profession, or to the development of generic skills that will be valuable in that profession. It is included in the programme to enable students to obtain a better understanding of real-life work experience relevant to the discipline of studies they pursue as well as to further enhance their all-round development. Students must complete WIE before graduation.

4.14 WIE must be a cooperative venture between the PolyU Department and the work organization. In order to enhance the feasibility of placement arrangements, and to provide more flexibility to Departments so they can take account of the specific situations of individual industries, WIE is intended to be flexible. Examples of activity types that are regarded as satisfying the WIE requirement are given as follows:

- (i) Summer placement (of normally 2-month duration) in a suitable organization participating in the Preferred Graduate Development Programme.
- (ii) Any other placement in any suitable external organization for a specified period of time.
- (iii) Any collection of community service programmes of an acceptable aggregate duration.
- (iv) Any jobs found by the student himself in an external organization and deemed to be suitable by the Department and the Dean in meeting the requirement of WIE. Such jobs must be declared by the student in advance so that the Department can have an opportunity to assess its suitability.
- (v) Relevant placement as student helpers in PolyU administrative departments and Industrial Centre.
- (vi) Assisting in PolyU activities that have an external collaboration or service component such as, Innovation and Technology Fund projects, RAPRODs projects, high-level consultancy projects, collaborative research projects that we undertake with external organizations, jobs undertaken by the Industrial Centre as a service for an external organization.
- (vii) Placement with the IAESTE (International Association for the Exchange of Students for Technical Experience) Programme in which the student is attached to a workplace abroad during the training.

Please also refer to the WIE Handbook published by the Careers and Placement Section of Student Affairs Office (SAO) available at https://www.polyu.edu.hk/sao/cps/wie/images/web_docs/WIE_Handbook_20200618.pdf.

PROGRESSION PATTERN OF THE CURRICULUM COMMON FIRST AND A HALF YEARS

1. (a) For students who have Level 2 or above in HKDSE Physics (or Combined Science with a component in Physics), or the equivalent qualifications.
 (b) For non-local students from the Chinese Mainland who have a Pass (a pass is taken as 60% of the total marks of the subject) in the Physics or Integrated Science subject in Joint Entrance Examination for universities.

(Total Credits Required for Graduation: 124 credits + 10 IC training credits)

Year 1 (33 credits & 4 IC training credits)			
Semester 1 (18 credits + 2 IC)		Semester 2 (15 credits + 2 IC)	
Healthy Lifestyle#	0	Healthy Lifestyle# – cont'd	0
English I (LCR I)#	3	English II (LCR II)#	3
CAR I#	3	CAR II#	3
Leadership and Intra-Personal Development#	3	Information Technology (ENG2003)	3
Basic Mathematics I – Calculus and Probability and Statistics (AMA1110)	3	Basic Mathematics II – Calculus and Linear Algebra (AMA1120)	3
Physics I (AP10005)	3	Physics II (AP10006)	3
Freshman Seminar for Engineering (ENG1003)#	3	-	-
Engineering Communication and Fundamentals (IC2105)	2 IC training credits	Engineering Communication and Fundamentals (IC2105) – cont'd	2 IC training credits
Year 2			
Semester 1 (18 credits)		Choose either PEM or ISE award	
CAR III#	3		
Chinese Communication (LCR III)#	3		
Fundamentals of Materials Science and Engineering (ENG2001) / Biology@ / Chemistry+	3		
Mathematics I (AMA2111)	3		
Engineering Economics (AF3625)	3		
Quality Engineering (ISE369)	3		

2. (a) For students who do not have Level 2 or above in HKDSE Physics (or Combined Science with a component in Physics), or the equivalent qualifications.
 (b) For non-local students from the Chinese Mainland who do not have a Pass (a pass is taken as 60% of the total marks of the subject) in the Physics or Integrated Science subject in Joint Entrance Examination for universities.

(Total Credits Required for Graduation: 127 credits + 10 IC training credits)

Year 1 (33 credits & 4 IC training credits)			
Semester 1 (18 credits + 2 IC)		Semester 2 (15 credits + 2 IC)	
Healthy Lifestyle#	0	Healthy Lifestyle# – cont'd	0
English I (LCR I)#	3	English II (LCR II)#	3
CAR I#	3	CAR II#	3
Leadership and Intra-Personal Development#	3	Information Technology (ENG2003)	3
Basic Mathematics I – Calculus and Probability and Statistics (AMA1110)	3	Basic Mathematics II – Calculus and Linear Algebra (AMA1120)	3
Introduction to Physics (AP10001)	3	Physics I (AP10005)	3
Freshman Seminar for Engineering (ENG1003)#	3	-	-
Engineering Communication and Fundamentals (IC2105)	2 IC training credits	Engineering Communication and Fundamentals (IC2105) – cont'd	2 IC training credits
Year 2			
Semester 1 (21 credits)		Choose either PEM or ISE award	
CAR III#	3		
Chinese Communication (LCR III)#	3		
Fundamentals of Materials Science and Engineering (ENG2001) / Biology@ / Chemistry+	3		
Mathematics I (AMA2111)	3		
Engineering Economics (AF3625)	3		
Quality Engineering (ISE369)	3		
Physics II (AP10006)	3		

PROGRESSION PATTERN OF PEM CURRICULUM

Year 2			
		Semester 2 (15 credits + 3 IC)	
		CAR IV#	3
		Introduction to Marketing (MM2711)	3
		Elective 1	3
		Electricity and Electronics (EIE2302)	3
		Society and the Engineer (ENG3004)	3
		Appreciation of Manufacturing Technologies (IC2121)	3 IC
Year 3 (28 credits + 3 IC training credits)			
Semester 1 (15 credits + 1.5 IC)		Semester 2 (13 credits + 1.5 IC)	
Instrumentation and Product Testing (ISE204)	3	Engineering Management (ENG3003)	3
Introduction to Industrial Design (SD348)	3	Professional Communication in English for Engineering Students (ELC3531)	2
Integrated Design for Manufacture (ISE386)	3	Professional Communication in Chinese (CLC3241P)	2
Marketing Research (MM3761)	3	Tool Design (ISE306)	3
Integrated Product Engineering Project I (ISE3007)	3	Service Learning#	3
Integrated Project (IC3103)	1.5 IC	Integrated Project (IC3103) – cont'd	1.5 IC
Year 4 (30 credits)			
Semester 1 (15 credits)		Semester 2 (15 credits)	
New Product Planning and Development (ISE430)	3	Business to Business Marketing (MM4711)	3
Global Marketing (MM4732)	3	Product Safety and Reliability (ISE330)	3
Computer-Aided Product Design (ISE418)	3	Eco-design and Manufacture (ISE4005)	3
Elective 2	3	Elective 3	3
Capstone Project (ISE445)	3	Capstone Project (ISE445) – cont'd	3

Elective subjects for PEM

Electives	Select any THREE from the following subjects
	<ul style="list-style-type: none">• Total Quality Management (ISE404)• Advanced Manufacturing Technology (ISE4009)• Marketing Management in China (MM4721)• Sales and Distribution Management (MM4782)• Design in Business for Engineering (SD4041)• Sustainable Product Design (SD4463)

PROGRESSION PATTERN OF ISE CURRICULUM

Year 2			
		Semester 2 (15 credits + 3 IC)	
		CAR IV#	3
		Electricity and Electronics (EIE2302)	3
		Introduction to Enterprise Computing (ISE2001)	3
		Industrial Engineering Techniques and Methods (ISE318)	3
		Systems Modeling & Simulation (ISE3004)	3
		Appreciation of Manufacturing Technologies (IC2121)	3 IC
Year 3 (31 credits + 3 IC training credits)			
Semester 1 (15 credits + 1.5 IC)		Semester 2 (16 credits + 1.5 IC)	
Operations Research I (ISE3001)	3	Service-Learning#	3
Planning of Production and Service Systems (ISE3002)	3	Professional Communication in English for Engineering Students (ELC3531)	2
Integrated Design for Manufacture (ISE386)	3	Professional Communication in Chinese (CLC3241P)	2
Materials and Processes Selection (ISE3006)	3	Product Safety and Reliability (ISE330)	3
Engineering Management (ENG3003)	3	Business Process Management (ISE457)	3
-	-	Automation Technology (ISE4003)	3
Integrated Project (IC3103)	1.5 IC	Integrated Project (IC3103) – cont'd	1.5 IC
Year 4 (27 credits)			
Semester 1 (15 credits)		Semester 2 (12 credits)	
Society and the Engineer (ENG3004)	3	Engineering Costing and Evaluation (ISE431)	3
Enterprise Resources Planning (ISE4004)	3	Total Quality Management (ISE404)	3
Project Management (ENG4001)	3	Elective 2	3
Elective 1	3	-	
Individual Project (ISE4008)	3	Individual Project (ISE4008) – cont'd	3

Elective subjects for ISE

Electives	Select any TWO from the following subjects
	<ul style="list-style-type: none"> • Computer-Aided Product Design (ISE418) • New Product Planning and Development (ISE430) • Mobile Technologies for Logistics Systems (ISE449) • Green Legislation and Supply Chain Logistics (ISE461) • Enterprise Systems and Strategy (ISE466) • Eco-design and Manufacture (ISE4005) • Advanced Manufacturing Technology (ISE4009)

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

@Biology subjects are listed below:

- Biotechnology and Human Health (ABCT1D03/ABCT1303)~
- Introductory Life Science (ABCT1D04/ABCT1101)~
- Bionic Human and the Future of Being Human (BME1D01/BME11101)~

+Chemistry subjects are listed below:

- Chemistry and Modern Living (ABCT1D01/ABCT1301)~
- Chemistry and Sustainable Development (ABCT1D14/ABCT1314)~

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 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
ABCT1314	ABCT1D14	CAR – D	Chemistry and Sustainable Development
ABCT1303	ABCT1D03	CAR – D	Biotechnology and Human Health
BME11101	BME1D01	CAR – D	Bionic Human and the Future of Being Human

**PROGRESSION PATTERN OF THE CURRICULUM –
FOR SENIOR YEAR STUDENTS**

BEng (Hons) in Product Engineering with Marketing

(Total Credits Required for Graduation: 64 credits* + 6 IC training credits)

Year 1 (34 credits + 6 IC training credits)			
Semester 1 (18 credits + 1.5 IC)		Semester 2 (16 credits + 4.5 IC)	
CAR I#	3	CAR II#	3
Quality Engineering (ISE369)	3	Professional Communication in English for Engineering Students (ELC3531)	2
Integrated Design for Manufacture (ISE386)	3	Professional Communication in Chinese (CLC3241P)	2
Marketing Research (MM3761)	3	Engineering Management (ENG3003)	3
Society and the Engineer (ENG3004)	3	Tool Design (ISE306)	3
Integrated Product Engineering Project I (ISE3007)	3	Service Learning#	3
Integrated Project (IC3103)	1.5 IC	Integrated Project (IC3103) – cont'd	1.5 IC
-		Appreciation of Manufacturing Technologies (IC2121)	3 IC
Year 2 (30 credits)			
Semester 1 (15 credits)		Semester 2 (15 credits)	
New Product Planning and Development (ISE430)	3	Business to Business Marketing (MM4711)	3
Global Marketing (MM4732)	3	Product Safety and Reliability (ISE330)	3
Computer-Aided Product Design (ISE418)	3	Eco-design and Manufacture (ISE4005)	3
Elective 1	3	Elective 2	3
Capstone Project (ISE445)	3	Capstone Project (ISE445) – cont'd	3

Elective subjects for PEM

Electives	Select any TWO from the following subjects
	<ul style="list-style-type: none">• Total Quality Management (ISE404)• Advanced Manufacturing Technology (ISE4009)• Marketing Management in China (MM4721)• Sales and Distribution Management (MM4782)• Design in Business for Engineering (SD4041)• Sustainable Product Design (SD4463)

PROGRESSION PATTERN OF THE CURRICULUM – FOR SENIOR YEAR STUDENTS

BEng (Hons) in Industrial and Systems Engineering

(Total Credits Required for Graduation: 64 credits* + 6 IC training credits)

Year 1 (34 credits + 6 IC training credits)			
Semester 1 (18 credits + 1.5 IC)		Semester 2 (16 credits + 4.5 IC)	
CAR I#	3	Service-Learning#	3
Operations Research I (ISE3001)	3	Professional Communication in English for Engineering Students (ELC3531)	2
Planning of Production and Service Systems (ISE3002)	3	Professional Communication in Chinese (CLC3241P)	2
Integrated Design for Manufacture (ISE386)	3	Product Safety & Reliability (ISE330)	3
Materials and Processes Selection (ISE3006)	3	Business Process Management (ISE457)	3
Engineering Management (ENG3003)	3	Automation Technology (ISE4003)	3
Integrated Project (IC3103)	1.5 IC	Integrated Project (IC3103) – cont'd	1.5 IC
-		Appreciation of Manufacturing Technologies (IC2121)	3 IC
Year 2 (30 credits)			
Semester 1 (15 credits)		Semester 2 (15 credits)	
Society and the Engineer (ENG3004)	3	Engineering Costing and Evaluation (ISE431)	3
Enterprise Resources Planning (ISE4004)	3	Total Quality Management (ISE404)	3
Project Management (ENG4001)	3	Elective 1	3
CAR II#	3	Elective 2	3
Individual Project (ISE4008)	3	Individual Project (ISE4008) – cont'd	3

Elective subjects for ISE

Electives	Select any TWO from the following subjects
	<ul style="list-style-type: none"> • Computer-Aided Product Design (ISE418) • New Product Planning and Development (ISE430) • Mobile Technologies for Logistics Systems (ISE449) • Green Legislation and Supply Chain Logistics (ISE461) • Enterprise Systems and Strategy (ISE466) • Eco-design and Manufacture (ISE4005) • Advanced Manufacturing Technology (ISE4009)

* 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. Degree LCR subjects include

TWO English language subjects

- Practical English for University Studies (ELC1011) 3 credits
- English for University Studies (ELC1012/1013) 3 credits
- Advanced English for University Studies (ELC2014) 3 credits

ONE Chinese language subject

- University Chinese (CLC1104C/P) 3 credits

Students are recommended to take these LCR subjects preferably in year one.

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

SECTION 5 - EXAMINATION AND ASSESSMENT

GENERAL ASSESSMENT REGULATIONS (GAR)

- 5.1 The University's General Assessment Regulations shall apply to the programmes. The specific assessment regulations are set out here, having been developed within the framework of the GAR.

ASSESSMENT METHODS

- 5.2 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 is clearly stated in Section 8 of this document. The subject offering Department can decide whether students are required to pass both the continuous assessment and examination components, or either components only, in order to obtain a subject pass, but this requirement (to pass both, or either, components) will be specified in Section 8 of this document. Learning outcome should be assessed by continuous assessment and/or examination appropriately, in line with the outcome-based approach.
- 5.3 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.
- 5.4 Assessment methods and parameters of subjects shall be determined by the subject offering Department.

GRADING

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

<i>Subject grade</i>	<i>Grade point</i>	<i>Short description</i>	<i>Elaboration on subject grading description</i>
A+ A A-	4.3 4.0 3.7	Excellent	Demonstrates excellent achievement of intended subject learning outcomes by being able to skillfully use concepts and solve complex problems. Shows evidence of innovative and critical thinking in unfamiliar situations, and is able to express the synthesis or application of ideas in a logical and comprehensive manner.
B+ B B-	3.3 3.0 2.7	Good	Demonstrates good achievement of intended subject learning outcomes by being able to use appropriate concepts and solve problems. Shows the ability to analyse issues critically and make well-grounded judgements in familiar or standard situations, and is able to express the synthesis or application of ideas in a logical and comprehensive manner.

C+	2.3	Satisfactory	Demonstrates satisfactory achievement of intended subject learning outcomes by being able to solve relatively simple problems. Shows some capacity for analysis and making judgements in a variety of familiar and standard situations, and is able to express the synthesis or application of ideas in a manner that is generally logical but fragmented.
C	2.0		
C-	1.7		
D+	1.3	Pass	Demonstrates marginal achievement of intended subject learning outcomes by being able to solve relatively simple problems. Can make basic comparisons, connections and judgments and express the ideas learnt in the subject, though there are frequent breakdowns in logic and clarity.
D	1.0		
F	0.0	Fail	Demonstrates inadequate achievement of intended subject learning outcomes through a lack of knowledge and/or understanding of the subject matter. Evidence of analysis is often irrelevant or incomplete.

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

Indicative descriptors for modifier grades

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

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

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

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

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

- 5.7 Exempted, ungraded and incomplete subjects, subjects for which credit transfer has been approved without any grade assigned[^], and subjects from which a student has been allowed to withdraw, i.e. those with the Grade "W" will be excluded from the GPA calculation. Subjects which have been given an "S" grade code i.e. absent from all assessment components, will be included in the GPA calculation and will be counted as "zero" grade point. The GPA is thus the unweighted cumulative average calculated for a student, for all relevant subjects taken from

the start of the programme to a particular point of time. GPA is an indicator of overall performance, and ranges from 0.00 to 4.30 from 2020/21.

^ 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.

DIFFERENT TYPES OF GPA

- 5.8 GPA 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.
- 5.9 The GPA calculated after the second Semester of the students' study is therefore a 'cumulative' GPA of all the subjects taken so far by students, and without applying any level weighting.
- 5.10 Along with the 'cumulative' GPA, a weighted GPA will also be calculated, to give an indication to the Board of Examiners on the award classification which a student will likely get if he makes steady progress on his/her academic studies. GUR subjects will be included in the calculation of weighted GPA for all programmes.
- 5.11 When a student has satisfied the requirements for award, an award GPA will be calculated to determine his/her award classification. GUR subjects will be included in the calculation of award GPA for all programmes.
- 5.12 For students taking the Major/Minor study route, a separate GPA will be calculated for their Major and Minor programmes. The Major GPA will be used to determine his/her award classification, which will be so reflected on the award parchment. The Minor GPA can be used as a reference for Board of Examiners to moderate the award classification for the Major.

ASSESSMENT OF INDUSTRIAL CENTRE TRAINING

- 5.13 An assessment panel (Industrial Centre Training) assesses the performance of students during the IC training period.
- 5.14 Industrial Centre Training is given a training credit value equivalent to one credit for each week spent on such training, this being equivalent to about 35 hours of study (including hours spent on private study). Accordingly, a 10-week equivalent of industrial training generates a total of 10 training credits. The typical schedule of IC Training is as follows:

Subject Description	Duration & Semester
Engineering Communication and Fundamentals (IC2105) (4 credits)	4 weeks, during semester 1 & 2 of Year 1
Appreciation of Manufacturing Technologies (IC2121) (3 credits)	3 weeks, during the semester 2 of Year 2
Integrated Project (IC3103) (3 credits)	3 weeks, during the semester 1 & semester 2 of Year 3

Subject 1 will be graded at the time when an assessment is made. Only ONE aggregate grade is given to sum up the performance of the student in this subject at the end of semester 2. Assessment for Subjects 2 and 3 are made at the end of semester 2 of year 2 and 3 respectively.

ASSESSMENT OF THE WORK INTEGRATED EDUCATION (WIE)

- 5.15 The Programme uses Engineering Faculty Guidelines for assessment of WIE. WIE components will NOT be counted towards GPA calculation. Students are required to complete a minimum of 2 weeks/80 hours of full-time training or equivalent. WIE required in the form of Summer Placement or other training may take place in Hong Kong, Mainland China, or overseas. WIE activities may be organised through the Department, the Careers and Placement Section (CPS) of the Student Affairs Office (SAO) or by the student's own initiative with advice from the WIE coordinator to ensure that they qualify for WIE on account of relevance, structure, and measurability. In such cases, assessment will be made using the WIE log book. The log book must be signed by the employer with a brief evaluation of the student, as appropriate. This is examined by the WIE coordinator to ensure that the WIE objectives have been achieved. The WIE coordinator may interview the student in making the evaluation.

PROGRESSION/ACADEMIC PROBATION/DEREGISTRATION

- 5.16 The Board of Examiners shall, at the end of each semester (except for Summer Term unless there are students who are eligible to graduate after completion of Summer Term subjects or the Summer Term study is mandatory for the programme), determine whether each student is:
- (i) eligible for progression towards an award; or
 - (ii) eligible for an award; or
 - (iii) required to be de-registered from the programme.

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

- 5.17 A student will have 'progressing' status unless he/she falls within any one of the following categories which may be regarded as grounds for de-registration from the programme:
- (i) the student has reached the final year of the normal period of registration for that programme, as specified in this document, unless approval has been given for extension; or
 - (ii) the student has reached the maximum number of retakes allowed for a failed compulsory subject; or
 - (iii) the student's GPA is lower than 1.70 for two consecutive semesters and his/her Semester GPA in the second semester is also lower than 1.70; or
 - (iv) the student's GPA is lower than 1.70 for three consecutive semesters.

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

A student may be deregistered from the programme enrolled before the time frame specified in (ii) or (iii) above if his/her academic performance is poor to the extent that the Board of

Examiners considers that there is not much of chance for him/her to attain a GPA of 1.70 at the end of the programme.

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

UNIVERSITY GRADUATION REQUIREMENTS

For Normal Students

5.18 A student is eligible for award if he/she satisfies all the conditions listed below:

- (i) Complete successfully an accumulation of 124 credits +10 IC training credits for the award[#];
- (ii) Earn a cumulative GPA of 1.70 or above at graduation;
- (iii) Complete successfully the mandatory Work-Integrated Education (WIE) component;
- (iv) Satisfy 30 credits of General University Requirements (GUR);

(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
	Total = 30 credits

[#] This minimum only applies to students who are admitted through the normal route.

[~] 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.

[@] Students admitted to the programmes as Senior Year Intakes are not required to take the Healthy Lifestyle Programme. Advanced Standing students are required to take the Healthy Lifestyle Programme (except for those who are HD/AD holders who follow the Senior/Articulation Degree programme GUR curriculum).

- (v) Satisfy the residential requirement for at least 1/3 of the credits to be completed for the award he/she is currently enrolled in PolyU; and
- (vi) Satisfy any other requirements as specified in this document and as specified by the University.

For Senior Year Students

5.19 A student is eligible for award if he/she satisfies all the conditions listed below:

- (i) Complete successfully an accumulation of 64 credits* + 6 IC training credits for the award;

- (ii) Earn a cumulative GPA of 1.70 or above at graduation;
- (iii) Complete successfully the mandatory Work-Integrated Education (WIE) component;
- (iv) Satisfy the following GUR requirements;

(a) Cluster Areas Requirement (CAR)	6 credits
(b) China Studies Requirement	(3 of the 6 CAR credits)
(c) Service-Learning	3 credits
	<i>Total = 9 credits</i>

* 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. 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.

- (v) Satisfy the residential requirement for at least 1/3 of the credits to be completed for the award he/she is currently enrolled in PolyU; and
 - (vi) Satisfy any other requirements as specified in this document and as specified by the University.
- 5.20 There are subjects which are designed to fulfil the credit requirement of different types of subject. Students passing these subjects will be regarded as having fulfilled the credit requirements of the particular types of subject concerned. Nevertheless, the subject passed will only be counted once in fulfilling the credit requirements of the award, and the students will be required to take another subject in order to meet the total credit requirement of the programme concerned.
- 5.21 Remedial subjects are designed for new students who are in need of additional preparations in a particular subject area, and only identified students of a programme are required to take these subjects. These subjects should therefore be counted outside the regular credit requirement for award.
- 5.22 In addition, students may be required to take subjects that are designed to enhance their skills in particular subject areas to underpin their further advanced study in the discipline. These underpinning subjects could be of different subject areas (e.g. Mathematics, science subjects), and the number of credits each student is required to take in a particular underpinning subject area may vary according to the different academic backgrounds of the students.
- 5.23 Senior Year intakes admitted to the 4-year Undergraduate Degree programmes on the strength of the Associate Degree/Higher Diploma qualifications are required to complete at least 60 credits in order to be eligible for a Bachelor's degree. Exemption may be given from subjects already taken in the previous Associate Degree/Higher Diploma studies. In that case, students should take other electives (including free electives) instead to make up the total of 60 credits required. For students who are exceptionally admitted before 2017/18 on the basis of academic qualification(s) more advanced than Associate Degree/Higher Diploma¹, such as the

¹ The admission of students to UGC-funded Articulation Degree programmes and Senior Year intakes on the basis of qualification(s) more advanced than Associate Degree/Higher Diploma is subject to the conditions stipulated by UGC governing the UGC-funded Senior Year places.

advanced stage of a 4-year degree curriculum programme, Departments can continue to grant credit transfer as appropriate, so as to give recognition to the advanced study taken, and these students can take fewer than 60 credits for attaining the award. The proportion of these students should remain low. As from the 2017/18 intake cohort, all students admitted to an Articulation Degree or Senior Year curriculum, irrespective of the entry qualifications they held when applying for admission to the programmes, are required to complete at least 60 credits to be eligible for award.

- 5.24 Level-0 subjects and training subjects (including clinical/field training) will not be counted to fulfill free elective requirement for graduation purpose.
- 5.25 A student is required to graduate as soon as he/she satisfies the graduation requirements as stipulated in 5.18 and 5.19 above. The student concerned is required to apply for graduation, in the semester in which he/she is able to fulfil all his/her graduation requirements, and after the add/drop period for that semester has ended.

STUDENTS TAKING THE MAJOR/MINOR OPTION

- 5.26 Students taking the Major/Minor option will be considered for an award when they have satisfied the requirements for both the Major and Minor studies (i.e. having a GPA of 1.70 or above) and have also submitted an application for graduation. If the 18 credits taken for the approved Minor study can meet the requirements for that Minor, the Major students may apply to graduate with a specific Minor, in addition to their Major. Otherwise, students will graduate with a Major only.
- 5.27 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. Nevertheless, students must take at least 6 credits from their chosen Minor programme in order to satisfy the residential requirement of their chosen Minor. In addition, to be eligible for the Major and Minor awards, the total number of credits taken by the students for their Major-Minor studies must not be lower than the credit requirement of the single discipline Major programme.

STUDENTS TAKING THE DOUBLE MAJORS OPTION

- 5.28 Students are required to obtain an overall GPA of at least 1.70, 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 Major will depend on the degree of commonality between the two Majors. Apart from the 30 credits if 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.

GUIDELINES FOR AWARD CLASSIFICATION

- 5.29 To help the Board of Examiners in arriving at award classification decisions, a weighted GPA will be computed for each student upon completion of the programme. The Weighted GPA will be computed as follows:

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

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 paragraph 5.6, 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.

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 ranges from 0.00 to 4.30 from 2020/21.

- 5.30 The contribution of each subject towards the weighted GPA depends on the product of the credits assigned and the level weighting. The weighted GPA will be used as one of the factors to be considered by the Board of Examiners in the determination of the award classifications.
- 5.31 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. However, if a student attempts more elective subjects (or optional subjects) than those required for graduation in or before the semester in which he/she becomes eligible for award, the elective subjects (or optional subjects) with a higher grade/contribution shall be included in the grade point calculation (i.e. the excessive subjects attempted with a lower grade/contribution, including failed subjects, will be excluded except for students who have indicated inclusion of specific free electives for fulfilment of award requirements).

STUDENTS TAKING THE MAJOR/MINOR STUDIES

- 5.32 For students who have completed a Major/Minor programme, a single classification will be awarded and their award classification will mainly be based on the "Major GPA", but it can be moderated by the Board of Examiners with reference to the "Minor GPA". For students who have completed a Major programme combined with free electives, their award classification will be determined by their "Major GPA" which includes grades obtained for the free electives, if appropriate.
- 5.33 "Major GPA" is derived based on all subjects of the Major programme, including those meeting the mandatory General University Requirements (GUR) and programme-specific language requirement, but not necessarily including the training credits.
- 5.34 "Minor GPA" is derived based on the 18 credits of specific Minor programme. "Minor GPA" is unweighted.
- 5.35 The "Major GPA" and the "Minor GPA" will be presented separately to the Board of Examiners for consideration. The guidelines for determining award classification applicable to programmes with Major/Minor studies.
- 5.36 Where a student has a high GPA for his/her Major but a lower GPA for his/her Minor, he/she will not be 'penalised' in respect of his/her award classification, which is attached to the Major. On the other hand, if a student has a lower GPA for his/her Major than his/her GPA for the Minor, the Board of Examiners may consider giving the student a higher award classification than with reference to his/her Major GPA.

STUDENTS TAKING THE DOUBLE MAJORS OPTION

- 5.37 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. Students will be given two award parchments, one for each Major programme, which will be issued upon completion of both Majors. The honours classification of the two Major awards need not be identical.

CLASSIFICATION OF AWARDS

- 5.38 The following are the award GPA ranges for determining award classifications:

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

- 5.39 Under exceptional circumstances, a student who has completed an Honours degree programme, but has not attained Honours standard, may be awarded a Pass-without-Honours degree. A Pass-without-Honours degree award will be recommended, when the student has demonstrated a level of final attainment which is below the 'essential minimum' required for graduation with Honours from the programme in question, but when he/she has nonetheless covered the prescribed work of the programmes in an adequate fashion, while failing to show sufficient evidence of the intellectual calibre expected of Honours degree graduates.
- 5.40 Students who have committed academic dishonesty or non-compliance with examination regulations will be subject to the penalty of the lowering of award classification by one level. For undergraduate students who should be awarded a Third class Honours degree, they will be downgraded to a Pass-without-Honours. The minimum of downgraded overall result will be kept at a Pass. In rare circumstances where both the Student Discipline Committee and Board of Examiners of a department consider that there are strong justifications showing the offence be less serious, the requirement for lowering the award classification can be waived.

- 5.41 The following tables may also be used as a reference for the Board of Examiners in determining award classifications:

Award Classification	Award GPA
1st Class Honours	3.60 to 4.30
2 nd Class Honours (Division 1)	3.00 to 3.59
2 nd Class Honours (Division 2)	2.40 to 2.99
Third Class Honours	1.70 to 2.39

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

VALIDITY OF CREDITS

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

RETAKEING OF SUBJECTS

- 5.44 Students may only retake a subject which they have failed (i.e. Grade F or U). Retaking of subjects is with the condition that the maximum study load of 21 credits per semester is not exceeded. The number of retakes of a subject should be restricted to two, i.e. a maximum of three attempts for each subject is allowed.
- 5.45 In cases where a student takes another subject to replace a failed elective subject, the fail grade will be taken into account in the calculation of the GPA, despite the passing of the replacement subject. Likewise, students who fail a Cluster Area Requirement (CAR) subject may need to take another subject from the same Cluster Area in order to fulfill this part of the GUR, since the original CAR subject may not be offered; in such cases, the fail grade for the first CAR subject will be taken into account in the calculation of the GPA, despite the passing of the second CAR subject.
- 5.46 Students need to submit a request to the Faculty Board for the second retake of a failed subject.
- 5.47 Students who have failed a compulsory subject after two retakes and have been de-registered can submit an appeal to the Academic Appeals Committee (AAC) for a third chance of retaking the subject.
- 5.48 In relation to 5.47 above, in case AAC does not approve further retaking of a failed compulsory subject or the taking of an equivalent subject with special approval from the Faculty, the student concerned would be de-registered and the decision of the AAC shall be final within the University.

ABSENCE FROM AN ASSESSMENT COMPONENT

- 5.49 If a student is unable to complete all the assessment components of a subject, due to illness or other circumstances which are beyond his/her control and considered by the subject offering

department as legitimate, the Department will determine whether the student will have to complete a late assessment and, if so, by what means. This late assessment shall take place at the earliest opportunity, and normally before the commencement of the following academic year (except that for Summer Term, which may take place within 3 weeks after the finalisation of Summer Term results). If the late assessment cannot be completed normally before the commencement of the following academic year, the Faculty Board Chairman shall decide on an appropriate time for completion of the late assessment.

- 5.50 The student concerned is required to submit his/her application for late assessment in writing to the Head of Department offering the subject, with 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.

ASSESSMENT TO BE COMPLETED

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

AEGROTAT AWARD

- 5.52 If a student is unable to complete the requirements of the programme in question the award, due to very serious illness, or other very special circumstances which are beyond his/her control, and are considered by the Board of Examiners as legitimate, the Faculty Board will determine whether the student will be granted aegrotat award. Aegrotat award will be granted under very exceptional circumstances.
- 5.53 A student who has been offered an aegrotat award shall have the right to choose either to accept such an award or request to be assessed on another occasion as stipulated by the Board of Examiners, the student's exercise of this option shall be irrevocable. The acceptance of an aegrotat award by a student shall disqualify him/her from any subsequent assessment for the same award. An aegrotat award shall normally not be classified, and the award parchment shall not state that it is an aegrotat award. However, the Board of Examiners may determine whether the award should be classified provided they have adequate information on the students' academic performance.

OTHER PARTICULAR CIRCUMSTANCES

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

RECORDING OF DISCIPLINARY ACTIONS IN STUDENTS' RECORDS

- 5.55 With effect from Semester One of 2015/16, disciplinary actions against students' misconducts will be recorded in students' records.
- 5.56 Students who are found guilty of academic dishonesty or non-compliance with examination regulations will be subject to the penalty of having the subject result concerned disqualified and be given a failure grade with a remark denoting 'Disqualification of result due to academic dishonesty/ non-compliance with examination regulations'. The remark will be shown in the

students' record as well as the assessment result notification and transcript of studies, until their leaving the University.

- 5.57 Students who have committed disciplinary offences (covering both academic and non-academic related matters) will be put on 'disciplinary probation'. The status of 'disciplinary probation' will be shown in the students' record as well as the assessment result notification, transcript of studies and testimonial during the probation period, until their leaving the University. The disciplinary probation is normally one year unless otherwise decided by the Student Discipline Committee.
- 5.58 The University reserves the right to withhold the issuance of any certificate of study to a student/graduand who has unsettled matters with the University, or is subject to disciplinary action.

SECTION 6 - PROGRAMME OPERATION AND CONTROL

FREQUENCY OF SUBJECTS TO BE OFFERED

- 6.1 Subjects are normally offered once a year. There are however, several common subjects shared by other programmes in the PolyU which may be available in both Semester's 1 and 2. Subject to the availability of resources, the Department will attempt to offer as many subjects as possible in both semesters.

DAYTIME, EVENING AND SUMMER TEACHING

- 6.2 Most of the subjects listed in the programme will be offered in the daytime and evening. Usually, there will be no summer term teaching (with the exception of IC training at the Industrial Centre or LCR/CAR/SL subjects), subjects will only be offered in Semester's 1 and 2.

SUBJECT REGISTRATION AND WITHDRAWAL

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

STUDY LOAD

- 6.4 For students following the progression pattern specified for their programme, they have to take the number of credits and subjects, as specified in this document, for each semester. Students cannot drop those subjects assigned by the Department unless prior approval has been given by the Department.
- 6.5 The normal study load is 15 credits in a semester for full-time study. The maximum study load to be taken by a student in a semester is 21 credits, unless exceptional approval is given by the Head of the programme offering Department. For such cases, students should be reminded that the study load approved should not be taken as grounds for academic appeal.
- 6.6 To help improve the academic performance of students on academic probation, these students will be required to take a reduced study load in the following semester (Summer Term excluded). The maximum number of credits to be taken by the students varies according to the policies of individual Departments and will be subject to the approval of the authorities concerned.
- 6.7 Students are not allowed to take zero subject in any semester, including the mandatory summer term as required by some programmes, unless they have obtained prior approval from the programme offering Department; otherwise they will be classified as having unofficially withdrawn from their programme. Students who have been approved for zero subject enrolment (i.e. taking zero subject in a semester) are allowed to retain their student status and

continue using campus facilities and library facilities. Any semesters in which students are allowed zero subjects will be counted towards the total period of registration.

SUBJECT EXEMPTION

- 6.8 Students may be exempted from taking any specified subjects, including mandatory General University Requirements (GUR) subjects, if they have successfully completed similar subjects previously in another programme or have demonstrated the level of proficiency/ability to the satisfaction of the subject offering Department. Subject exemption is normally decided by the subject offering Department. However, for applications which are submitted by students who have completed an approved student exchange programme, the subject exemption is to be decided by the programme offering Department in consultation with the subject offering Departments. In case of disagreement between the programme offering Department and the subject offering Department, the two Faculty Deans/School Board Chairmen concerned will make a final decision jointly on the application. If students are exempted from taking a specified subject, the credits associated with the exempted subject will not be counted towards meeting the award requirements (except for exemptions granted at admission stage). It will therefore be necessary for the students to consult the programme offering Department and take another subject in order to satisfy the credit requirement for the award.

CREDIT TRANSFER

- 6.9 Students may be given credits for recognised previous studies including mandatory General University Requirements (GUR) subjects; and the credits will be counted towards meeting the requirements for award. Transferred credits may not normally be counted towards more than one award. The granting of credit transfer is a matter of academic judgment.
- 6.10 Credit transfer may be done with or without the grade being carried over; the former should normally be used when the credits were gained from PolyU. Credit transfer with the grade being carried over may be granted for subjects taken from outside the University, if deemed appropriate, and with due consideration to the academic equivalence of the subjects concerned and the comparability of the grading systems adopted by the University and the other approved institutions. Subject credit transfer is normally decided by the subject offering Department. However, for applications which are submitted by students who have completed an approved student exchange programme, the decision will be made by the programme offering Department in consultation with the subject offering Departments.
- 6.11 The validity period of credits previously earned is up to 8 years after the year of attainment.
- 6.12 Normally, not more than 50% of the credit requirement for award may be transferable from approved institutions outside the University. For transfer of credits from programmes offered by PolyU, normally not more than 67% of the credit requirement for award can be transferred. In cases where both types of credits are being transferred (i.e. from programmes offered by PolyU and from approved institutions outside the University), not more than 50% of the credit requirement for award may be transferred. The 50% and 67% ceiling is also applicable to Minor programme, i.e. credit transfer can be given for not more than 9 credits of a Minor programme if the previous credits were earned from approved institutions outside of the university; and not more than 12 credits of a Minor programme if the previous credits were earned from programmes offered by PolyU. For students admitted to an Articulation Degree or Senior Year curriculum which is already a reduced curriculum, they should not be given credit transfer for any required GUR subjects, and they must complete at least 60 credits to be eligible for award. Students exceptionally admitted to an Articulation Degree or Senior Year curriculum before 2017/18 based on qualification more advanced than Associate Degree/Higher Diploma may be given credit transfer for the required GUR subjects if they had

completed comparable components in their earlier studies. These students can take fewer than 60 credits for attaining the award. As from the 2017/18 intake cohort, all students admitted to an Articulation Degree or Senior Year curriculum, irrespective of the entry qualifications they held when applying for admission to the programmes, are required to complete at least 60 credits to be eligible for award.

- 6.13 If a student is waived from a particular stage of study on the basis of advanced qualifications held at the time of admission, the student concerned will be required to complete fewer credits for award. For these students, the ‘deducted’ credits at admission stage will be counted towards the maximum limit for credit transfer when students apply for further credit transfer after their admission. This also applies to students admitted to an Articulation Degree or Senior Year curriculum when they claim further credit transfer after admission.
- 6.14 Credit transfer can be applicable to credits earned by students through study at an overseas institution under an approved exchange programme. Students should, before they go abroad for the exchange programme, seek prior approval from the programme offering Department (who will consult the subject offering Departments as appropriate) on their study plan and credit transferability.
- 6.15 All credit transfers approved will take effect only in the semester for which they are approved. A student who applies for transfer of credits during the re-enrolment or the add/drop period of a particular semester will only be eligible for graduation at the end of that semester, even if the granting of credit transfer will immediately enable the student to satisfy the credit requirement for the award.
- 6.16 Regarding credit transfer for GUR subjects, the Programme Host Department is the approval authority at the time of admission to determine the number of GUR credits which an Advanced Standing student will be required to complete for the award concerned. Programme Host Departments should make reference to the mapping lists of GUR subjects, compiled by the Committee on General University Requirements (CoGUR), on the eligibility of the subjects which can qualify as GUR subjects. Applications for credit transfer of GUR subjects after admission will be considered, on a case-by-case basis, by the Subject Offering Department or Office of General University Requirements (OGUR)/Office of Service Learning (OSL), in consultation with the relevant Sub-committee(s) under CoGUR, as appropriate.
- 6.17 For credit transfer of retaken subjects, the grade attained in the last attempt should be taken in the case of credit transfer with grade being carried over. Students applying for credit transfer for a subject taken in other institutions are required to declare that the subject grade used for claiming credit transfer was attained in the last attempt of the subject in their previous studies. If a student fails in the last attempt of a retaken subject, no credit transfer should be granted, despite the fact that the student may have attained a pass grade for the subject in the earlier attempts.
- 6.18 Students should not be granted credit transfer for a subject which they have attempted and failed in their current study unless the subject was taken by the student as an exchange-out student in his current programme.

DEFERMENT OF STUDY

- 6.19 Students may apply for deferment of study if they have a genuine need to do so such as illness or posting to work outside Hong Kong. Approval from the Department is required. The deferment period will not count towards total period of registration.
- 6.20 Application for deferment of study from students who have not yet completed the first year of a full-time programme will only be considered in exceptional circumstances.

- 6.21 Where the period of deferment of study begins during a stage for which fees have been paid, no refund of such fees will be made.
- 6.22 Students who have been approved for deferment are not entitled to enjoy any campus facilities during the deferment period.

NORMAL DURATION FOR COMPLETION OF THE PROGRAMME

- 6.23 Students should complete the programme within the normal duration of the programme as specified in the Programme Requirement Document. Those who exceed the normal duration of the programme will be de-registered from the programme unless prior approval has been obtained from relevant authorities. The study period of a student shall exclude deferment granted for justifiable reasons, and the semester(s) when the student has been approved to undertake internship. Any semester in which the students are allowed to take zero subject will be counted towards their total period of registration.
- 6.24 Students who have been registered for the normal duration of the programme may request extension of their studies for up to one year with the approval of the relevant Heads of Department. Applications for extension of study period beyond one year and up to two years will require the approval from Faculty Board Chairman.
- 6.25 Students who have exceeded the normal duration of the programme for more than two years and have been de-registered can submit an appeal to the Academic Appeals Committee to request further extension. If the appeal fails, the student shall be de-registered.

DEPARTMENTAL UNDERGRADUATE PROGRAMME COMMITTEE

- 6.26 The Head of Department can decide on the composition of the Departmental Undergraduate Programme Committee. The Departmental Undergraduate Programme Committee will meet at least twice a year, and additionally at the request of the Chairman or of one-third of its membership or of the Chairman of the Senate. It will exercise the overall academic and operational responsibility for the programme and its development within defined policies, procedures and regulations.

The Committee will be specifically responsible for the following:

- (i) the effective conduct, organisation and development of the programme;
- (ii) stimulation of the development of teaching methods and programme materials, through Heads of Departments, Theme Group Leaders, and the Educational Development Centre, as appropriate;
- (iii) review of academic regulations, admission policy, assessment and examination methods;
- (iv) formal submissions to appropriate professional bodies, normally via the Head of the host Department and in accord with the University's established procedures;
- (v) the continuing critical review of the rationale, aims, intended learning outcomes (ILOs) and the alignment of teaching, learning and assessment with the ILOs, programme learning outcomes assessment and its results, and the improvement and development of the programme(s);
- (vi) definition and maintenance of the programme's academic standard;
- (vii) ensuring that the views of students and other key stakeholders on the programme are known and taken into account;

- (viii) evaluation of the operation, health and progress of the programme as defined in the University's programme review procedures.

PROGRAMME LEADER

- 6.27 A Programme Leader will normally be a member of the programme offering Department and be appointed by the Head of Department. The appointment will be subject to the confirmation by the Chairman of the appropriate Faculty Board. In the unavoidable absence of a Programme Leader, an acting Programme Leader will be appointed by the Head of the programme offering Department. A Programme Leader is accountable in day-to-day operational terms to the Head of Department; and will normally hold office for a full cycle of the programme, but can then be considered for re-nomination. The Programme Leader will provide the academic and organizational leadership for the programme.

PROGRAMME EXECUTIVE GROUP

- 6.28 For programmes which are substantial, e.g. in scale, in the range of subjects or complexity, a small Programme Executive Group, would normally manage the day-to-day operation of the programme within the agreed scheme. The Group would operate informally, be organized by the Programme Leader and typically include staff with key programme responsibilities. For relatively simple programmes, the Programme Leaders would manage the day-to-day operation of the programmes.

THEME GROUP LEADERS

- 6.29 Theme Group Leaders are senior members of academic staff appointed by the Head of Department. They are responsible for the activities and development of subjects within a theme group which are part of the curricula of the programmes offered by the Department.

ACADEMIC ADVISOR

- 6.30 All full-time undergraduate students (including those admitted to Articulation Programmes or Senior Year Places) will be assigned to one full-time academic staff (normally at the Lecturer grade or above) from his/her Major Department who will act as his/her academic advisor throughout his/her course of study at PolyU.

- 6.31 The main responsibilities of the academic advisor will include:

- Building rapport with the student, serving as a bridge that connects them to the Department,
- Being accessible and available to students, and responding to their questions and concerns,
- Helping students to consider and clarify their intellectual, professional and personal goals,
- Helping students to develop an appropriate study plan (particular with regard to their Major), and assisting in their selection of appropriate courses to achieve their identified goals,
- Clarifying to students academic regulations and requirements, particularly those relating to the Major,
- Identifying students with special learning needs or early signs of learning problem, and referring/encouraging them to seek help or support.

- 6.32 Academic advisors are expected to keep in contact with their student advisees regularly (e.g., via emails or other means), and to have at least one face-to-face meeting with them, either individual or in small groups, during the academic year. Student advisees are expected to consult their respective advisors on their study plan before subject registration.

- 6.33 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 programme of study and/or its Major, 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.

STUDENT/STAFF CONSULTATIVE GROUP

- 6.34 The importance of assessing students' opinion on the organisation and running of the programme on a continual basis is recognised and formal arrangements for this purpose are in place. The Group should have equal numbers of students and staff, that student membership should include all years of study under the normal progression pattern and other major student groupings, and that staff membership should cover all the main subject areas and activities of the programme. A member of staff may chair the Group. The Group is to discuss any matters directly related to the programme, and to report or make recommendations, as deemed necessary, to the Departmental Undergraduate Programme Committee. Meetings are usually held once per semester.
- 6.35 It is important that students do not perceive meetings of the Group as the only or main channel for dealing with student problems and complaints accumulated since the last meeting. Such matters would be dealt with when they occurred, through the Programme Leader or other appropriate staff. This would allow meetings of the Group to be used for constructive discussion of the programme in general, of the demands of the programme on students, and of possible improvement.

SECTION 7 - PROGRAMME EVALUATION AND DEVELOPMENT

- 7.1 The programme evaluation and development procedures are intended to assess the:
- (i) extent to which the aims and objectives are being met and what measures need to be taken to remedy any deficiencies identified, and
 - (ii) continuing relevance of the aims and subject objectives and the ways they need to be modified to take account of technological change and the development of Hong Kong's industries.
- 7.2 The programme evaluation procedures are conducted at two levels: firstly at the Programme Executive Group/Departmental Undergraduate Programme Committee level continuously through the year and secondly to the Departmental Undergraduate Programme Committee/Departmental Academic Advisor level at the end of each year. The first level is described in Section 6 of this document and the other below.
- 7.3 The Departmental Undergraduate Programme Committee holds its Annual Programme Review Meeting each year after the Board of Examiner has met as described in Section 5 of this document. The issues described in Section 6 are considered, particularly as revealed by the examination performance, and recommendations for action are made to remedy any deficiencies identified. Following the Annual Programme Review Meeting the Programme Leader submits the Annual Programme Review Report (which is encapsulated as part of the Annual Operation Plan) to the Engineering Faculty Board each year which, for the previous academic year,
- (i) summarises the operation of the programme,
 - (ii) lists any modifications that are deemed necessary, and
 - (iii) makes proposals for substantial changes to the structure or content of the programme, or for changes with significant resource implications.
- 7.4 The Departmental Undergraduate Programme Committee adopts a policy of continuous improvement and is continuously evaluating the effectiveness and relevance of the Programme. This policy of continuous improvement includes soliciting the views of the Department's Advisory Committee, local industrialists, past graduates and the Departmental Academic Advisor.
- 7.5 The Programme is subject to an evaluation, normally every six years, as part of the PolyU's Departmental Review exercise. This is external to the Department and makes a critical appraisal of the standing, progress and future of all programmes that a department operates. The policy of continuous improvement as mentioned 7.4 attempts to render a major in-depth programme appraisal unnecessary prior to a Departmental Review.

SECTION 8 - SUBJECT SYLLABUSES AND PROJECTS

- 8.1 Syllabuses for all subjects and projects of the programme are listed in Table 8. Department of Industrial and Systems Engineering subjects are listed first, followed by subjects serviced by other departments. The subject coordinators for the ISE subjects will be updated regularly. Please access the departmental website <https://www.polyu.edu.hk/ise/current-students/programme-related-info/subject-syllabus> for the updated list.

TABLE 8 - SYLLABUS INDEX

Level	Code	Subject/Project	Page
Subjects Offered by Department of Industrial and Systems Engineering			8-4
2	ISE204	Instrumentation and Product Testing	8-5
2	ISE2001	Introduction to Enterprise Computing	8-8
3	ISE306	Tool Design	8-11
3	ISE318	Industrial Engineering Techniques and Methods	8-14
3	ISE330	Product Safety and Reliability	8-17
3	ISE369	Quality Engineering	8-20
3	ISE386	Integrated Design for Manufacture	8-23
3	ISE3001	Operations Research I	8-26
3	ISE3002	Planning of Production & Service Systems	8-29
3	ISE3004	Systems Modeling & Simulation	8-33
3	ISE3006	Materials and Processes Selection	8-36
3	ISE3007	Integrated Product Engineering Project I	8-39
4	ISE404	Total Quality Management	8-42
4	ISE418	Computer-Aided Product Design	8-45
4	ISE430	New Product Planning and Development	8-48
4	ISE431	Engineering Costing Evaluation	8-51
4	ISE445	Capstone Project	8-54
4	ISE449	Mobile Technologies for Logistics Systems	8-57
4	ISE457	Business Process Management	8-60
4	ISE461	Green Legislation and Supply	8-63
4	ISE466	Enterprise Systems and Strategy	8-67
4	ISE4003	Automation Technology	8-70
4	ISE4004	Enterprise Resources Planning	8-73
4	ISE4005	Eco-design and Manufacture	8-76
4	ISE4008	Individual Project	8-80
4	ISE4009	Advanced Manufacturing Technology	8-84

TABLE 8 - SYLLABUS INDEX CONTINUED

Level	Code	Subject/Project	Page
Subject offered by School of Accounting and Finance			8-87
3	AF3625	Engineering Economics	8-88
Subjects offered by Department of Applied Mathematics			8-90
1	AMA1110	Basic Mathematics I – Calculus and Probability & Statistics	8-91
1	AMA1120	Basic Mathematics II – Calculus and Linear Algebra	8-93
2	AMA2111	Mathematics I	8-95
Subjects offered by Department of Applied Physics			8-98
1	AP10005	Physics I	8-99
1	AP10006	Physics II	8-102
Subject offered by Department of Applied Social Studies			8-105
1	APSS1L01	Tomorrow's Leaders	8-106
Subjects offered by Chinese Language Centre			8-114
1	CLC1104C/P	University Chinese	8-115
3	CLC3241P	Professional Communication in Chinese	8-118
Subjects offered by Department of Electronic and Information Engineering			8-121
2	EIE2302	Electricity & Electronics	8-122
Subjects offered by English Language Centre			8-127
1	ELC1011	Practical English for University Studies	8-128
1	ELC1012/3	English for University Studies	8-131
2	ELC2011	Advanced English Reading and Writing Skills	8-134
2	ELC2012	Persuasive Communication	8-137
2	ELC2013	English in Literature and Film	8-140
2	ELC2014	Advanced English for University Studies	8-143
3	ELC3531	Professional Communication in English for Engineering Students	8-146
Subjects offered by Faculty of Engineering			8-150
1	ENG1003	Freshman Seminar for Engineering	8-151
2	ENG2001	Fundamentals of Materials Science and Engineering	8-155
2	ENG2003	Information Technology	8-158
3	ENG3003	Engineering Management	8-161
3	ENG3004	Society and the Engineer	8-164
4	ENG4001	Project Management	8-168

TABLE 8 - SYLLABUS INDEX CONTINUED

Level	Code	Subject/Project	Page
Subjects offered by Department of Management and Marketing			
			8-171
1	MM1L01	Tango! Managing Self & Leading Others	8-172
2	MM2711	Introduction to Marketing	8-180
3	MM3761	Marketing Research	8-184
4	MM4711	Business to Business Marketing	8-188
4	MM4721	Marketing Management in China	8-192
4	MM4732	Global Marketing	8-196
4	MM4782	Sales and Distribution Management	8-199
Subjects offered by School of Design			
			8-202
3	SD348	Introduction to Industrial Design	8-204
4	SD4041	Design in Business for Engineering	8-207
4	SD4463	Sustainable Product Design	8-211

**Subjects offered by
Department of Industrial and Systems Engineering**

Subject Description Form

Subject Code	ISE204
Subject Title	Instrumentation and Product Testing
Credit Value	3
Level	2
Pre-requisite / Co-requisite/ Exclusion	HKDSE Physics, Foundation Physics I and II (AP00002 & AP00003), or Introduction to Physics (AP10001)
Objectives	<p>This subject will enable students to</p> <ol style="list-style-type: none"> 1. understand the fundamentals of instrumentation and the generic approach of product testing; 2. apply the basic techniques in instrumentation and select appropriate product testing standards for quality assurance.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> a. understand the fundamentals of an instrumentation measurement system; b. evaluate the static and dynamic characteristics of instrumentation measurement systems; c. evaluate the test method and measuring instruments to ensure measurement accuracy; d. design an appropriate testing plan based on the features and standard requirements of a product.
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. <u>Introduction</u> Roles of instrumentation and product testing in manufacturing engineering. Unit of measurement and universal standards. General factors affecting measurement accuracy. Planning for measurement. 2. <u>Fundamentals of an Instrumentation Measurement System</u> Instrumentation and measurement terminologies. Basic elements of an instrumentation measurement system. Schematic representation of an instrumentation measurement system. 3. <u>Characteristics of Instrumentation Measurement Systems</u> Static and dynamic characteristics of instrumentation measurement systems. Analogue-to-digital and digital-to-analogue conversions.

	<p>4. <u>Calibration of instruments and Error Analysis</u> Calibration process. Traceability. Standards and calibration laboratories. Types and causes of errors. Error reduction. Calculations of accuracy and errors.</p> <p>5. <u>Product Testing</u> Test categories and areas, various performance evaluation guidelines, methodologies. Testing standards and specifications. National and international standards. Generic approach for product testing.</p>																																								
<p>Teaching/Learning Methodology</p>	<p>A mixture of lectures, laboratory and tutorial exercises, and case studies will be used to deliver the various topics in this subject. Some of which will be covered in a problem-based format where this enhances the learning objectives. Others will be covered through directed study in order to enhance the students' "self learning" ability.</p> <p>In particular, case studies based on published literature are used to integrate various product testing methodologies and thus help students to understand how various testing techniques are inter-related and how they are employed in real life situations.</p>																																								
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="4">Intended subject learning outcomes to be assessed</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> </tr> </thead> <tbody> <tr> <td>1. Quizzes</td> <td>10%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>2. Laboratory exercises / Case study</td> <td>10%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>3. Mid-term test</td> <td>25%</td> <td>✓</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>4. Final examination</td> <td>55%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>Total</td> <td>100%</td> <td colspan="4"></td> </tr> </tbody> </table> <p>Quizzes are used for assessing students' performance as well as monitoring their progress in attaining the intended learning outcomes. Additional tutorial classes will be given to those who need assistance. Students' experimental skills are assessed by the laboratory exercises. The written mid-term test and final examination are used to assess students' analytical skills related to the intended learning outcomes.</p>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed				a	b	c	d	1. Quizzes	10%	✓	✓	✓	✓	2. Laboratory exercises / Case study	10%	✓	✓	✓	✓	3. Mid-term test	25%	✓	✓			4. Final examination	55%	✓	✓	✓	✓	Total	100%				
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Total	100%																																								
<p>Student Study Effort Required</p>	<table border="1"> <tr> <td>Class contact:</td> <td></td> </tr> <tr> <td>▪ Lecture</td> <td>22 Hrs.</td> </tr> </table>	Class contact:		▪ Lecture	22 Hrs.																																				
Class contact:																																									
▪ Lecture	22 Hrs.																																								

	▪ Laboratory	8 Hrs.
	▪ Tutorial	6 Hrs.
	▪ Case Study	3 Hrs.
	Other student study effort:	
	▪ Revision	52 Hrs.
	▪ Preparation for Laboratory Exercises, Assignment and Case study	24 Hrs.
	Total student study effort	115 Hrs.
Reading List and References	<ol style="list-style-type: none"> 1. Nakra, BC & Chaudhry KK 2004, <i>Instrumentation, Measurement and Analysis</i>, 2nd edition, Tata McGraw-Hill, New Delhi. 2. Beckwith, TG, Marangoni, RD & Lienhard, JH 1993, <i>Mechanical Measurements</i>, 5th edition, Addison-Wesley, New York. 3. <i>Consumer Product Evaluation Standards</i>, June 2010 <http://www.astm.org/Standards/consumer-product-evaluation-standards.html> 4. <i>BSI Healthcare and Testing Services</i>, June 2010 <http://www.bsigroup.com/en/ProductServices/> 	

Subject Description Form

Subject Code	ISE2001
Subject Title	Introduction to Enterprise Computing
Credit Value	3
Level	2
Pre-requisite/Co-requisite/Exclusion	Nil
Objectives	<p>This subject enables students to</p> <ol style="list-style-type: none"> 1. understand the fundamentals and working knowledge in the application of enterprise computing in the running and operation of a company-wide and enterprise-wide business; 2. develop their ability to produce e-solutions.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> a. understand the basic concept of enterprise computing and how it supports company-wide and enterprise-wide business operation; b. understand basic computing technologies; c. apply computing technologies to implement e-solutions.
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. Introduction to Business Enterprise and Enterprise Computing From mainframe to network computing; Client/Server computing; Group-wise electronic messaging, document management systems, and corporate database systems; HTML; XML; VBScript; ASP; PHP; Application of company-wide and enterprise-wide computing 2. Development of Enterprise Applications Development of e-solutions based on applications software; Static and dynamic Webpage; Electronic publishing; Scripting language; Introduction to multimedia; Use of reporting tools; Web programming tools for e-solutions
Teaching/Learning Methodology	<p>A mixture of lectures, tutorials, in-class exercises, laboratory exercises, and a mini-project are used to deliver the topics. Lectures are conducted to enable students to understand the concepts and techniques of enterprise computing which are reinforced by in-class exercises. Practical problems are raised as a focal point for discussion in tutorial classes. Lab sessions and exercises are conducted to enable students to reflect on and apply the knowledge learned. The mini-project enables students to learn how to apply the knowledge to</p>

	application-oriented projects through teamwork.						
Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks		% weighting	Intended subject learning outcomes to be assessed			
				a	b	c	
	1. In-class Exercises		25%		✓		
	2. Laboratory Exercises		10%			✓	
	3. Mini-project		25%	✓		✓	
	4. Quizzes		40%	✓	✓		
	Total		100%				
<p>Continuous assessments consist of in-class exercises, lab exercises, a mini-project, and quizzes, which are designed to facilitate students to achieve intended learning outcomes. All assessment components require students to apply computing technologies delivered in class to real-life cases and to implement e-solutions. The mini-project requires students to identify a real-life case of e-business, analyze the case, and design and implement the e-solution by using computing technologies. Quizzes are designed to facilitate students' review in relation to the breadth and depth of their understanding.</p>							
Student Study Effort Expected	Class contact:						
	▪ Lectures		3 hours/week for 5 weeks; 2 hours/week for 6 weeks				27 Hrs.
	▪ Tutorials		1 hour/week for 6 weeks				6 Hrs.
	▪ Laboratories		3 hours/week for 2 weeks				6 Hrs.
	Other student study effort:						
	▪ Preparation for the mini-project, project presentation, project report, and quizzes						77 Hrs.
	Total student study effort						116 Hrs.
Reading List and References	1. Kroenke, D and Auer, D 2013, <i>Database Concepts</i> , 6 th edn, Prentice Hall						
	2. Harvey & Paul Deitel & Associates Harvey Deitel Abbey Deitel 2012,						

	<p><i>Internet and World Wide Web How To Program, 5/E, Pearson</i></p> <p>3. Comer, D 2006, <i>Internet Book, The Everything You Need to Know About Computer Networking and How the Internet Works</i>, 4th edn, Prentice Hall</p>
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Subject Description Form

Subject Code	ISE306
Subject Title	Tool Design
Credit Value	3
Level	3
Pre-requisite	Nil
Objectives	This subject enables the student to learn and apply the design of different tools, both technical and economical aspects, with reference to various production equipment and components, such as jigs and fixtures, press tools for sheet metal working, molds for plastic injection molding, and die casting.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> apply the basic principles in designing general jigs and fixtures, as well as molds and dies; assess the performance of a given tool design for meeting the specific design criteria; evaluate the effects of a given tool design on work quality.
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> <u>Fundamental Principles of Tool Design</u> Design criteria consideration; Application and justification of tool-type selection; Selection of tooling materials <u>Design of Jigs and Fixtures</u> Principles of location and clamping; Design consideration of different types of jigs and fixtures; Applications and case studies <u>Design of Presswork Tools</u> Blanking, piercing, bending, forming, and drawing tools; Compound, combination, and progressive tools; Justification of die selection <u>Design of Plastic Molds</u> Basic construction of plastic injection molds; Functions and requirements of individual components; Decision for the number of cavities <u>Design of Die Casting Molds</u> Design criteria and basic construction of different die casting molds,

	including the gating and runner systems; Applications and case studies							
Teaching/Learning Methodology	A mixture of lectures, tutorial exercises, laboratory work, and case studies are used to deliver various topics on this subject matter. Students are divided into small groups and instructed to tackle several major tasks in real life via different CAD software packages. The tasks are covered in a problem-based format, as this can enhance the attainment of the learning objectives. Others are covered through guided studies in order to develop students' ability of "learning to learn."							
Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks		% weighting		Intended subject learning outcomes to be assessed			
			a	b	c			
	1. Assignments		20%	✓	✓			
	2. Test		40%	✓	✓			
	3. Mini-group Project		40%	✓	✓	✓		
	Total		100%					
<p>The assessments are designed to help students reflect on and apply periodically the knowledge throughout the class period.</p> <p>Student performance is continuously assessed by lab work, tutorials, assignments, progress tests, and mini-group projects, as well as presentations and written reports. Students are required to demonstrate their understanding and abilities in these assessment components, which are aligned with the intended learning outcomes.</p>								
Student Study Effort Expected	Class contact:							
	▪ Lectures							30 Hrs.
	▪ Tutorial, Tests, Laboratory, and Mini-project							9 Hrs.
	Other student study effort:							
	▪ Assignments							20 Hrs.
	▪ Preparation for Test, Presentation, and Report Writing							58 Hrs.
Total student study effort							117 Hrs.	

Reading List and References	<ol style="list-style-type: none">1. Spitler, D, Lantrip, J, Nee, J, and Smith DA, <i>Fundamentals of Tool Design</i>, latest edition, Society of Manufacturing Engineers, Dearborn.2. Boyes, WE (Ed.), <i>Handbook of Jig and Fixture Design</i>, latest edition, Society of Manufacturing Engineers, Dearborn.3. Menning, G and Stoeckhert, K, <i>Mold-making Handbook: For the Plastics Engineer</i>, latest edition, Hanser Gardner Publications, Cincinnati.4. <i>Injection Moulds</i>, latest edition, MS Welling (trans.), <i>VDI-Verlag</i>, Dusseldorf.5. Menqes, G, Michaeli, W, and Mohren, P, <i>How to Make Injection Moulds</i>, latest edition, Hanser Gardner Publications, Cincinnati.6. Street, A (Ed.), <i>The Diecasting Book</i>, latest edition, Portcullis Press, Redhill, Surrey.
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Subject Description Form

Subject Code	ISE318
Subject Title	Industrial Engineering Techniques and Methods
Credit Value	3
Level	3
Pre-requisite/Co-requisite/Exclusion	Nil
Objectives	<p>This subject provides students with</p> <ol style="list-style-type: none"> 1. basic skills for analyzing and improving working methods, procedures and systems in the context of the work stations and a department, taking into account ergonomic considerations in order for them to carry out a project on work improvement in a company for the purpose of productivity improvement; 2. skills in the use and compilation of work measurement data, as well as a basic understanding of the techniques and importance of quantifying work in manufacturing and service industries, thereby allowing them to measure the work content of typical jobs; 3. ability to use statistical sampling techniques in order for them to measure effectively the utilized resources (e.g., staffing, machines, and equipment) and to estimate their corresponding work content; 4. working knowledge on the techniques for facilities layout and their interaction with materials handling system (if relevant), thereby enabling them to evaluate an existing layout and recommend improvements and/or to plan a new layout.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> a. examine an existing work situation and conduct a work improvement program in order to identify low productivity in a manufacturing or service company; b. apply appropriate recording techniques, or to design new work methods and procedures, for a manufacturing or service company; c. select an appropriate measurement technique (time study and PMTS) and apply it to measure the standard time for the work involved; d. design a work sampling study, apply it to various work situations, analyze the results, and estimate the standard time for the work involved; e. identify the objectives of layout planning in both manufacturing and

	service companies, evaluate its effectiveness, and apply layout planning techniques, recognizing their limitations when considering relevant constraints.						
Subject Synopsis/ Indicative Syllabus	<p>1. <u>Introduction</u></p> <p>Productivity; Causes of low productivity in organizations; Resources and outputs, their importance, and how they are measured</p> <p>2. <u>Work Improvement</u></p> <p>Benefits, the systematic approach, identifying improvement areas in enterprises; Terms of reference; Approach to personnel, techniques of recording information; Systems flowchart; Design of documents in both hard and electronic format; Principles of computer screen layout; Examination of existing working methods and development of new methods and procedures; Implementation and continuous improvement</p> <p>3. <u>Work Measurement</u></p> <p>Purposes in the manufacturing and service sectors; Techniques for industrial and clerical work, self-recording, and time study; Work sampling with observations at random and fixed time intervals; Introduction to predetermined motion time systems for manufacturing and clerical works; Summary of work measurements; Selection of appropriate techniques; Factors that influence choice, including time, cost, accuracy, and purpose</p> <p>4. <u>Layout Planning</u></p> <p>Objectives, types of layout found in the manufacturing industry and the clerical sector; Systematic layout planning, as applied to manufacturing and clerical work; Introduction to the design of flowlines in manufacturing; Line balancing; Techniques; Efficiency of assembly lines; Balance loss</p>						
Teaching/Learning Methodology	A mixture of lectures, tutorial exercises, and case studies are used to deliver the various topics in this subject, some of which are covered in a problem-based format, as these can enhance the learning objectives. Others are covered through directed study in order to enhance the students' ability of "learning to learn." Some case studies, largely based on consultancy experience, are used to integrate the topics, thus demonstrating to students how the various techniques are interrelated and how they can be applied in real work situations.						
Assessment Methods in Alignment with Intended Learning Outcomes	Specific Assessment Methods/Tasks	% Weighting	Intended subject learning outcomes to be assessed				
			a	b	c	d	e
	1. Continuous Assessment (Four Case Studies, each comprising 10% each)	40%	✓	✓	✓		✓

	2. Examination (Open Book)	60%	✓	✓	✓	✓	✓
	Total	100%					
	<p>Continuous assessment comprises case studies with individual and group components. <u>Note:</u> Questions for the assessment of Intended Learning Outcomes (ILOs) may vary from year to year in terms of whether they are by Continuous Assessment or by Examination. However, all ILOs are covered each year. Moreover, all assessment components require students to apply what they learned to realistic work applications.</p>						
Student Study Effort Expected	Class contact:						
	▪ Lecture/Tutorial						27 Hrs.
	▪ Laboratory/Case Study	3 hours/week for 4 weeks					12 Hrs.
	Other student study effort:						
	▪ Studying and Self-learning						38 Hrs.
	▪ Case Study and Report Writing						28 Hrs.
	Total student study effort						105 Hrs.
Reading List and References	1. Heizer, Jay and Render, Barry, 2014, <i>Principle of Operations management</i> , 9 th edition, Pearson						
	2. Mundel ME and Danner DL 1994, <i>Motion and Time Study: Improving Productivity</i> , 7th edn, Prentice Hall						
	3. Tompkins, JA, White, JA, Bozer, YA, Tanchoco, JMA, and Trevino J 1996, <i>Facilities Planning</i> , 2 nd edn.						
	4. Gavriel Salvendy (Ed.) 2007, <i>Industrial Engineering Handbook</i> , John Wiley & Sons Ltd.						
	<u>Note:</u> Other books with the same or similar titles as above can also be used.						

Subject Description Form

Subject Code	ISE330
Subject Title	Product Safety and Reliability
Credit Value	3
Level	3
Pre-requisite/Co-requisite/Exclusion	Knowledge of calculus & statistics
Objectives	This subject is designed to provide students with an overview of the legal, regulatory, and contractual obligations related to product safety and reliability, as well as the approaches to managing compliance to these obligations.
Intended Learning Outcomes	<p>Upon completion of this subject, students will be able to</p> <ol style="list-style-type: none"> a. be aware of the safety and reliability requirements in product development; b. evaluate compliance for product safety marks; c. apply relevant methodologies and tools to identify, assess, and mitigate product risks; d. quantify product risks and perform simple failure data analysis.
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. <u>Product Liabilities</u> Evolution of product liability concepts: strict liability, tort, warranty; Approaches to mitigating liability; and Product recalls 2. <u>Product Safety Standards</u> Consumer product safety acts, Consumer Product Safety Commission (CPSC), national and international safety standards, and compliance for product safety marks 3. <u>Product Risk Management</u> Availability, reliability, safety and security; Product risk management program 4. <u>Product Safety and Reliability Practices</u> Establishing product safety and reliability policy, FMECA, FTA, HAZOP, HACCP, safety and reliability testing, root cause analysis; Case studies 5. <u>Analytical Methods for Product Risk Assessment</u>

	Quantification of risk and failure data analysis						
Teaching/Learning Methodology	A combination of lectures, tutorial exercises, and case studies is used to deliver the various topics in this subject. Some of the topics are delivered in a problem-based format to enhance the effectiveness of achieving the learning outcomes. Other topics are covered through directed study or mini-projects designed to enhance students' self-learning skills. Some of the coursework is designed to develop students' ability to apply knowledge in managing product risks.						
Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed				
			a	b	c	d	
	1. Examination	60%	✓		✓	✓	
	2. Continuous Assessment	40%					
	▪ Quizzes/Reflective Journals/Assignments (20%)		✓		✓	✓	
	▪ Case study (20%)			✓	✓		
	Total	100%					
Examination and continuous assessments that take the forms of quizzes and in-class or take-home assignments are designed to assess students' ability to apply the knowledge introduced in the subject in analyzing and solving product safety and reliability problems. Students' performance in these tasks is evaluated individually. The case study is group based and is designed to test students' ability to identify, assess, and mitigate risks in the design of a selected product and to determine the process for obtaining the applicable safety marks. It is assessed based on performance in an oral presentation and the merit of a written report. Students' reflective journals on the case study presentations made by their peer groups are also assessed.							
Student Study Effort Expected	Class contact						
	▪ Lecture	2 hours/week for 13 weeks					26 Hrs.
	▪ Tutorial/Case Study/Assessments	1 hour/week for 13 weeks					13 Hrs.
	Other student study efforts						
	▪ Self study: review lecture materials, compile reflective journal, and prepare for examination						32 Hrs.
	▪ Case study: information gathering, group discussion,						39 Hrs.

	preparation of oral presentation, and written report	
	Total student study effort	110 Hrs.
Reading List and References	<ol style="list-style-type: none"> 1. Abbot, H & Tyler, M 1997, <i>Safer by Design: A Guide to the Management and Law of Designing for Product Safety</i>, 2/e Gower 2. Geistfeld, M A 2011, <i>Principles of Products Liability</i>, 2/e, Foundation Press 3. Owen, D G & Davis, M J 2015, <i>Products Liability & Safety: Cases and Materials</i>, 7/e, Foundation Press 4. Owen, D G & Davis, M J 2015, <i>Products Liability & Safety: Cases and Materials 2015-2016 Statutory Supplement</i>, 7/e, Foundation Press 5. <i>IEC 60300-1 Dependability Management – Part 1: Guidance for management and application</i>, 2014 3/e 6. <i>IEC 60300-3-1 Dependability Management – Part 3-1: Application Guide – Analysis Techniques for Dependability – Guide on Methodology</i>, 2003 2/e 	

Subject Description Form

Subject Code	ISE369
Subject Title	Quality Engineering
Credit Value	3
Level	3
Pre-requisite/Co-requisite/Exclusion	AMA1110 Basic Mathematics I – Calculus and Probability & Statistics or AMA1103 Introductory Linear Algebra or AMA1104 Introductory Probability
Objectives	<p>The subject will provide students with</p> <ol style="list-style-type: none"> 1. knowledge of the modern concept of quality; 2. appreciation of the functions served by a quality management system; 3. ability to design quality products to satisfy both internal and external customers; 4. ability to control process performance using appropriate statistical tools; 5. ability to diagnose quality problems and develop sustainable improvement.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> a. apply the modern concepts of quality and quality management system to solve the existing quality problems of a company; b. obtain design quality from internal and external customers and formulate plans thereof; c. use appropriate statistical tools for better process control; d. diagnose quality problems and develop sustainable improvement.
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. <u>Quality Management Processes</u> Modern quality concepts; Quality planning, quality control, and quality improvement; New and old 7-QC tools 2. <u>Design for Quality</u> Reliability fundamental, life distribution, failure rate prediction, and estimation; Failure mode, effects, and criticality analysis (FMECA); Fault tree analysis (FTA); Taguchi approach to achieving quality; Design reviews 3. <u>Statistical Quality Control</u> Process variation; Process capability study; Control charts; Statistical

	<p>tolerancing; Acceptance sampling plans</p> <p>4. <u>Partnership with Suppliers</u></p> <p>Vendor evaluation; Joint planning with suppliers; Best practices of partnership with suppliers</p> <p>5. <u>Quality Management Systems</u></p> <p>ISO 9000 series of standards; Quality audits; Product and system certification programs</p> <p>6. <u>Quality Improvement</u></p> <p>Project approach to quality improvement; Diagnostic techniques for identifying root causes; Implementing change and sustaining gains</p>																																																				
Teaching/Learning Methodology	<p>The major teaching activities contain a combination of lectures, tutorials, and practical exercises to achieve the objectives of this subject. Some of the topics are not taught in the classroom environment; students are directed to learn these topics by themselves during the process of writing problem-based assignments.</p>																																																				
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>1. Examination</td> <td>60%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>2. Assignment & tests</td> <td>30%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>3. Case Studies</td> <td>10%</td> <td>✓</td> <td>✓</td> <td></td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td>100 %</td> <td colspan="6"></td> </tr> </tbody> </table> <p>The continuous assessment involves three components: two tests (10%), two case studies (10%), and four take-home assignments (20%). The tests aim to assess the interim knowledge gained by the students. The assignments are designed to assess students' ability to apply the equations in assessing the performance of the processes. The case study requires students to complete two team projects involving quality improvement and quality management. The results of the case study are presented both orally and in written form. The final examination is also used to assess the abilities of students in achieving the learning outcomes of the subject.</p>							Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed						a	b	c	d			1. Examination	60%	✓	✓	✓	✓			2. Assignment & tests	30%	✓	✓	✓	✓			3. Case Studies	10%	✓	✓		✓			Total	100 %						
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Student Study Effort Expected	<p>Class contact</p> <ul style="list-style-type: none"> ▪ Lecture 2 hours/week for 13 weeks 						<p>26 Hrs.</p>																																														

	▪ Tutorial/Case Study 1 hour/week x 13 weeks	13 Hrs.
	Other student study efforts	
	▪ Self Study/Assignment	58 Hrs.
	▪ Case Study	13 Hrs.
	Total student study effort	110 Hrs.
Reading List and References	<ol style="list-style-type: none"> 1. Montgomery, D C 2009, <i>Introduction to Statistical Quality Control</i>, 6th edition, John Wiley 2. Gryna, F M 2000, <i>Quality Planning & Analysis</i>, 4th edition, McGraw Hill 3. ISO 9001: 2008, <i>Quality Management Systems – Requirements</i> 	

Subject Description Form

Subject Code	ISE386
Subject Title	Integrated Design for Manufacture
Credit Value	3
Level	3
Pre-requisite/Co-requisite/Exclusion	Exclusion : ISE3003 Design for Manufacture and Sustainability
Objectives	<p>This subject provides students with</p> <ol style="list-style-type: none"> 1. knowledge on how product life cycle issues affect the design of a product; 2. fundamental knowledge on approaches and methods of value engineering, design for manufacture, design for quality, design for manufacturability and design for environment.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> a. understand the concept of value engineering; b. analyze a part design for manufacturability; c. apply appropriate methods to consider quality issue in product design stage; d. analyze product design for assembly and environment.
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. <u>Introduction to Product Development and Design for Product Life Cycle</u> Product development process, Product development methods, Design for manufacture and product lifecycle 2. <u>Value Engineering</u> Concept of value, Value analysis, Product improvement 3. <u>Quality in Design</u> Quality function deployment, Robust design 4. <u>Design for Assembly</u> Design guidelines, DFA methodology 5. <u>Design for Manufacturability</u> Part design for injection molding and sheet metal operations, Process

	simulation 6. <u>Design for Environment</u> Design for disassembly, Design for recycling																																														
Teaching/Learning Methodology	A mixture of lectures, tutorial exercises, case studies, a group project, and laboratory exercises are used to deliver various topics on the subject. Some topics are covered in a problem-based format wherein learning objectives are enhanced, others are covered by directed studies to enhance students' "learning to learn" ability.																																														
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Student Study Effort Expected	<table border="1"> <tr> <td>Class contact:</td> <td></td> </tr> <tr> <td>▪ Lectures</td> <td>22 Hrs.</td> </tr> <tr> <td>▪ Tutorials and case studies</td> <td>9 Hrs.</td> </tr> <tr> <td>▪ Laboratory exercises</td> <td>8 Hrs.</td> </tr> <tr> <td>Other student study effort:</td> <td></td> </tr> <tr> <td>▪ Take-home assignments</td> <td>58 Hrs.</td> </tr> <tr> <td>▪ Preparation for tests</td> <td>25 Hrs.</td> </tr> <tr> <td>Total student study effort</td> <td>122 Hrs.</td> </tr> </table>	Class contact:		▪ Lectures	22 Hrs.	▪ Tutorials and case studies	9 Hrs.	▪ Laboratory exercises	8 Hrs.	Other student study effort:		▪ Take-home assignments	58 Hrs.	▪ Preparation for tests	25 Hrs.	Total student study effort	122 Hrs.																														
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Reading List and References	<ol style="list-style-type: none"> Boothroyd, G., Dewhurst, P. and Knight, W.A. 2002, <i>Product Design for Manufacture and Assembly</i>, Marcel Dekker, N.Y. Ficalora, J.P. and Cohen, L. 2010, <i>Quality Function Deployment and Six</i> 																																														

	<p><i>Sigma</i>, Prentice Hall</p> <ol style="list-style-type: none">3. Wu, Y. and Wu, A. 2000, <i>Taguchi Methods for Robust Design</i>, ASME Press4. Otto, K. and Wood, K. 2001, <i>Product Design</i>, Prentice Hall5. Lewis, H & Gertsakis, J 2001, <i>Design + Environment: A Global Guide to Design Greener Goods</i>, Greenleaf Publishing Ltd.
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Subject Description Form

Subject Code	ISE3001
Subject Title	Operations Research I
Credit Value	3
Level	3
Pre-requisite/Co-requisite/Exclusion	Nil
Objectives	<p>This subject will provide students with</p> <ol style="list-style-type: none"> 1. ability to understand the concepts and importance of Operations Research; 2. knowledge of formulating mathematical models in day to day business operations; 3. skills in improving management by applying Operations Research theories in real life; 4. Operations Research models in decision makings.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> a. recognize the importance of Operations Research; b. build an Operations Research model from real-life problems; c. understand Operations Research theories and models and their applications to a variety of scenarios; d. apply computer tools to obtain optimal solutions from a mathematical model.
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. <u>Introduction</u> Basic concepts in Operations Research and Mathematical Modeling. 2. <u>Linear Programming</u> Concept in Linear Programming, Graphics method, the Simplex method. 3. <u>The Assignment and the Transportation Problem</u> The model of the assignment problem, and the transportation problem. The transshipment problem.

	<p>4. <u>Advanced Topics in Linear Programming</u> Duality, the Interior-Point Method.</p> <p>5. <u>Integer Linear Programming</u> Concepts in Integer Programming, the Branch-and-Bound Algorithm. The cutting plane method.</p> <p>6. <u>Network and Dynamic Programming</u> Network and methods. Dynamic Programming and its applications.</p>																																																												
Teaching/Learning Methodology	<p>A mixture of lectures, tutorial exercises, and case studies will be used to deliver the various topics in this subject. Some of them will be covered in a problem-based format which enhances the learning objectives. Others will be covered through directed study in order to enhance the students' ability of "learning to learn". Some case studies will be used to integrate these topics and thus demonstrate to students how the various techniques are interrelated and how they can be applied to real problems in industry.</p>																																																												
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Student Study Effort Expected	Class contact:																																																												
	▪ Lectures	3 hours/week for 10 weeks					30 Hrs.																																																						
	▪ Lab., Presentation, Test	3 hours/week for 3 weeks					9 Hrs.																																																						

	Other student study effort:	
	▪ Preparation and Review, Self-study	60 Hrs.
	▪ Report Writing	21 Hrs.
	Total student study effort	120 Hrs.
Reading List and References	<ol style="list-style-type: none"> 1. Rader, D. J. 2010, <i>Deterministic Operations Research: Models and Methods in Linear Optimization</i>, J. Wiley & Sons 2. Taha, H. A. 2007, <i>Operations Research</i>, 8th edn, Pearson 3. Taylor, B. W. III 2013, <i>Introduction to Management Science</i>, 11th edn, Prentice Hall 4. Schrage, L. 1997, <i>Optimization Modeling with LINDO</i>, 5th edn, Thomson 5. Winston, W. L. 2004, <i>Operations Research: Applications and Algorithms</i>, 4th edn, Thomson 6. Williams, H. P. 2013, <i>Model Building in Mathematical Programming</i>, 5th edn, Wiley 7. Hillier, F. S. and Lieberman, G. J. 2010, <i>Introduction to Operations Research</i>, 9th edn, McGraw-Hill 8. Ravindran, R. 2009, <i>Operations Research</i>, CRC Press 	

Subject Description Form

Subject Code	ISE3002
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Subject Title	Planning of Production and Service Systems
Credit Value	3
Level	3
Pre-requisite/Co-requisite/Exclusion	Nil
Objectives	<p>This subject provides students with</p> <ol style="list-style-type: none"> 1. an understanding of the concepts of production and service systems; 2. the ability to apply principles and techniques in the design, planning and control of these systems to optimize/make best use of resources in achieving their objectives.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> a. apply the systems concept for the design of production and service systems; b. make forecasts in the manufacturing and service sectors using selected quantitative and qualitative techniques; c. apply the principles and techniques for planning and control of the production and service systems to optimize/make best use of resources; d. understand the importance and function of inventory and to be able to apply selected techniques for its control and management under dependent and independent demand circumstances.
Subject Synopsis / Indicative Syllabus	<ol style="list-style-type: none"> 1. <u>The Systems Concept</u> <p>The transformation model of production systems. The boundary and attributes of a socio-technical production system. Effects of the environmental factors. Systems balance and sub-optimization. The need for systems integration and adaptation to environment.</p> 2. <u>Forecasting</u> <p>Production demand management. Qualitative and quantitative methods in forecasting. Forecasting errors and control. Forecasting and its relationship to capacity planning.</p> 3. <u>Capacity Planning</u> <p>Capacity measurement. Aggregate units. Manual and mathematical methods for aggregate planning. Master production scheduling.</p> 4. <u>Inventory Control and Material Requirement Planning (MRP)</u>

	<p>Independent inventory control and management; Types of inventory; Continuous review and periodic review systems; Reorder level and order quantities, including quantity discounts; ABC analysis. Planning of dependent inventory; MRP concepts and principles; Lot sizing</p> <p>5. <u>Operations Loading and Scheduling</u></p> <p>Gantt charts for loading and scheduling. Techniques and algorithms for operations scheduling and Personnel Scheduling</p> <p>6. <u>Just-in-time and Lean Manufacture</u></p> <p>Push and pull systems of production control; Advantages and limitations; Set-up and changeover times and their reduction; Use of Kanban; Effect on inventory; Issues of implementation</p>																																		
<p>Teaching/Learning Methodology</p>	<p>A mixture of lectures, tutorial exercises, case studies and laboratories will be used to deliver the various topics in this subject to attain the intended learning outcomes. Some of which will be covered in a problem-based format where this enhances the learning outcomes. Others will be covered through directed study in order to enhance the students’ ability of “learning to learn”. Tutorials and laboratories are conducted as group activities so that students can discuss, practice and understand materials in the class. Case studies and simulation exercises will be provided to provoke students’ further thinking about and integration of the factors related to real life problem solving in the discipline of studies.</p>																																		
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% Weighting</th> <th colspan="4">Intended subject learning outcomes to be assessed</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> </tr> </thead> <tbody> <tr> <td>1. Assignments/case studies/presentation</td> <td>20%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>2. Laboratory works</td> <td>20%</td> <td></td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>3. Examination</td> <td>60%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>Total</td> <td>100%</td> <td colspan="4"></td> </tr> </tbody> </table> <p>The assignments/case studies assess students’ ability to synthesize and apply the concepts and skills learnt in solving problems related to the subject.</p> <p>The laboratory exercises assess students’ capability in the planning and control of activities in production and service systems to optimize/make the best use of resources to attain system’s objectives.</p> <p>The examination assesses students’ understanding on the concepts and in the</p>	Specific assessment methods/tasks	% Weighting	Intended subject learning outcomes to be assessed				a	b	c	d	1. Assignments/case studies/presentation	20%	✓	✓	✓	✓	2. Laboratory works	20%		✓	✓		3. Examination	60%	✓	✓	✓	✓	Total	100%				
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3. Examination	60%	✓	✓	✓	✓																														
Total	100%																																		

	use of the skills in solving problems related to the subject.	
Student Study Effort Expected	Class Contact:	
	▪ Lecture	2.0 hours/week for 12 weeks
	▪ Tutorial	2.0 hours/week for 5 weeks
	▪ Laboratory	2.5 hours/week for 2 weeks
	Other student study effort:	
	▪ Studying and self learning	59 Hrs.
	▪ Assignment and report writing	25 Hrs.
	Total student study effort	123 Hrs.
Reading List and References	<ol style="list-style-type: none"> 1. Krajewski, L J, Ritzman, L P and Malhotra, M K 2013, <i>Operations Management: Processes and Supply Chains</i>, Upper Saddle River, N.J.: Pearson/Prentice Hall 2. Nahmias, S 2009, <i>Production and Operations Analysis</i>, 5th edn, McGraw-Hill 3. Schroeder, R G, Goldstein, S M and Rungtusanatham, M J 2013, <i>Operations Management : Contemporary Concepts and Cases</i>, New York, NY : McGraw-Hill/Irwin 4. Chase, R B., Aquilano, N J, and Robert, J F 2006, <i>Operations Management for Competitive Advantage</i>, Boston: McGraw-Hill Irwin 5. Shafer, S M and Meredith, J R 2003, <i>Operations Management</i>, New York: John Wiley & Sons 6. Vollmann, T E et al. 2005, <i>Manufacturing Planning and Control Systems for Supply Chain Management</i>, New York: McGraw-Hill 7. Turner, W C et al. 2001, <i>Introduction to Industrial and Systems Engineering</i>, Beijing: Tsing Hua University: Prentice Hall 8. Schroeder, R G and Flynn, B B 2001, <i>High Performance Manufacturing: Global Perspectives</i>, New York: John Wiley 9. Sipper, D and Bulfin, R L Jr 1997, <i>Production: Planning, Control, and Integration</i>, McGraw-Hill 10. Markland, R E, Vickery, S K, and Davis, R A 1998, <i>Operations Management: Concepts in Manufacturing and Services</i>, Cincinnati, Ohio : South-Western College Pub 	

Subject Description Form

Subject Code	ISE3004
Subject Title	Systems Modeling and Simulation
Credit Value	3
Level	3
Pre-requisite/Co-requisite/Exclusion	Nil
Objectives	<p>This subject provides students with</p> <ol style="list-style-type: none"> 1. the basic system concept and definitions of system; 2. techniques to model and to simulate various systems; 3. the ability to analyze a system and to make use of the information to improve the performance.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> a. understand the system concept and apply functional modeling method to model the activities of a static system; b. understand the behavior of a dynamic system and create an analogous model for a dynamic system; c. simulate the operation of a dynamic system and make improvement according to the simulation results.
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. <u>System definitions and classification</u> Introduction to system definitions. System Classification. Components in a System. 2. <u>Basic Static and Dynamic System Modeling Techniques</u> Static System Modeling: IDEF0 (Input, Control, Output, Mechanism). Dynamic System Modeling: Stella (Stock, Flow, Converter). 3. <u>Introduction to Discrete Event Simulation</u> Analytical and Simulation Modeling, Simulation Worldviews, Preparation for Model Building. Generation of Random Number and Vitiante. Introduction to Distribution Functions, Fitting of Probability Distribution Function to Data. 4. <u>Applications of Discrete Event Simulation</u>

	Simulation Modeling with Probabilistic Functions. Applications of Simulation in Business, Medical, Manufacturing and Transportation systems.																																																				
Teaching/Learning Methodology	The emphasis of this subject is on application aspects and considerable efforts are needed on hand-on activities. Teaching is conducted through class lectures, tutorials, laboratory exercises and a mini-project in related to the application of simulation. The lectures are targeted at the understanding system concept, modeling methods, and different simulation techniques. Substantial works on laboratory exercises and tutorials are employed to enforce students' capabilities in building system models and application of simulation software. The mini-project is to give students a chance of conducting a simulation related project in a more comprehensive manner, and test/quiz is used to classify students' achievement in this subject.																																																				
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>Laboratory/Exercise</td> <td>40%</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Mini-project/Case Study</td> <td>30%</td> <td></td> <td></td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Test/Quiz</td> <td>30%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td>100 %</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>							Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed						a	b	c				Laboratory/Exercise	40%	✓	✓					Mini-project/Case Study	30%			✓				Test/Quiz	30%	✓	✓	✓				Total	100 %						
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Each laboratory exercise would be divided into two parts such that the group work would have to be submitted by the end of the laboratory class while the individual component can be hand-in afterward. Test/quiz will be given to assess students' learning outcomes, and, a mini-project in related to application of simulation in practical situation.																																																					
Student Study Effort Expected	Class contact:																																																				
	<ul style="list-style-type: none"> ▪ Lecture/Seminar 2 hours/week for 6 weeks 						12 Hrs.																																														
	<ul style="list-style-type: none"> ▪ Tutorial/Hand-on Exercise 2 hours/week for 3 weeks 						6 Hrs.																																														
<ul style="list-style-type: none"> ▪ Laboratory/Case Study/Test 3 hours/week for 5 weeks + 6 hours/week for 1 week 						21 Hrs.																																															

	Other student study effort:	
	▪ Project report	31 Hrs.
	▪ Self Study/Laboratory Report	52 Hrs.
	Total student study effort	122 Hrs.
Reading List and References	<ol style="list-style-type: none"> 1. Zeigler, BP, Praehofer, H, Kim, TG 2000, <i>Theory of Modeling and Simulation: Integrating Discrete Event and Continuous Complex Dynamic Systems</i>, Academic Press 2. Altioik, T, Melamed, B 2007, <i>Simulation Modeling and Analysis with Arena</i>, Academic Press 3. Evans, JR, Olson, DL 2001, <i>Introduction to Simulation and Risk Analysis</i>, Prentice Hall, New Jersey 4. Banks J. et al., 2010, <i>Discrete-Event System Simulation</i>, Pearson Education 5. Kelton, WD, Sadowski, R, Zupick, 2014, <i>Simulation with Arena</i>, McGraw-Hill 	

Subject Description Form

Subject Code	ISE3006
Subject Title	Materials and Processes Selection
Credit Value	3
Level	3
Pre-requisite/Co-requisite/Exclusion	Nil
Objectives	<p>This subject will provide the students with</p> <ol style="list-style-type: none"> 1. an understanding of properties and applications of engineering materials; 2. an understanding of working principles of basic manufacturing processes for common materials; 3. an understanding of the interaction between material, shape, process and functional requirements of products in the materials and processes selection; 4. the knowledge of a systematic approach to the choice of materials and processes for a range of products, with consideration of economical, technological and environmental factors.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> a. exemplify the importance of engineering materials in product design; b. recognize the availability of different processing routes for the manufacture of a product; c. establish a link between material, shape, process and functional requirements of a product in materials and process selection; d. apply suitable methodologies to perform materials selection and determine appropriate manufacturing processes to achieve desired shapes and functional requirements for a range of products with respect to economical, technological and environmental factors.
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. <i>Properties, Applications and Selection of Engineering Materials</i> Ferrous and non-ferrous alloys, engineering plastics, ceramics and composites; Properties of engineering materials and their applications. Materials selection charts, performance maximizing criteria, material indices based on Ashby's analysis.

	<p>2. Fundamentals of Manufacturing Processes</p> <p>Classification of manufacturing processes; <i>metal processing technologies</i>: casting, powder metallurgy, bulk formation, sheet metal forming, conventional and non-conventional material removal; <i>polymer processing technologies</i>: injection molding, compression and transfer molding, extrusion, thermoforming, rotational molding, advanced molding technologies; joining and surface finishing processes.</p> <p>3. Process Selection and Economic Consideration</p> <p>Process screening by attributes: material, size, shape, accuracy, surface finish, bulk and surface properties; economic production capabilities of typical processes: equipment and tooling cost, production rate, and economic production quantity.</p>																																																						
<p>Teaching/Learning Methodology</p>	<p>Theories of the technologies involved are introduced in the lectures via a case study approach. The materials and processes selection are supported by using a software package “CES” in the Digital Factory of the Department. Tutorials are used to facilitate the understanding of such theories as well as the interaction between material, process, shape and function through group discussions and case studies, whereas a mini-project is used to review students’ understanding of process selection.</p>																																																						
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>1. Assignments</td> <td>20%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>2. Mini-project</td> <td>10%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>3. Test</td> <td>10%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>4. Examination</td> <td>60%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td>100%</td> <td colspan="6"></td> </tr> </tbody> </table> <p>The assignments are designed to reflect students’ understanding of the subject and to assist them in monitoring their progress.</p> <p>The mini-project is designed to assess the student’s ability in selecting appropriate materials and manufacturing processes for particular components or products with consideration to technical, economical and environmental aspects of the available processes.</p> <p>The test and examination are used to assess the students’ understanding of the subject content and to determine their ability in achieving the subject learning</p>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed						a	b	c	d			1. Assignments	20%	✓	✓	✓	✓			2. Mini-project	10%	✓	✓	✓	✓			3. Test	10%	✓	✓	✓	✓			4. Examination	60%	✓	✓	✓	✓			Total	100%						
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4. Examination	60%	✓	✓	✓	✓																																																		
Total	100%																																																						

	outcomes after the subject has been completed.	
Student Study Effort Required	Class contact	
	▪ Lectures	26 Hrs.
	▪ Tutorials and laboratory work	13 Hrs.
	Other student study efforts	
	▪ Preparation for assignments, mini-project and laboratory report	27 Hrs.
	▪ Self-study and preparation for test and examination	57 Hrs.
	Total student study effort	123 Hrs.
Reading List and References	<ol style="list-style-type: none"> 1. Kalpakjian, S & Schmid, K S 2010, <i>Manufacturing Engineering and Technology</i>, New York: Prentice Hall. 2. Schey, J A 2000, <i>Introduction to Manufacturing Processes</i>, Boston: McGraw Hill. 3. Groover, M P 2010, <i>Fundamentals of Modern Manufacturing: Materials, Processes and Systems</i>, Hoboken, NJ: Wiley. 4. Ashby, MF 2011, <i>Materials Selection in Mechanical Design</i>, Butterworth-Heinenann, Oxford. 5. Callister, WD, Rethwisch, DG 2008, <i>Fundamentals of Materials Science and Engineering: An integrated approach</i>, John Wiley & Sons, Hoboken, NJ. 	

Subject Description Form

Subject Code	ISE3007
Subject Title	Integrated Product Engineering Project I
Credit Value	3
Level	3
Pre-requisite/Co-requisite	Nil
Objectives	<p>This subject facilitates students to develop their ability in applying various computer-aided technologies on product development with the aim to:</p> <ol style="list-style-type: none"> 1. enable them to understand various computer-aided technologies and their application on design, analysis and manufacture of new products; 2. provide them with the platform to apply appropriate methodologies and software tools involved in product design; 3. provide them the opportunity to function in a multidisciplinary team.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> a. model product geometries; share and reuse product information in new product development; b. analyse and optimise a product within realistic constraints by applying appropriate methods; c. communicate (oral, written, graphical, and numerate) effectively.

Subject Synopsis/ Indicative Syllabus	<p>Students are required to work through the various stages step-by-step from conceptual design to implementation and evaluation. The subject is expected to cover the following topics:</p> <p><u>1. Digital Mockup Generation</u></p> <p>Mechanical CAD modelling for machine elements; Freeform CAD modeling for consumer products: class A surface & 3D texture; Assembly & mechanism modelling; Reverse engineering; Virtual sculpting.</p> <p><u>2. Virtual Verification</u></p> <p>Rendering and animation; Engineering analysis: structurally, thermal, motion & mechanism, CFD; Direct digital manufacturing: rapid prototyping.</p> <p><u>3. Concurrent Collaboration</u></p> <p>PDM: configuration, version & change management, security, BOM & parts file management, inter-operatability; viewer sharing.</p>																											
Teaching/Learning Methodology	<p>This is an activity-orientated subject which adopts a project-based learning approach. Although no formal lectures are given, briefings/seminars and laboratory/tutorial sessions are available to provide students guidelines and assistance in conducting the project. Students are divided into groups of about five members and work on a product-based project. The teaching and learning activities in each stage of the project are used to facilitate students to achieve the intended learning outcomes by reflection, imitation, and experience. Feedback will be given to students for making improvement.</p>																											
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="3">Intended subject learning outcomes to be assessed</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> </tr> </thead> <tbody> <tr> <td>1. Progress Assignments</td> <td>70%</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>2. Final Report</td> <td>30%</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>Total</td> <td>100%</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>In each of the assessment components above, it consists of both “group work” and “individual work” to reflect the students’ performance. The progress of the project is assessed periodically to monitor the students’ achievement towards the intended learning outcomes (a), (b), and (c) via seven progress assignments. Final oral presentation and report allows students to demonstrate their abilities in presenting their projects clearly and logically including the project objectives, their approaches to solve the problem and the deliverable of their projects. It is appropriated for the assessment of all intended learning</p>					Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed			a	b	c	1. Progress Assignments	70%	✓	✓	✓	2. Final Report	30%	✓	✓	✓	Total	100%			
Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed																										
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1. Progress Assignments	70%	✓	✓	✓																								
2. Final Report	30%	✓	✓	✓																								
Total	100%																											

	outcomes.	
Student Study Effort Required	Class contact:	
	▪ Briefings/seminars and tutorial/laboratory sessions	39 Hrs.
	▪ Other student study effort:	
	▪ Preparation of reports and oral presentation	42 Hrs.
	Guided Study/Self-learning	45 Hrs.
	▪ Total student study effort	126 Hrs.
Reading List and References	<ol style="list-style-type: none"> 1. Akin, John Edward 2010, <i>Finite Element Analysis Concepts: via SolidWorks</i>, World Scientific 2. Burden, Rodger 2003, <i>PDM: Product Data Management</i>, Resource Pub 3. Chua, Chee Kai, Leong, K. F., & Lim, C. S. 2010, <i>Rapid Prototyping: Principles and Applications</i>, World Scientific 3/e 4. Lee, Kunwoo 1999, <i>Principles of CAD/CAM/CAE Systems</i>, Addison-Wesley 5. Otto, K. 2001, <i>Product Design: Techniques in Reverse Engineering and New Product Development</i>, Prentice Hall 6. Vaughan, William 2012, <i>Digital Modeling</i>, New Riders 7. Training materials published by the Industrial Centre, The Hong Kong Polytechnic University 	

Subject Description Form

Subject Code	ISE404
Subject Title	Total Quality Management
Credit Value	3
Level	4
Pre-requisite/Co-requisite/Exclusion	Students who do not have background knowledge in quality control and quality engineering should be prepared to do additional reading.
Objectives	<p>This subject provides students with the knowledge to</p> <ol style="list-style-type: none"> 1. understand the philosophy and core values of Total Quality Management (TQM); 2. determine the voice of the customer and the impact of quality on economic performance and long-term business success of an organization; 3. apply and evaluate best practices for the attainment of total quality.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> a. select and apply appropriate techniques in identifying customer needs, as well as the quality impact that will be used as inputs in TQM methodologies; b. measure the cost of poor quality and process effectiveness and efficiency to track performance quality and to identify areas for improvement; c. understand proven methodologies to enhance management processes, such as benchmarking and business process reengineering; d. choose a framework to evaluate the performance excellence of an organization, and determine the set of performance indicators that will align people with the objectives of the organization.
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. <u>Principles of Total Quality</u> <i>Concepts of quality; Core values and paradigms for TQM, including corporate citizenship and protection of the environment; Models for performance excellence: Deming Prize, Baldrige Quality Award, European Quality Award</i> 2. <u>Customer Needs</u> Internal and external customers; Voice of the customer; Customer satisfaction; Customer loyalty; Service recovery; Crisis management

	<p>3. <u>Economics of Quality</u></p> <p>Classification and analysis of quality costs; Implementing quality costing systems; Economic value of customer loyalty and employee loyalty</p> <p>4. <u>TQM Methodologies</u></p> <p>Quality Function Deployment (QFD); Benchmarking; Business process reengineering; Process improvement</p> <p>5. <u>Learning and Growth</u></p> <p>Organizational learning; Organizational renewal; Change management; Employee empowerment</p> <p>6. <u>Strategic Quality Management</u></p> <p>Vision, strategy, goals, and action plans; Measurement of organizational performance</p>																																														
<p>Teaching/Learning Methodology</p>	<p>A mixture of lectures, group discussions (tutorials), and mini-case studies are used to achieve the objectives of this subject. Some topics are taught in the classroom environment; students have to learn these topics by themselves in the process of writing problem-based assignments. Directed study is also used to develop the self-learning ability of students.</p>																																														
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>1. Assignments</td> <td>35%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>2. Tests</td> <td>20%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>3. Examination</td> <td>45%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td>100%</td> <td colspan="6"></td> </tr> </tbody> </table> <p>The assignments, reflective journals, essays, and case studies facilitate the application of concepts and skills learned in analyzing and attaining total quality while emphasizing factors that may affect decisions.</p> <p>Examination/tests allow students to demonstrate the extent of their understanding of concepts, as well as their abilities to analyze and solve problems related to the subject.</p>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed						a	b	c	d			1. Assignments	35%	✓	✓	✓	✓			2. Tests	20%	✓	✓	✓	✓			3. Examination	45%	✓	✓	✓	✓			Total	100%						
Specific assessment methods/tasks	% weighting			Intended subject learning outcomes to be assessed																																											
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2. Tests	20%	✓	✓	✓	✓																																										
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Total	100%																																														
<p>Student Study</p>	<p>Class contact:</p>																																														

Effort Expected	▪ Lecture/Tutorial 2 hours/week for 13 weeks	26 Hrs.
	▪ Tutorial/Case Study 1 hour/week for 13 weeks	13 Hrs.
	Other student study effort:	
	▪ Studying and self learning	50 Hrs.
	▪ Assignment and report writing	28 Hrs.
	Total student study effort	117 Hrs.
Reading List and References	<ol style="list-style-type: none"> 1. Besterfield, DH, et.al. 2003, <i>Total Quality Management</i>, 3rd edn, Prentice Hall 2. Goetsch, DL & Davis, B 2006, <i>Quality Management: Introduction to Total Quality Management for Production, Processing and Services</i>, 5th edn, Pearson 3. Gryna FM 2001, <i>Quality Planning & Analysis</i>, 4th edn, Jr., McGraw-Hill 4. Selected articles in Quality Progress and the web site of American Society for Quality 	

Subject Description Form

Subject Code	ISE418
Subject Title	Computer-Aided Product Design
Credit Value	3
Level	4
Pre-requisite/Co-requisite/Exclusion	Knowledge of set theory and calculus Knowledge of linear algebra and mechanics of materials
Objectives	This subject provides students with <ol style="list-style-type: none"> 1. knowledge of various computer-aided engineering theories and technologies in product design; 2. essential knowledge of stress analysis, and mechanics of materials for product design 3. skills to develop product design solutions using various computer-aided engineering tools.
Intended Learning Outcomes	Upon completion of the subject, students will be able to <ol style="list-style-type: none"> a. apply three-dimensional transformations and viewing operations in computer-aided product design; b. apply curve, surface, and solid modelling in computer-aided product design; c. understand the fundamentals of mechanics of materials and structures for product design & apply computer-aided engineering analysis (CAE) in product design;
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. <u>Three-Dimensional Transformations and Viewing Operations</u> Homogenous coordinates, rigid motions, scalings, shearings, projections. 2. <u>Geometric Modelling</u> Curve modelling, surface modelling, solid modelling. Virtual prototyping. Product Data Management (PDM). 3. <u>Computer-aided Engineering Analysis</u> Mechanics of materials and structures for product design. Basic theory, processes, and techniques of finite element analysis (FEA). Design optimization. Introduction to virtual engineering.

Teaching/Learning Methodology	<p>A mixture of lectures, tutorials, and student-centred learning activities is used to achieve the above outcomes. Case studies and exercises are provided in the tutorials to reinforce the theories, methodologies, and tools introduced in the lectures. Some material is covered using a problem-based format where this advances the learning objectives. Other material is covered through directed study to enhance the students' "learning to learn" ability. Some case studies, largely those based on consultancy experience, are used to integrate these topics and demonstrate to students how the various techniques are interrelated and applied in real-life situations.</p>																																																					
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>1. Individual assignments</td> <td>20%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2. Group assignments</td> <td>30%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3. Examination</td> <td>50%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td>100%</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Individual assignments are used to assess students' understanding of three-dimensional operations, modelling methods, and mechanics of materials, and their ability to apply them in computer-aided product design. The coursework is designed to develop students' understanding of these topics and their ability to apply them in product design.</p> <p>Group assignments are used to assess whether students can function in a group to carry modelling and analysis for product design. They are also used to assess whether students can apply FEA in product design.</p> <p>A final examination is given to assess whether students truly understand the subject matters and how to use them in product design.</p>								Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed						a	b	c				1. Individual assignments	20%	✓	✓	✓				2. Group assignments	30%	✓	✓	✓				3. Examination	50%	✓	✓	✓				Total	100%						
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Student Study Effort Expected	Class contact:																																																					
<ul style="list-style-type: none"> ▪ Lectures 	3 hours/week for 10 weeks						30 hrs.																																															
<ul style="list-style-type: none"> ▪ Laboratory work/Case studies/Tutorials 	3 hours/week for 3 weeks						9 hrs.																																															
Other student study effort:																																																						

	▪ Coursework	50 hrs.
	▪ Preparation for tests and the final examination	30 hrs.
	Total student study effort	119 hrs.
Reading List and References	<ol style="list-style-type: none"> 1. Anand, V.B., <i>Computer graphics and geometric modeling for engineers</i>, John Wiley & Sons, 1993. 2. Barbero, E.J., <i>Finite element analysis of composite materials using Abaqus</i>, Taylor & Francis Group 2013 3. Bungartz, H.J., Griebel, M., & Zenger, C., <i>Introduction to Computer Graphics</i>, Charles River Media 2004 2/e 4. Burdea, G., <i>Virtual Reality Technology</i>, Wiley-Interscience 20032/e 5. Cardarelli, F., <i>Materials handbook: a concise desktop reference</i>, Springer 2018 3/e 6. Gere, J.M. & Goodno, B.J., <i>Mechanics of materials</i>, Cengage Learning 2013 8/e 7. Harper, C.A., <i>Handbook of materials for product design</i>. McGraw-Hill 2001 3/e 8. Lee, K.W., <i>Principles of CAD/CAM/CAE systems</i>, Addison-Wesley, 1999. 9. Moaveni, S., <i>Finite Element Analysis: Theory and Application with ANSYS</i>, Pearson Prentice Hall 2014 4/e 10. Zeid, I., <i>Mastering CAD/CAM</i>, McGraw-Hill 2005 	

Subject Code	ISE430
Subject Title	New Product Planning and Development
Credit Value	3
Level	4
Pre-requisite/Co-requisite/Exclusion	Exclusion: MM484 Managing New Product Development
Objectives	<p>This subject will enable students to</p> <ol style="list-style-type: none"> 1. understand the new product development process and strategic features of new product development; 2. develop strategic thinking and planning abilities throughout the early product design stage; 3. understand various techniques for new product planning.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> a. appreciate the generation of product concepts that satisfy the needs of customers; b. explore and analyze market needs and appreciate their direct relationship with new products; c. identify new product opportunities; d. introduce financial, environmental, social, and cultural considerations with regard to design decisions.
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. <u>Introduction to New Product Planning and Development</u> New product planning and development process, Types of new products, Drivers of new product development, Success and failure factors, New product development strategy, Analysis of business and completion environments for new product development 2. <u>Issues of Strategic Planning for New Products</u> Modular product design, Product architecture, Product family design, Product line design, Product Portfolio planning, Customized products versus mass products, Technology roadmapping 3. <u>Customer Needs and Value</u> Acquisition, organization and analysis of customer needs, Customer value and its measurement

	<p>4. <u>Segmentation, Targeting, and Positioning</u></p> <p>Market and benefit segmentation and its techniques, Product positioning, Perceptual mapping, Value mapping</p> <p>5. <u>Opportunity Specification and Justification</u></p> <p>Needs analysis, Ethnography, Scenario analysis, Product innovation charter</p> <p>6. <u>Defining Design Specification</u></p> <p>Conjoint analysis, QFD-based techniques</p> <p>7. <u>Concept Test</u></p> <p>Concept statements, Considerations, Formats</p> <p>8. <u>Sales Forecasting and Financial Analysis</u></p> <p>Sales forecasting models, Choice modeling, Pricing techniques for new products, Examples of financial plans</p>																																						
<p>Teaching/Learning Methodology</p>	<p>Teaching and learning activities include lectures, tutorials, case studies, a group project, and a laboratory exercise. The lectures are aimed at providing students with the basic understanding of new product development process, as well as common techniques and methods used in new product planning. In tutorial classes, small group discussions are facilitated for students to enhance their understanding of the subject matter. Through a number of minor exercises in tutorial classes, students not only have better understanding of the subject matter, but teachers are also allowed to monitor their learning progress. All the case studies are related to real-life successful and failed cases of new product development. Through the case studies, students can appreciate various issues and factors leading to the success and failure of new product development. Laboratory exercises provide students with hands-on experience on the segmentation and generation of perceptual maps.</p>																																						
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3. Test	30%	✓	✓	✓	✓																																		

	Total	100%	
	The case studies are aimed at assessing all the ILOs of students. The assignments of this subject contain in-class assignments and take-home assignments which are used to assess the ILOs a, b and c of students. A test is normally conducted by the end of the semester and is aimed at assessing all the ILOs of students.		
Student Study Effort Expected	Class contact:		
	▪ Lectures		24 Hrs.
	▪ Tutorials		11 Hrs.
	▪ Laboratory exercise		2 Hrs.
	▪ Test		2 Hrs.
	Other student study effort:		
	▪ Case studies		25 Hrs.
	▪ Preparation for test		28 Hrs.
	▪ Take-home assignments		30 Hrs.
	Total student study effort		
Reading List and References	<ol style="list-style-type: none"> 1. Crawford, C.M., and Di Benedetto, C.A., <i>New Products Management</i>, McGraw Hill 2. Glen, L. 1993, <i>Design and Marketing of New Products</i>, Prentice Hall 3. Lilien, G.L. and Rangaswamy, A. 2003, <i>Marketing Engineering – Computer Assisted Marketing Analysis and Planning</i>, Prentice Hall 4. Baxter, M. 1995, <i>Product Design – Practical Methods for Systematic Development of New Products</i>, Chapman & Hall 5. Ulrich, K.T. and Eppinger, S.D., <i>Product Design and Development</i>, McGraw-Hill 6. <i>Design Management Journal</i>, Design Management Institute Press 7. <i>The Journal of Product Innovation Management</i>, Elsevier Science Inc. 		

Subject Description Form

Subject Code	ISE431
Subject Title	Engineering Costing and Evaluation
Credit Value	3
Level	4
Pre-requisite/Co-requisite/Exclusion	Nil
Objectives	<p>This subject provides students with knowledge of</p> <ol style="list-style-type: none"> 1. the major types of costing methods and budgeting operations that support engineering cost analysis and project/operations planning and control; 2. concepts and techniques of economic analysis that can be applied to solving engineering and business problems; 3. methods that evaluate/support engineering projects and operations.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> a. apply costing principles and techniques to the planning and control of profitability in the production of goods and services in the engineering industry; b. prepare budgets and relate them to production plans for performance evaluation; c. apply the principles and techniques of economic analysis to the appraisal of investment alternatives; d. understand the foregoing principles and apply the foregoing techniques in the evaluation of engineering projects.
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. <u>Costing in the Production of Goods and Services in the Engineering Industry</u> Production and operation costs; job and product costing; process costing; absorption of overhead; cost behaviour and cost estimation; functional-based costing; activity-based costing; cost database and its maintenance; learning curve; cost-volume-profit analysis; pricing and profitability analysis; make-or-buy decisions. 2. <u>Performance Planning and Evaluation</u> Enterprise strategy and budget setting; standard costing and variance

	<p>analysis; flexible budgeting and variance analysis; production plan; cash budget; profit plan; master budget; performance evaluation; balanced scorecard and its implementation.</p> <p>3. <u>Engineering and Project Economic Analysis</u></p> <p>Cost and benefit concepts; worth measures and efficiency measures; time value of money; capital budgeting and investment appraisal decisions; financing methods; cost of capital; evaluation of project alternatives using discounted cash flow methods; opportunity cost; lease versus buy decisions; replacement and timing decisions; effects of tax and depreciation; sensitivity and risk analysis in project evaluation.</p> <p>4. <u>Engineering Evaluation</u></p> <p>Technological forecasting; evaluation of technological innovation; environmental cost evaluation and management. Process and the social context of engineering decision making.</p>																																						
<p>Teaching/Learning Methodology</p>	<p>A mixture of lectures, tutorial exercises, and case studies is used to deliver the various topics in this subject. Some material is covered using a problem-based format where this advances the learning objectives. Other material is covered through directed study to enhance the students' self-learning abilities. Tutorials, projects, and case studies are conducted mainly as group activities so that students can discuss and practice the materials learnt in the class. This also stimulates further thinking about the materials together with the factors to be considered in solving problems related to the subject.</p>																																						
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>1. Continuous assessment (Assignments/Projects/Case studies)</td> <td>40%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>2. Examination</td> <td>60%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td>100%</td> <td colspan="6"></td> </tr> </tbody> </table> <p>The assignments, projects, and case studies are designed to assess students' capability to synthesise and apply the concepts and skills learnt in analysing and solving engineering costing and evaluation problems.</p> <p>The final examination assesses students' understanding of the concepts and their ability to apply the skills learnt to analysing and solving problems related</p>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed						a	b	c	d			1. Continuous assessment (Assignments/Projects/Case studies)	40%	✓	✓	✓	✓			2. Examination	60%	✓	✓	✓	✓			Total	100%						
Specific assessment methods/tasks	% weighting			Intended subject learning outcomes to be assessed																																			
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2. Examination	60%	✓	✓	✓	✓																																		
Total	100%																																						

	to the subject.	
Student Study Effort Expected	Class contact:	
	▪ Lectures	2 hours/week for 13 weeks
	26 Hrs.	
	▪ Tutorials/Case studies	1.5 hours/week for 8 weeks + 1 hour
	13 Hrs.	
	Other student study effort:	
	▪ Studying and self-learning	58 Hrs.
▪ Assignment and report writing	26 Hrs.	
	Total student study effort	123 Hrs.
▪ Reading List and References	<ol style="list-style-type: none"> 1. Hartman, J C 2007, Engineering Economy and the Decision-Making Process, Upper Saddle River, N.J.: Prentice Hall 2. Chan, S P 2012, Fundamentals of Engineering Economics, Upper Saddle River, N.J.: Pearson/Prentice Hall 3. Horngren, C T, Datar, S M & Foster, G 2011, Cost Accounting: a Managerial Emphasis, Upper Saddle River, NJ: Pearson/Prentice Hall 4. Rogers, M & Duffy, A 2012, Engineering Project Appraisal, Oxford: Blackwell Science 	

Subject Description Form

Subject Code	ISE445
Subject Title	Capstone Project
Credit Value	6
Level	4
Pre-requisite/Co-requisite/Exclusion	Nil
Objectives	<p>This subject aims to</p> <ol style="list-style-type: none"> 1. provide students with the opportunity to have an in-depth exploration of a particular topic in Product Engineering with Marketing (PEM); 2. develop the skills of students so that they may work effectively on their own while demonstrating initiative to perform tasks and within constraints; 3. develop the ability of students in preparing, presenting, and defending a project report.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> a. define a problem by understanding its background, then set the objectives and deliverables of a project that addresses a significant issue relevant to the goal pursued by the student; b. develop and implement the strategies and methodology to achieve the project objectives within a given set of constraints; c. communicate effectively with stakeholders of the project and work independently to achieve the project objectives and produce the deliverables; d. prepare, present, and defend a clear, coherent, and succinct project report.
Subject Synopsis/ Indicative Syllabus	Each student is required carry out an individual project in an area relevant to the discipline of PEM. Details of the work will depend on the subject of the project that the student works on.
Teaching/Learning Methodology	<p>This subject is conducted using an integrated project-based learning approach. Students work on an individual project selected or proposed in the stream area of PEM. An academic supervisor is assigned to guide and monitor the progress of the project. There is a final project presentation and each student is required to submit a project report.</p> <p>Throughout the duration of the project, supervisors make themselves available</p>

	<p>for discussions with their students at meetings arranged at mutually convenient times. To aid students in organizing their project in a systemic manner, students are required to submit a progress report, which provides detailed records of the various stages of project work.</p> <p>The proposed project defined by the student and/or the supervisor should be in an area relevant to the discipline. The project will be used as a vehicle for the student to integrate his/her knowledge gained in the programme. In order to achieve the subject learning outcomes, it is not appropriate to have projects mainly focused on literature review or pure computer programming. Depends on the nature of the project, the work covers by the students may include the background and scope of the project; literature review, field works; experiments; data collection; case studies; methodology; discussion; and conclusion.</p>						
Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed				
			a	b	c	d	
	1. Continuous assessment	10%	✓	✓	✓		
	2. Progress report	10%	✓	✓	✓	✓	
	3. Oral presentation	20%	✓	✓	✓		
	4. Report	60%	✓	✓	✓	✓	
	Total	100%					
	<p>Performance of the student's drive and diligence in carrying out his/her project work is assessed by the project supervisor. This provides a reflection of the student's creativity and self-motivation demonstrated throughout the project.</p> <p>The progress report is assessed by the co-examiner, an individual who is generally not involved in supervising the student. The assessment of the progress report reflects the student's performance in pursuing the project work from a third person's point-of-view.</p> <p>The oral presentation is assessed by both the supervisor and the co-examiner. The assessment is designed to test the student's ability in marshalling his/her thoughts clearly and in presenting finished output, which had been logically and succinctly executed on various aspects of the product analyses.</p> <p>The individual written report is assessed by both the supervisor and the co-examiner. The students use the written report to demonstrate their performance. Written reports reflect the depth of the student's comprehension of the subject, as well as the ability of the student to logically present his/her analyses in a written format.</p>						

Student Study Effort Expected	Class contact:	
	▪ Project briefing	2 hrs.
	▪ One day per week is allotted for analyses and investigations of individual projects. Students are expected to work on this for at least	78 hrs.
	Other student study effort	
	▪ Discussion with supervisors	16 hrs.
	▪ Preparation for oral presentation	38 hrs.
	▪ Preparation for report writing	80 hrs.
	Total student study effort	214 hrs.
Reading List and References	<p>Different references are recommended by different project supervisors depending on the nature of the individual project concerned. Recommended texts related to the generic skills for carrying out a student project are as follows:</p> <ol style="list-style-type: none"> 1. Peck, John and Coyle, Martin 2012, <i>The Student's Guide to Writing: Spelling, Punctuation and Grammar</i>, 3/e, Palgrave MacMillan 2. Cottrell, Stella 2011, <i>Critical Thinking Skills: Developing Effective Analysis and Argument</i>, 2/e, Palgrave MacMillan 3. http://resource.unisa.edu.au/file.php/1572/Harvard_referencing_guide_UniSA_Jan_2013.pdf 	

Subject Description Form

Subject Code	ISE449
Subject Title	Mobile Technologies for Logistics Systems
Credit Value	3
Level	4
Pre-requisite/Co-requisite/Exclusion	Nil
Objectives	<p>This subject aims to</p> <ol style="list-style-type: none"> 1. enable students to understand the concept of mobile technology and to apply relevant techniques to solve traditional logistics process problem; 2. provide students with knowledge in applying latest commercial available hardware and software technologies to enable efficient information capturing, processing and exchanges among various business entities in today's supply chain and logistics environment; 3. provide a working knowledge of latest information and communication technology and an interactive environment in which students can learn and practice their skills in mobile applications.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> a. understand the existing logistics operations and to design process improvement procedures in various supply chain areas; b. apply appropriate mobile devices and data capturing techniques to improve data exchange and information flow; c. integrate existing logistics infrastructure into mobile technologies to form a more effective system; d. identify the advantages and limitations of mobile technologies in various areas.
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. <u>Basics of Mobile Technologies</u> Mobility of data; Industry classifications of mobile technologies; Mobile network infrastructure concepts and capabilities. 2. <u>Information Exchange, Identification, Location and Tracking Techniques</u> Identification techniques (Barcode/Smartcard/RFID); Logistics management requirements; Wireless Network Services (WAP/SMS); Personal Digital Assistant (PDA) business tools; Image capture and transmission using camera phones; Video streaming and conferencing.

	<p>3. <u>Workflow Improvement</u> Business automation tools; Mobile functionality requirements for productivity support; Personal productivity tools; Instant messaging using mobile technology; Technology integration requirements.</p> <p>4. <u>Mobile Applications in Different Areas</u> Integration of message delivery services; Export/import process enhancement; Mobile security; Personalization of consumer profiles; Mobile entertainment; Mobile platform functionality; Market growth attributes and projections.</p>																																																						
Teaching/Learning Methodology	A mix of lectures, tutorials, case studies, a mini project, and laboratory exercises is used to deliver the modules in this subject. Case studies, largely based on real cases, are used to demonstrate to students how the mobile techniques can be applied to improve the existing logistics operations.																																																						
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3. Mini Project	30%	✓	✓	✓	✓																																																		
4. Test	30%	✓	✓	✓	✓																																																		
Total	100%																																																						
Student Study Effort Expected	<table border="1"> <tr> <td colspan="2">Class contact:</td> <td></td> </tr> <tr> <td>▪ Lecture/Tutorial</td> <td>3 hours/week for 9 weeks</td> <td>27 Hrs.</td> </tr> <tr> <td>▪ Laboratory/Case Study</td> <td>3 hours/week for 4 weeks</td> <td>12 Hrs.</td> </tr> <tr> <td colspan="2">Other student study effort:</td> <td></td> </tr> </table>	Class contact:			▪ Lecture/Tutorial	3 hours/week for 9 weeks	27 Hrs.	▪ Laboratory/Case Study	3 hours/week for 4 weeks	12 Hrs.	Other student study effort:																																												
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Other student study effort:																																																							

	<ul style="list-style-type: none"> ▪ Self Study/Group Discussion for Mini Project, Case Study and Laboratory Exercise 	30 Hrs.
	<ul style="list-style-type: none"> ▪ Preparation for Presentation and Write-up Assignment 	28 Hrs.
	<ul style="list-style-type: none"> ▪ Preparation for Test 	15 Hrs.
	Total student study effort	112 Hrs.
Reading List and References	<ol style="list-style-type: none"> 1. Hedgepeth WO 2007, <i>RFID Metrics: Decision Making Tools for Today's Supply Chains</i>, CRC Press 2. Sadeh N 2002, <i>Mobile Commerce: Technologies, Services and Business Models</i>, Wiley 3. Anderson C 2001, <i>GPRS and 3G Wireless Applications</i>, Wiley 4. Landt J 2001, <i>Shrouds of Time The history of RFID</i>, AIM Inc. 5. Buckingham S 2000, <i>Success 4 SMS</i>, Mobile Lifestreams 6. Rankl W and Effing W 2000, <i>Smart Card Handbook</i>, 2nd edn, John Wiley and Sons Australia Ltd. 	

Subject Description Form

Subject Code	ISE457
Subject Title	Business Process Management

Credit Value	3
Level	4
Pre-requisite/Co-requisite/Exclusion	Nil
Objectives	<p>This subject aims at enabling students to</p> <ol style="list-style-type: none"> 1. appraise the importance of structuring and measuring business processes in an organization; 2. identify and build business processes for various business applications; 3. apply appropriate measures to assess, report and improve the performance of business processes.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> a. describe the basic concept of business process management; b. assess the organizational implications of functional and process-centric management; c. illustrate the process of designing and developing a Business Process Management Solution; d. configure and manage a business process management system with knowledge of the scope and limitations of such tools; e. develop an overall understanding of team building and governance of processes in an organization.
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. <u>Introduction to Business Process Management</u> Definition of business process management; Process and workflow life cycle; Transformation of a functional enterprise to a process-centric enterprise; Business value and risk of process automation. 2. <u>Business Process Management Solution Development</u> Business process management solution architectures; Business process analysis; BPM Process Development; BPM reporting and monitoring. BPM and application integration; BPM and Robotic Process Automation; Configuration of business process management solutions; BPM software vendor products; and Evaluation and selection. 3. <u>Technology for Business Process Management</u> Process Modeling Standards - Business Process Modeling Notation (BPMN); Process repository and Business rules systems.

Teaching/Learning Methodology	<p>A mix of lectures, laboratories, tutorial exercises, and projects is used to deliver the various topics in this subject. Practical problems and case studies are raised as a focal point for discussion in tutorial classes. Laboratory session(s) are also used to illustrate and assimilate some fundamental principles of business process management, some of which are covered in a problem-based format and exercises to enhance the learning objectives. Others are covered through directed study in order to enhance the students' ability of "learning to learn." The subject stresses creative thinking, and problem solving approach. Local and overseas case studies are also included to reinforce understanding and enhance practicality.</p>																																																													
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th>e</th> <th></th> </tr> </thead> <tbody> <tr> <td>1. Assignment</td> <td>20%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2. Forum discussions</td> <td>10%</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>3. Tests</td> <td>40%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>4. Project</td> <td>30%</td> <td></td> <td></td> <td>✓</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td>100%</td> <td colspan="6"></td> </tr> </tbody> </table> <p>The coursework consists of assignments with individual and group components, usually up to two individual tests. All assessment components require students to apply concepts delivered in lectures to real life cases. The assignments require students to conduct background research on BPM and identify, among others, potential applications and benefits. Short quizzes are also used to test student's understanding of the taught concepts and ability to apply BPM to stated situations. As they work in groups, students must tackle a project by identifying the problem structure, representing the processes, presenting and simulating the process flow, as well as identifying innovations and potential improvements in the current design.</p>								Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed						a	b	c	d	e		1. Assignment	20%	✓	✓	✓				2. Forum discussions	10%	✓	✓			✓		3. Tests	40%	✓	✓	✓	✓	✓		4. Project	30%			✓	✓			Total	100%						
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	<ul style="list-style-type: none"> ▪ Tackling of assignments and preparation for tests 	35 Hrs.
	<ul style="list-style-type: none"> ▪ Background research and project 	40 Hrs.
	Total student study effort	114 Hrs.
Reading List and References	<u>Reference Books</u> <ol style="list-style-type: none"> 1. Burton, R 2001, <i>Business Process Management: Profiting from Process</i>, Sams, Indianapolis 2. Smith, H and Fingar, P 2006, <i>Business Process Management: The Third Wave</i>, Megan Kiffer Press, Tampa <u>Journal</u> <ol style="list-style-type: none"> 3. Bradford X 2005, <i>Business Process Management Journal</i>, England: MCB University Press 	

Subject Description Form

Subject Code	ISE461
Subject Title	Green Legislation and Supply Chain Logistics
Credit Value	3
Level	4
Pre-requisite/Co-requisite/Exclusion	Knowledge of supply chain management
Objectives	The subject relates green practices to supply chain management. Students learn how green legislation has evolved over the years, and the importance and impacts of environmental regulations with respect to supply chain management. In this connection, the environmental impacts of supply chains are discussed. In addition, the course introduces related methodologies and tools for analysing, designing, and improving supply chains in a green context.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> a. understand recent trends in green legislation with respect to supply chains; b. understand the environmental impacts of supply chains and hence the need for green supply chains; c. apply related methodologies and tools to the design of green supply chains and the improvement of existing supply chains; d. integrate green practices, based on green legislation, into supply chain activities for sustainable development; e. have a critical and analytical perspective that enhances their appreciation and independent judgment of green supply chain design; f. understand the importance of green legislation and thus comply with green regulations in their future professional career.
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. <u>Overview of Green Supply Chain Management</u> Recent trends in green supply chain management; environmental impacts of supply chains, the green supply chain as a competitive advantage in today's business environment. 2. <u>Evolution of Green Legislation</u> Drivers of green supply chains; recent trends in green legislation; RoHS, WEEE, and REACH; need for and importance of green legislation related to supply chain management.

	<p>3. <u>Life-Cycle Approach to Green Supply Chains</u></p> <p>Life-cycle assessment as a tool; greening of supply chains; green supply chain design.</p> <p>4. <u>GreenSCOR model</u></p> <p>Supply chain operations reference (SCOR) model; Supply Chain Council; cross-industry standard and diagnostic tool for supply-chain management; GreenSCOR as a focused model; applications of the GreenSCOR model to a green supply chain.</p> <p>5. <u>Greening Supply Chains by Reverse Logistics</u></p> <p>Reverse logistics; comparison with traditional forward logistics flow; effective means to reduce operational costs; waste generated in supply chain processes; reverse logistics case studies.</p> <p>6. <u>Sustainable Development</u></p> <p>Sustainable development with respect to supply chain management.</p>																																																															
Teaching/Learning Methodology	<p>A mixture of lectures and discussions of industrial case studies in small groups in tutorial sessions is employed. This interactive approach offers better opportunities for students to gain a theoretical understanding of the principles and hands-on experience. Students present the results of their discussion of selected cases in assigned project work either as individuals or in teams. This helps the students to develop a critical and analytical perspective to enhance their appreciation and independent judgment of green supply chain design. Industry experts may be invited to speak on a specific area such as the manufacture of electronics, printed circuit boards, and electrical appliances. This helps the students to understand the recent trends in green legislation with respect to supply chains, and to understand green practices and green supply chains for sustainable development in the real world.</p>																																																															
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1"> <thead> <tr> <th>Specific assessment methods/tasks</th> <th>% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed</th> </tr> <tr> <td></td> <td></td> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th>e</th> <th>f</th> </tr> </thead> <tbody> <tr> <td>1. Mid-term test</td> <td>20%</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>2. Reflective Essay</td> <td>5%</td> <td></td> <td></td> <td></td> <td>✓</td> <td></td> <td>✓</td> </tr> <tr> <td>3. Take-home assignment</td> <td>10%</td> <td></td> <td></td> <td>✓</td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>4. Mini project (oral presentation and report)</td> <td>20%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td>✓</td> </tr> <tr> <td>5. Examination</td> <td>45%</td> <td></td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> </tr> </tbody> </table>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed								a	b	c	d	e	f	1. Mid-term test	20%	✓	✓			✓		2. Reflective Essay	5%				✓		✓	3. Take-home assignment	10%			✓		✓		4. Mini project (oral presentation and report)	20%	✓	✓	✓	✓		✓	5. Examination	45%		✓	✓	✓	✓								
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5. Examination	45%		✓	✓	✓	✓																																																										

	Total	100%						
	<p>The test and reflective essay are designed to facilitate students to reflect on and apply the knowledge gained of green legislation to real-life cases and industrial companies.</p>							
	<p>The take-home assignment is designed to assess students' ability to apply different logistics techniques in building up and enhancing a green supply chain management system in a typical company.</p>							
	<p>The integrated application-oriented group project is designed to facilitate students to acquire knowledge of the different areas of green legislation and supply chain logistics in various industrial sectors through team work (presentation and report).</p>							
	<p>The final written examination is designed to assess students' understanding of the topic. Students are required to analyze problem-based and case-based questions/scenarios and to present concepts clearly and logically.</p>							
Student Study Effort Expected	Class contact:							
	▪ Lectures	2 hours/week for 11 weeks					22 Hrs.	
	▪ Tutorials	1 hour/week for 11 weeks					11 Hrs.	
	▪ Industrial case studies	3 hours/week for 2 weeks					6 Hrs.	
	Other student study effort:							
	▪ Preparation for tests and site visit (s)						12 Hrs.	
	▪ Execution of the group project						27 Hrs.	
	▪ Reading background information in preparation for tutorials; presentation and report writing						21 Hrs.	
	▪ Preparation for case studies, the take-home assignment, application software						27 Hrs.	
Reading List and References	<u>Recommended</u>							
	<ol style="list-style-type: none"> 1. Sarkis, J., <i>Greener manufacturing and Operations</i>, Greenleaf Publishing Limited, latest edition. 2. Taylor, D. and Brunt, D. <i>Manufacturing Operations and Supply Chain Management: The LEAN Approach</i>, Thomson Learning, latest edition. 							

Supplementary

1. Plenert, G., *How to Create an Integrated World-Class Lean SCM Environment*, In *Reinventing Lean*, Chapter 10, pp. 290-294, Butterworth-Heinemann, latest edition.
2. Van Hoek, R. I. 2001, *Case Studies of Greening the Automotive Supply Chain Through Technology and Operations*, *International Journal of Environmental Technology and Management*, 1(1-2), 140-163
3. Sarkis, J. 2003, *A Strategic Decision Framework for Green Supply Chain Management*, *Journal of Cleaner Production*, 11(4), 397-409

Journals

1. Logistics Information Management
2. Journal of Operations Management
3. Supply Chain Management: An International Journal.

Websites

1. Supply Chain Council: <http://www.supply-chain.org>
2. Supply Chain Management for Environmental Improvement:
<http://www.pprc.org/pubs/grnchain>

Subject Description Form

Subject Code	ISE466
Subject Title	Enterprise Systems and Strategy
Credit Value	3
Level	4
Pre-requisite/Co-requisite/Exclusion	Nil
Objectives	<p>This subject will provide students with</p> <ol style="list-style-type: none"> 1. the basic skills in developing corporate strategies; 2. the ability to utilize an integrated approach in designing and implementing business systems, processes and functions.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> a. recognize the complexity of a modern enterprise; b. develop effective corporate strategies and to implement these strategies in an organizational context.
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. <u>Enterprise Systems</u> Production System, Purchasing System, Inventory System. 2. <u>Enterprise Strategy</u> Inventory Planning and Control, Material Purchasing Strategy, Production Strategy, Warehouse management, Cash flow management. 3. <u>Production Strategy</u> Production Planning and Control, Sales order processing; Bidding processing, Production order processing.
Teaching/Learning Methodology	<p>A mix of lectures, tutorial exercises, seminars, and case studies is used to illustrate and teach the fundamental principles of the development of enterprise systems and corporate strategies. The use of a typical enterprise simulator enables students to solve problems in a simulated enterprise environment. Such environment also allows the students to implement corporate strategies, understand the organization in a global way, improve their strategic management skills, increase the quality of their business decision making, and improve their teamwork skills.</p>

Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed				
			a	b			
	1. Laboratory work	35%	✓	✓			
	2. Assignment	30%		✓			
	3. Quiz	20%	✓	✓			
	4. Case Study	15%		✓			
	Total	100%					
<p>The quiz is designed to assess students' depth of knowledge in recognizing the complexity of a modern enterprise. The case study is designed to appraise students' performance in presenting the concepts of the enterprise systems and strategy. The laboratory work and assignments are designed to measure students' understanding in corporate strategy development and to reflect their performance in the simulated enterprise simulator.</p>							
Student Study Effort Expected	Class contact:						
	▪ Lectures/Tutorials						30 Hrs.
	▪ Seminar/Case Studies						9 Hrs.
	Other student study effort:						
	▪ Preparation Work for Laboratory and Assignment						30 Hrs.
	▪ Quiz preparation						20 Hrs.
	▪ Case Study preparation						15 Hrs.
	Total student study effort						104 Hrs.
Reading List and References	<ol style="list-style-type: none"> Gupta, Sushil 2014, <i>Production and operations management systems</i>, Boca Raton : CRC Press/Taylor & Francis. Bensoussan, Alain, c2011, <i>Dynamic Programming and Inventory Control</i>, Amsterdam: IOS Press. Wee, Hui-Ming, c2011, <i>Inventory systems: modelling and research methods</i>, New York : Nova Science Publishers. Sawik, Tadeusz, c2011, <i>Scheduling in Supply Chains using Mixed</i> 						

	<p><i>Programming</i>, Hoboken, N.J.: Wiley.</p> <p>5. Campbell, David J, 2011, 3rd, <i>Business Strategy: an introduction</i>, Basingstoke: Palgrave Macmillan.</p>
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Subject Description Form

Subject Code	ISE4003
Subject Title	Automation Technology
Credit Value	3
Level	4
Pre-requisite/Co-requisite/Exclusion	HKDSE Physics, or Foundation Physics I and II (AP00002 & AP00003)
Objectives	<p>This subject provides students with</p> <ol style="list-style-type: none"> 1. the basic to implement low cost automation systems; 2. the ability to evaluate the feasibility and effectiveness of alternative automation strategies; 3. the practical skill in using industrial robots and programmable logic controllers.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> a. implement low cost automation systems using pneumatic and electrical means; b. perform industrial robot, programmable logic controller and microprocessors programming for industrial system control; c. design automated assembly system for industrial applications.
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. <u>Introduction of Fundamental Automation Devices</u> Sensors: temperature, force, pressure, proximity, light sensors, etc. Actuators: motors, pneumatic devices, etc. Simple Machine Vision Applications. 2. <u>Control Circuit Design for Industrial Applications</u> Logic theory and logic circuit design. Design of sequential and combinational circuits. Electric relay circuits. 3. <u>Programmable Controllers</u> Introduction to programmable logic. Applications of microprocessors and computer to industrial system control. 4. <u>Automated Assembly Design</u>

	Assembly process automation: classification of assembly systems, transfer systems, feeding mechanisms and robots. Failure analysis and economic justification.						
Teaching/Learning Methodology	The learning method of this subject consists of a series of class lectures and laboratory exercises. Emphasizing is put on the developments of practical hand-on skills in automation with theoretical backup. The lectures facilitate students in understanding the fundamental concepts, working principles and techniques in related to automation while laboratory exercises are incorporated to give students practical familiarity on relevant areas.						
Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks		% weighting		Intended subject learning outcomes to be assessed		
			a	b	c		
	Laboratory Exercise	60%	✓	✓	✓		
	Test/Assignment	40%	✓	✓			
	Total	100%					
	Each laboratory exercise would be divided into two parts such that the group work would have to be submitted by the end of the laboratory class while the individual component can be hand-in afterward. Tutorials would be provided to students to improve their understanding of the subject materials and finally, an examination will be given to assist the assessment of students' learning outcomes.						
Student Study Effort Expected	Class contact:						
	▪ Lecture/Seminar	2 hours/week for 9 weeks				18 Hrs.	
	▪ Tutorial	3 hours/week for 7 weeks				21 Hrs.	
	Other student study effort:						
	▪ Self Study					32 Hrs.	
	▪ Laboratory Report/Tutorial					50 Hrs.	
	Total student study effort						121 Hrs.
Reading List and References	<ol style="list-style-type: none"> Boothroyd, G, Knight, W, Dewhurst, P 2010, <i>Product Design for Manufacture and Assembly</i>, Third Edition (Manufacturing Engineering and Materials Processing), CRC Press Boothroyd, G 2005, <i>Assembly Automation and Product Design</i>, Second Edition (Manufacturing Engineering and Materials Processing), CRC 						

	<p>Press</p> <ol style="list-style-type: none"><li>3. Clarence, W. de Silva 2007, <i>Sensors and Actuators: Control System Instrumentation</i>, CRC Press<li>4. Boucher, TO 1995, <i>Computer Automation in Manufacturing: An Introduction</i>, Springer
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Subject Description Form

Subject Code	ISE4004
Subject Title	Enterprise Resources Planning
Credit Value	3
Level	4
Pre-requisite/Co-requisite/Exclusion	Nil
Objectives	<p>This subject will provide students with</p> <ol style="list-style-type: none"> 1. the fundamental principles of Enterprise Resources Planning (ERP); 2. the major components in an ERP system and the relationship between these components; Selection, Evaluation and Implementation of ERP; 3. the basic skills in developing corporate strategies.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> a. identify major components in an ERP system and conduct feasibility of ERP; b. develop effective corporate strategies and to implement these strategies using ERP.
Subject Synopsis/ Indicative Syllabus	<p>The topics of this syllabus are:</p> <ol style="list-style-type: none"> 1. <u>Enterprise Systems</u> Strategic inventory management; collaborative planning; forecasting; replenishment. 2. <u>Enterprise Strategy</u> Enterprise and corporate strategies; strategic management building; implementation techniques. 3. <u>Enterprise Resources Planning (ERP) Solutions</u> Distribution items and purchased material, manufactured items, sales and operation planning, sales order processing, warehouse management, production order processing, multisite operations.
Teaching/Learning Methodology	<p>A mixture of lectures, tutorial exercises, seminars, and case studies will be used to illustrate and teach the fundamental principles of Enterprise Resources Planning (ERP). The use of a typical enterprise system (such as Microsoft Dynamics) and an enterprise simulator will enable students to solve problems</p>

	<p>in a simulated enterprise environment. Such environment enables students to develop effective corporate strategies and to implement these strategies in an organizational context. It also enables to improve students' strategic management skills and to increase the quality of their business decision making.</p>																																																													
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed</th> </tr> <tr> <th>a</th> <th>b</th> <th></th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>1. Laboratory work</td> <td>35%</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2. Assignment</td> <td>30%</td> <td></td> <td>✓</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>3. Quiz</td> <td>20%</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>4. Case Study</td> <td>15%</td> <td></td> <td>✓</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td>100%</td> <td colspan="6"></td> </tr> </tbody> </table> <p>The quiz is designed to assess students' depth of knowledge in recognizing the complexity of a modern enterprise. The case study is designed to appraise students' performance in presenting the concepts of the enterprise systems and strategy. The laboratory work and assignments are designed to measure students' understanding in corporate strategy development and to reflect their performance in the simulated enterprise simulator.</p>								Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed						a	b					1. Laboratory work	35%	✓	✓					2. Assignment	30%		✓					3. Quiz	20%	✓	✓					4. Case Study	15%		✓					Total	100%						
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<p>Student Study Effort Expected</p>	<p>Class contact:</p> <ul style="list-style-type: none"> ▪ Lectures/Tutorials ▪ Seminar/Case Studies <p>Other student study effort:</p> <ul style="list-style-type: none"> ▪ Preparation Work for Laboratory and Assignment ▪ Quiz preparation ▪ Case Study preparation <p>Total student study effort</p>							<p>21 Hrs.</p> <p>18 Hrs.</p> <p>30 Hrs.</p> <p>21 Hrs.</p> <p>12 Hrs.</p> <p>102 Hrs.</p>																																																						
<p>Reading List and References</p>	<ol style="list-style-type: none"> 1. Hamilton, S 2009, <i>Managing Lean Manufacturing Using Microsoft Dynamics AX 2009</i>, Visions First 2. Hamilton, S 2009, <i>Managing Your Supply Chain Using Microsoft Dynamics AX 2009</i>, McGraw-Hill 																																																													

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| | <ol style="list-style-type: none"><li>3. DeWit, B & Meyer, R 2003, <i>Strategy: Process, Content</i>, 3rd edn, International Thomson Business Press<li>4. Blanchard, BS 2003, <i>Logistics Engineering and Management</i>, 6th edn, Prentice Hall Inc., Upper Saddle River, N.J.<li>5. Stock, R. & Lambert M. 2001, <i>Strategic Logistics Management</i>, 4th edn, McGraw-Hill Publishing Company |
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Subject Description Form

Subject Code	ISE4005
Subject Title	Eco-design and Manufacture
Credit Value	3
Level	4
Pre-requisite/Co-requisite/Exclusion	Nil
Objectives	<p>This subject is aimed to</p> <ol style="list-style-type: none"> 1. provide students with the recent global trends and significance eco-design and manufacture in industry; 2. ensure that students are aware of the regulatory requirements of European Union (EU), China, USA, Japan, and other regions on eco-design and manufacture; 3. provide students with a holistic approach to eco-design and manufacture, and to address issues such as: environmental impact; product eco-design, use, and life; technology capabilities; and business benefits.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> a. address issues relating to recent global trends and significance of eco-design and manufacture in industry; b. be aware of the regulatory requirements of European Union (EU) on eco-design and manufacture; c. take a holistic approach to eco-design and manufacture, addressing and relating elements like: environmental impacts; product eco-design, use and life; technology capabilities; and business benefits; d. understand and apply the methods to reduce environmental impacts throughout the whole product life cycle by better product eco-design and use.

Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. <u>Introduction to Eco-design and Manufacture</u> Sustainable product development, global environmental concerns, impact on merchandise trade, eco-product market trends, business benefits and opportunities; driving forces of eco-design and manufacture, role of designers and engineers. 2. <u>Environmental Considerations in Product eco-design</u> Stages of product development process in eco-design; Materials, manufacturing and packaging, use, end-of-life and disposal issues; design for disassembly and recycling; Recycling Potential Indicator (RPI); the six RE-philosophy. 3. <u>Global and regional regulatory requirements on Eco-design and Manufacture</u> Eco-product Laws in Japan; Eco- product Legislations in the US; EU Directives: Waste of Electrical and Electronic Equipment (WEEE) and Restriction of Hazardous Substances (RoHS) and EcoDesign framework for Energy Using Product (EuP) and Energy-related Product (ErP); China Environmental Laws. 4. <u>Environmental Assessment of Products and related tools and techniques</u> Life Cycle Assessment (LCA) and streamlined methods, e.g. MET, Philip’s Fast-Five; Software tools in LCA, e.g. SimaPro and Gabi; Integrated Product Policy (IPP); “Green Mark”, “Eco-labels” and eco-labeling schemes and programmes. 5. <u>Environmental Management Systems</u> International Standards (ISO14000), management of waste materials and chemical substances; Registration of Chemicals in European Union; Green supply chain management. 6. <u>Industrial Examples in Eco-design and Manufacture</u> Eco-design of electrical appliances, examples of green-manufactured electronic products; alternate and emerging green technologies.
Teaching/Learning Methodology	<p>In the lectures, the general principles of the syllabus topics will be presented and developed. In the case studies, students will develop and apply these general principles through student centered learning activities under the guidance of the lecturer. In the seminars, they will be able to learn and appreciate the latest developments of the subject, particularly its practice in various industries in Hong Kong and the Pearl River Delta region.</p> <p>The pace of change in the subject area is faster than conventional subject revision procedures can effectively accommodate. Moreover some of the techniques, technologies, and practices are highly specialized and unique to</p>

	<p>different industries. As a consequence, the material taught during the early years of the subject may become outdated by the time the student graduates. To accommodate these circumstances, this level-4 subject serves two separate functions. Firstly, it is to ensure that students are aware of the overall global trends in eco-design and manufacture, its regulatory requirements and business opportunities with compliance. Secondly, it is to prepare students for subsequent in-depth study in selected topics relating to techniques, methodologies and technologies in the subject. Where appropriate, seminars and/or visits will be arranged for students to get wider exposure.</p>																																																												
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>1. Tutorial Exercises</td> <td>20%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>2. Take home assignment</td> <td>10%</td> <td></td> <td></td> <td>✓</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>3. Test</td> <td>20%</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>4. Examination</td> <td>50%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td>100%</td> <td colspan="6"></td> </tr> </tbody> </table> <p>Tutorial exercises are designed to facilitate students to reflect and apply the knowledge on eco-design and manufacture to practical problems and real-life cases.</p> <p>Take home assignment is designed to facilitate students to address problem by taking a holistic approach to eco-design and manufacture, and to reduce environmental impacts throughout the whole product life cycle by better product design and use.</p> <p>Test is designed to be aware of the regulatory requirements of European Union (EU) on eco-design and manufacture, and to address issues relating to recent global trends and significance of environmental eco-design and manufacture in industry.</p> <p>Written examination is designed to facilitate students to show their understanding of the topic through analyzing problem-base and case-base questions/scenario in order to present their concepts clearly and logically.</p>							Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed						a	b	c	d			1. Tutorial Exercises	20%	✓	✓	✓	✓			2. Take home assignment	10%			✓	✓			3. Test	20%	✓	✓					4. Examination	50%	✓	✓	✓	✓			Total	100%						
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Total	100%																																																												
<p>Student Study Effort Expected</p>	<p>Class contact:</p>																																																												
	<ul style="list-style-type: none"> ▪ Lecture 	<p>2 hours/week for 11 weeks</p>					<p>22 Hrs.</p>																																																						
	<ul style="list-style-type: none"> ▪ Guided Learning/Case Studies 					<p>14 Hrs.</p>																																																							

	2 hours/week for 7 weeks	
▪ Seminars	1.5 hours/week for 2 weeks	3 Hrs.
Other student study effort:		
▪ Preparation for reading guided learning background information and case studies		50 Hrs.
▪ Preparation for seminars and take home assignment and application software		36 Hrs.
Total student study effort		125 Hrs.
Reading List and References	<ol style="list-style-type: none"> 1. Davis M.L. and Masten S.J., <i>Principles of Environmental Engineering and Science</i>, McGraw-Hill 2. Ulrich K.T. and Eppinger S.D., <i>Product Design and Development</i>, McGraw-Hill, latest edn 3. J. Rodrigo, <i>Electrical and Electronic: Practical Design Guide</i>, F. Castells University Rovira I Virgili, Tarragona, Spain, latest edn. 4. H. Lewis and J. Gertsakis, <i>Design + Environment: A Global Guide to Design Greener Goods</i>, Greenleaf Publishing Ltd., latest edn 5. European Union Directives on WEEE, RoHS and EuP, latest edn 	

Subject Description Form

Subject Code	ISE4008
Subject Title	Individual Project
Credit Value	6
Level	4
Pre-requisite/Co-requisite/Exclusion	Nil
Objectives	<p>While the specific objectives of individual projects may vary from one project to another, students are expected to develop the following generic skills through the learning experience of working on an individual project under the guidance of a supervisor:</p> <p>Skills to obtain information needed to formulate a problem, and to devise and implement strategies that will produce a solution.</p> <p>Skills to apply knowledge, procedures (principles, techniques and methods), and to understand their limitations in problem identification, data analysis and formulation of logical observations and or solutions.</p> <p>Skills to work effectively as an individual using one's own initiative and within constraints.</p> <p>Skills to prepare, present, and defend a project report effectively.</p>
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> a. understand the background, as well as define the objectives (time, cost and technical requirements) and deliverables of a project that address a significant issue relevant to the award pursued by the student; b. formulate strategies and methodologies to achieve the project objectives within the constraints of a given situation; c. select, apply, integrate and, ideally, extend available knowledge, procedures and tools to collect data in performing the needed investigational or design work, and to draw conclusions that address the project objectives; d. communicate effectively with stakeholders of the project outputs and work independently to produce, within applicable constraints, optimal solutions that address the project objectives; e. prepare, present, and defend a clear, coherent and succinct report.

Teaching/Learning Methodology	<p>Throughout the duration of the project, the supervisor provides guidance and monitors the progress of the project.</p> <p>The progression of the project typically follows the following indicative stages:</p> <p>Project Definition – in this stage, the student will work in consultation with the project supervisor to draw up a project plan addressing issues such as:</p> <ul style="list-style-type: none"> Background of the project Aims and objectives Deliverables Project scope and applicable constraints Coverage of literature review Methodologies to be considered Project schedule <p>Project Execution – This is the major part of the project. After the project requirements are defined, the student will work independently under the guidance of the project supervisor towards the achievement of the project objectives and produce the project deliverables in a given situation. On his own initiative, the student will meet the project supervisor regularly to review progress and discuss issues of the project. In this stage, the student should demonstrate:</p> <ul style="list-style-type: none"> Adherence to the schedule Initiatives to acquire and synthesize knowledge, collect the needed data, and solve problems Tenacity, resourcefulness, critical thinking and creativity in achieving project objectives Systematic documentation of data, design and results throughout the process <p>The student is required to maintain a project workbook that records the meetings held and summarizes the work performed in this stage.</p> <p>Project Report – On completion of the project, the student will disseminate the results to his peers and examiners to review. The major deliverables of this stage are:</p> <ul style="list-style-type: none"> A written project report (softcopy and hardcopy) An oral presentation
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	<p>Taking questions and comments in a question-and-answer session</p> <p>The proposed project defined by the student and/or the supervisor should be in an area relevant to the discipline. The project will be used as a vehicle for the student to integrate his/her knowledge gained in the programme. In order to achieve the subject learning outcomes, it is not appropriate to have projects mainly focused on literature review or pure computer programming. Depends on the nature of the project, the work covers by the students may include the background and scope of the project; literature review, field works; experiments; data collection; case studies; methodology; discussion; and conclusion.</p>						
Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed				
			a	b	c	d	e
	<ul style="list-style-type: none"> ▪ Progress 	15%	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	<ul style="list-style-type: none"> ▪ Workbook 	10%	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	<ul style="list-style-type: none"> ▪ Final Report 	50%	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	<ul style="list-style-type: none"> ▪ Oral Presentation 	25%	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Total	100%						
	<p>The workbook is designed to assist the project student to organise and document, in summary form, his project work in a systematic manner. This workbook, to be submitted at the end of Semester 1, will be commented by the Project Supervisor and then assessed by a co-examiner of the project. The final report should be a clear, coherent and succinct document that disseminate the background, problem statement, objectives and expected deliverables, literature review, methodologies, project execution, analysis and, where appropriate, design, as well as discussion and conclusions. Thus, the written report and the oral presentation are assessed by the project supervisor and a co-examiner to determine the achievement of all the learning outcomes of the project work.</p> <p>The project supervisor, who communicates regularly with the student, will assess the student's progress during project execution.</p>						
Student Study Effort Expected	Class contact:						
	<ul style="list-style-type: none"> ▪ Briefing on Final Year Project 	2 Hrs.					
	<ul style="list-style-type: none"> ▪ Information Literacy Seminar 	2 Hrs.					
	Other student study effort:						

	<ul style="list-style-type: none"> ▪ Meetings with Supervisor and/or project stakeholders 2 Hrs. × 13 	26 Hrs.
	<ul style="list-style-type: none"> ▪ Literature review/field work/experiments 	120 Hrs.
	<ul style="list-style-type: none"> ▪ Analysis/report writing 	90 Hrs.
	Total student study effort	240 Hrs.
Reading List and References	<ol style="list-style-type: none"> 1. Blaxter, L., et al. 2001, <i>How to Research</i>, 2nd edn, Open University Press 2. Bryman, A. 1989, <i>Research Methods and Organization Studies</i>, Unwin Hyman 3. Campbell, W.G., et al. 1990, <i>Forms and Style: Thesis, Reports, Term Papers</i>, 8th edn, Boston, Houghton Mifflin 4. Murray, Rowena 2002, <i>How to Write a Thesis</i>, Open University Press 	

Subject Description Form

Subject Code	ISE4009
Subject Title	Advanced Manufacturing Technology
Credit Value	3
Level	4
Pre-requisite/Co-requisite/Exclusion	(ISE3006 Materials and Processes Selection)
Objectives	<p>This subject provides students with</p> <ol style="list-style-type: none"> 1. an understanding of specific advanced and emerging manufacturing technologies employed in modern industry with an emphasis on nano-micro fabrication; 2. a basic understanding of the capabilities, limitations, and productivity of these manufacturing technologies.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> a. comprehend the merits and limitations of the taught technologies, in terms of flexibility, productivity, quality, profitability, etc. b. identify suitable manufacturing technologies for the production of some typical nano-micro components/products.
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. <u>Overview of Some Advanced Manufacturing Technologies</u> <p>Outline of modern processes for the production of precision and/or micro components/products. Ultra-precision machining. Physicochemical machining processes. Micro-machining. Computer aided machining (CAM). Physical and chemical vapour deposition technologies. Lasers based manufacturing processes. Rapid prototyping.</p> 2. <u>Precision Removal Processes</u> <p>Ultra-precision machining, principles and applications, precision plastic optical products. High-speed machining. CAM. Micro electric discharge machining. Physicochemical machining. Micro-components.</p> 3. <u>Surface Engineering</u> <p>Chemical and physical vapour deposition (CVD, PVD), capability and accuracy, distortion and residual stresses, applications in optical and electronic devices.</p>

	<p>4. <u>Laser Technology</u> Fundamentals of lasers. Industrial lasers. Laser materials processing for photovoltaic applications, bio-medical applications, micro-mould and die manufacture, MEMS.</p> <p>5. <u>Rapid Prototyping Technology</u> Commercial RP techniques and their applications: stereolithography, selective laser sintering, laminated object manufacturing, fused deposition modeling, solid ground curing, and ink jet printing techniques.</p>																																																														
<p>Teaching/Learning Methodology</p>	<p>The subject is taught through a combination of lectures, laboratory exercises, and tutorial assignments integrated with a mini-project. The lectures introduce the student to in-depth knowledge in the current practices of advanced manufacturing technologies. The laboratory and tutorial exercises provide opportunities for student to learn and practice with guiding materials. Mini-projects promote students' ability to conduct a literature search and their self-learning skills.</p>																																																														
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed</th> </tr> <tr> <th>a</th> <th>b</th> <th></th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>1. Assignments</td> <td>8%</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2. Lab reports</td> <td>8%</td> <td>✓</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>3. Mini-project</td> <td>14%</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>4. Test</td> <td>10%</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>5. Final examination</td> <td>60%</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td>100%</td> <td colspan="6"></td> </tr> </tbody> </table> <p>The assignments, which are administered periodically throughout the course, are designed to facilitate students to reflect on and apply the knowledge learnt.</p> <p>The laboratory exercises are designed to assess students' problem-solving skills in advanced manufacturing technology (learning outcomes (a) and (b)).</p> <p>The mini-projects follow a problem-based format and include case studies, presentations, and report writing. They are designed to facilitate students to acquire the relevant knowledge and demonstrate their ability to apply different technologies. The final examination is used to assess students' individual achievement in all of the intended learning outcomes.</p>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed						a	b					1. Assignments	8%	✓	✓					2. Lab reports	8%	✓						3. Mini-project	14%	✓	✓					4. Test	10%	✓	✓					5. Final examination	60%	✓	✓					Total	100%						
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Student Study Effort Required	Class contact:	
	▪ Lectures	27 Hrs.
	▪ Tutorials	6 Hrs.
	▪ Laboratory	6 Hrs.
	Other student study effort:	
	▪ Guided reading, assignments	32 Hrs.
	▪ Self-study, preparation for test and examination	40 Hrs.
	Total student study effort	111 Hrs.
Reading List and References	<ol style="list-style-type: none"> 1. Steve Krar and Arthur Gill 2003, <i>Exploring Advanced Manufacturing Technologies</i>, Industrial Press, ISBN 9780831131500 2. Nitaigour Premchand Mahalik (2006) <i>Micromanufacturing and Nanotechnology</i>, Springer, ISBN 3540253777 3. Dornfeld David, Lee Dae-Eun 2008, <i>Precision Manufacturing</i>, Spinger 4. Hassan Ei-Hofy 2005, <i>Advanced Machining Processes-Nontraditional and Hybrid Machining Processes</i>, McGraw-Hill 5. Journal of Microelectromechanical Systems 	

**Subject Offered by
School of Accounting and Finance**

Subject Description Form

Subject Code	AF3625
Subject Title	Engineering Economics
Credit Value	3
Level	3
Exclusion	AF2618
Objectives	<p>This subject aims to equip students with</p> <ol style="list-style-type: none"> 1. The fundamental concepts of micro- and macroeconomics related to the engineering industry; 2. The fundamental understanding of finance and costing for engineering operations, budgetary planning and control.
Intended Subject Learning Outcomes	<p>Upon successful completion of this subject, students will be able to:</p> <ol style="list-style-type: none"> 1. Understand how the relevant economic factors shape the environment within which an engineering company operates; 2. Evaluate the financial condition of a company based on the financial statements; 3. Apply the basic cost accounting techniques in the planning and control of engineering and production activities.
Subject Synopsis/ Indicative Syllabus	<p><u>Economic Environment of a Firm</u> Microeconomic Factors Scarcity, choice and opportunity cost; Demand, supply and price; Profit-maximizing behavior of the firm; Organization of industry: perfect competition and monopoly</p> <p>Macroeconomic Factors International trade and globalization</p> <p><u>Accounting and Engineering Economics</u> Financial statements; Financial ratio analysis; Return on investment; Composition of cost; Cost-volume-profit analysis; Accounting profit versus economic profit</p> <p><u>Fundamentals of Budgetary Planning and Control</u> Principle types of budgets for production and service operations; Approaches to budgeting and the budgeting process; Investment and source of finance; Cost of capital; Evaluation of investment alternatives</p>
Teaching/ Learning Methodology	<p>The two-hour lecture each week focuses on the introduction and explanation of key concepts of Engineering Economics. The one-hour tutorial provides students with directed studies to enhance their self-learning capacities. Individual and group activities including discussions and presentations are conducted to facilitate</p>

	students' understanding and application of the concepts they have learned to tackling real-life problems in Engineering Economics.				
Assessment Methods in Alignment with Intended Learning Outcomes	Specific Assessment Methods/Tasks	% Weighting	Intended Subject Learning Outcomes to be Assessed (Please tick as appropriate)		
			1	2	3
	Continuous Assessment	50%			
	1. In-class activities	15%	√	√	√
	2. Written assignments	15%	√	√	√
	3. Test	20%	√	√	√
	Final Examination	50%	√	√	√
	Total	100 %			
To pass this subject, students are required to obtain Grade D or above in both the Continuous Assessment and Examination components.					
Student Study Effort Required	Class contact:				
	• Lecture	26 Hours			
	• Tutorial	13 Hours			
	Other student study effort:				
	• Study and self-learning	48 Hours			
	• Presentation preparation and written assignments	18 Hours			
	Total student study effort:				
105 Hours					
Reading List and References	Recommended Textbooks				
	1. Parkin and Bade, <i>Foundations of Microeconomics</i> , 8 th ed., Pearson, 2018. 2. Sullivan, Wicks and Koelling, <i>Engineering Economy</i> , 16 th ed., Pearson, 2014.				
	References				
	1. Drury, Colin, <i>Management and Cost Accounting</i> , 10 th ed., Cengage Learning, 2018. 2. Robert H. Frank, <i>The Economic Naturalist: Why Economics Explain Almost Everything?</i> , Basic Books, 2007.				
Last Updated	July 2019				
Prepared by	School of Accounting and Finance				

**Subjects offered by
Department of Applied Mathematics**

Subject Description Form

Subject Code	AMA1110																																
Subject Title	Basic Mathematics I – Calculus and Probability & Statistics																																
Credit Value	3																																
Level	1																																
Pre-requisite	Nil																																
Objectives	This subject aims to introduce students to the basic concepts and applications of elementary calculus and statistics. Emphasis will be on the understanding of fundamental concepts and the use of mathematical techniques in handling practical problems in science and engineering.																																
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <p>(a) apply analytical reasoning to solve problems in science and engineering;</p> <p>(b) make use of the knowledge of mathematical/statistical techniques and adapt known solutions to various situations;</p> <p>(c) apply mathematical modeling in problem solving;</p> <p>(d) demonstrate abilities of logical and analytical thinking.</p>																																
Subject Synopsis/ Indicative Syllabus	<p><u>Elementary calculus</u>: Limit and continuity, derivatives and their geometric meaning, rules of differentiation including chain rule, Leibniz's rule and L'Hopital's rule, exponential and logarithmic functions, trigonometric functions and their inverses, hyperbolic and inverse hyperbolic functions, applications of differential calculus.</p> <p><u>Elementary Probability and Statistics</u>: Descriptive statistics, random variables, probability and probability distributions, binomial, Poisson and normal distributions, applications.</p> <p>Population and random samples. Sampling distributions related to sample mean, sample proportions, and sample variances. Concepts of a point estimator and a confidence interval. Point and interval estimates of a mean and the difference between two means.</p>																																
Teaching/Learning Methodology	Basic concepts and elementary techniques of differential and integral calculus and elementary statistics will be taught in lectures. These will be further enhanced in tutorials through practical problem solving.																																
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="width: 30%;">Specific assessment methods/tasks</th> <th rowspan="2" style="width: 10%;">% weighting</th> <th colspan="4" style="width: 60%;">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th style="width: 15%;">a</th> <th style="width: 15%;">b</th> <th style="width: 15%;">c</th> <th style="width: 15%;">d</th> </tr> </thead> <tbody> <tr> <td>1. Assignments and mid-term tests</td> <td style="text-align: center;">40%</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> </tr> <tr> <td>2. Examination</td> <td style="text-align: center;">60%</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> </tr> <tr> <td>Total</td> <td style="text-align: center;">100 %</td> <td colspan="4"></td> </tr> </tbody> </table>					Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)				a	b	c	d	1. Assignments and mid-term tests	40%	✓	✓	✓	✓	2. Examination	60%	✓	✓	✓	✓	Total	100 %				
Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)																															
		a	b	c	d																												
1. Assignments and mid-term tests	40%	✓	✓	✓	✓																												
2. Examination	60%	✓	✓	✓	✓																												
Total	100 %																																

	<p>Continuous Assessment comprises of assignments, in-class quizzes, online quizzes and a mid-term test. An examination is held at the end of the semester.</p> <p>Questions used in assignments, quizzes, tests and examinations are used to assess students' level of understanding of the basic concepts and their ability to use mathematical techniques in solving problems in science and engineering.</p> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p><i>The subject focuses on understanding of basic concepts and application of techniques in differential/integral calculus, elementary statistics. As such, an assessment method based mainly on examinations/tests/quizzes is considered appropriate. Furthermore, students are required to submit homework assignments regularly in order to allow subject lecturers to keep track of students' progress in the course.</i></p>	
Student Study Effort Expected	Class contact:	
	▪ Lecture	26 Hrs.
	▪ Tutorial	13 Hrs.
	Other student study effort:	
	▪ Homework and self-study	81 Hrs.
Reading List and References	<p>Chung, K.C. <i>A Short Course in Calculus and Matrices</i>, McGraw Hill 2013</p> <p>Hung, K.F., Kwan, Wilson, Pong, T.Y. <i>Foundation Mathematics & Statistics</i>, McGraw Hill 2013</p> <p>Larson, R., Edwards, B. <i>Single Variable Calculus</i>, Brooks/Cole 2012</p> <p>Walpole, R.E., Myers, R.H., Myers, S.L. Ye, K. <i>Probability and Statistics for Engineers and Scientists</i>, Prentice Hall, 2012</p>	

Subject Description Form

Subject Code	AMA1120																																
Subject Title	Basic Mathematics II –Calculus and Linear algebra																																
Credit Value	3																																
Level	1																																
Pre-requisite	Basic Mathematics I – Calculus and Probability & Statistics (AMA1110)																																
Objectives	This subject aims to introduce students to the basic concepts and applications of elementary calculus and statistics. Emphasis will be on the understanding of fundamental concepts and the use of mathematical techniques in handling practical problems in science and engineering.																																
Intended Learning Outcomes	Upon completion of the subject, students will be able to: (a) apply analytical reasoning to solve problems in science and engineering; (b) make use of the knowledge of mathematical/statistical techniques and adapt known solutions to various situations; (c) apply mathematical modeling in problem solving; (d) demonstrate abilities of logical and analytical thinking.																																
Subject Synopsis/ Indicative Syllabus	<p><u>Elementary calculus</u>: Mean Value Theorem with applications to optimization and curve sketching. Definite and indefinite integrals, fundamental theorem of calculus, methods of integration (integration by substitution, integration by parts, integration of rational functions using partial fractions and integration of trigonometric and hyperbolic functions), reduction formulas, applications to geometry and physics. Improper Integrals.</p> <p><u>Linear algebra</u>: Basic properties of matrices and determinants, linear systems, Gaussian elimination, inverse of a square matrix, Cramer’s rule, vectors in 2-space or in 3-space, applications to geometry.</p>																																
Teaching/Learning Methodology	Basic concepts and elementary techniques of differential and integral calculus and linear algebra will be taught in lectures. These will be further enhanced in tutorials through practical problem solving.																																
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="4">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> </tr> </thead> <tbody> <tr> <td>1. Assignments and tests</td> <td>40%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>2. Examination</td> <td>60%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>Total</td> <td>100 %</td> <td colspan="4"></td> </tr> </tbody> </table> <p>Continuous Assessment comprises of assignments and tests. An examination is held at the end of the semester.</p> <p>Questions used in assignments, tests and examinations are used to assess students’ level of understanding of the basic concepts and their ability to use</p>					Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)				a	b	c	d	1. Assignments and tests	40%	✓	✓	✓	✓	2. Examination	60%	✓	✓	✓	✓	Total	100 %				
Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)																															
		a	b	c	d																												
1. Assignments and tests	40%	✓	✓	✓	✓																												
2. Examination	60%	✓	✓	✓	✓																												
Total	100 %																																

	<p>mathematical techniques in solving problems in science and engineering.</p> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p><i>The subject focuses on understanding of basic concepts and application of techniques in differential/integral calculus, elementary statistics and elementary linear algebra. As such, an assessment method based mainly on examinations/tests is considered appropriate. Furthermore, students are required to submit homework assignments regularly in order to allow subject lecturers to keep track of students' progress in the course.</i></p>	
Student Study Effort Expected	Class contact:	
	▪ Lecture	26 Hrs.
	▪ Tutorial	13 Hrs.
	Other student study effort:	
	▪ Homework and self-study	81 Hrs.
	Total student study effort	120 Hrs.
Reading List and References	<p>Chung, K.C. <i>A Short Course in Calculus and Matrices</i>, McGraw Hill 2013</p> <p>Hung, K.F., Kwan, Wilson, Pong, T.Y. <i>Foundation Mathematics & Statistics</i>, McGraw Hill 2013</p> <p>Larson, R., Edwards, B. <i>Single Variable Calculus</i>, Brooks/Cole 2012</p> <p>Larson, R. <i>Elementary Linear Algebra</i>, Brooks/Cole 2013</p>	

Subject Description Form

Subject Code	AMA2111
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Subject Title	Mathematics I
Credit Value	3
Level	2
Pre-requisite	Calculus and Linear Algebra (AMA1007) or Calculus I (AMA1101) or Calculus IA (AMA1102) or Basic Mathematics II – Calculus and Linear Algebra (AMA1120) or Calculus for Engineers (AMA1130) or Foundation Mathematics for Accounting and Finance (AMA1500)
Exclusion	Intermediate Calculus and Linear Algebra (AMA2007) Introduction to Differential Equations (AMA2008) Mathematics for Engineers (AMA2308) Engineering Mathematics (AMA2380) Applied Mathematics I (AMA2511) Mathematics for Scientists and Engineers (AMA2882) Engineering Mathematics (AMA290)
Objectives	This subject aims to introduce students to the basic principles and techniques of engineering mathematics. Emphasis will be on the understanding of fundamental concepts as well as applications of mathematical methods in solving practical problems in science and engineering.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: 1. apply mathematical reasoning to analyze essential features of different problems in science and engineering; 2. extend their knowledge of mathematical and numerical techniques and adapt known solutions in various situations; 3. develop and extrapolate the mathematical concepts in synthesizing and solving new problems 4. demonstrate abilities of logical and analytical thinking; 5. search for useful information in the process of problem solving.
Subject Synopsis/ Indicative Syllabus	1. <u>Algebra of complex numbers</u> Complex numbers, geometric representation, complex exponential functions, n-th roots of a complex number. 2. <u>Linear algebra</u> Systems of linear equations, vector spaces, inner product and orthogonality, eigenvalues and eigenvectors, applications. 3. <u>Ordinary differential equations</u>

	<p>ODE of first and second order, linear systems, Laplace transforms, Convolution theorem, applications to mechanical vibrations and simple circuits.</p> <p>4. <u>Differential calculus of functions of several variables</u></p> <p>Partial derivatives, total differential, chain rule, Taylor's expansion, maxima and minima, directional derivatives, Lagrange multipliers, implicit differentiation, applications.</p>																																					
Teaching/Learning Methodology	<p>The subject will be delivered mainly through lectures and tutorials. The lectures aim to provide the students with an integrated knowledge required for the understanding and application of mathematical concepts and techniques. Tutorials will mainly be used to develop students' problem solving ability.</p>																																					
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="5">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> </tr> </thead> <tbody> <tr> <td>1.Homework, quizzes and mid-term test</td> <td>40%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>2. Examination</td> <td>60%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>Total</td> <td>100%</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Continuous Assessment comprises of assignments, in-class quizzes, online quizzes and a mid-term test. An examination is held at the end of the semester.</p> <p>Questions used in assignments, quizzes, tests and examinations are used to assess students' level of understanding of the basic concepts and their ability to use mathematical techniques in solving problems in science and engineering.</p> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p><i>The subject focuses on understanding of basic concepts and application of techniques in engineering mathematics. As such, an assessment method based mainly on examinations/tests/quizzes is considered appropriate. Furthermore, students are required to submit homework assignments regularly in order to allow subject lecturers to keep track of students' progress in the course.</i></p>					Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)					1	2	3	4	5	1.Homework, quizzes and mid-term test	40%	✓	✓	✓	✓	✓	2. Examination	60%	✓	✓	✓	✓	✓	Total	100%					
Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)																																				
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1.Homework, quizzes and mid-term test	40%	✓	✓	✓	✓	✓																																
2. Examination	60%	✓	✓	✓	✓	✓																																
Total	100%																																					
Student Study Effort Expected	Class contact:																																					
	• Lecture		26 Hours																																			
	• Tutorial		13 Hours																																			
	• Mid-term test and examination																																					
	Other student study effort																																					
	• Assignments and Self study		78 Hours																																			
	Total student study effort:		117 Hours																																			

Reading List and References	<ol style="list-style-type: none">1. C.K. Chan, C.W. Chan and K.F. Hung, <i>Basic Engineering Mathematics</i>, McGraw-Hill, 2015.2. Anton, H. <i>Elementary Linear Algebra</i> (11th edition). Wiley, 2014.3. Kreyszig, E. (2011). <i>Advanced Engineering Mathematics</i>, 10th ed. Wiley.4. James, G. (2015). <i>Modern Engineering Mathematics</i>, 5th ed. Pearson Education Limited5. Thomas, G. B., Weir, M. D. & Hass, J. R. <i>Thomas' Calculus</i>, 14th ed. Pearson Education 2017
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**Subjects offered by
Department of Applied Physics**

Subject Description Form

Subject Code	AP10005
Subject Title	Physics I
Credit Value	3
Level	1
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	This course provides a broad foundation in mechanics and thermal physics to those students who are going to study science, engineering, or related programmes.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ul style="list-style-type: none"> (a) solve simple problems in single-particle mechanics using calculus and vectors; (b) solve problems in mechanics of many-particle systems using calculus and vectors; (c) understand simple harmonic motion and solve simple problems; (d) solve problems related to acoustic standing waves; (e) calculate changes in frequency received due to Doppler's effect; (f) apply ideal gas laws to solve problems; (g) apply the first law of thermodynamics to simple processes; and (h) solve simple problems related to the cyclic processes.
Subject Synopsis/ Indicative Syllabus	<p>Mechanics: calculus-based kinematics, dynamics and Newton's laws; calculus-based Newtonian mechanics, involving the application of impulse, momentum, work and energy, etc.; conservation law; gravitational force; systems of particles; collisions; rigid body rotation; angular momentum; oscillations and simple harmonic motion; pendulum; statics; longitudinal and transverse waves; travelling wave and standing wave; Doppler effect; sound waves and beats.</p> <p>Thermal physics: conduction, convection and radiation; black body radiation; ideal gas and kinetic theory; work, heat and internal energy; first law of thermodynamics; entropy and the second law of thermodynamics; Carnot cycle; heat engine and refrigerators.</p>
Teaching/Learning Methodology	<p>Lecture: Fundamentals in mechanics, waves and electromagnetism will be explained. Examples will be used to illustrate the concepts and ideas in the lecture. Students are free to request help. Homework problem sets will be given.</p> <p>Student-centered Tutorial: Students will work on a set of problems in tutorials. Students are encouraged to solve problems and to use their own knowledge to</p>

	<p>verify their solutions before seeking assistance. These problem sets provide them opportunities to apply their knowledge gained from the lecture. They also help the students to consolidate what they have learned. Furthermore, students can develop a deeper understanding of the subject in relation to daily life phenomena or experience.</p> <p>e-learning: In order to enhance the effectiveness of teaching and learning processes, electronic means and multimedia technologies would be adopted for presentations of lectures; communication between students and lecturer; delivery of handouts, homework and notices etc.</p>																																																											
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="8">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th>e</th> <th>f</th> <th>g</th> <th>h</th> </tr> </thead> <tbody> <tr> <td>(1) Continuous assessment</td> <td>40</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>(2) Examination</td> <td>60</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>Total</td> <td>100</td> <td colspan="8"></td> </tr> </tbody> </table> <p>Continuous assessment: The continuous assessment includes assignments, quizzes and test(s) which aim at checking the progress of students' study throughout the course, assisting them in fulfilling the learning outcomes. Assignments in general include end-of-chapter problems, which are used to reinforce and assess the concepts and skills acquired by the students; and to let them know the level of understanding that they are expected to reach. At least one test would be administered during the course of the subject as a means of timely checking of learning progress by referring to the intended outcomes, and as means of checking how effective the students digest and consolidate the materials taught in the class.</p> <p>Examination: This is a major assessment component of the subject. It would be a closed-book examination. Complicated formulas would be given to avoid rote memory, such that the emphasis of assessment would be put on testing the understanding, analysis and problem solving ability of the students.</p>										Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)								a	b	c	d	e	f	g	h	(1) Continuous assessment	40	✓	✓	✓	✓	✓	✓	✓	✓	✓	(2) Examination	60	✓	✓	✓	✓	✓	✓	✓	✓	✓	Total	100								
Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)																																																										
		a	b	c	d	e	f	g	h																																																			
(1) Continuous assessment	40	✓	✓	✓	✓	✓	✓	✓	✓	✓																																																		
(2) Examination	60	✓	✓	✓	✓	✓	✓	✓	✓	✓																																																		
Total	100																																																											
<p>Student Study Effort Expected</p>	Class contact:																																																											
	• Lecture					33 h																																																						
	• Tutorial					6 h																																																						
	Other student study effort:																																																											

	• Self-study	81 h
	Total student study effort:	120 h
Reading List and References	<p>John W. Jewett and Raymond A. Serway, “Physics for Scientists and Engineers”, 2014, 9th edition, Brooks/Cole Cengage Learning.</p> <p>Hafez A. Radi, John O. Rasmussen, “Principles of physics: for scientists and engineers”, 2013, Springer.</p> <p>W. Bauer and G.D. Westfall, “University Physics with Modern Physics”, 2011, McGraw-Hill.</p>	

Subject Description Form

Subject Code	AP10006
Subject Title	Physics II
Credit Value	3
Level	1
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	To provide students with fundamental knowledge in physics focusing on the topics of waves and electromagnetism. This course prepares students to study science, engineering or related programmes.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: (a) apply simple laws in optics to explain image formation; (b) understand phenomena related to the wave character of light; (c) solve problems in electrostatics; (d) solve problems on interaction between current and magnetic field; (e) apply electromagnetic induction to various phenomena; and (f) solve problems in simple circuits.
Subject Synopsis/ Indicative Syllabus	Waves and optics: nature of light, reflection and refraction; Snell's law; image formation by mirrors and lenses; compound lens; microscope and telescope; superposition of waves; Huygen's principle; interference and diffraction; diffraction grating; Rayleigh's criterion and optical resolution; polarization. Electromagnetism: charge and Field; Coulomb's law and Gauss' law; electrostatic field and potential difference; capacitors and dielectric; current and resistance; Ohm's law; electromotive force, potential difference; Lorentz force; magnetic force on moving charges and current; Hall effect; Biot-Savart law and Ampere's law; Faraday's law and Lenz's law; induction; transformers; AC circuits and applications.
Teaching/Learning Methodology	Lecture: The fundamentals in optics and electromagnetism will be explained. Examples will be used to illustrate the concepts and ideas in the lecture. Students are free to request help. Homework problem sets will be given. Student-centered Tutorial: Students will work on a set of problems in tutorials. Students are encouraged to solve problems and to use their own knowledge to verify their solutions before seeking assistance. These problem sets provide them opportunities to apply their knowledge gained from the lecture. They also help the students to consolidate what they have learned. Furthermore, students can

	<p>develop a deeper understanding of the subject in relation to daily life phenomena or experience.</p> <p>e-learning: In order to enhance the effectiveness of teaching and learning processes, electronic means and multimedia technologies would be adopted for presentations of lectures; communication between students and lecturer; delivery of handouts, homework and notices etc.</p>							
Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)					
			a	b	c	d	e	f
	(1) Continuous assessment	40	✓	✓	✓	✓	✓	✓
	(2) Examination	60	✓	✓	✓	✓	✓	✓
	Total	100						
Student Study Effort Expected	<p>Continuous assessment: The continuous assessment includes assignments, quizzes and test(s) which aim at checking the progress of students' study throughout the course, assisting them in fulfilling the learning outcomes. Assignments in general include end-of-chapter problems, which are used to reinforce and assess the concepts and skills acquired by the students; and to let them know the level of understanding that they are expected to reach. At least one test would be administered during the course of the subject as a means of timely checking of learning progress by referring to the intended outcomes, and as means of checking how effective the students digest and consolidate the materials taught in the class.</p> <p>Examination: This is a major assessment component of the subject. It would be a closed-book examination. Complicated formulas would be given to avoid rote memory, such that the emphasis of assessment would be put on testing the understanding, analysis and problem solving ability of the students.</p>							
	Class contact:							
	• Lecture	33 h						
	• Tutorial	6 h						
	Other student study effort:							
• Self-study	81 h							

	Total student study effort	120 h
Reading List and References	John W. Jewett and Raymond A. Serway, "Physics for Scientists and Engineers", 2014, 9th edition, Brooks/Cole Cengage Learning. Hafez A. Radi, John O. Rasmussen, "Principles of physics: for scientists and engineers", 2013, Springer. W. Bauer and G.D. Westfall, "University Physics with Modern Physics", 2011, McGraw-Hill.	

**Subject offered by
Department of Applied Social Sciences**

The Hong Kong Polytechnic University

Subject Description Form

Subject Code	APSS1L01														
Subject Title	Tomorrow's Leaders														
Credit Value	3														
Level	1														
GUR Requirements Intended to Fulfill	<p>This subject intends to fulfill the following requirement(s) :</p> <p><input type="checkbox"/> Healthy Lifestyle</p> <p><input type="checkbox"/> Freshman Seminar</p> <p><input type="checkbox"/> Languages and Communication Requirement (LCR)</p> <p><input checked="" type="checkbox"/> Leadership and Intra-Personal Development</p> <p><input type="checkbox"/> Service-Learning</p> <p><input type="checkbox"/> Cluster-Area Requirement (CAR)</p> <p style="padding-left: 40px;"><input type="checkbox"/> Human Nature, Relations and Development</p> <p style="padding-left: 40px;"><input type="checkbox"/> Community, Organization and Globalization</p> <p style="padding-left: 40px;"><input type="checkbox"/> History, Cultures and World Views</p> <p style="padding-left: 40px;"><input type="checkbox"/> Science, Technology and Environment</p> <p><input type="checkbox"/> China-Study Requirement</p> <p style="padding-left: 40px;"><input type="checkbox"/> Yes or <input type="checkbox"/> No</p> <p><input type="checkbox"/> Writing and Reading Requirements</p> <p style="padding-left: 40px;"><input type="checkbox"/> English or <input type="checkbox"/> Chinese</p>														
Pre-requisite / Co-requisite/ Exclusion	Nil														
Assessment Methods	<table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <thead> <tr> <th style="width: 50%;">100% Continuous Assessment</th> <th style="width: 25%;">Individual Assessment</th> <th style="width: 25%;">Group Assessment</th> </tr> </thead> <tbody> <tr> <td>1. Class Participation</td> <td style="text-align: center;">20%</td> <td style="text-align: center;">--</td> </tr> <tr> <td>2. Group Project</td> <td style="text-align: center;">--</td> <td style="text-align: center;">30%</td> </tr> <tr> <td>3. Term Paper</td> <td style="text-align: center;">50%</td> <td style="text-align: center;">--</td> </tr> </tbody> </table> <ul style="list-style-type: none"> The grade is calculated according to the percentage assigned; The completion and submission of all component assignments are required for passing the subject; and 			100% Continuous Assessment	Individual Assessment	Group Assessment	1. Class Participation	20%	--	2. Group Project	--	30%	3. Term Paper	50%	--
100% Continuous Assessment	Individual Assessment	Group Assessment													
1. Class Participation	20%	--													
2. Group Project	--	30%													
3. Term Paper	50%	--													

	<ul style="list-style-type: none"> • Student must pass all component(s) if he/she is to pass the subject.
Objectives	The course is designed to enable students to learn and integrate theories, research and concepts of the basic personal qualities (particularly intrapersonal and interpersonal qualities) of effective leaders. This subject also intends to help students develop and reflect on their intrapersonal qualities, interpersonal qualities and connection of learning to oneself. Finally, the subject cultivates students' appreciation of the importance of intrapersonal and interpersonal qualities in effective leadership.
Intended Learning Outcomes <i>(Note 1)</i>	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> understand and integrate theories, research and concepts on the basic qualities (particularly intrapersonal and interpersonal qualities) of effective leaders; develop self-awareness and self-understanding demonstrate self-leadership in pursuit of continual self-improvement; apply intrapersonal and interpersonal skills in daily lives; appreciate the importance of intrapersonal and interpersonal qualities in effective leadership, particularly the connection of learning in the subject to one's professional development and personal growth; recognize and accept their responsibility as professionals and citizens to the society and the world
Subject Synopsis/ Indicative Syllabus <i>(Note 2)</i>	<ol style="list-style-type: none"> An overview of the personal attributes of effective leaders: roles of intrapersonal and interpersonal qualities in effective leadership and university graduates' employability in the service economy. Self-leadership in effective leaders; the importance of self-understanding and self-management; life-long learning and leadership. Social emotional competence I (intrapersonal domain): awareness and understanding of emotions; emotional management, roles of emotional awareness and management in effective leadership and career development. Social emotional competence II (interpersonal domain): social awareness, relationship management, the application of social emotional competence in daily lives and in effective leadership. Resilience and stress-coping: stresses faced by youth; resilience and life adversities; coping with life stresses; role of resilience in effective leadership.

	<ol style="list-style-type: none"> 6. Morality and integrity: moral competence; role of morality in effective leadership; ethical leadership; importance of moral competence in different professions. 7. Spirituality: connectedness to others, personal beliefs and values, meaning of life, spirituality and professional development, role of spirituality in effective leadership; spiritual practices in daily lives. 8. Cultural competence and global citizenship: cultural competence in a globalized world, global citizenship and effective leadership, responsibilities of university students as both professionals and citizens of the society. 9. Effective communication: basic communication skills, importance of effective communication to daily life and leadership, care and compassion in effective leadership. 10. Team building: theories, concepts, skills and blocks of team building, role of team building in effective leadership, application of team building in different professions. 																																														
<p>Teaching/Learning Methodology</p> <p><i>(Note 3)</i></p>	<p>Students taking this course are expected to be sensitive to their own behavior in intrapersonal and interpersonal contexts. Intellectual thinking, reflective learning, experiential learning and collaborative learning are emphasized in the course. Case studies on successful and fallen leaders will also be covered in the course. The teaching/learning methodology includes:</p> <ol style="list-style-type: none"> 1. Lectures (including e-learning modules) 2. Experiential classroom activities; 3. Group project presentation; 4. Written assignment. 																																														
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p> <p><i>(Note 4)</i></p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th>e</th> <th>f</th> </tr> </thead> <tbody> <tr> <td>1. Class Participation[^]</td> <td>20%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>2. Group Project*</td> <td>30%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>3. Term Paper[^]</td> <td>50%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>Total</td> <td>100 %</td> <td colspan="6"></td> </tr> </tbody> </table> <p>*assessment is based on group effort [^]assessment is based on individual effort</p> <p>Explanation of the appropriateness of the assessment methods in</p>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)						a	b	c	d	e	f	1. Class Participation [^]	20%	✓	✓	✓	✓	✓	✓	2. Group Project*	30%	✓	✓	✓	✓	✓	✓	3. Term Paper [^]	50%	✓	✓	✓		✓		Total	100 %						
Specific assessment methods/tasks	% weighting			Intended subject learning outcomes to be assessed (Please tick as appropriate)																																											
		a	b	c	d	e	f																																								
1. Class Participation [^]	20%	✓	✓	✓	✓	✓	✓																																								
2. Group Project*	30%	✓	✓	✓	✓	✓	✓																																								
3. Term Paper [^]	50%	✓	✓	✓		✓																																									
Total	100 %																																														

assessing the intended learning outcomes:

1. Assessment of Class Participation (20%): It is expected that both online and classroom activities and preparation for lectures can help students understand the subject matter and oneself, develop social skills, connect learning to oneself and promote an appreciation of the importance of intrapersonal and interpersonal leadership qualities. Hence, marks for class participation (including the participation in e-learning modules) and preparation for lectures will be given. Students will be assessed by: a) preparation for class (e.g., complete e-learning modules, online assignment, and dig up materials before class), b) participation in class and online learning activities (e.g., completion of worksheets and sharing in class, participation in online discussion forum) and c) volunteering to answer questions and join discussions. Also, students will be invited to rate the performance and learning of other group members in an honest and authentic manner. The marks will reflect the mastery of knowledge, self-reflection and quality of interpersonal skills (such as collaboration with other members and contribution to the group) of the group members. Peer assessment will contribute to marks in class participation.
2. Assessment of Group Project (30%): Group project presentation can give an indication of the students' understanding and integration of theories and concepts on personal qualities in effective leadership, personal and group reflections, interpersonal skills and degree of recognition of the importance of active pursuit of knowledge covered in the course.
3. Assessment of Term Paper (50%): Individual paper can give an indication of the students' understanding and integration of theories and concepts on the personal qualities in effective leadership, self-assessment, self-reflection, connection of the subject matter to oneself and degree of recognition of the importance of active pursuit of knowledge covered in the course.

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

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

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

	<p><i>Adolescence Health</i>, 9(2), 223-234.</p> <p>Ma, C. M. S., Shek, D. T. L., Li, P. P. K., Mok, B. P. W. & Leung, E. Y. K. (2016). Qualitative evaluation of a leadership and intrapersonal development subject for university students in Hong Kong. <i>International Journal of Child and Adolescent Health</i>, 9(2), 217-224.</p> <p>Shek, D. T. L. (2012). Development of a positive youth development subject in a university context in Hong Kong. <i>International Journal on Disability and Human Development</i>, 11(3), 173-179.</p> <p>Shek, D. T. L. (2013). Promotion of holistic development in university students: A credit-bearing subject on leadership and intrapersonal development. <i>Best Practices in Mental Health</i>, 9(1), 47-61.</p> <p>Shek, D. T. L., Fok, H. K., Leung, C. T. L., & Li, P. P. K. (2016). Qualitative evaluation of a credit-bearing leadership subject in Hong Kong. <i>International Journal of Child and Adolescent Health</i>, 9(2), 173-183.</p> <p>Shek, D. T. L., & Leung, J. T. Y. (2014) Perceived benefits of a university subject on leadership and intrapersonal development. <i>International Journal on Disability and Human Development</i>.doi:10.1515/ijdh-2014-0345</p> <p>Shek, D. T. L., & Ma, C. M. S. (2014). Do university students change after taking a subject on leadership and intrapersonal development? <i>International Journal on Disability and Human Development</i>. doi:10.1515/ijdh-2014-0341</p> <p>Shek, D. T. L., Sun, R. C. F., Tsien-Wong, T. B. K., Cheng, C. T., & Yim H. Y. (2013). Objective outcome evaluation of a leadership and intrapersonal development subject for university students. <i>International Journal on Disability and Human Development</i>, 12(2), 221-227.</p> <p>Shek, D. T. L., & Wu, F. K. Y. (2014). The role of teachers in youth development: Reflections of students. <i>International Journal on Disability and Human Development</i>. doi:10.1515/ijdh-2014-0344</p> <p>Shek, D. T. L., Wu, F. K. Y., Leung, C. T. L., Fok, H. K., & Li, P. P. K. (2016). Focus group evaluation of a subject on leadership and intrapersonal development in Hong Kong. <i>International Journal of Child and Adolescent Health</i>, 9(2), 185-194.</p> <p>Shek, D. T. L., & Yu, L. (2014). Post-course subjective outcome evaluation of a subject on leadership and intrapersonal development for university students in Hong Kong. <i>International Journal on Disability and Human Development</i>. doi:10.1515/ijdh-2014-0342</p> <p>Shek, D. T. L., & Yu, L. (2016). Student feedback on a subject on leadership and intrapersonal development for university students in Hong Kong. <i>International Journal on Disability and Human Development</i>, 15(3), 339-345</p> <p>Yu, L., Shek, D. T. L., & Leung, E. Y. K. (2016). Post-lecture evaluation of a university subject on leadership and intrapersonal development. <i>International Journal of Child and Adolescent Health</i>, 9(2), 155-164.</p>	
Student Study Effort Expected	Class contact:	
	<ul style="list-style-type: none"> ▪ Lectures and experiential/online learning activities 	39 Hrs.
	Other student study effort:	
	<ul style="list-style-type: none"> ▪ Group project preparation 	20 Hrs.
	<ul style="list-style-type: none"> ▪ Reading and writing term paper 	76 Hrs.

	Total student study effort	135 Hrs.
Reading List and References	<p>Basic References</p> <p>Catalano, R. F., Berglund, M. L., Ryan, J. A. M., Lonczak, H. S., & Hawkins, J. D. (2002). Positive youth development in the United States: Research findings on evaluations of positive youth development programs. <i>Prevention and Treatment, 5</i>(15), 1-106.</p> <p>Dalton, J., & Crosby, P. (2007). Being and having: Shouldn't excellence in higher education (and people) be a measure of what one does rather than what one has? <i>Journal of College and Character, 9</i>(1), 1-5.</p> <p>Davies, L. (2006). Global citizenship: abstraction or framework for action? <i>Educational review, 58</i>(1), 5-25.</p> <p>Gilley, A., Gilley, J. W., McConnell, C. W., & Veliquette, A. (2010). The competencies used by effective managers to build teams: An empirical study. <i>Advances in Developing Human Resources, 12</i>(1), 29-45.</p> <p>Goleman, D. (1995). <i>Emotional Intelligence: Why it can matter more than IQ</i>. New York: Bantam Books.</p> <p>Houghton, J. D., & Yoho, S. K. (2005). Toward a contingency model of leadership and psychological empowerment: When should self-leadership be encouraged? <i>Journal of Leadership and Organizational Studies, 11</i>(4), 65-84.</p> <p>Kim, Y. H., Chiu, C. Y., & Zou, Z. M. (2010). Know thyself: Misperceptions of actual performance undermine achievement motivation, future performance, and subjective well-being. <i>Journal of Personality and Social Psychology, 99</i>(3), 395-409.</p> <p>Kohlberg, L. (1964). Development of moral character and moral ideology. In M. L. Hoffman, & L. W. Hoffman (Eds.), <i>Review of child development research</i> (pp. 381-431). New York: Russell Sage Foundation.</p> <p>Lau, P. S. Y., & Wu, F. K. Y. (2012). Emotional competence as a positive youth development construct: A conceptual review. <i>The Scientific World Journal, 2012</i>, 8 pages. doi:10.1100/2012/975189</p> <p>Marsh, H. W. (1990). A multidimensional, hierarchical self-concept: Theoretical and empirical justification. <i>Educational Psychological Review, 2</i>(2), 77-172.</p> <p>Masten, A. S., & Obradović, J. (2006). Competence and resilience in development. <i>Annals of the New York Academy of Sciences, 1094</i>(1), 13-27.</p> <p>Rockstuhl, T., Seiler, S., Ang, S., Van Dyne, L., & Annen, H. (2011). Beyond general intelligence (IQ) and emotional intelligence (EQ): The role of cultural intelligence (CQ) on cross-border leadership effectiveness in a globalized world. <i>Journal of Social Issues, 67</i>(4), 825-840.</p> <p>Rycek, R. F., Stuhr, S. L., McDermott, J., Benker, J., & Swartz,</p>	

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- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *American Psychologist*, 55(1), 5-14.
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- Neck, C. P., & Houghton, J. D. (2006). Two decades of self-leadership theory and research: Past developments, present trends, and future possibilities. *Journal of Managerial Psychology, 21*(4), 270-295.
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**Subjects offered by
Chinese Language Centre**

Subject Description Form

Subject Code	CLC1104C (Cantonese) / CLC1104P (Putonghua) [2019-20 onward] / CBS1104C (Cantonese) / CBS1104P (Putonghua) [2018-19 and before] (for 42470, 42477, 42480 and 42375) <i>Remarks: Students taking the Cantonese version of CLC/CBS1104 (i.e. CLC/CBS1104C) will be offered a 39 hour non-credit bearing e-learning course in Putonghua (optional).</i>
Subject Title	University Chinese (大學中文)
Credit Value	3
Level	1
Pre-requisite / Co-requisite/ Exclusion	Students with HKDSE Chinese subject result at level 3 or above or equivalent
Objectives	This subject aims at enhancing the students' command of language knowledge to communicate effectively in both written and spoken Chinese, with particular reference to the stylistic variations of expression in different communicative settings. The ultimate goal of this subject is to train students to be effective communicators and life-long learners, and to equip them for the Chinese Discipline-Specific Language Requirement subject.
Intended Subject Learning Outcomes	Upon completion of the subject, students will be able to: (a) Consolidate the ability to identify and correct the most common errors in written texts; (b) Develop Chinese writing skills through the analysis and in-depth reading of selected literary masterpieces; (c) Master the format, organization, language and style of expression of various genres of Chinese writing; (d) Produce formal presentations in spoken Chinese effectively and appropriately.
Contribution of the Subject to the Attainment of the Programme Outcomes	Programme Outcomes: (for 42375) <u>Category B: Attributes for all-roundedness</u> • Programme Outcome 8. (for 42470) <u>Category B: Attributes for all-roundedness</u> • Programme Outcome 9. (for 42477) <u>Category B: Attributes for all-roundedness</u> • Programme Outcome 8. (for 42480) <u>Category B: Attributes for all-roundedness</u> • Programme Outcome 8.

Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. Written communication Language, format and organization of each genre; coherence and thread of thinking in Chinese writing; style of expression of different genres; context dependent stylistic variation; development of logical and persuasive arguments. 2. Spoken communication Choice of words; articulation and flow of speaking; manner of speaking and gesture; identification of main idea and key messages; evaluation of relevancy of information in a message; skills of summarizing; agreeing / disagreeing / answering to questions politely; use of visual aids; body movement. 3. Reading strategies Intensive and critical reading; identification of authors' stances, arguments and purposes; extracting useful information from the texts; determination of the meanings of the important concept words in context; evaluation of the validity of the factual information and arguments of the texts; appreciation of different genres including literary masterpieces. 4. Language development Grammatical skills; use of clear words; use of specific sentences; choice of diction. 																																		
Teaching/Learning Methodology	<p>The teaching/learning methodology is a combination of highly interactive seminars, self-formed study groups, seminar discussion, oral presentations and written assignments. E-learning materials for enhancing students' proficiency in both spoken and written Chinese are included in Chinese LCR teaching.</p> <p>Students are expected to follow teachers' guidelines and get access to the materials on the e-Learning platform for self-study on a voluntary basis.</p>																																		
Assessment Methods in Alignment with Intended Subject Learning Outcomes	<table border="1"> <thead> <tr> <th rowspan="2">Specific Assessment Methods/Tasks</th> <th rowspan="2">% Weighting</th> <th colspan="4">Intended Subject Learning Outcomes to be Assessed (Please tick as appropriate)</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> <th>4</th> </tr> </thead> <tbody> <tr> <td>Quizzes / Exercises</td> <td>20%</td> <td>√</td> <td></td> <td>√</td> <td></td> </tr> <tr> <td>Written Assignments</td> <td>55%</td> <td>√</td> <td>√</td> <td>√</td> <td></td> </tr> <tr> <td>Oral presentation</td> <td>25%</td> <td>√</td> <td></td> <td>√</td> <td>√</td> </tr> <tr> <td>Total</td> <td>100 %</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes: The quizzes and exercises are designed to assess students' basic knowledge of Chinese linguistics and how well they achieve ILOs (1) and (3). The writing assessments aim to obtain an objective measurement of students' basic competence in the use of written Chinese in accurate and appropriate grammatical structures (ref. ILOs (1), (2) and (3)). The oral assessment assesses students' ability to plan and present accurately, appropriately and effectively (ref. ILOs (1), (3) and (4)). Explanations and exercises are</p>	Specific Assessment Methods/Tasks	% Weighting	Intended Subject Learning Outcomes to be Assessed (Please tick as appropriate)				1	2	3	4	Quizzes / Exercises	20%	√		√		Written Assignments	55%	√	√	√		Oral presentation	25%	√		√	√	Total	100 %				
Specific Assessment Methods/Tasks	% Weighting			Intended Subject Learning Outcomes to be Assessed (Please tick as appropriate)																															
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Written Assignments	55%	√	√	√																															
Oral presentation	25%	√		√	√																														
Total	100 %																																		

	provided in classroom teaching.	
Student Study Effort Expected	Class contact:	
	▪ Seminar	39 Hours
	Additional activity:	
	▪ e-Learning in Putonghua and written Chinese	9 Hours
	Other student study effort:	
	▪ Outside Class Practice	39 Hours
	▪ Self-study	39 Hours
	Total student study effort	126 Hours
Reading List and References	<ol style="list-style-type: none"> 1. 于成鯤、陳瑞端、秦扶一、金振邦主編：《當代應用文寫作規範叢書》，上海：復旦大學出版社，2011年。 2. 任伯江：《口語傳意權能：人際關係策略與潛力》，香港：香港中文大學出版社，2006年。 3. 吳禮權：《演講的技巧》，香港：商務印書館，2013年。 4. 李錦昌：《商業溝通與應用文大全》，香港：商務印書館，2012年。 5. 邵敬敏：《現代漢語通論》，上海：上海教育出版社，2007年。 6. 香港城市大學語文學部編著：《中文傳意—基礎篇》。香港：香港城市大學出版社，2001。 7. 香港城市大學語文學部編著：《中文傳意—寫作篇》。香港：香港城市大學出版社，2001。 8. 孫光萱：《中國現代散文名家名篇賞讀》，上海：上海教育出版社，2001年。 9. 梁慧敏：《正識中文》，香港：三聯書店，2010年。 10. 梁慧敏：《語文正解》，香港：三聯書店，2015年。 11. 梁慧敏：《語文通病》，香港：三聯書店，2014年。 12. 陳瑞端，《生活病語》，香港：中華書局，2000。 13. 陳瑞端：《生活錯別字》，香港：中華書局，2000年。 14. 賴蘭香：《傳媒中文寫作》(新修本)，香港：中華書局，2012年。 	
Last Updated	May 2019	
Prepared by	Chinese Language Centre	

The Hong Kong Polytechnic University

Subject Description Form

Subject Code	CLC3241P (2019-20 onward) CBS3241P (2018-19 and before)
Subject Title	Professional Communication in Chinese
Credit Value	2
Level	3
Pre-requisite / Co-requisite	Chinese LCR subjects (in Semester 2 of Year 3 or Semester 1 of Year 4)
Objectives	This subject aims to develop the language competence for professional communication in Chinese required by students to communicate effectively with various parties and stakeholders in regard to engineering-related project proposals and reports.
Intended Learning Outcomes	Upon completion of the subject, and in relation to effective communication with a variety of intended readers/audiences in Chinese, students will be able to <ol style="list-style-type: none"> a. plan, organise and produce professionally acceptable project proposals and reports with appropriate text structures and language for different intended readers b. plan, organise and deliver effective project-related oral presentations with appropriate interactive strategies and language for different intended audiences c. adjust the style of expression and interactive strategies in writing and speaking in accordance with different intended readers/audiences
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. Project proposals and reports in Chinese <ul style="list-style-type: none"> • Planning and organising project proposals and reports • Explaining the background, rationale, objectives, scope and significance of a project • Referring to the literature to substantiate project proposals • Describing the methods of study • Describing and discussing project results, including anticipated results and results of pilot study • Presenting the budget, schedule and/or method of evaluation • Writing executive summaries./abstracts

	<p>2. Oral presentations of projects</p> <ul style="list-style-type: none"> • Selecting content for audience-focused presentations • Choosing language and style appropriate to the intended audience • Using appropriate transitions and maintaining coherence in team presentations • Using effective verbal and non-verbal interactive strategies 																																						
<p>Teaching/Learning Methodology</p>	<p><u>Learning and teaching approach</u></p> <p>The subject is designed to develop the students' Chinese language skills, both oral and written, that students need to communicate effectively and professionally with a variety of stakeholders of engineering-related projects. It builds upon the language and communication skills covered in GUR language training subjects.</p> <p>The study approach is primarily seminar-based. Seminar activities include instructor input as well as individual and group work, involving drafting and evaluating texts, mini-presentations, discussions and simulations.</p> <p>The learning and teaching activities in the subject will focus on a course-long project which will engage students in proposing and reporting on an engineering-related project to different intended readers/audiences. During the course, students will be involved in:</p> <ul style="list-style-type: none"> - planning and researching the project - writing project-related documents such as project proposals and reports - giving oral presentations to intended stakeholders of the project 																																						
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>1. Project proposal in Chinese</td> <td>60%</td> <td>✓</td> <td></td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2. Oral presentation of project proposal</td> <td>40%</td> <td></td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td>100 %</td> <td colspan="6"></td> </tr> </tbody> </table> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>The assessments will arise from the course-long engineering-related project.</p>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)						a	b	c				1. Project proposal in Chinese	60%	✓		✓				2. Oral presentation of project proposal	40%		✓	✓				Total	100 %						
Specific assessment methods/tasks	% weighting			Intended subject learning outcomes to be assessed (Please tick as appropriate)																																			
		a	b	c																																			
1. Project proposal in Chinese	60%	✓		✓																																			
2. Oral presentation of project proposal	40%		✓	✓																																			
Total	100 %																																						

	<ul style="list-style-type: none"> • Students will be assessed on written documents and oral presentations targeted at different intended readers/audiences. This facilitates assessment of students' ability to select content and use language and style appropriate to the purposes and intended readers/audiences. • Students will collaborate in groups in planning, researching, discussing and giving oral presentations on the project. The written proposals will be individual work to ensure that students will be rigorously engaged in the application of language skills for the entire document. 	
Student Study Effort Expected	Class contact:	
	▪ Seminars	26 Hrs.
	Other student study effort:	
	▪ Researching, planning, writing, and preparing the project	44 Hrs.
	Total student study effort	70 Hrs.
Reading List and References	<p>a) 司有和 (1984) : 《科技寫作簡明教程》, 安徽教育出版社。</p> <p>b) 葉聖陶、呂叔湘、朱德熙、林燾 (1992) : 《文章講評》 語文出版社。</p> <p>c) 于成鯤主編 (2003) : 《現代應用文》, 復旦大學出版社。</p> <p>d) 岑紹基、謝錫金、祈永華 (2006) : 《應用文的語言·語境·語用》, 香港教育圖書公司。</p> <p>e) 邵敬敏主編 (2010) : 《現代漢語通論 (第二版)》, 上海教育出版社。</p> <p>f) 于成鯤、陳瑞端、秦扶一、金振邦主編 (2010) : 《中國現代應用文寫作規範叢書: 科教文與社交文書寫作規範》, 復旦大學出版社。</p> <p>g) 香港特別行政區政府教育局·課程發展處中國語文教育組 (2012) : 《常用字字形表》, 政府物流服務署印。</p>	

Subject offered by
Department of Electronic and Information Engineering

Subject Description Form

Subject Code	EIE2302 (for AP and ISE)
Subject Title	Electricity and Electronics
Credit Value	3
Level	2
Pre-requisite	Nil
Co-requisite/ Exclusion	Nil
Objectives	<ol style="list-style-type: none"> 1. Introduce the fundamental concepts of operation of electric circuits applicable to engineering students. 2. Develop ability for solving problems involving electric circuits. 3. Understand the function and application of basic electronic devices. 4. Develop skills for experimentation on electric circuits. 5. Impart relevant skills and knowledge in basic electricity and electronics for independent learning of other subjects that require such skills and knowledge.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <p><u>Category A: Professional/academic knowledge and skills</u></p> <ol style="list-style-type: none"> 1. Understand the operating principles of some fundamental electric circuits. 2. Solve simple problems in electric circuits. 3. Use suitable instrumentation to carry out experimental investigations to validate the theoretical investigations. 4. Understand the basic function and application of some basic electronic devices.
Subject Synopsis/ Indicative Syllabus	<p>Syllabus:</p> <ol style="list-style-type: none"> 1. DC circuits - Introduction to electric circuits. Potential and potential difference. Current. Resistance. Ohm's law. Kirchhoff laws. Voltage divider, current divider, series and parallel circuits. Node Voltage and Mesh Current Analyses. Thévenin and Norton Equivalents, Wheatstone bridge. Power dissipation and maximum power transfer. 2. Basic AC elements and simple AC circuits. 3. Electrical machines and protection - Generators. Motors. Mutual inductance and transformer. Circuit breakers. Motor selection. 4. Basic electronic devices - Junction diodes, bipolar junction transistors, field-effect transistors and their applications in simple mechatronics. 5. Applications of electronic devices – Solid state relays. ADC. Display drivers.

	<p>Motor controllers, Power supplies. Frequency converters.</p> <p>Laboratory Experiments:</p> <ol style="list-style-type: none"> 1. Introduction to laboratory instrumentation / Thévenin and Norton theorems 2. Voltage regulators 3. Transformer tests and characteristics. 		
<p>Teaching/ Learning Methodology</p>	<p>Teaching and Learning Method</p>	<p>Intended Subject Learning Outcome</p>	<p>Remarks</p>
	<p>Lectures, supplemented with interactive questions and answers</p>	<p>1, 2, 4</p>	<p>In lectures, students are introduced to the <i>knowledge</i> of the subject, and <i>comprehension</i> is strengthened with interactive Q&A.</p>
	<p>Tutorials, where problems are discussed and are given to students for them to solve</p>	<p>1, 2, 4</p>	<p>In tutorials, students <i>apply</i> what they have learnt in solving the problems given by the tutor.</p>
	<p>Laboratory sessions, where students will perform experimental verifications. They will have to record results and write a report on one of the experiments.</p>	<p>2, 3, 4</p>	<p>Students <i>acquire</i> hands-on experience in using electronic equipment and <i>apply</i> what they have learnt in lectures/tutorials to experimentally validate the theoretical investigations.</p>
	<p>Assignments</p>	<p>1, 2, 3, 4</p>	<p>Through working assignments, students will develop a firm understanding and <i>comprehension</i> of the <i>knowledge</i> taught.</p>

Alignment of Assessment and Intended Learning Outcomes	Specific Assessment Methods/ Task	% Weighting	Intended Subject Learning Outcomes to be Assessed (Please tick as appropriate)			
			1	2	3	4
	1. Continuous Assessment (Total 40%)					
	• Assignments	10%	✓	✓		✓
	• Laboratory works and reports	10%		✓	✓	✓
	• Mid-semester test	10%	✓	✓		✓
	• End-of-semester test	10%	✓	✓		✓
	2. Examination	60%	✓	✓		✓
	Total	100%				

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:		
Specific Assessment Methods/Tasks	Remark	
Assignments	Assignments are given to students to assess their competence level of <i>knowledge</i> and <i>comprehension</i> . The criteria (i.e. <i>what</i> to be demonstrated) and level (i.e. the <i>extent</i>) of achievement will be graded according to six levels: (A+ and A), Good (B+ and B), Satisfactory (C+ and C), Marginal (D) and Failure (F). These will be made known to the students before an assignment is given. Feedback about their performance will be given promptly to students to help them improve their learning.	
Laboratory works and reports	Students will be required to perform three experiments and submit a report on one of the experiments. Expectation and grading criteria will be given as in the case of assignment.	
Mid-semester test	There will be a mid-semester test to evaluate students' achievement of all the learning outcomes and give feedback to them for prompt improvement. Expectation and grading criteria will be given as in the case of assignments.	
End-of-semester test and Examination	There will be an end-of-semester test and examination to assess students' achievement of all the learning outcomes. These are mainly summative in nature. Expectation and grading criteria will be given as in the case of assignments.	
Student Study Effort Expected	Class contact (time-tabled):	
	▪ Lecture	26 Hours
	▪ Tutorial	4 Hours
	▪ Laboratory	9 Hours
	Other student study effort:	
	▪ Revision	36 Hours
	▪ Tutorial and Assignments	21 Hours

	<ul style="list-style-type: none"> ▪ Log book and Report Writing 	9 Hours
	Total student study effort:	105 Hours
Reading List and References	<p>Textbooks:</p> <ol style="list-style-type: none"> 1. G. Rizzoni, <i>Fundamentals of Electrical Engineering</i>, 1st ed., McGraw-Hill, 2009. 2. A.S. Sedra and K.C. Smith, <i>Microelectronic Circuits</i>, 6th ed., Oxford University Press, 2009. <p>References:</p> <ol style="list-style-type: none"> 1. R.L. Boylestad and L. Nashelsky, <i>Electronic Devices and Circuit Theory</i>, 10th ed., Prentice Hall, 2008. 2. R.C. Jaeger and T.N. Blalock, <i>Microelectronic Circuit Design</i>, 4th ed., McGraw Hill, 2010. 3. C.K. Tse, <i>Linear Circuit Analysis</i>, London: Addison-Wesley, 1998. 4. D.A. Neamen, <i>Microelectronics: Circuit Analysis and Design</i>, 4th ed., McGraw Hill, 2009. 5. R.A. DeCarlo and P.M. Lin, <i>Linear Circuit Analysis</i>, 2nd ed., Oxford University Press, 2001. 6. A.H. Robbins and W.C. Miller, <i>Circuit Analysis: Theory and Practice</i>, Thomson Learning, 4th ed., 2006. 	
Last Updated	June 2014	
Prepared by	Dr Y.M. Lai	

**Subjects offered by
English Language Centre**

The Hong Kong Polytechnic University

Subject Description Form

Subject Code	ELC1011
Subject Title	Practical English for University Studies
Credit Value	3
Level	1
Pre-requisite / Co-requisite/ Exclusion	Nil
Objectives	This subject aims to develop and enhance students' general proficiency and communication skills in English. A strong focus will be given to enhancing competence and confidence in writing, grammar, vocabulary, pronunciation and fluency.
Intended Learning Outcomes	<p>Upon successful completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> a. organise and write accurate and coherent short texts b. improve language accuracy and the ability to proofread for common errors in written texts c. use appropriate verbal and non-verbal skills to enhance fluency and accuracy in spoken communication such as short presentations <p>To achieve the above outcomes, students are expected to use language and text structure appropriate to the context, select information critically, and present their views logically and coherently.</p>
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. Written communication Enhancing the use of accurate and appropriate grammatical structures and vocabulary for various communicative purposes; improving the ability to organise written texts logically; and improving cohesion and coherence in writing. 2. Spoken communication Developing verbal and non-verbal interaction strategies appropriate to the context and level of formality. 3. Reading and listening Understanding the content and structure of information delivered in written and spoken texts; developing effective reading and listening strategies. 4. Language development Improving and extending relevant features of grammar, vocabulary, pronunciation and fluency.

Teaching/Learning Methodology	<p>The study method is primarily seminar-based. Following a blended delivery approach, activities include teacher input as well as in- and out-of-class individual and group work involving drafting of texts, information search, mini-presentations and discussions. Students will make use of elearning resources and web-based work to improve their grammar and vocabulary, and other language skills.</p> <p>Learning materials developed by the English Language Centre are used throughout the course. Students will be referred to learning resources on the Internet and in the ELC's Centre for Independent Language Learning. Additional reference materials will be recommended as required.</p>																																
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="3">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> </tr> </thead> <tbody> <tr> <td>1. Paragraph writing</td> <td>20%</td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>2. Essay writing</td> <td>40%</td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>3. Documentary presentation</td> <td>40%</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>Total</td> <td>100 %</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>The paragraph writing test, which assess students' grammar, vocabulary and paragraph organization skills, necessitates achievement of LOs (a) and (b).</p> <p>The essay writing assessment evaluates students' ability write a longer text in accurate and appropriate grammatical structures (ref. LOs (a) and (b)).</p> <p>The documentary presentation assesses students' ability to speak accurately, appropriately and confidently. Students will research a topic, organise information from a variety of sources, and deliver the information as a digital documentary and mini-presentation (ref. LOs (a), (b) and (c)).</p> <p>In addition to these assessments, students are required to complete further language training through web-based language work. The additional language training offered in online tasks is aligned with all the three LOs and corresponds to their learning in class.</p>					Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)			a	b	c	1. Paragraph writing	20%	✓	✓		2. Essay writing	40%	✓	✓		3. Documentary presentation	40%	✓	✓	✓	Total	100 %			
Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)																															
		a	b	c																													
1. Paragraph writing	20%	✓	✓																														
2. Essay writing	40%	✓	✓																														
3. Documentary presentation	40%	✓	✓	✓																													
Total	100 %																																
Student Study Effort Expected	Class contact:																																
	▪ Seminar		39 Hrs.																														
	Other student study effort:																																

	▪ Self-study/preparation	78 Hrs.
	Total student study effort	117 Hrs.

Reading List and References	<p><i>Course material</i> Learning materials developed by the English Language Centre</p> <p><i>Recommended references</i> Boyle, J. & Boyle, L. (1998). <i>Common Spoken English Errors in Hong Kong</i>. Hong Kong: Longman. Brannan, B. (2003). <i>A writer's workshop: Crafting paragraphs, building essays (3rd ed.)</i>. Boston: McGraw-Hill. Hancock, M. (2003). <i>English pronunciation in use</i>. Cambridge: Cambridge University Press. Nettle, M. and Hopkins, D. (2003). <i>Developing grammar in context: Intermediate</i>. Cambridge: Cambridge University Press. Redman, S. (2003). <i>English vocabulary in use: Pre-intermediate and intermediate</i>. Cambridge: Cambridge University Press. Powell, M. (2011). <i>Presenting in English. How to get successful presentations</i>. USA. Heinle & Heinle Publishers.</p>
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The Hong Kong Polytechnic University

Subject Description Form

Subject Code	ELC1012/ELC1013
Subject Title	English for University Studies (This subject will be offered in two versions for students who will primarily be using (1) APA/Harvard referencing styles or (2) IEEE/Vancouver referencing styles in their university studies.)
Credit Value	3
Level	1
Pre-requisite / Co-requisite/ Exclusion	Students entering the University with Level 3-5** from the HKDSE will be required to take this course.
Objectives	This subject aims to help students study effectively in the University's English medium learning environment, and to improve and develop their English language proficiency within a framework of university study contexts.
Intended Learning Outcomes	Upon successful completion of the subject, students will be able to: <ul style="list-style-type: none"> a. refer to sources in written texts and oral presentations b. paraphrase and summarise materials from written and spoken sources c. plan, write and revise expository essays with references to sources d. deliver effective oral presentations <p>To achieve the above outcomes, students are expected to use language and text structure appropriate to the context, select information critically, and present information logically and coherently.</p>

Subject Synopsis/ Indicative Syllabus	<p>1. Written communication Analysing and practising common writing functions; improving the ability of writing topic sentences and strategies for paragraph development; understanding common patterns of organisation in expository writing; taking notes from written and spoken sources; practising summarising and paraphrasing skills; improving coherence and cohesion in writing; developing revision and proofreading skills.</p> <p>2. Spoken communication Recognising the purposes of and differences between spoken and written communication in English in university study contexts; identifying and practising the verbal and non-verbal interaction strategies in oral presentations; developing and applying critical thinking skills to discussions of issues.</p> <p>3. Language development Improving and extending relevant features of grammar, vocabulary and pronunciation.</p>																																					
Teaching/Learning Methodology	<p>The study method is primarily seminar-based. Following a blended delivery approach, activities include teacher input as well as in- and out-of-class individual and group work involving drafting and evaluating texts, mini-presentations, discussions and simulations. The process approach to writing is adopted, and students make use of elearning resources to engage in academic discussions and to reflect on their learning.</p> <p>Learning materials developed by the English Language Centre are used throughout the course. Students will be referred to learning resources on the Internet and in the ELC's Centre for Independent Language Learning. Additional reference materials will be recommended as required.</p>																																					
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="4">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> </tr> </thead> <tbody> <tr> <td>1. Academic essay 1</td> <td>30%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>2. Academic essay 2</td> <td>30%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>3. Oral presentation</td> <td>40%</td> <td>✓</td> <td>✓</td> <td></td> <td>✓</td> </tr> <tr> <td>Total</td> <td>100 %</td> <td colspan="4"></td> </tr> </tbody> </table> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes: Assessments 1 and 2 necessitate achievement of LOs (a), (b) and (c) in order to write an effective academic essay via the process of extending and improving the essay for assessment 1. In order for students to present an effective academic oral presentation, as demanded in assessment 3, they will need to read, note and synthesise from a variety of sources, and refer to those sources in their presentation (ref. LOs (a), (b) and (d)).</p>				Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)				a	b	c	d	1. Academic essay 1	30%	✓	✓	✓		2. Academic essay 2	30%	✓	✓	✓		3. Oral presentation	40%	✓	✓		✓	Total	100 %				
Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)																																				
		a	b	c	d																																	
1. Academic essay 1	30%	✓	✓	✓																																		
2. Academic essay 2	30%	✓	✓	✓																																		
3. Oral presentation	40%	✓	✓		✓																																	
Total	100 %																																					

	In addition to these assessments, students are required to complete further language training, through web-based language work, reading tasks and online reflections. The additional language training offered in online tasks is aligned with all the four LOs. In some of the tasks, students to critically read and summarise information contained in a variety of sources, as required in LOs (a) and (b).	
Student Study Effort Expected	Class contact:	
	▪ Seminars	39 Hrs.
	Other student study effort:	
	▪ Self study/preparation	78 Hrs.
	Total student study effort	117Hrs.
Reading List and References	<p><u>Course material</u> Learning materials developed by the English Language Centre</p> <p><u>Recommended references</u></p> <ul style="list-style-type: none"> ▪ Bailey, S. (2014). <i>Academic writing: a handbook for international students</i>. Abingdon: Routledge. ▪ Comfort, J. (2001). <i>Effective presentations</i>. Oxford: Cornelsen & Oxford University Press. ▪ Hung, T. T. N. (2005). <i>Understanding English grammar: A course book for Chinese learners of English</i>. Hong Kong: Hong Kong University Press. ▪ Tang, R. (2012). <i>Academic writing in a second or foreign language: Issues and challenges facing ESL/EFL academic writers in higher education contexts</i>. London: Continuum International Pub. ▪ Zwier, L. J. (2002). <i>Building academic vocabulary</i>. Ann Arbor, MI: University of Michigan Press. 	

Subject Description Form

Subject Code	ELC2011
Subject Title	Advanced English Reading and Writing Skills
Credit Value	3
Level	2
Pre-requisite / Co-requisite	Pre-requisite: ELC1012 / ELC1013 English for University Studies
Objectives	This subject aims to help students become more effective readers and writers. It focuses on developing students' facility to read a variety of texts in a critical manner, both intensively and extensively; and to write texts that demonstrate knowledge and insight.
Intended Learning Outcomes	<p>Upon successful completion of the subject, students will be able to examine a variety of texts, including literary texts, and:</p> <ol style="list-style-type: none"> a. reflect on and critically analyze texts of different genres and styles, identifying the writer's aims and stance b. identify and evaluate language used to make claims and support these with valid arguments c. write a text on a chosen topic that includes their opinion and interpretation of some key issues and demonstrates critical thinking and creativity
Subject Synopsis / Indicative Syllabus	<p>Reading strategies Reading extensively to appreciate the use of language, acquire information, promote understanding, and develop empathy. Reading intensively to investigate a particular topic and develop an in-depth understanding of issues and stances. Reading critically to extract implications, identify writers' assumptions and purposes, and analyze issues raised in texts written from different perspectives.</p> <p>Writing strategies Describing and analyzing the structure, meaning and characteristics of a variety of texts. Presenting views and arguments to educated readers with sophisticated language and appropriate visual images and formats.</p>
Teaching/Learning Methodology	<p>The study method is primarily seminar-based. Following a blended learning approach, activities include teacher input as well as in- and out-of-class work involving sharing and discussion of reading experiences; and reading, evaluating and drafting texts. The process approach to writing is adopted, and students make use of e-learning resources to engage in discussions and to reflect on their learning.</p> <p>Learning materials developed by the English Language Centre are used throughout the course. Students will be referred to learning resources on the Internet and in the ELC's Centre for Independent Language Learning. Additional reference materials will be recommended as required.</p>

Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)		
			a	b	c
	1. Analyzing genres of writing	30%	✓	✓	
2. Reflective writing	30%	✓			
3. Feature article writing	40%			✓	
Total	100%				
<p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>Assessment 1 requires students to employ effective critical reading and thinking skills to interpret texts, identify the writer's style and stance, and evaluate the choice of language used; and is aligned with ILOs (a) and (b). Assessment 2 requires students to write a reflection after reading a range of literary genres and sharing their ideas in class; and is aligned with ILO (a). Assessment 3 requires students to first conduct research and gain some insight into a particular topic, then produce an article which can inform and impress readers through its substance, structure and language; and is aligned with ILO (c). Through these assessments, students will be able to develop and demonstrate more advanced reading and writing skills.</p>					
Student Study Effort Expected	Class contact:				
	Seminars		39 Hrs.		
	Other student study effort:				
	Online forums and blogs Readings and sharing session preparation Research and drafting/revising of texts		78 Hrs.		
	Total student study effort:		117 Hrs.		
Reading List and References	<p><i>Course material</i> Learning materials developed by the English Language Centre</p> <p><i>Recommended references</i> Best, J. (2001). <i>Damned lies and statistics: Untangling numbers from the media, politicians, and activists</i>. Berkeley, CA: University of California Press.</p> <p>Cooper, S. & Patton, R. (2010). <i>Writing logically, thinking critically</i>. New York, NY: Longman.</p> <p>Damer, T. E. (2009). <i>Attacking faulty reasoning: A practical guide to fallacy-free arguments</i>. Belmont, CA: Wadsworth Cengage Learning.</p>				

	<p>Kennedy, X. J. & Gioia, D. (2010). <i>Literature: An introduction to fiction, poetry, drama, and writing</i> (11th ed.). New York, NY: Longman.</p>
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	<p>Mefcalfe, M. (2006). <i>Reading critically at university</i>. Thousand Oaks, CA: Sage.</p>
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Subject Description Form

Subject Code	ELC2012
Subject Title	Persuasive Communication
Credit Value	3
Level	2
Pre-requisite / Co-requisite/ Exclusion	Pre-requisite: ELC1012 or ELC1013 English for University Studies
Objectives	This subject aims to help students become more persuasive communicators in a variety of contexts that they may encounter at university and in the workplace.
Intended Learning Outcomes <i>(Note 1)</i>	<p>By the end of the subject, students should be able to communicate effectively in an English-medium environment through:</p> <ul style="list-style-type: none"> a) writing persuasive texts intended for a variety of audiences b) communicating persuasively in oral contexts c) making persuasive arguments in formal discussions <p>To achieve these, students are expected to use language and text structure appropriate to the context, select information critically, and present and support stance and opinion.</p>
Subject Synopsis/ Indicative Syllabus <i>(Note 2)</i>	<p>1. Preparing for effective persuasion Assessing the situation; selecting relevant content; organising ideas and information; selecting an appropriate tone, distance and level of formality to support the communication of messages.</p> <p>2. Persuasion through writing Developing and practising appropriate language, tone, style and structure; achieving cohesion and coherence.</p> <p>3. Persuasion through speaking Developing and practising appropriate verbal and non-verbal skills for persuasive oral communication; improving and extending relevant pronunciation features, including articulation, pausing, intonation, word stress and sentence stress.</p>
Teaching/Learning Methodology <i>(Note 3)</i>	<p>The study method is primarily seminar-based. Activities include teacher input as well as individual and group work involving reading and appreciating texts, discussions and presentations of ideas.</p> <p>Learning materials developed by the English Language Centre are used</p>

	throughout the course. Students will be referred to learning resources on the Internet and in the ELC's Centre for Independent Language Learning. Additional reference materials will be recommended as required.						
Assessment Methods in Alignment with Intended Learning Outcomes (Note 4)	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)				
			a	b	c		
	1. Speech	30%		✓			
	2. Persuasive written text	40%	✓				
	3. Debate	30%		✓	✓		
Total	100 %						
	<p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>Assessment 1 is an individual speech. Assessment 2 concentrates on persuasive writing. Assessment 3 examines a different aspect of persuasion, the debate.</p>						
Student Study Effort Expected	Class contact:						
	▪ Seminars		39 Hrs.				
	Other student study effort:						
	▪ Self study/preparation		78 Hrs.				
	Total student study effort		117 Hrs.				
Reading List and References	<i>Required readings</i>						
	ELC-provided subject materials.						
	<i>Other readings</i>						
	Breaden, B. L. (1996). <i>Speaking to persuade</i> . Fort Worth, TX: Harcourt Brace College.						
	Covino, W.A. (1998). <i>The elements of persuasion</i> . Boston: Allyn and Bacon.						
	Edwards, R. E. (2008). <i>Competitive debate: The official guide</i> . New York: Alpha Books.						
Leanne, S. (2008). <i>Say it like Obama: The power of speaking with purpose and vision</i> . New York: McGraw Hill.							
Rogers, W. (2007). <i>Persuasion: messages, receivers, and contexts</i> . Lanham,							

	<p>MD: Rowman & Littlefield Publishers.</p> <p>Stiff, J. B. (2003). <i>Persuasive communication</i> (2nd ed.). New York: Guilford Press.</p>
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Subject Description Form

Subject Code	ELC2013
Subject Title	English in Literature and Film
Credit Value	3
Level	2
Pre-requisite / Co-requisite/ Exclusion	Pre-requisite: English for University Studies (ELC1012/1013)
Objectives	<p>This subject aims to introduce students to a range of literary genres in English as well as to enable them to consider differences in media representations of genres, and to appreciate and negotiate the meanings of a variety of literary texts.</p> <p>It is also intended that the subject will help students further develop literacy, as well as higher order thinking and life-long learning skills.</p>
Intended Learning Outcomes <i>(Note 1)</i>	<p>Upon successful completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> examine and analyse literary texts from different perspectives discuss literary techniques employed by writers appreciate and articulate differences in textual and visual media representations <p>To achieve the above outcomes, students are expected to use language and text structure appropriate to the context, select information critically, and present and support stance and opinion.</p>
Subject Synopsis/ Indicative Syllabus <i>(Note 2)</i>	<ol style="list-style-type: none"> Written communication Describing and interpreting content and language in literary texts; employing appropriate grammatical structures and vocabulary. Spoken communication Presenting critical evaluation of literary works effectively and convincingly. Reading Developing understanding of and competence in using literary devices such as metaphor, simile and symbolism, via reading literary texts and viewing film versions. Language development Improving fluency and pronunciation, and extending grammatical and lexical competence.

<p>Teaching/Learning Methodology</p> <p>(Note 3)</p>	<p>The study method is primarily seminar-based. Following a blended delivery approach, activities include teacher input as well as in- and out-of-class individual and group work involving listening to and viewing a variety of audio-visual sources, reading and drafting texts, conducting internet research, making mini-presentations, participating in discussions, and comparing various representations of literature. Students will make use of elearning resources and web-based work to further improve their English literacy skills.</p> <p>Learning materials developed by the English Language Centre are used throughout the course. Students will be referred to learning resources on the Internet and in the ELC's Centre for Independent Language Learning. Additional reference materials will be recommended as required.</p>																															
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p> <p>(Note 4)</p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="3">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> </tr> </thead> <tbody> <tr> <td>1. Individual Essay</td> <td>40%</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>2. Group Presentation</td> <td>30%</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>3. Individual Project</td> <td>30%</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>Total</td> <td>100 %</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>In assessment 1, students are required to write an individual paper in which they critically reflect on their reading of prose, and by so doing, demonstrate their achievement of LO (a). Assessments 2 and 3 are aligned with all three LOs. Assessment 2 assesses students' understanding of a literary drama and requires comparison of the merits of its textual and theatrical versions. Assessment 3 is an individual project that requires interpretation and presentation of more creative literature and audio-visual sources.</p>				Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)			a	b	c	1. Individual Essay	40%	✓	✓	✓	2. Group Presentation	30%	✓	✓	✓	3. Individual Project	30%	✓	✓	✓	Total	100 %			
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<p>Reading List and References</p>	<p><i>Recommended reading</i></p> <p>The PolyU library retains either hardcopies or electronic copies of the following titles. The titles can also be found online.</p> <p>Stam, R., and Raengo, A. (eds.). (2004). <i>A companion to literature and film</i>. [electronic source] Blackwell reference online. Malden: Blackwell. Call number PN1995.3.C65 2004eb</p>																															

http://www.blackwellreference.com/subscriber/uid=262/book?id=g9780631230533_9780631230533&authstatuscode=202

Other readings will be specified by the ELC teacher, and may contain short fiction, novelettes, plays and poetry.

Subject Description Form

Subject Code	ELC2014
Subject Title	Advanced English for University Studies
Credit Value	3
Level	2
Pre-requisite/ Co-requisite/ Exclusion	Pre-requisite: English for University Studies (ELC1012/ELC1013) (unless exempted)
Objectives	This subject aims to help students study effectively in the University's English medium learning environment, and to improve and develop their English language proficiency within a framework of university study contexts.
Intended Learning Outcomes <i>(Note 1)</i>	<p>Upon successful completion of the subject, students will be able to:</p> <ul style="list-style-type: none"> a) research relevant academic texts for a topic and integrate the sources into a position argument essay appropriately and effectively; b) plan, research for, write and revise a position argument essay; and c) present and justify views effectively in a mini oral defence. <p>To achieve the above outcomes, students are expected to use language and text structure appropriate to the context, select information critically, and present and support stance and opinion logically and persuasively.</p>
Subject Synopsis/ Indicative Syllabus <i>(Note 2)</i>	<p>1. Written communication Developing logical and persuasive arguments; applying a variety of organisation patterns in discursive writing, including the writing of explanatory and evaluative texts; selecting information from academic texts critically; supporting stance; maintaining cohesion and coherence in discursive writing; achieving appropriate style and tone.</p> <p>2. Spoken communication Enhancing and practising the specific oral and aural skills required to participate effectively in an academic discussion and to present and justify views in an oral defence.</p> <p>3. Reading and listening Understanding the content and structure of information in oral and written texts; comprehending, inferring and evaluating messages and attitude.</p> <p>4. Language development Improving and extending relevant features of grammar, vocabulary and pronunciation.</p>

<p>Teaching/Learning Methodology</p> <p><i>(Note 3)</i></p>	<p>The study method is primarily seminar-based. Following a blended delivery approach, activities include teacher input as well as in- and out-of-class individual and group work involving drafting and evaluating texts, mini-presentations, discussions and simulations. The process approach to writing is adopted, and students make use of elearning resources to engage in academic discussions and to reflect on their learning.</p> <p>Learning materials developed by the English Language Centre are used throughout the course. Students will be referred to learning resources on the Internet and in the ELC's Centre for Independent Language Learning. Additional reference materials will be recommended as required.</p>																																
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p> <p><i>(Note 4)</i></p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="3">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> </tr> </thead> <tbody> <tr> <td>1. Position Argument Essay (draft)</td> <td>20%</td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>2. Academic Presentation & discussion</td> <td>35%</td> <td>✓</td> <td></td> <td>✓</td> </tr> <tr> <td>3. Position Argument Essay (final)</td> <td>45%</td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>Total</td> <td>100 %</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>Assessments 1 and 3 assess students' abilities to produce a coherent academic text which requires research, and effective use and referencing of sources (ref. LOs (a) and (b)). Assessment 2 assesses their abilities to plan, present and justify their views in an oral defence (ref. LOs (a) and (c)).</p> <p>In addition to their assessments, students complete further language training by carrying out academic research and by completing a variety of independent-learning tasks focussing on grammar and academic skills such as paraphrasing and discussion strategies.</p>					Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)			a	b	c	1. Position Argument Essay (draft)	20%	✓	✓		2. Academic Presentation & discussion	35%	✓		✓	3. Position Argument Essay (final)	45%	✓	✓		Total	100 %			
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	Total student study effort	117 Hrs.
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Reading List and References	<p><i>Course material</i></p> <p>Learning materials developed by the English Language Centre</p> <p><i>Recommended references</i></p> <p>Davies, B. (2012). <i>Reading research: A user friendly guide for health professionals</i> (5th ed.). Toronto, ON: Elsevier Canada.</p> <p>Faigley, L. (2012). <i>Backpack writing: Reflecting, arguing, informing, analyzing, evaluating</i> (3rd ed.). Boston, MA: Pearson.</p> <p>Madden, C. and Rohlck, T. N. (1997). <i>Discussion and interaction in the academic community</i>. Ann Arbor, MI: University of Michigan Press.</p> <p>McWhorter, K. T. (2007). <i>Academic reading</i> (6th ed.). New York, NY: Pearson/Longman</p> <p>Oshima, A. & Hogue, A. (2006). <i>Writing academic English</i> (4th ed.). White Plains, NY: Pearson/Longman.</p> <p>Reinhart, S. M. (2013). <i>Giving academic presentations</i> (2nd ed.). Ann Arbor, MI: University of Michigan Press.</p> <p>Rost, M. (2013). <i>Active listening</i>. Harlow, England: Pearson.</p> <p>Wood, N. V. (2012). <i>Perspectives on argument</i> (7th ed.). Boston, MA: Pearson.</p>
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The Hong Kong Polytechnic University

Subject Description Form

Subject Code	ELC3531
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Subject Title	Professional Communication in English for Engineering Students
Credit Value	2
Level	3
Pre-requisite / Co-requisite	English LCR subjects
Objectives	This subject aims to develop the language competence for professional communication in English required by students to communicate effectively with various parties and stakeholders in regard to engineering-related project proposals.
Intended Learning Outcomes	<p>Upon completion of the subject, and in relation to effective communication with a variety of intended readers/audiences in English, students will be able to:</p> <ul style="list-style-type: none"> d. plan, organise and produce professionally acceptable project proposals with appropriate text structures and language for different intended readers e. plan, organise and deliver effective project-related oral presentations with appropriate interactive strategies and language for different intended audiences f. adjust the style of expression and interactive strategies in writing and speaking in accordance with different intended readers/audiences
Subject Synopsis / Indicative Syllabus	<p>1. Project proposal in English</p> <ul style="list-style-type: none"> • Planning and organising a project proposal • Explaining the background, rationale, objectives, scope and significance of a project • Referring to the current situation or existing literature to substantiate a project proposal • Describing the methods of study • Describing and discussing anticipated project results and (if applicable) results of a pilot study • Presenting the budget, schedule and (if applicable) method of evaluation • Writing an executive summary <p>2. Oral presentation of project proposal in English</p> <ul style="list-style-type: none"> • Selecting content for an audience-focused presentation • Choosing language and style appropriate to the intended audience • Using appropriate transitions and maintaining coherence in a team presentation • Using effective verbal and non-verbal interactive strategies
Teaching/Learning Methodology	<p>The subject is designed to develop the English language skills, both oral and written, that students need to use to communicate effectively and professionally with a variety of stakeholders of engineering-related projects. It builds upon the language and communication skills covered in GUR language training subjects.</p> <p>The study approach is primarily seminar-based. Seminar activities include instructor input as well as individual and group work, involving drafting and evaluating texts,</p>

	<p>mini-presentations, discussions and simulations.</p> <p>The learning and teaching activities in the subject will focus on a course-long project which will engage students in proposing and reporting on an engineering-related project to different intended readers/audiences. During the course, students will be involved in:</p> <ul style="list-style-type: none"> • planning and researching the project • writing project-related documents such as project proposals • giving oral presentations to intended stakeholders of the project 																																															
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>1. Project proposal in English</td> <td>40%</td> <td>✓</td> <td></td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2. Oral presentation of project proposal in English</td> <td>60%</td> <td></td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td>100%</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>The assessments will arise from a course-long engineering-related project. Students will collaborate in groups in planning, researching, discussing and giving oral presentations on the project. They will be assessed on written documents and oral presentations targeted at different intended readers/audiences. This facilitates assessment of students' ability to select content and use language and style appropriate to the purposes and intended readers/audiences.</p> <table border="1"> <thead> <tr> <th>Assessment type</th> <th>Intended readers/audience</th> <th>Timing</th> </tr> </thead> <tbody> <tr> <td>1. Project proposal in English Each team writes a proposal of 2000-2500 words; and each member writes a report of 200-250 words explaining his/her contribution to the project</td> <td>Mainly engineering experts</td> <td>Week 8</td> </tr> <tr> <td>2. Oral presentation of project proposal in English Each team delivers a speech (30 minutes for a team of four), simulating a presentation of the final proposal</td> <td>Mainly non-experts</td> <td>Weeks 12-13</td> </tr> </tbody> </table>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)						a	b	c				1. Project proposal in English	40%	✓		✓				2. Oral presentation of project proposal in English	60%		✓	✓				Total	100%							Assessment type	Intended readers/audience	Timing	1. Project proposal in English Each team writes a proposal of 2000-2500 words; and each member writes a report of 200-250 words explaining his/her contribution to the project	Mainly engineering experts	Week 8	2. Oral presentation of project proposal in English Each team delivers a speech (30 minutes for a team of four), simulating a presentation of the final proposal	Mainly non-experts	Weeks 12-13
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Student Study Effort Expected	Class contact:	
	Seminars	26 Hrs.
	Other student study effort:	
	Researching, planning and writing the project Rehearsing the presentation	52 Hrs.
	Total student study effort:	78 Hrs.
Reading List and References	<ol style="list-style-type: none"> 1. D. F. Beer, Ed., <i>Writing and Speaking in the Technology Professions: A practical guide</i>, 2nd ed. Hoboken, NJ: Wiley, 2003. 2. R. Johnson-Sheehan, <i>Writing Proposals</i>, 2nd ed. New York: Pearson/Longman, 2008. 3. S. Kuiper, <i>Contemporary Business Report Writing</i>, 4th ed. Mason, OH: South-Western, 2009. 4. M. H. Markel, <i>Practical Strategies for Technical Communication</i>. New York: Bedford/St. Martin's, 2016. 5. D. C. Reep, <i>Technical Writing: Principles, strategies, and readings</i>, 8th ed. Boston: Pearson/Longman, 2011. 6. E. D. Zanders and L. Macleod, <i>Presentation Skills for Scientists: A practical guide</i>, 2nd ed. Cambridge: Cambridge University Press, 2018. 	

**Subjects offered by
Faculty of Engineering**

Subject Description Form

Subject Code	ENG1003
Subject Title	Freshman Seminar for Engineering
Credit Value	3
Level	1
Pre-requisite / Co-requisite/ Exclusion	Nil
Objectives	<p>The objectives of this subject are to:</p> <ol style="list-style-type: none"> (1) Introduce students to the engineering broad discipline and enthuse them about their major study (2) Cultivate students' creativity and problem-solving ability, and global outlook (3) Introduce students to the concept of entrepreneurship (4) Engage the students in desirable forms of learning at university that emphasizes self-regulation, autonomous learning and deep understanding
Intended Learning Outcomes	<p>Upon completion of the subject, students will:</p> <ol style="list-style-type: none"> (a) Be able to demonstrate an understanding and an enthusiasm about the engineering broad discipline and their major study (b) Develop their problem-solving ability and global outlook (c) Be able to demonstrate an understanding of entrepreneurship (d) Be able to research for information, formulate a project plan, and manage a project with initiative (e) Be able to demonstrate an understanding of academic integrity.
Subject Synopsis/ Indicative Syllabus	<p>1. <i>Online Tutorial on Academic Integrity (4 hours*)</i> Students will be required to complete successfully an <i>Online Tutorial on Academic Integrity</i> on or before week 5 of the first semester. The students will understand the importance of academic integrity by completing the Online Tutorial.</p> <p>2. <i>Seminars (12 hours*)</i> There will be seminars given by various speakers on various topics to introduce to students the engineering broad discipline, to enthuse them about their major study, to arouse students' interests in engineering and to cultivate their understanding of and sense of belonging to the discipline and the engineering profession, and to cultivate students' global outlook. The formats of the seminars may be, but not limited to, Departmental Seminars, and Renowned Speaker Seminar.</p> <p>3. <i>Freshman Project (45 hours*)</i> There will be practical workshops, presentation and demonstration sessions for the Freshman Project. The freshman project aims at developing students' creativity, problem-solving skills, research for information, and project</p>

	<p>management abilities through practical and hands-on tasks at a level commensurate with their first-year engineering backgrounds. Students will work in small groups under the guidance of teachers/instructors to design and implement an engineering solution to some given problems.</p> <p>4. <i>Entrepreneurship Project (45 hours)*</i> The entrepreneurship project is designed to develop students' appreciation and understanding about entrepreneurship and the commercialization process by attending lectures, workshops and tutorials. In the course of the Entrepreneurship Project, students will identify technology opportunities and learn the skills of preparing a simple business plan.</p> <p>(* Note: hours indicate total student workload)</p>
<p>Teaching/Learning Methodology</p>	<p><i>Online Tutorial on Academic Integrity</i></p> <p>The <i>Online Tutorial on Academic Integrity (OTAI)</i> is developed by the University to help the students understand the importance of academic integrity. By going through the Online Tutorial, students will be aware of the importance of upholding academic integrity during University study. They will also learn good practices by which to stay clear of dishonest behaviors and academic plagiarism. Completing the OTAI is a completion requirement of Freshman Seminar. For successful completion of the OTAI, the students need to attempt the pre-test in the Tutorial, read all four modules in the Tutorial, obtain at least 75% in the post-test in the Tutorial and sign the Honour Declaration before the completion deadline. Students who fail to complete the OTAI before the completion deadline will fail the Freshman Seminar for Engineering.</p> <p><i>Seminars</i></p> <p>The seminars (such as renowned speaker seminars and departmental seminars) are designed to arouse students' interest about engineering. The delivery mode will be <i>interactive</i> and <i>engaging</i>. Students will be motivated to search for information and do background reading. They will be encouraged to raise questions and discuss with the presenters. Assessment tasks (quizzes) will be designed to measure students' learning outcomes as well as to encourage participation and interaction.</p> <p><i>Freshman Project</i></p> <p>For the Freshman Project, students will work collaboratively with their group members to design and implement an engineering solution to a given problem under the guidance of instructors. There will be close staff-students and students-students <i>interaction</i>. Students will be given opportunities to develop creativity, problem-solving skills, research for information and project management abilities. Assessment tasks will consist of demonstration, presentation, reports, and reflective essay writings. These are designed to evaluate individual student's performance and achievement of the relevant intended learning outcomes as well as to encourage active participation. Appropriate pedagogies will also be used to promote the "Learning to Learn" ability of students.</p> <p><i>Entrepreneurship Project</i></p> <p>There will be lectures, workshops, and tutorials. A general overview of the concepts required to conduct the project will be provided to students through</p>

	lectures. They will then work in small groups in a workshop to appreciate the essential elements in the development of a business plan and subsequently to produce a simple business plan and to present it to fellow classmates. Assessment will focus towards students' understanding about entrepreneurship, innovation and creativity.																																															
Assessment Methods in Alignment with Intended Learning Outcomes	<p>Students' performance in this subject will be assessed by using a letter-grading system in accordance with the University's convention from grade F (failure) to A+. The relative weights of the different assessment components are as follows:</p> <table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="5">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th>e</th> </tr> </thead> <tbody> <tr> <td><i>Online Tutorial on Academic Integrity</i></td> <td>0%</td> <td></td> <td></td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td><i>Seminars</i> Quizzes</td> <td>10%</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td><i>Freshman Project</i> Project demonstration, presentation, report and reflective essay writing</td> <td>45%</td> <td></td> <td>✓</td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td><i>Entrepreneurship Project</i> Business plan</td> <td>45%</td> <td></td> <td></td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>Total</td> <td>100 %</td> <td colspan="5"></td> </tr> </tbody> </table> <p><i>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</i></p> <p><u>Quizzes</u> (online or paper-based) can measure the students' <i>understanding</i> about the engineering discipline. Through <u>reflective essays</u>, students can reflect on their appreciation and understanding about the <i>engineering</i> discipline. Through project <u>demonstration</u>, <u>presentation</u> and project <u>reports</u>, students can demonstrate their <i>creativity and problem-solving skills abilities</i>. They can also demonstrate their <i>ability to research for information, formulate a project plan, and manage a project with initiative</i>. Through <u>business plan</u>, students can demonstrate their understanding about <i>entrepreneurship</i>.</p> <p>Pass Conditions</p> <p>In order to pass this subject, students must obtain a Grade D or above for total marks comprising the Seminars, Freshman Project and Entrepreneurship Project Project as described here <u>AND</u> successfully complete the Online Tutorial on Academic Integrity (OTAI) on or before week 5 of semester 1 as described in</p>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)					a	b	c	d	e	<i>Online Tutorial on Academic Integrity</i>	0%					✓	<i>Seminars</i> Quizzes	10%	✓	✓				<i>Freshman Project</i> Project demonstration, presentation, report and reflective essay writing	45%		✓		✓		<i>Entrepreneurship Project</i> Business plan	45%			✓	✓		Total	100 %					
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	the previous section.	
Student Study Effort Expected	Class contact:	
	<ul style="list-style-type: none"> ▪ Introduction and Seminars (such as Departmental Seminars, Renowned Speaker Seminar) 	6 hours
	<ul style="list-style-type: none"> ▪ Freshman project: 3 hours per week for 5 weeks 	15 hours
	<ul style="list-style-type: none"> ▪ Entrepreneurship project: 3 hours per week for 5 weeks 	15 hours
	<ul style="list-style-type: none"> ▪ Other student study effort: 4 hours for Online Tutorial on Academic Integrity; 6 hours for seminars quizzes preparation; 60 hours for Freshman project and Entrepreneurship project: background information search, project work preparation, meeting and discussion, presentation and demonstration, and report writing. 	70 Hours
	<ul style="list-style-type: none"> ▪ Total student study effort 	106 Hours
Reading and References List	<p>H. Scott Fogler and Steven E. LeBlanc, <i>Strategies for creative problem solving</i>, Upper Saddle River, N.J. : Prentice Hall, 2008</p> <p>N.J. Smith (ed), <i>Engineering project management</i>, Oxford, UK; Malden, MA: Blackwell, 2008</p> <p>Gene Moriaty, <i>The engineering project: its nature, ethics, and promise</i>, University Park, Pa.: Pennsylvania State University Press, 2008.</p> <p>K. Allen, <i>Entrepreneurship for scientists and engineers</i>, Upper Saddle River, N.J. : Prentice Hall, 2010.</p> <p>The Hong Kong Institution of Engineers, “Engineering Our City”, Youtube clip ref. no. nYMmI6vIVeQ</p> <p>HKIE Corporate Video, Youtube clip ref. no. INMV18MuNEY</p>	

(revised) June 2020

Subject Description Form

Subject Code	ENG2001
Subject Title	Fundamentals of Materials Science and Engineering
Credit Value	3
Level	2
Pre-requisite / Co-requisite/ Exclusion	Nil
Objectives	<ol style="list-style-type: none"> 1. To realize the impact of the development of engineering materials on human civilization; 2. To enable students to establish a broad knowledge base on the structure and properties of materials for solving engineering problems. 3. To enable students to understand the applications and selection of engineering materials based on the consideration of properties, cost, ease of manufacture, environmental issues and their in service performance.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> a. comprehend the importance of materials in engineering and society; b. explain the properties and behaviour of materials using fundamental knowledge of materials science. c. apply the knowledge of materials science to analyze and solve basic engineering problems related to stress, strain and fracture of materials; d. select appropriate materials for various engineering applications taking into consideration of issues in cost, quality and environmental concerns.
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. <u>Introduction</u> Historical perspective; Evolution of engineering materials; Materials science and engineering; Classification of materials 2. <u>Atomic Structure and Structures of Materials</u> Atomic structure; Bonding forces and energies; Primary interatomic bonds and secondary bonding; Crystalline and non-crystalline materials; Phase diagram and microstructure of alloys 3. <u>Electrical and Optical Properties of Materials</u>

	<p>Conductors and insulators; Semi-conductor materials; N-type and P-type semiconductors; P/N junction; Light interactions with materials; Light emitting diode (LED) and photovoltaics; Light propagation in optical fibers; Liquid crystal; Photoelasticity</p> <p>4. <u>Mechanical Properties of Materials</u></p> <p>Concept of stress and strain; Stress-strain behaviour; Elastic and plastic properties of materials; Concepts of dislocations and strengthening mechanisms; Tensile properties; Elastic recovery after plastic deformation; Hardness; Stress concentration; Impact energy, Fracture toughness; Design and safety factors</p> <p>5. <u>Introduction to Failure Analysis and Prevention</u></p> <p>Fundamentals of fracture: ductile, brittle, fatigue and creep; Corrosion; Nondestructive testing; Techniques for failure analysis and prevention</p> <p>6. <u>Selection of Engineering Materials</u></p> <p>Characteristics of metallic, polymeric, ceramic, electronic and composite materials; Economic, environmental and recycling issues</p>																																																						
<p>Teaching/Learning Methodology</p>	<p>The subject will be delivered mainly through lectures but tutorials, case studies and laboratory work will substantially supplement which. Practical problems and case studies of material applications will be raised as a focal point for discussion in tutorial classes, also laboratory sessions will be used to illustrate and assimilate some fundamental principles of materials science. The subject emphasizes on developing students' problem solving skills.</p>																																																						
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>1. Assignments</td> <td>15%</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td></td> <td></td> </tr> <tr> <td>2. Test</td> <td>20%</td> <td></td> <td>√</td> <td>√</td> <td>√</td> <td></td> <td></td> </tr> <tr> <td>3. Laboratory report</td> <td>5%</td> <td></td> <td>√</td> <td>√</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4. Examination</td> <td>60%</td> <td></td> <td>√</td> <td>√</td> <td>√</td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td>100 %</td> <td colspan="6"></td> </tr> </tbody> </table>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)						a	b	c	d			1. Assignments	15%	√	√	√	√			2. Test	20%		√	√	√			3. Laboratory report	5%		√	√				4. Examination	60%		√	√	√			Total	100 %						
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	<p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>The assignments are designed to reflect students' understanding of the subject and to assist them in self-monitoring of their progress.</p> <p>The laboratory report is designed to assess the capability of students in analyzing and reporting experimental data relates to learning outcome (b).</p> <p>The test and examination are for determining students' understanding of key concepts as well as for assessing their achievement of the learning outcomes.</p>	
Student Study Effort Expected	Class contact:	
	<ul style="list-style-type: none"> ▪ Lectures, tutorials, practical 	39Hrs.
	Other student study effort:	
	<ul style="list-style-type: none"> ▪ Guided reading, assignments and reports 	37Hrs.
	<ul style="list-style-type: none"> ▪ Self-study and preparation for test and examination 	47Hrs.
Reading List and References	<ol style="list-style-type: none"> 1. William D. Callister, Jr., David G. Rethwisch, <i>Fundamentals of materials science and engineering</i>, 4th edition, <i>E-Text</i> John Wiley & Sons; ISBN: 978-1-118-53126-6 2. William D. Callister, Jr., David G. Rethwisch, <i>Materials Science and Engineering</i>, 8th edition, <i>E-Text</i> John Wiley & Sons; ISBN: 978-1-118-37325-5 3. Materials World (Magazine of the Institute of Materials, Minerals and Mining) 	

Revised (April 2014)

Subject Description Form

Subject Code	ENG2003
Subject Title	Information Technology
Credit Value	3
Level	2
Pre-requisite / Co-requisite/ Exclusion	Nil
Objectives	To provide the foundation knowledge in internet applications, computer networks, and database management that is essential to modern information system design
Intended Subject Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <p><u>Category A: Professional/academic knowledge and skills</u></p> <ol style="list-style-type: none"> 1. Understand the functions and features of modern computing systems. 2. Understand the client-server architecture and be able to set up multiple internet applications. 3. Understand the principles of computer networks and be able to set up simple computer networks. 4. Understand the basic structure of a database system and be able to set up a simple database system. <p><u>Category B: Attributes for all-roundedness</u></p> <ol style="list-style-type: none"> 1. Solve problems using systematic approaches.
Subject Synopsis/ Indicative Syllabus	<p>Syllabus:</p> <ol style="list-style-type: none"> 1. <u>Introduction to computers</u> Introduction to information technology using Internet of Things as a real life example. Introduction to modern computing systems. 2. <u>Computer Networks</u> Introduction to computer networks (Client-Server Architecture). Study different internet applications (HTTP/FTP/DNS). Explain basic concepts on packet routing (Data Encapsulation/IP Addressing/Functions of Routers). Introduction to basic network security measures. 3. <u>Introduction to data processing and information systems</u>

	<p>Database systems – architecture, relational database concept, structural query language (SQL), database management systems, Web and database linking, database application development. Introduction to Information systems. Workflow management.</p> <p>Case study: Database design, implementation and management.</p>																																																														
Teaching/Learning Methodology	<p>There will be a mix of lectures, tutorials, and laboratory sessions/workshops to facilitate effective learning. Students will be given case studies to understand and practice the usage of modern information systems.</p>																																																														
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weightin g</th> <th colspan="5">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>A1</th> <th>A2</th> <th>A3</th> <th>A4</th> <th>B1</th> </tr> </thead> <tbody> <tr> <td>1. Quizzes (in tutorials)</td> <td>3%</td> <td>√</td> <td>√</td> <td>√</td> <td></td> <td>√</td> </tr> <tr> <td>2. Quizzes (in lectures)</td> <td>14%</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> </tr> <tr> <td>3. Workshops</td> <td>14%</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> </tr> <tr> <td>4. Mid-term Test</td> <td>11%</td> <td>√</td> <td>√</td> <td>√</td> <td></td> <td>√</td> </tr> <tr> <td>5. Assignment</td> <td>8%</td> <td></td> <td></td> <td></td> <td>√</td> <td>√</td> </tr> <tr> <td>6. Examination</td> <td>50%</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> <td>√</td> </tr> <tr> <td>Total</td> <td>100 %</td> <td colspan="5"></td> </tr> </tbody> </table> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>The assessment methods include an end-of-subject 2-hour written examination (total 50%) and other assessment methods (total 50%), including quizzes, a mid-term test, workshops, and an assignment, which cover intended subject learning outcomes A1, A2, A3, A4, and B1.</p>		Specific assessment methods/tasks	% weightin g	Intended subject learning outcomes to be assessed (Please tick as appropriate)					A1	A2	A3	A4	B1	1. Quizzes (in tutorials)	3%	√	√	√		√	2. Quizzes (in lectures)	14%	√	√	√	√	√	3. Workshops	14%	√	√	√	√	√	4. Mid-term Test	11%	√	√	√		√	5. Assignment	8%				√	√	6. Examination	50%	√	√	√	√	√	Total	100 %					
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	<ul style="list-style-type: none"> • Self study (3/week) 	39 Hours
	Total student study effort	108 Hours
Reading List and References	<ol style="list-style-type: none"> 1. B. Williams and S. Sawyer, <i>Using Information Technology: A Practical Introduction to Computers and Communications</i>, 11th ed., McGraw-Hill, 2014. 2. J. F. Kurose and K. W. Ross, <i>Computer Networking: A Top-Down Approach</i>, 7th ed., Pearson, 2016. 3. D. E. Comer, <i>Computer Networks and Internets</i>, 6th ed., Pearson, 2015. 4. B. A. Forouzan, <i>TCP/IP Protocol Suite</i>, 4th ed., Tmh, 2010. 5. W. Stalling, <i>Data and Computer Communications</i>, 10th ed., Pearson, 2013. 6. S. Morris and C. Coronel, <i>Database Systems: Design, Implementation, and Management</i>, 11th Edition, Course Technology, 2014. 7. M. Mannino, <i>Database Design, Application Development, & Administration</i>. 6th ed., Chicago Business Press, 2014. 	

(revised) July 2018

Subject Description Form

Subject Code	ENG3003
Subject Title	Engineering Management
Credit Value	3
Level	3
Pre-requisite/Co-requisite/Exclusion	Nil
Objectives	<p>This subject provides students with:</p> <ol style="list-style-type: none"> 1. A practical introduction to management and a comprehensive guide to the tools and techniques used in managing people and other resources. 2. Opportunities to trace the historical development and describe the functions of management, from planning, and decision making to organizing, staffing, leading, motivating, and controlling. It also includes a discussion on engineering ethics. 3. Opportunities to explore the core business strategy, technology, and innovation, and examine how these functions intertwine to play a central role in structural design, as well as supporting an organization's overall success.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> a. perform tasks in an organization related to organizing, planning, leading and controlling project and process activities; b. select appropriate management techniques for improving organizational structures, work procedures, and quality performance of operational tasks; c. analyze the factors that affect changes in the work environment, and be aware of the approaches in implementing change in an organization; d. be aware of the imperatives of ethical and business behaviors in engineering organizations in a fast-changing business environment.
Subject Synopsis/Indicative Syllabus	<ol style="list-style-type: none"> 1. <u>Introduction</u> General management concepts in organizations; Functions and types of industrial organizations; Organizational structures; Corporate objectives, strategy, and policy 2. <u>Industrial Management</u> Roles of managers: Process of management, leadership, planning, organizing,

	<p>motivating, and control of social and engineering activities; Quality management: Related tools and techniques</p> <p>3. <u>Project Management</u></p> <p>Project scope and objectives; Network analysis; Tools that support engineering operations and task scheduling</p> <p>4. <u>Management of Change</u></p> <p>Change leadership; Organizational change; Phases of planned change; Stress management; Factors that affect the execution of change</p> <p>5. <u>Effects of Environmental Factors</u></p> <p>The effects of extraneous factors on the operations of engineering organizations, such as ethics and corporate social responsibilities issues</p>																																														
<p>Teaching/Learning Methodology</p>	<p>A mixture of lectures, tutorial exercises, and case studies are used to deliver various topics in this subject. Some topics are covered by problem-based format whenever applicable in enhancing the learning objectives. Other topics are covered by directed study so as to develop students' "life-long learning" ability.</p> <p>The case studies, largely based on real experience, are designed to integrate the topics covered in the subject and to illustrate the ways various techniques are inter-related and applied in real life situations.</p>																																														
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>1. Coursework</td> <td>40%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td> <ul style="list-style-type: none"> • Group learning activities (10%) • Presentation (individual) (30%) </td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2. Final examination</td> <td>60%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td>100%</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>The coursework of this subject involves students working in groups to study cases that reflect the realities of management situations in an engineering setting. Through such exercises, students' ability to apply and synthesize acquired knowledge can be assessed on the basis of their performance in group</p>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed						a	b	c	d			1. Coursework	40%	✓	✓	✓	✓			<ul style="list-style-type: none"> • Group learning activities (10%) • Presentation (individual) (30%) 								2. Final examination	60%	✓	✓	✓	✓			Total	100%						
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	discussion, oral presentations, and the quality of their written reports on these case studies. A written final examination is also designed to assess the intended learning outcomes.	
Student Study Effort Expected	Class contact:	
	▪ Lectures and review	27 Hrs.
	▪ Tutorials and presentations	12 Hrs.
	Other student study effort:	
	▪ Research and preparation	30 Hrs.
	▪ Report writing	10 Hrs.
	▪ Preparation for oral presentation and examination	37 Hrs.
	Total student study effort	116 Hrs.
Reading List and References	<ol style="list-style-type: none"> 1. John R. Schermerhorn, Jr., 2013, Introduction to Management, 12th Ed., John Wiley 2. Robbins, S P, DeCenzo, D A, and Coulter, M, 2013, Fundamentals of Management Essential Concepts and Applications, 8th Ed., Pearson 3. Morse, L C and Babcock, D L, 2010, Managing Engineering and Technology: an Introduction to Management for Engineers, 5th Ed., Prentice Hall 4. White, M A and Bruton, G D, 2011, The Management of Technology and Innovation: A Strategic Approach, 2nd Ed., South-Western Cengage Learning 	

(revised) July 2015

Subject Description Form

Subject Code	ENG3004
Subject Title	Society and the Engineer
Credit Value	3
Level	3
Pre-requisite/Co-requisite/Exclusion	Nil
Objectives	<p>This subject is designed for engineering students as a complementary subject on the role of the professional engineer in practice and their responsibilities toward the profession, colleagues, employers, clients, and the public. The objectives of the subject are to enable students to</p> <ol style="list-style-type: none"> 1. appreciate the historical context of modern technology and the nature of the process whereby technology develops and the relationship between technology and the environment, as well as the implied social costs and benefits; 2. understand the social, political, legal, and economic responsibilities and accountability of the engineering profession and the organizational activities of professional engineering institutions; 3. be aware of the short-term and long-term effects related to safety and health, and the environmental impacts of technology; 4. observe professional conduct, as well as the legal and other applicable constraints, related to various engineering issues; and 5. develop a strong vision to optimize their contribution to sustainable development.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> a. identify and evaluate the effects of technology as it applies to the social, cultural, economic, legal, health, safety, and environmental dimensions of society; b. explain the importance of local and international professional training, professional conduct and ethics, and responsibilities in various engineering disciplines, particularly the Washington Accord; c. evaluate and estimate, in a team setting, the impact of contemporary issues, planned projects, and unforeseen technological advances related to engineers; effectively communicate and present the findings to laymen and peers.

<p>Subject Synopsis/ Indicative Syllabus</p>	<ol style="list-style-type: none"> 1. <u>Impact of Technology on Society</u> Historical cases and trends of technological innovation explored through their impact on social and cultural developments of civilization and their commonalities. 2. <u>Environmental Protection and Related Issues</u> Roles of the engineer in energy conservation, ecological balance, and sustainable development. 3. <u>Global Outlook for Hong Kong's Economy and Industries</u> Support organizations, policies and their impacts on industrial and economic development in Greater China, the Pacific Rim, and the world. 4. <u>Regulatory Organizations and Compliance</u> Discussion of engineer's responsibilities within different regulatory frameworks and environments; Examples from various entities such as the Labor Department and the Occupational Health and Safety Council; Legal dimensions to engineering such as liability, contract law, and industrial legislation. 5. <u>Professional Institutions</u> Local and overseas professional institutions; Washington Accord and the qualifications and criteria of professional engineers. 6. <u>Professional Ethics</u> Prevention of bribery and corruption; The work of the Independent Commission Against Corruption (ICAC); Social responsibilities of engineers.
<p>Teaching/Learning Methodology</p>	<p>Class comprises short lectures to provide essential knowledge and information on the relationships between society and the engineer under a range of dimensions.</p> <p>Other methods include discussions, case studies, and seminars to develop students' in-depth analysis of the relationships.</p> <p>Each student will submit two assignments based on their weekly learning activities, which will be part of the subject's evaluation. The assignments will deal with important issues of social, cultural, economic, legal, health, safety, and environmental dimensions of society.</p> <p>Students are assembled into groups; throughout the course, they will work on engineering cases by completing the following learning activities:</p> <ol style="list-style-type: none"> 1. Case analysis where students explore the relationships between society and the engineering issues of a project under specific dimensions; 2. Construction and assembly of a case portfolio which includes

	<ul style="list-style-type: none"> i. Presentation slides ii. Feedback critiques iii. Weekly summary reports iv. A report on Sustainable Development v. Individual Reflections 																																																
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	<p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>The coursework requires students to work in groups to study cases from the perspectives of the eight dimensions in an engineering setting. Based on these exercises, students' ability to apply and synthesize acquired knowledge can be assessed through their performance during groups' discussion, oral presentations, and the quality of their portfolio reports on the case studies.</p> <p>The closed-book examination is used to assess students' critical thinking and problem-solving skills when working on their own.</p>																																																
Student Study Effort Expected	Class contact:																																																
	▪ Lectures and review	27 Hrs.																																															
	▪ Presentation	12 Hrs.																																															
	Other student study efforts:																																																
	▪ Research and preparation	55 Hrs.																																															

	<ul style="list-style-type: none"> ▪ Report and Assignments writing 	25 Hrs.
	Total student study effort	119 Hrs.
Reading List and References	<p>Reference Books & Articles:</p> <ol style="list-style-type: none"> 1. Education for Sustainable Development - An Expert Review of Processes and Learning, UNESCO, 2011 2. Poel, Ibo van de, and Lambèr M. M. Royakkers. Ethics, Technology, and Engineering: an Introduction. Wiley-Blackwell, 2011 3. Engineering-Issues, Challenges and Opportunities for Development, USECO, 2010 4. Engineering for Sustainable Development: Guiding Principles, Royal Academy of Engineering, 2005 5. Securing the future: delivering UK sustainable development strategy, 2005 6. Johnston, F S, Gostelow, J P, and King, W J, 2000, <i>Engineering and Society Challenges of Professional Practice</i>, Upper Saddle River, N.J.: Prentice Hall 7. Hjorth, L, Eichler, B, and Khan, A, 2003, <i>Technology and Society A Bridge to the 21st Century</i>, Upper Saddle River, N.J.:Prentice Hall 8. The Council for Sustainable Development in Hong Kong, http://www.enb.gov.hk/en/susdev/council/ 9. Poverty alleviation: the role of the engineer, http://publications.arup.com/publications/p/poverty_alleviation_the_role_of_the_engineer/ <p>Reading materials:</p> <p>Engineering journals:</p> <ul style="list-style-type: none"> - Engineers by The Hong Kong Institution of Engineers - Engineering and Technology by The Institution of Engineers and Technology <p>Magazines: Time, Far East Economic Review</p> <p>Current newspapers: South China Morning Post, China Daily, Ming Pao Daily</p>	

(revised) July 2019

Subject Description Form

Subject Code	ENG4001
Subject Title	Project Management
Credit Value	3
Level	4
Pre-requisite/Co-requisite/Exclusion	Nil
Objectives	<p>This subject provides students with knowledge in:</p> <ol style="list-style-type: none"> 1. project management tools in business organizations, taking into account the time-cost relationships, resources, processes, risks, the project life cycle, organization, and management principles; 2. project management methodologies and their application; 3. choosing project variables for effective project management; and 4. various developments of project management.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> a. demonstrate good understanding of definition of a project, the characteristics and project life cycle; b. identify appropriate project variables and practices that are applicable to engineering projects; c. perform project planning, cost/resources estimation, evaluate and monitor of project progress; and d. propose project management solutions, taking into consideration the project objectives and constraints.
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. <u>Project Overview, Management Principles, and the Systems Approach</u> Characteristics of projects and project management. Management principles. Project organization. Team development. Systems concepts and principles. Conflict management. 2. <u>Project Methodologies and Planning Techniques</u> Constraints: time, cost, and technical performance. Work breakdown structure. Management of scope. Scheduling tools: Gantt charts, network analysis techniques, time-phased networks, CPA, PERT, and resource smoothing. 3. <u>Cost Estimation and Cost Control for Projects</u> Types of estimates. Budgeting project costs. Experience curve. Cost schedules and forecasts. Cost control systems.

	<p>4. <u>Evaluation and Control of Projects</u> Earned value measurement system. Managing project risks. Status reporting. Project closeout and termination.</p>																																									
<p>Teaching/Learning Methodology</p>	<p>A mixture of lectures, tutorial exercises, case studies, and laboratory work are used to deliver the various topics in this subject. Some material is covered using a problem-based format where this advances the learning objectives. Other material is covered through directed study to enhance the students' "learning to learn" ability. Some case studies are from best practices of projects, based on a literature review. They are used to integrate the topics and demonstrate to students how the various techniques are interrelated and applied in real-life situations.</p>																																									
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="4">Intended subject learning outcomes to be assessed</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> </tr> </thead> <tbody> <tr> <td>1. Tutorial exercises/ written report</td> <td>20%</td> <td></td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>2. Mid Term Test</td> <td>20%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>3. Written examination</td> <td>60%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>Total</td> <td>100%</td> <td colspan="4"></td> </tr> </tbody> </table> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>Continuous assessment (1) & (2): Test, written reports and tutorial exercises are used to assess students' understanding and application of the knowledge that they have learnt relative to learning outcomes (a), (b) and (c).</p> <p>Written examination: questions are designed to assess learning outcomes (a), (b), (c), and (d).</p>						Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed				a	b	c	d	1. Tutorial exercises/ written report	20%		✓	✓		2. Mid Term Test	20%	✓	✓	✓		3. Written examination	60%	✓	✓	✓	✓	Total	100%						
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	Total student study effort	118 Hrs.
Reading List and References	<ol style="list-style-type: none">1. Meredith JR and Mantel SJ, 2010, <i>Project Management: a Managerial Approach</i>, Wiley, Hoboken NJ2. Kerzner, H 2009, <i>Project Management: a Systems Approach to Planning, Scheduling, and Controlling</i>, John Wiley, New York3. Smith, NJ (ed.) 2008, <i>Engineering Project Management</i>, Blackwell, Oxford	

(Revised) July 2015

**Subjects offered by
Department of Management and Marketing**

Subject Description Form

Subject Offering Department	Department of Management and Marketing
Subject Code	MM1L01
Subject Title	Tango! Managing Self & Leading Others
GUR Requirements	<input type="checkbox"/> Cluster Area Requirements (CAR) <input type="checkbox"/> Human Nature, Relations and Development <input type="checkbox"/> Community, Organization and Globalisation <input type="checkbox"/> History, Cultures and World Views <input type="checkbox"/> Science, Technology and Environment <input type="checkbox"/> Freshman Seminar <input type="checkbox"/> Healthy Lifestyle <input checked="" type="checkbox"/> Leadership & Intra-Personal Development (LIPD) <input type="checkbox"/> Languages and Communication Requirement (LCR) <input type="checkbox"/> Service-Learning
Reading/Writing Requirements in English/Chinese	<input type="checkbox"/> China-Study Requirement (CSR) More than 60% CSR-related content <input type="checkbox"/> Eligible for “English Writing” (EW) designation Include an extensive piece of writing (2,500 words) <input type="checkbox"/> Eligible for “Chinese Writing” (CW) designation Include an extensive piece of writing (3,000 characters) <input type="checkbox"/> Eligible for “English Reading” (ER) designation Include a reading of an extensive text (100,000 words or 200 pages) <input type="checkbox"/> Eligible for “Chinese Reading” (CR) designation Include a reading of an extensive text (100,000 characters or 200 pages) <input checked="" type="checkbox"/> None
Medium of Instruction	English
Credit Value	3
Level	1
Normal Duration	1-semester
Pre-requisite/ Co-requisite/ Exclusion	None
Objectives	<p>This subject contributes to the achievement of the University Graduation Requirements relating to Leadership and Intra-personal Development (LIPD) and the FB BBA Generic Learning Outcomes.</p> <ol style="list-style-type: none"> 1. Aim to prepare you to lead yourself and others (aim of LIPD) 2. Apply creative thinking in the business setting (BBA Outcome 3) 3. Evaluate the process and structure through which organizations plan, decide, motivate and control their activities (BBA Outcome 9)

Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> a. Demonstrate understanding of intra-personal concepts and theories b. Demonstrate understanding of leadership concepts and theories c. Apply creative thinking in idea expression and presentation d. Apply leadership concepts and theories in organizational settings
Subject Synopsis/ Indicative Syllabus	<p>Self-management</p> <ol style="list-style-type: none"> 1. <i>Who am I?</i> <ol style="list-style-type: none"> a. self-understanding b. self-perceptions c. me in the eyes of others d. understanding personality 2. <i>Begin with the end in mind!</i> <ol style="list-style-type: none"> a. knowing priorities b. setting goals c. resources & action plan 3. <i>The superman's hurdles</i> <ol style="list-style-type: none"> a. own styles in leadership potentials b. managing stress c. understanding EQ 4. <i>Solve it using creativity</i> <ol style="list-style-type: none"> a. creativity in me, creative process, creativity in the workplace
	<p>Leading people</p> <ol style="list-style-type: none"> 5. <i>Connecting the minds</i> <ol style="list-style-type: none"> a. team formation b. team roles c. determinants of team effectiveness 6. <i>Candy box</i> <ol style="list-style-type: none"> a. leadership theories: meaning, attributes, behaviours 7. <i>Fight or flight?</i> <ol style="list-style-type: none"> a. types of conflict b. managing conflict c. caring about others 8. <i>Leadership challenges</i> <ol style="list-style-type: none"> a. desirable competencies in the real world

<p>Teaching/Learning Methodology</p>	<ol style="list-style-type: none"> 1. In general, through <i>active classes, guided readings and assignments</i> (one individual and one group assignment), students develop positive attitude, build knowledge and skills, and apply their learning in tracking and analyzing relevant issues toward personal and leadership effectiveness. 2. Specifically, weekly <i>2-hour lectures</i> are designed to channel students with theories, concepts, principles, strategies of self-management and leadership. Each lecture is focused on 1-2 specific topics for discussion. In-lecture short exercises are built-in to encourage student engagement track learning of students. 3. Furthermore, weekly <i>1-hour tutorials</i> are in place to support students to learn best. Classes incorporate group activities, case studies, discussion, and/or presentation, with its design referenced to the 4-stage of experiential learning (ie having an experience, reviewing the experience, concluding the experience and planning the next steps) and different types of learning styles (ie visual, auditory and kinaesthetic learners). 4. Students are directed and encouraged to appropriate <i>reading resources</i> for long-term continuous learning. 5. Written <i>assignments, exercises and presentations</i> enable the students to have their achievement/experience demonstrated and self-efficacy increased. The assignments facilitate the students to have interaction with the real world (such as face-to-face interview). 																																														
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting*</th> <th colspan="4">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>a.</th> <th>b.</th> <th>c.</th> <th>d.</th> </tr> </thead> <tbody> <tr> <td>Continuous Assessment</td> <td>100%</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Tutorial Attendance and Participation</td> <td>15%</td> <td>✓</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>Lecture Attendance and Performance through exercises/activities/ quizzes</td> <td>15%</td> <td>✓</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>Group Assignment</td> <td>35%</td> <td></td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>Individual Assignment</td> <td>35%</td> <td>✓</td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>Total</td> <td>100%</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p><i>*Weighting of assessment methods/tasks in continuous assessment may be different, subject to each subject lecturer. Details or alterations are available to students via the Subject Outline available at the beginning of the semester.</i></p> <p>To pass this subject, students are required to obtain Grade D or above in the Continuous Assessment components.</p>	Specific assessment methods/tasks	% weighting*	Intended subject learning outcomes to be assessed (Please tick as appropriate)				a.	b.	c.	d.	Continuous Assessment	100%					Tutorial Attendance and Participation	15%	✓	✓			Lecture Attendance and Performance through exercises/activities/ quizzes	15%	✓	✓			Group Assignment	35%		✓	✓	✓	Individual Assignment	35%	✓		✓		Total	100%				
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	<p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <ol style="list-style-type: none"> Tutorial Attendance and Participation, applicable to weekly tutorials, encourages active classes for better learning. Graded participation and attendance shape active learning attitude and development of reflection of students to enhance knowledge and skill acquisition and retention. Allocation of marks is based on assessment criteria and/or rubrics (eg ‘come to class prepared, makes thoughtful comments when called upon, and contributes occasionally without prompting’). Lecture Attendance and Performance through exercises/activities/quizzes, applicable to weekly lectures, boosts learning by incorporating participation and active lectures with or without employment of technology. Allocation of marks is based on performance and assessment criteria. For group assignment, students are expected to complete an empirical study, which makes enquiries into contemporary issues on individual and leadership effectiveness, and give a group presentation. Besides enhancing the understanding of theories, application of relevant skills; the process involves students learning with and from each other as fellow learners. Taken as a whole, this assignment facilitates the integration of learning and increase students’ self-efficacy. Allocation of marks is based on assessment criteria and rubrics. For individual assignment, each student is required to complete an individual essay based on individual scenarios to advise and develop strategies to achieve continuous, personal growth. Allocation of marks is based on assessment criteria and rubrics. 	
<p>Student Study Effort Expected</p>	Class contact:	
	<ul style="list-style-type: none"> ▪ Lectures 	26 Hrs.
	<ul style="list-style-type: none"> ▪ Tutorials 	13 Hrs.
	Other student study effort:	
	<ul style="list-style-type: none"> ▪ Preparation for lectures and seminars (reading & get ready an enquiry mindset) 	13 Hrs.
	<ul style="list-style-type: none"> ▪ Group assignment preparation (collective as well as individual efforts outside classroom) 	39 Hrs.
	<ul style="list-style-type: none"> ▪ Individual assignment preparation 	26 Hrs.
	Total student study effort	117 Hrs.

<p>Reading List and References</p>	<p>Textbooks/Book chapters</p> <ol style="list-style-type: none"> 1. Pang E. 2019, <i>Managing self and leading other</i>, 3rd edn, McGraw-Hill, Singapore. (e-Book) 2. De Janasz, S.C., Dowd, K.O. & Schneider, B.A. 2019, <i>Interpersonal skills in organizations</i>, 6th edn, McGraw-Hill, Singapore. 3. Hughes, R.L., Ginnett, R.C. & Curphy, G.J. 2019, <i>Leadership</i>, 9th edn, McGraw-Hill, Singapore. 4. Lamberton, L.H. & Minor L. 2019, <i>Human relations – Strategies for success</i>, 6th edn, McGraw-Hill, NY. 5. Waitley, D. 2019, <i>Psychology of success – Finding meaning in work and life</i>, 7th edn, McGraw-Hill, NY. <p>Supplementary readings relating to “Self-Management”</p> <ol style="list-style-type: none"> 1. Beaugard, T.A. 2010, “Introduction: The import of intrapersonal and interpersonal dynamics in work performance”, <i>British Journal of Management</i>, vol. 21, pp. 255-261. 2. Blakeslee, T.R. 1996, <i>Beyond the conscious mind – Unlocking the secrets of the self</i>, Plenum Press, New York. 3. Carter, P. & Russell, K. 2003, <i>More psychometric testing</i>, Wiley, England. 4. Connolly, M.B. & Crits-Christoph, P. 1999, “The reliability and validity of a measure of self-understanding of interpersonal patterns”, <i>Journal of Counseling Psychology</i>, vol. 46, no. 4, pp. 472-482. 5. Cranwell-Ward, J. 1990, <i>Thriving on stress – Self-development for managers</i>, Routledge, London.
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6. Gable, S.L., Reis, H.T., Impett, E.A. & Asher, E.R. 2004, "What do you do when things go right? The intrapersonal and interpersonal benefits of sharing positive events", *Journal of Personality and Social Psychology*, vol. 87, No. 2, pp. 228-245.
7. Ghaye, T. & Lillyman S. 2000, *Caring moments – The discourse of reflective practice*, Mark Allen Publishing, UK.
8. Hamachek, D.E. 1987, *Encounters with the self*, 3rd edn, CBS College Publishing, USA.
9. Huang, L. 2010, "Cross-cultural communication in business negotiations", *International Journal of Economics and Finance*, vol. 2, no. 2, pp. 196-196199.
10. Johns, C. 2002, *Guided reflection advancing practice*, Blackwell Publishing, UK.
11. Keenan, J.P. 2003, *The face in the mirror*, Harper Collins Publishers, New York.
12. King, C.L. 2010, "Beyond persuasion: The rhetoric of negotiation in business communication", *The Journal of Business Communication*, vol. 47, no. 1, pp. 69.
13. Lawson, K. 2007, "Influencing: Skills and techniques for business success", *Personnel Today*, no. 0959-5848, pp. 30-30.
14. Murdock, J.W. & Goel, A.K. 2008, "Meta-case-based reasoning: Selfimprovement through self-understanding" *Journal of Experimental & Theoretical Artificial Intelligence*, vol. 20, no. 1, pp. 1-36.
15. Overbeck, J.R., Neale, M.A. & Govan, C.L. 2010, "I feel, therefore you act: Intrapersonal and interpersonal effects of emotion on negotiation as a function of social power", *Organizational Behavior and Human Decision Processes*, vol. 112, no. 2, pp. 126-139.
16. Patterson, I. 2007, "Influencing: Skills and techniques for business success", *Training Journal*, no. 14656523, pp. 59-59.
17. Ross, W.H., Jr, Conlon, D.E. & Lind, E.A. 1990, "The mediator as leader: Effects of behavioral style and deadline certainty on negotiator behavior", *Group & Organization Management*, vol. 15, no. 1, pp. 105-105.
18. Seibt, J. 2011, "Beyond the 'identity'-paradigm: Conflict resolution and the dynamics of self-understanding", *Conflict Resolution Quarterly*, vol. 28, no. 3, pp. 229-237.
19. Tschudin, V. 1991, *Beginning with awareness – A facilitator's guide*, Churchill Livingstone, Singapore.

20. Weissman, D.R. 2010, *Awakening to the secret code of your mind*, Hay House Inc., USA.

21. Wilmot, W. & Hocker, J. 2010, *Interpersonal conflict*, 6th edn, McGrawHill, New York.

Supplementary readings relating to “Leading People”

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Subject Description Form

Subject Code	MM2711
Subject Title	Introduction to Marketing
Credit Value	3
Level	2
Normal Duration	1-semester
Pre-requisite / Co-requisite/Exclusion	Exclusion: Marketing and the Consumer (MM2791) or Introduction to Marketing (MM2B05) or equivalent
Role and Purposes	This core subject introduces the basic principles and concepts of Marketing. It provides an analytical foundation for further study of Marketing and also contributes to the BBA Programme Outcomes in two ways. First, the content directly addresses the <u>creation of value (Outcome 8), ethics (Outcome 4), cultural diversity and globalization (Outcome 2)</u> . Second, the classroom activities and assessments develop students' teamwork, ability to communicate in English, <u>analyse business situations by applying relevant conceptual frameworks and critical thinking (Outcome 3)</u> .
Subject Learning Outcomes	Upon completion of the subject, students will be able to: <ul style="list-style-type: none"> (a) Analyse diverse marketing situations and identify marketing opportunities and threats (BBA Outcome 2); (b) Apply marketing theories and models to practical marketing situations (BBA Outcome 3); (c) Evaluate ethical issues from a marketing perspective and suggest appropriate actions (BBA Outcome 4); (d) Analyse and/or suggest ways to create value in goods and services and deliver these to customers (BBA Outcome 8); (e) Critically select and manage information, develop and present coherent arguments on marketing issues.
Subject Synopsis/ Indicative Syllabus	<p>Overview of Marketing What is marketing and why is it important? The marketing process</p> <p>Developing Marketing Strategies and a Marketing Plan The marketing plan and strategic planning tools</p> <p>Marketing and Society Marketing's impact on individual consumers, society and other businesses Marketing ethics and corporate social responsibility</p> <p>UNDERSTANDING THE MARKET Analyzing the Marketing Environment The company's macro- and micro- environment</p> <p>Consumer Behaviour</p>

	<p>The consumer decision making process Types of buying decision behaviour Factors affecting consumer behaviour: cultural, social, personal, psychological</p> <p>Business Buying Behaviour Business to business markets Business buyer behaviour Factors affecting the buying process: buying centre, buying situations Role of the internet in business-to-business marketing</p> <p>Marketing Research and Information Systems The marketing research process Marketing information systems</p> <p>VALUE CREATION Market Segmentation, Targeting and Positioning Benefits of segmentation Segmentation bases The segmentation process The positioning process and repositioning</p> <p>Product and Services Product and Service Classifications Product Decisions Product Lifecycle Branding Characteristics of services and their implications for marketing</p> <p>Price Considerations affecting pricing decisions Major pricing strategies New product pricing: skimming and penetration pricing Price adjustment strategies</p> <p>Distribution Nature and importance of marketing channels Channel design decisions: channel structure, distribution intensity Channel management</p> <p>Promotion The communication process AIDA model Importance of integrated marketing communications Designing the promotion mix Setting the promotion budget</p>
<p>Teaching/Learning Methodology</p>	<p>The two-hour weekly lecture aims to guide and promote students' understanding of relevant concepts. The weekly one-hour tutorial activities include discussions on case studies, contemporary marketing topics and journal articles. Students will also work in groups to prepare and make presentations, and to critique the work presented by others. Emphasis is placed throughout on the application of theory to the solution of practical and realistic marketing problems in the local and global setting.</p>

Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks	% weighting	Intended Subject Learning Outcomes to be assessed (Please tick as appropriate)				
			a	b	c	d	e
	Continuous Assessment	50%					
	1. Individual essay	15%			✓		✓
	2. Group project(s) and presentation	20%	✓	✓	✓	✓	✓
	3. Individual contribution to class discussions	15%					✓
	Examination	50%	✓	✓		✓	✓
	Total	100 %					
<p><i>*Weighting of assessment methods/tasks in continuous assessment may be different, subject to each subject lecturer.</i></p> <p>To pass this subject, students are required to obtain Grade D or above in BOTH the Continuous Assessment and Examination components.</p> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes: the above methods are designed to ensure that all students -</p> <ul style="list-style-type: none"> ▪ Read the recommended material; ▪ Discuss the issues brought up in the lectures/seminars; ▪ Appreciate the different approaches that may be adopted in solving marketing problems and ▪ Participate in presenting the group's views on a case/marketing situation. <p>Feedback is given to students immediately following the presentations. All students are also invited to join the discussion.</p>							
Student Study Effort Required	Class contact:						
	▪ Lectures		26Hrs.				
	▪ Seminars		13 Hrs.				
	Other student study effort:						
	▪ Preparation for tutorials and presentation		26 Hrs.				
	▪ Reading and essay writing		21 Hrs.				
	▪ Self study in preparation for exam		40 Hrs.				
	Total student study effort			126 Hrs.			

Reading List and References	<p><i>Recommended Textbook</i> Kotler, P., Armstrong, G., Ang, S.H., Leong, S.M., Tan, C.T., Yau, O.H.M. (2017) <i>Principles of Marketing: An Asian Perspective</i>, 4th Edition, Singapore, Pearson Education South Asia.</p> <p><i>References</i> Kerin, R. A., Lau, G.T. Hartley, S. W. and Rudelius, W. (2015), <i>Marketing in Asia</i>, 3rd edition, Singapore, McGraw-Hill.</p> <p>Grewal, D. and Levy, M. (2019) <i>Marketing</i>, 6th Edition, New York, McGraw-Hill.</p> <p>Various newspapers, magazines, journal articles and web addresses will be referenced.</p>
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Subject Description Form

Subject Code	MM3761
Subject Title	Marketing Research
Credit Value	3
Level	3
Normal Duration	1-semester
Pre-requisite/ Co-requisite/ Exclusion	Pre-requisite: Introduction to Marketing (MM2711) or Introduction to Marketing (MM2B05) or Marketing (MM273) and Introduction to Probability and Statistics (AMA217) or Quantitative and Computational Methods (ME3903) or Quantitative Methods for Business (AMA2101/LGT2105) or Quantitative Methods (ISE206) or Probability & Engineering Statistics (AMA302/AMA305) or Statistics and Mathematics for Textiles (ITC241) or equivalent
Role and Purposes	It provides an understanding of the underlying concepts of marketing research and the importance of information to the making of marketing decisions. It aims to introduce students the basic marketing research techniques and to develop their ability to interpret marketing research findings. This subject contributes to 6 of the 13 outcomes of the BBA(Hons) Programme.
Subject Learning Outcomes	Upon completion of the subject, students will be able to: <ul style="list-style-type: none"> a. explain the nature and scope of marketing research (BBA Outcomes 9 & 10); b. describe its role in designing and implementing successful marketing programs (BBA Outcomes 9 & 10); c. use statistical programs for analyzing and interpreting marketing research data (BBA Outcomes 6, 9 & 10); d. use and evaluate marketing research, and to design simple research investigations (BBA Outcomes 1, 9 & 10).

Subject Synopsis/ Indicative Syllabus	<ul style="list-style-type: none">- Introduction to Marketing Research /Research Problems and Research Objectives- An Overview of Data Sources- Qualitative Methods and Survey Methods- Measurements and Designing Questionnaires- Sampling Procedures and Sample Size- Preparing Data for Analysis (including descriptive statistics)- Univariate Data Analysis (including one sample t-test)- Bivariate Analysis (including mean comparison tests, chi-square test, correlation analysis, and simple linear regression)- Multivariate Data Analysis (including factor analysis and multiple regression)
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Teaching/Learning Methodology	<p>This subject is taught in thirteen three-hour sessions on a weekly basis. The sessions consist of formal lectures, seminar discussions and computer workshops. Active student participation is expected. Lectures cover the main theoretical, conceptual and technical aspects of the syllabus. Computer workshops are used for students to gain hands-on experience of application software in analyzing survey data. The other activities are for developing and integrating the materials in the subject.</p>																																												
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="4">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> </tr> </thead> <tbody> <tr> <td>Continuous Assessment</td> <td>50%</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1. Participation</td> <td>10%</td> <td>✓</td> <td>✓</td> <td></td> <td>✓</td> </tr> <tr> <td>2. Individual/group assignments</td> <td>40%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>Examination</td> <td>50%</td> <td>✓</td> <td>✓</td> <td></td> <td>✓</td> </tr> <tr> <td>Total</td> <td>100 %</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p><i>*Weighting of assessment methods/tasks in continuous assessment may be different, subject to each subject lecturer.</i></p> <p>To pass this subject, students are required to obtain Grade D or above in <u>BOTH</u> the Continuous Assessment and Examination components.</p> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes: the various methods are designed to ensure that all students taking this subject are able to –</p> <ul style="list-style-type: none"> ▪ Demonstrate a basic understanding of concepts/theories; ▪ Possess the ability to apply concepts/theories to real situations and prepare a simple research proposal ▪ Solve problems in business settings ▪ Apply concepts/theories in a given situation and solve problems ▪ Use statistical programs for analyzing and interpreting marketing research data 					Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)				a	b	c	d	Continuous Assessment	50%					1. Participation	10%	✓	✓		✓	2. Individual/group assignments	40%	✓	✓	✓	✓	Examination	50%	✓	✓		✓	Total	100 %				
Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)																																											
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2. Individual/group assignments	40%	✓	✓	✓	✓																																								
Examination	50%	✓	✓		✓																																								
Total	100 %																																												
Student Study Effort Required	Class contact:																																												
	<ul style="list-style-type: none"> ▪ Lectures 		39 Hrs.																																										
	Other student study effort:																																												
	<ul style="list-style-type: none"> ▪ Preparation for lectures 		14 Hrs.																																										
	<ul style="list-style-type: none"> ▪ Preparation for data analysis tests, in-class exercises, take-home assignments, and final examination 		56 Hrs.																																										

	Total student study effort	109 Hrs.
Reading List and References	<p><i>Recommended Textbook</i> Burns, Veeck, and Bush, Marketing Research, 8/E (Prentice Hall).</p> <p><i>References</i> Aaker, Kumar and Day, Marketing Research 11/E (Wiley). Churchill & Iacobucci, Marketing Research: Methodological Foundations, 12/E (South-Western).</p>	

Subject Description Form

Subject Code	MM4711
Subject Title	Business to Business Marketing
Credit Value	3
Level	4
Normal Duration	1-semester
Pre-requisite/ Co-requisite/ Exclusion	Pre-requisite: Introduction to Marketing (MM2711) or equivalent
Role and Purposes	This advance subject aims to enhance students' abilities to analyze sales and marketing activities in a Business environment and achieves a number of BBA Programme Outcomes. It directly addresses the roles and the interactional dynamics of a buyer and a seller in the value-added manufacturing context (Outcome 11 & 12). It also perceives a seller from a problem solver's perspective and how this seller helps improve a buying organization that is internally guided by its product innovation, cost management, and marketing programs and externally influenced by its domestic and global economic environment (Outcome 9 & 13). The seminars, class activities and assignments develop students' abilities in English communication and creative thinking skills (Outcome 1 & 4).
Subject Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ul style="list-style-type: none"> (a) Understand the nature and scope of business-to-business market and the differences between consumer marketing and business marketing (BBA Outcomes 8 & 10). (b) Apply buying models and theories to analyze organizational buying behavior; conceptualize the business dynamics in the business market (BBA Outcome 9). (c) Formulate and evaluate higher level marketing strategies (targeting,

	<p>segmentation, positioning and differentiation) and lower level strategies (product, pricing, channels of distribution and promotions) in different business marketing settings (BBA Outcomes 1, 3 & 6).</p> <p>(d) Propose and evaluate relationship strategies in a business-to-business interactional environment (BBA Outcome 10).</p>
<p>Subject Synopsis/ Indicative Syllabus</p>	<p>Business Marketing Perspective</p> <p>Marketing to different types of business organizations, appreciating the cost and profit context of business and economic environment; explaining the differences between business and consumer marketing.</p> <p>Organizational Buying Behavior</p> <p>Recognizing the strategic goals of purchasing, the procurement procedures, and buying situations in the business, government, and institutional organizations; acknowledging the relationships between strategic purchasing goals, cost drivers, cost reduction program and revenue enhancement.</p> <p>Relationship Management</p> <p>Appreciating the relationship spectrum; recognizing the relationship between collaboration and operational linkage; formulating relationship program; searching relationship dimensions; acknowledging the differences between western and Chinese relationship management.</p> <p>Business Market Segmentation</p> <p>Segmenting the business market; supporting segmentation through technology environment and product differentiation; the relationship between segmentation and sales planning.</p> <p>Business Product Mixes</p> <p>Creating product core competence through value chain; Classifying business product; Improving product positioning through quality management.</p> <p>Business Pricing Mixes</p> <p>Perceiving pricing from a cost perspective; deriving target cost management procedures; recognizing the relationship between price, cost and profit.</p> <p>Business Placing Mixes</p> <p>Classifying direct and indirect placing option; delineating the role of direct sales offices, distributors, and manufacturer representatives/agencies;</p>

	<p>evaluating and managing alternative placing methods.</p> <p>Business Promotion Mixes</p> <p>Recognizing the functions of business promotion; appreciating the role of integrative marketing communications through trade shows, conferences, personal selling, and other below-the line advertising tools.</p>
Teaching/Learning Methodology	<p>Students are encouraged to participate in class discussions for both lectures and seminars. To facilitate students' ability of lateral thinking and to apply theories, case scenarios will be stressed in teaching. Students will form groups, each of which is in charge of presenting two cases with external search of information from internet, newspapers, company annual reports etc. In addition, an individual/group assignment will be used to integrate student's understanding of all taught materials.</p>

Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)			
			a	b	c	d
	Continuous Assessment	50%				
	1. Class participation	10%	✓	✓		
	2. Group presentation and report	15%	✓	✓	✓	
	3. Individual/ group assignment	25%	✓	✓	✓	✓
	Examination	50%	✓	✓	✓	✓
	Total	100 %				
<p><i>*Weighting of assessment methods/tasks in continuous assessment may be different, subject to each subject lecturer.</i></p> <p>To pass this subject, students are required to obtain Grade D or above in <u>BOTH</u> the Continuous Assessment and Examination components.</p> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes: the various methods are designed to ensure that all students taking this subject –</p> <ul style="list-style-type: none"> ▪ Read all prescribed book chapters prior to every lecture; ▪ Exchange ideas on the issues raised in the lectures/seminars; ▪ Evaluate alternative strategies/approaches in different business situations; ▪ Involve/participate in presentations and express views and comments on how to solve business problems. <p>Feedbacks will be given to students immediately after their presentation. All students are encouraged to give their views.</p>						
Student Study Effort Expected	Class contact:					
	▪ Lectures		26Hrs.			
	▪ Tutorials		13Hrs.			
	Other student study effort:					
	▪ Preparation for presentation & report		48 Hrs.			
	▪ Preparation for assignment/examination		50 Hrs.			
	Total student study effort			137 Hrs.		

Reading List and References	<p><i>Recommended Textbook:</i></p> <p><u>Hutt</u>, Michael D and Speh, Thomas W (2018) <i>Business Marketing Management: B2B, Thomson South Western</i>, 12th International Edition.</p> <p><i>References:</i></p> <p>Dwyer, Robert F and Tanner, John (2008) <i>Business Marketing: Connecting Strategy, Relationships, and Learning</i>, McGraw-Hill/Irwin, 4 edition</p> <p>Leung, T.K.P. (2010) <i>Negotiate on a relationship in China</i>, Lap Lambert Academic Publishing.</p> <p>Zhang, <u>Wenxian</u> and Alon, Ilan (2009) <i>A guide to the top 100 companies in China</i>, World Scientific Publishing Co</p> <p>Various newspapers, magazines, journal articles, company annual reports, and online information will be referenced.</p>
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Subject Description Form

Subject Code	MM4721
Subject Title	Marketing Management in China
Credit Value	3
Level	4
Normal Duration	1-semester
Pre-requisite/ Co-requisite/ Exclusion	Pre-requisite: Introduction to Marketing (MM2B05) or Introduction to Marketing (MM2711) or equivalent
Role and Purposes	This subject is designed to develop the students' understanding of China's marketing environment and marketing system. Specifically, it aims to provide a background for the critical appreciation of the opportunities available and for effective implementation and coordination of marketing mix programs in the vast China market. Students will be introduced a set of principles by which practicing managers can assess the burgeoning China market scientifically and thoroughly.

<p>Subject Learning Outcomes</p>	<p>Upon completion of the subject, students will be able to:</p> <ul style="list-style-type: none"> (a) Understand the idiosyncrasies of China's business environment and the characteristics of Chinese customers', both individual and organizational, buying behaviour and their implications for the formulation of effective marketing strategies. (BBA Outcome 2) (b) Evaluate alternative market entry strategies for the China market. (c) Explore and describe opportunities in the China market. (BBA Outcome 2) (d) Identify critical strategic and marketing management issues in the unique context of China's marketing environment. (BBA Outcome 3) (e) Benchmark the marketing approaches and techniques adopted by both local and foreign companies which have demonstrated excellent performance in China. (f) Identify both market-based and administration-based constraints on effective marketing operations in China. (BBA Outcomes 3 & 10) <p>All these will ultimately enhance the all-round development of students in appreciation of cultural and other environmental influences on marketing practice and the abilities in critically analyzing marketing opportunities in new markets and in applying modern marketing techniques in a mixed economy with socialist character in creative and flexible manner.</p>
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<p>Subject Synopsis/ Indicative Syllabus</p>	<p>Understanding the Marketing Environment in China Unique features of the China market. The dynamics and market potential of the China market. The interactions between the marketing environment and the macro-environment. The implications of building a market economy with socialist character for effective marketing management in China. Regional disparity in culture, level of economic development, and business behavior. Possible impacts of WTO and CEPA on the China market.</p> <p>Marketing Research in China Sources of information. Legal and ethical issues. The information market in China. Attitudes of Chinese people towards marketing research. The implications of the above issues for research design. Problems associated with the implementation of marketing research activities in China and interpretation of collected data.</p> <p>Understanding Chinese Buyers Distinctive characteristics of Chinese buyers' purchasing behavior. Cultural impact on buying behavior. Changes in consumption patterns and the forces underlying such changes. The concept of 'guanxi' and its implications for the understanding of Chinese buyers' purchasing behavior. The Children market in China.</p> <p>Entry Strategies for the China Market Reforms in both foreign trade and distribution areas. Scenario of the existing distribution system. Characteristics of channel members' marketing behavior. Evaluation of alternative entry strategies.</p> <p>Designing the Marketing Program Issues concerning adaptation of Western marketing principles in China. Advertising in China. Price reforms and their impact on pricing behavior. Developing and managing new products for Chinese customers. Logistics management in China. Promotion management in China. Impact of WTO on the country's marketing channels.</p>
<p>Teaching/Learning Methodology</p>	<p>Lectures and seminars are utilized. In the seminars, cases and other project oriented work involving the analysis of marketing management activities in China are used.</p>

Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)					
			a	b	c	d	e	f
	Continuous Assessment*	50%						
1. Marketing Case Analysis and Tutorial Questions	20%							
2. Benchmarking project	30%							
Examination	50%							
Total	100 %							

**Weighting of assessment methods/tasks in continuous assessment may be different, subject to each subject lecturer.*

To pass this subject, students are required to obtain Grade D or above in BOTH the Continuous Assessment and Examination components.

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes: the various methods are designed to ensure that all students taking this subject –

There is no textbook which is well-structured and well-organized to reflect the latest development of the China market and the unique market characteristics and associated marketing and management issues. Therefore, the use of empirical research papers and management reports and real-life cases published in the past few years is more effective in explaining the current market situations and related marketing management challenges to students. This approach ensures the achievement of learning outcome a, b, c, d, and f. In addition, each student is asked to work in a team to evaluate a selected firm’s marketing strategy that has been adopted in China, preferably less than 3 years. This provides students with another opportunity to learn the updated situation of the China market and how to identify the marketing and management problems derived from the unique characteristics of the China market. Through the evaluation of the market performance of the product/brand/firm, students can benchmark both excellent and inappropriate marketing practice in China. This assessment component enables us to achieve all the desired learning outcomes.

An examination which only uses essay questions is not appropriate for this subject in the context of the aforesaid learning outcomes. However, the final examination for this subject is specifically designed to combine both essay and application

	<p>questions and mini-case analysis. This format enables us to achieve the desired learning outcomes, particularly outcome a, d, e, and f.</p>	
<p>Student Study Effort Expected</p>	<p>Class contact:</p>	
	<p>Lecture (2 hours) and tutorial (1 hour)</p>	<p>39Hrs</p>
	<p>Other student study effort:</p>	
	<p>Group discussion and research</p>	<p>42Hrs</p>
	<p>Writing reports and prepare presentation PPTs</p>	<p>56Hrs</p>
	<p>Total student study effort</p>	<p>137Hrs</p>
<p>Reading List and References</p>	<p>Philip Kotler, Kevin Lane Keller and Taihong Lu (2009), "Marketing in China", 1 st Edition, Pearson</p> <p>Tim Ambler, Morgen Witzel and Chao Xi (2017)," Doing business in China", 4 th Edition, Routledge, Taylor & Francis Group</p> <p>Atsmon, Dixit, Magni, and St-Maurice (2010), "<i>China's New Pragmatic Consumers</i>," The McKinsey Quarterly</p> <p>Baker, Mark and Orsmond, D. (2010), "<i>Household Consumption Trends in China</i>", March Quarter, Reserve Bank of Australia.</p>	

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Sin, Tse, Yau, Lee, and Chow (2004), "Market Orientation and Business Performance in the PRC: A Regional Comparison," *Journal of Global Marketing*, Vol.17, No.2/3, pp55-89. Teo, Piotroski, and Nunnes (2007), "Why Wining the Wallets of China's Consumers is Harder than You Think," *Outlook*, September, Accenture.

Tse, Edward, '*The Right Way to Achieve Profitable Growth in the Chinese Consumer Market*', Strategy and Business, Second Quarter, Booz-Allen & Hamilton Consultant Co. Ltd, 1998.

Tse, Edward (2006), "*Developing a China Strategy that Delivers Results*," Booz, Allen and Hamilton.

Uncles and Wang, (2010), "A Temporal Analysis of Behavioral Brand Loyalty

among Urban Chinese Consumers”, *Journal of Marketing Management*, 921-942.

Yu, J. and Zhou, Joyce (2010), “Segmenting Young Chinese Consumers Based on Shopping-Decision Styles: A Regional Comparison,” *Journal of International Consumer Marketing*, Vol.22, 59-71

Subject Description Form

Subject Code	MM4732
Subject Title	Global Marketing
Credit Value	3
Level	4
Normal Duration	1-semester
Pre-requisite/ Co-requisite/ Exclusion	<p>Pre-requisite: Introduction to Marketing (MM2B05) or Introduction to Marketing (MM2711) or equivalent</p> <p>Exclusion: International Marketing (MM4731)</p>
Role and Purposes	<p>The purpose of this subject is to provide students a rigorous theoretical grounding against which international marketing problems and issues may be systematically synthesized, analyzed, and managed. The focus is on the analysis of the global operating environment and the management of international marketing operations. Specially, this subject contributes to the BBA Project Outcomes in transforming students to be culturally diversity and globalized, analytical, value creation, creative, ethical, and sensitive to domestic and global business environments.</p>

Subject Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> a. demonstrate a global outlook and an understanding of how cultural, social, economic, political, and organisational factors affect the practice of marketing in foreign countries (BBA Outcome 2); b. identify and evaluate opportunities for organizational expansion into new foreign markets; c. formulate effective marketing strategies in response to perceive opportunities in foreign markets (BBA Outcome 8); d. apply knowledge learned to the creative solution of problems confronting organizations operating in cross-cultural environments (BBA Outcome 3); e. appraise the social, ethical and commercial implications of implementing marketing strategies across different cultural contexts (BBA Outcome 4); f. exhibit leadership and interpersonal skills working together in teams to obtain creative solutions to international marketing problems (BBA Outcome 10).
Subject Synopsis/ Indicative Syllabus	<p>Global marketing environment: Challenges of marketing in the global marketplace, the global economy, cultural and social forces, political, and legal forces</p> <p>Analyzing foreign markets: Global markets and buyers, country attractiveness, international marketing research</p> <p>Developing global marketing strategies: Developing a global mindset, entry strategies, issues of standardization and adaptation</p> <p>Designing global marketing programs: Global product and service strategies, managing global distribution channels, global promotion strategies, pricing for global markets</p> <p>Managing global marketing process: Organizing global marketing, planning and controlling global marketing programs</p>
Teaching/Learning Methodology	<p>This subject is taught through a mix of lectures and tutorials. Lectures are used to explain and illustrate concepts and theories in international marketing while tutorials provide opportunities for group discussion and sharing, case study, and presentation. Active participation is expected, with activities designed to encourage the application of concepts and theories in resolving global marketing problems.</p>

Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks	% weighting	Intended Subject Learning Outcomes to be assessed (Please tick as appropriate)					
			a	b	c	d	e	f
	Continuous Assessment	100%						
Individual exercise/ assignment	50%	✓	✓	✓	✓	✓		
Participation	10%						✓	
Group project/ presentation	40%	✓	✓	✓	✓	✓	✓	
Total	100 %							
<p><i>*Weighting of assessment methods/tasks in continuous assessment may be different, subject subject to each subject lecturer.</i></p> <p>To pass this subject, students are required to obtain Grade D or above in the Continuous Assessment components.</p> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>The above assessment methods are designed to ensure that all students:</p> <ul style="list-style-type: none"> ▪ Read the recommended materials ▪ Discuss the global marketing issues brought up in the lectures and tutorials ▪ Appreciate the different approaches that may be adopted in solving global marketing problems ▪ Participate in presenting the group's views on various current marketing issues at the global context 								
Student Study Effort Expected	Class contact:							
	▪ Lectures							26Hrs.
	▪ Tutorials							13Hrs.
	Other student study effort:							
	▪ Reading & discussion							42Hrs.
	▪ Assignments & quiz/test							42Hrs.
Total student study effort							123Hrs.	
Reading List and	<i>Recommended Text</i>							

References

Keegan, Warren and Mark C. Green (2016). *Global Marketing*, 9th edition. Upper Saddle River, N.J.: Pearson/Prentice Hall.

Other Suggested Text***Academia Journals***

Journal of Marketing

Journal of International Business Studies

Journal of International Marketing

International Marketing Review

International Business Review

Journal of Global Marketing

Practitioner Journals

Harvard Business Review

MIT Sloan Management Review

California Management Review

Business Horizons

Subject Description Form

Subject Code	MM4782
Subject Title	Sales and Distribution Management
Credit Value	3
Level	4
Pre-requisite/ Co-requisite/ Exclusion	<p>Pre-requisite: Introduction to Marketing (MM2711) or Introduction to Marketing (MM2B05) or equivalent</p> <p>Exclusion: Marketing Channel Management (MM3782) and Sale Management (MM4781)</p>
Objectives	<p>This subject provides an overview of the sales and distribution management. It discusses various sales functions ranging from various sales organization structures to the role of the sales manager in improving sales by hiring, training, motivating and leading the sales force. It also discusses distribution function and marketing channel management.</p> <p>This subject is designed to provide students with current theories and practices for developing and managing a sales force, and solid and proficient skills in managing marketing channels. Students study the topics of sales management from the managerial point of view and the selling process approach. In addition to learning sales function, the subject strives to equip students with a thorough understanding of and an ability to manage marketing channels for making the products available to final consumers.</p>
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> a. Identify the nature of <i>managerial work</i> in a variety of forms of organization, and assess the impact of the external environment on managers' jobs. (BBA Outcome 3) b. Understand the essence of <i>human and CRM behavior</i> and be able to assess the implications for the management of organizations and businesses. Understand essential elements of the <i>selling process</i>. Be able to evaluate the arguments surrounding social responsibility and

	<p>ethical behaviour in business, and an enhanced awareness of the importance of such issues.</p> <p>c. Analyze and evaluate the managing distribution in the context of managing channels of distribution as well as physical distribution, and then to acquire a solid foundation on both dimensions. (BBA Outcome 3)</p> <p>d. Apply the channel management concepts in real commercial settings and learn how products to be physically distributed in effective ways in terms of the total cost borne by all related parties based on logistics and channel management cases drawn from local and international perspectives.</p>
<p>Subject Synopsis/ Indicative Syllabus</p>	<p>Nature and Scope of Sales Management Key features: Sales-force management in the total marketing programme. Relationship between sales management and other marketing and managerial functions. Responsibilities of the sales manager. Sales environment.</p> <p>To discuss sales management's tasks in a company with a customer orientation and outline its roles in relation to other marketing mix variables. Students are expected to know how the nature of sales management has changed, what managerial challenge face sales managers and how environmental factors affect the sales activities of the company.</p> <p>Key steps of the selling process include prospecting, preparation, presentation, handling objections, closing the sale and follow-up activities.</p> <p>To trace the evolution of modern selling and discuss the roles of personal selling today. Students are expected to have key ideas about typical problems encountered in doing personal selling and how they can be resolved. Extensive use will be made of role playing exercises.</p> <p>Nature and Scope of Marketing Channel Management Key features: Channel concept. Selecting, motivating and evaluating channel members. Working with channel members on issues related to product, price and promotion. Channel conflict and power.</p> <p>To discuss marketing channels as a competitive advantage to firms as other forms of traditional competitive differentiations can be copied and followed easily. Students are expected to learn channel management as a separate marketing function that involves efficient channel design, conflict management and implementation of sophisticated channel information systems which will enhance the process of making the products available to final consumers in a timely manner.</p> <p>To discuss the roles of marketing channel manager today. Students are expected to know how “place” as a key component of strategic marketing and understand this growing awareness of the importance of marketing channels, in the content of a firm’s overall marketing objectives.</p>

<p>Teaching/Learning Methodology</p>	<p>Students are encouraged to participate in class discussions for both lectures and seminars. They are required to finish weekly reading assignments before the lecture.</p> <p>To facilitate students' ability to apply theories, case studies will be stressed in teaching, including cases assigned for discussion in class and a project assigned as field work. Students are required to form groups to conduct the projects dealing with real firms. Formation of student groups and topics for case studies will be discussed in detail during class and consultation hours.</p>																																																				
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="4">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> </tr> </thead> <tbody> <tr> <td>Continuous Assessment</td> <td>50%</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1. Individual Paper</td> <td>15%</td> <td>✓</td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>2. Group Presentation</td> <td>15%</td> <td></td> <td>✓</td> <td></td> <td>✓</td> </tr> <tr> <td>3. Group Project</td> <td>15%</td> <td></td> <td>✓</td> <td></td> <td>✓</td> </tr> <tr> <td>4. Individual Participation</td> <td>5%</td> <td></td> <td>✓</td> <td></td> <td>✓</td> </tr> <tr> <td>Examination</td> <td>50%</td> <td>✓</td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>Total</td> <td>100 %</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p><i>*Weighting of assessment methods/tasks in continuous assessment may be different, subject to each subject lecturer.</i></p> <p>To pass this subject, students are required to obtain Grade D or above in <u>BOTH</u> the Continuous Assessment and Examination components.</p> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes: the various methods are designed to ensure that all students taking this subject –</p> <ul style="list-style-type: none"> ▪ Understand and analyse the issues and concepts of sales and distribution management; ▪ Read relevant chapters of the recommended textbook and other 	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)				a	b	c	d	Continuous Assessment	50%					1. Individual Paper	15%	✓		✓		2. Group Presentation	15%		✓		✓	3. Group Project	15%		✓		✓	4. Individual Participation	5%		✓		✓	Examination	50%	✓		✓		Total	100 %				
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Examination	50%	✓		✓																																																	
Total	100 %																																																				

	<p>relevant learning material including research journal articles, cases & reports, etc.</p> <ul style="list-style-type: none"> ▪ Appreciate alternative approaches, perspectives and theories to deal with various sales and distribution management issues; ▪ Undertake critical reflective thinking and practice about innovative ways of thinking and new ways of selling and distributing products. <p>Feedback is given to students after they have presented their view and all students are invited to join this discussion.</p> <p>As indicated in the table above, all assessments including the final examination are in alignment with all four intended subject learning outcomes that, in turn, match the BBA outcome. All individual assessments evaluate the BBA outcome and, therefore, the overall subject grade (as the summary of the results of the all assessments) is used as an indicator to evaluate to what extent the BBA outcomes are matched.</p> <p>In Appendix A, there are examples of assessments for reference.</p>	
Student Study Effort Expected	Class contact:	
	▪ Lectures	26 Hrs.
	▪ Seminars	13 Hrs.
	Other student study effort:	
	▪ Preparation for discussion	42 Hrs.
	▪ Preparation for project/assignment/tests	42 Hrs.
	Total student study effort	123Hrs.
Reading List and References	<p>Textbook Johnston, M. & Marshall, G. (2012). <i>Relationship Selling</i> (3rd ed), McGraw Hill.</p> <p>Rosenbloom, B. (2012). <i>Marketing Channels: A Management View</i>, International Edition (8th ed), Cengage Learning.</p> <p>Key Reference Coughlan, A., Anderson, E., Stern, L.W. and El-Ansary, A. (2006). <i>Marketing Channels</i> (7th ed), Prentice Hall.</p> <p>Futrell, C. (2013). <i>ABC's of Relationship Selling</i> (12th ed), McGraw-Hill.</p> <p>Pelton, L.E., Strutton, D. and Lumpkin, J.R. (2002). <i>Marketing Channels: A Relationship Management Approach</i> (2nd ed), McGraw-Hill/Irwin.</p>	

**Subjects offered by
School of Design**

Subject Description Form

Subject Code	SD348
Subject Title	Introduction to Industrial Design
Credit Value	3
Level	3
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	<p>This subject gives an introduction to the field of industrial design as a creative discipline, a discipline which synthesises knowledge from fields as diverse as arts, sciences and engineering. Industrial design is known for its capacity to innovate and to add value to products and services. Industrial designers solve problems centred on user needs with the intent to improve the quality of people's lives. The design process incorporates unique problem solving methods and creativity process. Industrial design intends to work with technological and ecological parameters in an appropriate way. The development and use of state of the art tools and technologies puts industrial design in a significant position socially and economically.</p> <p>The subject aims to equip students with knowledge and experience of industrial design to appreciate the profession, relate to its practitioners in different work situations, employ the design process appropriately for problem identification, solving and innovation, and to realise the importance of a user centred approach to the creation of new products and services.</p> <p>The subject is project-oriented that the students are expected to learn through a design project. The subject does not include any engineering skill, such as software application. The students are expected to apply the technological and engineering knowledge, skills and experience obtained from other subjects to tackle the project.</p>
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to basic knowledge to:</p> <ol style="list-style-type: none"> a. Appreciate the industrial/product design profession, relate to its practitioners in different work situations. b. Employ the design process appropriately for problem solving and innovation. c. Realise the importance of a user centered approach to the creation of new products and services.

	<p>d. Apply visualisation skill in project presentation.</p> <p>e. Understand objectives of industrial/product design, and apply knowledge and experience in other related subjects and future career.</p>																														
<p>Subject Synopsis/ Indicative Syllabus</p>	<p>The field of industrial design is introduced through a series of lectures featuring a review of milestones of design achievements internationally and locally. The relationships between design, culture and society are highlighted through a look at topics like cultural identity in product design, user centred design, employment of technologies, and design and sustainability.</p> <p>Further lectures and seminars cover two major parts of industrial design and its professional practice:</p> <p>1. The essentially theoretical foundation of the industrial design process and methodology covering topics such as:</p> <ul style="list-style-type: none"> Design and culture Form, aesthetics and semantics Human factors and ergonomics in design Research and problem identification Design requirements and design brief Design development and specifications Design evaluation and concept selection <p>2. The essentially practical aspects of the industrial design process covering topics such as:</p> <ul style="list-style-type: none"> Design visualisation, presentation and communication Product prototyping and user testing Manufacturer and marketing relations 																														
<p>Teaching/Learning Methodology</p>	<p>Emphasis in the practical learning activities is placed on students' creativity in relation to designing. Students explore different approaches to problems and experience methods of problem solving with the designer's tools.</p>																														
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th>e</th> <th></th> </tr> </thead> <tbody> <tr> <td>1. Design project: Understanding design process</td> <td>10</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>2. Design project:</td> <td>30</td> <td></td> <td>✓</td> <td>✓</td> <td></td> <td>✓</td> <td></td> </tr> </tbody> </table>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)						a	b	c	d	e		1. Design project: Understanding design process	10	✓	✓	✓	✓	✓		2. Design project:	30		✓	✓		✓	
Specific assessment methods/tasks	% weighting			Intended subject learning outcomes to be assessed (Please tick as appropriate)																											
		a	b	c	d	e																									
1. Design project: Understanding design process	10	✓	✓	✓	✓	✓																									
2. Design project:	30		✓	✓		✓																									

	investigation and application in design							
	3. Design project: development of design ideas	45	✓	✓	✓	✓	✓	
	4. Design project: presentation of design ideas	15				✓	✓	
	Total	100 %						
Project and continuous assessment approaches are adopted in the subject.								
Student Study Effort Required	Class contact:							
	▪ Lectures and seminars		26 Hrs.					
	▪ Tutorials and exercises		13 Hrs.					
	Other student study effort:							
	▪ Research and design		31 Hrs.					
	▪ Preparation of presentation		10 Hrs.					
	Total student study effort			80 Hrs.				
Reading List and References	<ol style="list-style-type: none"> 1. <i>Design Issues. The MIT Press. (Journal)</i> 2. <i>Design Management Journal. The Design Management Institute. (Journal)</i> 3. <i>Design Studies. Elsevier Science. (Journal)</i> 4. <i>International Journal of Design (Journal)</i> 5. <i>The Design Journal (Journal)</i> 6. <i>Forest, D. (Ed.) (2014). The art of things: Product design since 1945. New York: Abbeville Press Publishers.</i> 7. <i>Fung, A., Lo, A., & Rao, M. N. (2005). Creative tools. Hong Kong: School of Design, The Hong Kong Polytechnic University.</i> 8. <i>Graedel, T. E. (2003). Industrial ecology (2nd ed.). Upper Saddle River, NJ: Prentice Hall.</i> 9. <i>Jordan, P. W. (1997). Putting the pleasure into products. IEE Review, Nov. 1997, 249-252.</i> 10. <i>Koos, E. (2014). Sketching product design presentation. Amsterdam, The Netherlands: BIS.</i> 11. <i>Leung, T. P. (Ed.) (2004). Hong Kong: Better by design. Hong Kong: The Hong Kong Polytechnic University.</i> 12. <i>Mackenzie, D. (1997). Green design: Design for the environment (2nd ed.). London: Laurence King.</i> 13. <i>Monika, H. (2013). Branding and product design: An integrated perspective.</i> 							

	<p><i>Surrey, England: Gower Publishing Limited.</i></p> <p>14. Norman, D. A. (1998). <i>The invisible computer: Why good products can fail, the personal computer is so complex and information appliances are the solution.</i> Cambridge, Mass., London: The MIT Press.</p> <p>15. Norman, D. A. (1998). <i>The design of everyday things.</i> London: The MIT Press.</p> <p>16. Richard, M. (2016). <i>The fundamentals of product design (2nd ed.).</i> London: Fairchild Books.</p> <p>17. Rodgers, P. (2011). <i>Product design.</i> London: Laurence King.</p> <p>18. Roqueta, H. (2002). <i>Product design.</i> London: Te Neues.</p> <p>19. Rowe, P. G. (1987). <i>Design thinking.</i> Cambridge, Mass.: The MIT Press.</p> <p>20. Siu, K. W. M. (Ed.) (2009). <i>New era of product design: Theory and practice (Chinese ed.)</i> Beijing: Beijing Institute of Technology Press. 邵健偉 編著 (2009) : 《產品設計新紀元：理論與實踐》。北京：北京理工大學出版社。</p> <p>21. Stanton, N. (Ed.) (1998). <i>Human factors in consumer products.</i> London: Taylor & Francis.</p> <p>22. Ulrich, K. T. (2004). <i>Product design and development (3rd ed.).</i> New York, NY: McGraw-Hill/Irwin.</p> <p>23. Wang, S. Z. (1995). <i>A history of modern design 1864-1996.</i> Guangzhou: Xin Shi Ji Chu Ban She.</p> <p>24. Whiteley, N. (1993). <i>Design for society.</i> London: Reaktion Books.</p>
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Subject Description Form

Subject Code	SD4041
Subject Title	Design in Business for Engineering
Credit Value	3
Level	4
Pre-requisite/ Co-requisite/ Exclusion	SD348 Introduction to Industrial Design ME49003/ME49005 Capstone Project OR ISE445 PEM Capstone Project Nil
Objectives	<p>Upon completion of the subject, students will be able to:</p> <p>To apply a model of strategies and processes to a Level 4 product development project undertaken concurrently to support the creation and development of a breakthrough product and services. The model includes the following:</p> <ol style="list-style-type: none"> 1. Methods to obtain insights into emerging trends in consumer and industrial markets.

	<ol style="list-style-type: none"> 2. A means to navigate and control the ‘fuzzy front end’ of the product development process. 3. The use of qualitative research to understand who the customer is. 4. Techniques to assist in the integration of diverse team players. 5. A complete product development process from opportunity identification to patenting. 6. An approach that connects strategic planning and brand management to product development.
Intended Learning Outcomes	<ol style="list-style-type: none"> a. Formulate a design problem addressing certain market needs and to develop design specifications with due consideration of industrial design. b. Generate alternative design concepts, and then evaluate each of these concepts by considering the impacts of various important factors related to business. c. Apply arts, mathematics, information technology, material technology and manufacturing processes via analytical and computational approaches to realize a selected design concept. d. Understand the importance of life-long learning and perform literature search to upkeep with the state-of-the-art product design technology. e. Work effectively as a member or the leader in a multi-disciplinary design project team, and able to present a design project via oral presentation and written report.
Subject Synopsis/ Indicative Syllabus	<p>The syllabus sets out the sequence for developing a breakthrough product/service and is delivered concurrently with the Capstone Project which has this objective. The process for new product development is as follows:</p> <p><i>Stage 1 - Identifying the Opportunity</i></p> <ol style="list-style-type: none"> a) Interpret the interconnected factors of Social Change, Economic Trends, and Technological Innovation that lead to the Identification of Product Opportunity Gaps in the marketplace, for both products and services. b) Examine the concept of the Positioning Map, which shows how breakthrough products and services are differentiated from the competition by Style, Technology and Value. <p><i>Stage 2 - Understanding the Opportunity</i></p> <p>Examine the complex combination of value attributes that connect breakthrough products/services to people's lifestyles. Turn insights into product concepts, list product characteristics and constraints.</p> <p><i>Stage 3 - Conceptualizing the Opportunity</i></p>

	<p>Turn value opportunities into useful, useable, and desirable product concepts. Identify the parts differentiation matrix. Produce visual prototype, functional prototype, clear market definition.</p> <p>Stage 4 - Realizing the opportunity Develop a clear marketing plan, taking account of the interests of stakeholders. Consider intellectual property protection. Consider materials and manufacturing process.</p>						
<p>Teaching/Learning Methodology</p>	<p>This syllabus has evolved over three years of application as a core subject in the BA Hons Design. It is now a very successful component of this degree because the delivery of the syllabus is concurrent with an individual design project. This syllabus provides a powerful framework for new product development that is proposed by Professors Cagan and Vogel of Carnegie Mellon University. The framework described in their 2002 book <i>Creating Breakthrough Products: Innovation from Product Planning to Program Approval</i> (Prentice Hall) is the reference textbook for this syllabus. Professor Vogel is a visiting faculty in the School of Design which will enable us to maintain close links with the continuing refinement of this new product development framework.</p> <p>The pattern of lectures, seminars and tutorials shifts from a general approach of establishing an understanding of the framework for innovative product development which is established in the lectures, to a more specified application of the concepts which is progressed in seminars and tutorials. This approach to the syllabus enables a close integration between this syllabus and the Capstone Project.</p> <p>Major Teaching/Learning Activities:</p> <p>Weeks 1 – 7 Lectures and seminars in which the conceptual framework is explained to students, and they begin to apply it to the early stages of the capstone project</p> <p>Week 7 Hand in progress report</p> <p>Week 8 Self study</p> <p>Week 9 Review of progress reports</p> <p>Weeks 10-12 Tutorials on the production of final reports</p> <p>Week 12 Hand in final report</p> <p>Week 13 Review of final reports</p>						
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1"> <thead> <tr> <th>Specific assessment methods/tasks</th> <th>% weighting</th> <th>Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)			
Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)					

		a	b	c	d	e	
1. Progress report	30	V	V	V	V		
2. Final report	60	V	V	V	V	V	
3. Contribution to class activities	10					V	
Total	100 %						

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

The participation in the co-requisite Capstone Project is based on groups of 3 students. It is desirable that all 3 students should elect to undertake this subject. In this case the presentations, Progress Report and Final Report are produced by the same group of 3 students.

In the event of only one or two members of a Capstone Project group electing to undertake this subject, their input to the Project is expected to be enhanced and enable them to take a leading role in the development of the Project.

The *Progress Report* (30% of assessment) should demonstrate how the concepts learned in this syllabus inform the Capstone Project. The concepts relating to the development of breakthrough products/services should strengthen the project proposal(s) of the Capstone Project by providing useful frameworks for developing new product ideas. The *Progress Report* should be about 2,000 words of explanation in addition to images, figures and other visual contributions. It is a draft of the Final Report that is to be handed in at the end of the semester.

The *Final Report* (60% of assessment) is to be handed in for grading in week 12. This report should provide a basis for the project report(s) of the Capstone Project. It will be a more developed version of the *Progress Report*. The structure of the report should reflect the choices made from the key concepts discussed in this syllabus, and should contain about 3,000 words of explanation in addition to images, figures and other visual contributions.

Contribution to class activities (10% assessment).

The assessed activities – the Progress and Final reports, are closely linked with progress in the Capstone Project. The Progress Report is both formative and summative. This approach supports deep engagement in the learning materials.

Student Study

Class contact:

Effort Required	▪ Lecture	26 Hrs.
	▪ Seminar and tutorial	13 Hrs.
	Other student study effort:	
	▪ Research and self study	13 Hrs.
	▪ Preparation of report	28 Hrs.
	Total student study effort	80 Hrs.
Reading List and References	<ol style="list-style-type: none"> 1. Design Management Journal, Design Management Institute. Various editions. 2. Bruce, M & W.G. Biemans, 1995, Product Development: Meeting the Challenge of the Design-Marketing Interface. John Wiley. 3. Bruce, M. & J. Bessant, (eds.) 2002, Design in Business: Strategic Innovation Through Design. Pearson Education. 4. Cagan J. & C.M. Vogel, 2002, Creating Breakthrough Products: Innovation from Product Planning to Program Approval. Prentice Hall. 5. Conny, B., 2014, Products that Last: Product Design for Circular Business models. TU Delft Library. 6. Gilmore, F. & S. Dumont, 2003, Brand Warriors China: Creating Sustainable Capital. Profile Books. 7. Monika, H, 2013, Branding and Product Design: An Integrated Perspective. Gower Publishing. 8. Rosner, K. M., 2012, Packaging design successful product branding from concept to shelf (2nd ed.). Wiley. 9. Shan, P., 2011, How to Run a Successful Design Business the New Professional Practice. Gower. 	

SD4463 Sustainable Product Design

Discipline Elective

Level	4
Credit value	3
Contact hour	32
Pre-requisites	
	Nil
Co-requisites	
will Nil	
Exclusions	
	Nil

Objectives

subject aims to enable students to explore and practice product design via a sustainable solution approach, and introduce them with system design thinking. Students will learn to develop products from a broader social and ecological context. Through seminars, project and group tutorials, students also be introduced to the concepts of design for environment (DfE), design for sustainability (DfS), product design for sustainability (PDfS), upcycling design, circular design and basic sustainable product design strategies.

Intended learning outcomes

Upon completing the subject, students will be able to:

Professional skills

- 1 recognize the significance of solution-based design and system design thinking in the practice of industrial/product design;
- 2 critically analyze a given design problem or a model sustainable solution;
- 3 formulate eco-design strategies based on the given problem or sustainable solution;
- 4 produce an eco-friendly design via lifecycle thinking and appropriate eco-design strategy;
- 5 practice visualization, 3D modeling and material selection in sustainable design production.

Transferable skills

- 6 social /cultural appreciation, critical and creative thinking, leadership and entrepreneurship;

7 system thinking, team management, project management and presentation skills.

Subject synopsis

Students will be introduced to:

- notion of ‘sustainability’.
- basic idea of Design for Environment (DfE) and eco-design.
- concept of lifecycle thinking and LCA.
- the ‘4r’, ‘4R’ and 4 DfD strategies.
- idea of ‘system’ and the concept of ‘system design’ thinking
- concept of ‘Design for Sustainability’ (DfS).
- concept of Product-Service System (PSS), Product Design for sustainability (PDfS).
- Idea of recycling, upcycling and ‘circular’ design.

Teaching and learning methods

Activity	Purpose
Lecture	To introduce students to theories and principles related to the topics.
Workshop	Putting principles into practice with short in-class exercise(s).
Tutorial	To guide students on the development of projects, individually or in small groups
Project	To allow students to have hand-on practices of taught concepts of product design for sustainability, upcycling/ circular design, related methods and processes through specific assignments and the development of a design proposal.

Assessment methods

Learning outcomes to be assessed

Assessment task	Weighting	1	2	3	4	5	6	7
1 Design Project	60%	•	•	•	•	•	•	•
2 Learning journal	25%	•	•	•	•	•		•
3 Peer Appraisal	15%						•	•
Total	100%							

Purposes

Design Project	To evaluate how the students have applied taught theories, concepts methods and tools introduced to practical context in a group project.
Learning journal	To evaluate the students' critical reflections on their learning and teamwork experiences, how they have made connections between the concepts discussed in the subject with other areas of learning, responses to assigned readings and their project development process.

Student study effort expected

hours

Class contact	
1	Lecture 10
2	Group Tutorial 18
3	Workshop 4
Other student study effort	
1	Self-study 20
2	Project work 51
Total student study effort 103	

Resource List

Books

- Alastair Fuad-Luke, (2002). *Eco-Design: The Sourcebook*, San Francisco: Chronicle Books.
- Helen Lewis & John Gertsakis, (2001). *Design + Environment: a global guide to designing greener goods*, UK: Greenleaf Publishing
- Lacy, P. and Rutqvist, J. (2014). *Waste to Wealth: The Circular Economy Advantage*. UK: Palgrave Macmillan.
- Leong, B.D., & Manzini, E., (2006). *Design Vision: the Sustainable Way of Living in China*, Guangzhou, China: Lingnan Art Publishing.
- Martin Charter & Ursula Tischner, (2001). *Sustainable Solutions: Developing Products & Services for the Future*, UK: Greenleaf Publishing.
- Papanek, Victor, (1995). *The Green Imperative*, New York: Thames and Hudson.
- Verzzoli, C., Kohtala, C., Srinivasan, A., Diehl, J.C., Fusakul, S.M., Xin, L. and Deepta Sateesh. (2014). *Product-Service System Design for Sustainability*. UK: Greenleaf Publishing
- W. McDonough & M. Braungart, (2002). *Cradle to Cradle: Remaking the Way We Make Things*, New York: North Point Press.

Internet References / Web Sites

Working paper: "The Concept of Circular Economy: its Origins and its Evolution".

https://www.researchgate.net/publication/322555840_The_Concept_of_Circular_Economy_its_Origins_and_its_Evolution

OVAM Ecodesign link <http://www.ecodesignlink.be/en/ecolizer-1>

Field Guide to Sustainability, Lunar Design.

http://www.lunar.com/pdf/the_designers_field_guide_to_sustainability_v1.pdf

Toolkits

Circular Design Guide. <https://www.circulardesignguide.com/>

Ecodesign Tool: Ecolizer 2.0 http://www.ecodesignlink.com/images/filelib/EcolizerEN_1180.pdf

IDSA, environmental responsibility section, Business-Ecodesign Tools

<http://www.greenbiz.com/sites/default/files/document/CustomO16C45F54474.pdf>

Okala practitioner guide: Ecological design <http://www.okala.net/>

SECTION 9 – INDUSTRIAL CENTRE TRAINING MODULES

The IC Training modules for the programme are listed below. Note that this list is not exhaustive and other modules may be developed to replace or supplement those listed. Such alterations are on-going and will be made in conjunction with the Departmental Undergraduate Programme Committee's assessment of current needs in conjunction with the Industrial Centre.

TABLE 9 - INDEX

Code	Module	Page
IC2105	Engineering Communication and Fundamentals	9-2
IC2121	Appreciation of Manufacturing Technologies	9-7
IC3103	Integrated Project	9-10

Subject Description Form

Subject Code	IC2105
Subject Title	Engineering Communication and Fundamentals
Credit Value	4 Training Credits
Level	2
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	This subject offers a wide spectrum of fundamental engineering practice that are essential for a professional engineer. This subject includes Engineering Drawing and CAD, Industrial Safety and Electronic Product Safety Test and Practice, Basic Mechatronic Practice and Basic Scientific Computing that aims at providing fundamental and necessary technical skills to all year 1 students interested in engineering.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ul style="list-style-type: none"> a) Describe the principles and conventional representation of engineering drawings according to engineering standards and be able to use it as a medium in technical communication and documentation with CAD application, modelling and practice with application in mechanical, industrial systems and electrical engineering; b) Interpret basic occupational health and industrial safety requirements for engineering practice; c) Explain common electronic product safety tests; d) Design and implement simple mechatronic systems with programmable controller, software, actuation devices, sensing devices and mechanism; and e) Apply scientific computing software for computing in science and engineering including visualization and programming;

<p>Subject Synopsis/ Indicative Syllabus</p>	<p>Syllabus:</p> <ol style="list-style-type: none"> 1. <u>(TM8059) Engineering Drawing and CAD</u> <ol style="list-style-type: none"> 1.1. Fundamentals of Engineering Drawing and CAD Principles of orthographic projection; sectioning; dimensioning; sketching; general tolerances; conventional representation of screw threads and fasteners; types of drawings including part drawing and assembly drawing. Introduction to CAD; features of 2D CAD system (layer; draw; modify; block & attributes; standard library); techniques for the creation of titleblock; setup of 2D plotting; general concepts on 3D computer modeling; parametric feature based solid modeling; construction and detailing of solid features; solid model modification and its limitations; concepts of assembly modeling including bottom up and top down approaches for the generation of parts, subassemblies, and final assembly; virtual validation and simulation, generation of 2D drawings from 3D parts and assemblies; drawing annotation including dimensioning, tolerancing, and part list. 1.2. Electrical Drawing Wiring diagram and wiring table for electronic and electrical installation, functional representation of circuit, system block diagram, electrical and electronic device symbols and layout, architectural wiring diagram with reference to the architectural symbols for electrical drawings in Hong Kong and international standards. 2. <u>(TM2009) Industrial Safety</u> <ol style="list-style-type: none"> 2.1. Safety Management: Overview, essential elements of safety management, safety training, accident management, and emergency procedures. 2.2. Safety Law: F&IU Ordinance and principal regulations, OSH Ordinance and principal regulations. 2.3. Occupational Hygiene and Environmental Safety: Noise hazard and control; dust hazard and control; ergonomics of manual handling. 2.4. Safety Technology: Mechanical lifting, fire prevention, dangerous substances and chemical safety, machinery hazards and guarding, electrical safety, first aid, job safety analysis, fault tree analysis, personal protective equipment. 3. <u>(TM1116) Electronic Product Safety Test and Practice</u> <ol style="list-style-type: none"> 1. Use of basic electronic test instruments, current and voltage measurements, waveform measurement, power supply and signal sources; 2. Electronic product safety test method; High Voltage Isolation Test, Insulation Resistance Test, Continuity Test, Leakage Current
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	<p>Measurement, Electrostatic Discharge (ESD) Test.</p> <p>4. <u>(TM0510) Basic Mechatronic Practice</u></p> <p>4.1. Definitions of mechatronics; design and operation of typical mechatronic systems; appreciation of measurement system, actuator system, motor drives, mechanical drives, gear train and linkage, pneumatic and hydraulic systems, signal conditioning, and human-machine interfaces.</p> <p>4.2. Integration of system components using appropriate controller hardware and software such as PLC, PAC, and Microcontroller system; use of simulation software packages for pneumatic and hydraulic circuit design.</p> <p>One of the followings as decided by hosting programme</p> <p>5. <u>(TM3014) Basic Scientific Computing with MATLAB</u></p> <p>5.1. Overview to scientific computing; introduction to MATLAB; interactive calculations, random number generators, variables, vectors, matrices and string; mathematical operations, polynomial operation, data analysis and curve fitting, file I/O functions. Basic 2D and 3D plots.</p> <p>5.2. M-file programming & debugging; scripts, functions, logic operations, flow control, introduction to graphical user interface.</p> <p>6. <u>(TM3300) Basic Scientific Computing with Python</u></p> <p>6.1. Basic data structures and data operations; script programming and debugging; logic operations, flow control and graphical user interfaces.</p> <p>6.2. Use of functions and popular Python packages, such as Numpy, Panda and Matplotlib.</p> <p>6.3. Data visualization by using graphics packages; such as basic plotting, formatting, 2D and 3D plots and modifying colormap.</p>
<p>Learning Methodology</p>	<p>The teaching and learning methods include lectures, workshop tutorials, and practical works. The lectures are aimed at providing students with an overall and concrete background knowledge required for understanding key issues in engineering communication, use of standard engineering components and systems, and importance of industrial safety. The workshop tutorials are aimed at enhancing students' in-depth knowledge and ability in applying the knowledge and skills to complete specific tasks. The practical works aim at facilitating students to review the diverse topics covered in this course and perform active learning with research, practice, questioning, and problem solving in a unified activity.</p>

Assessment Methods in Alignment with Intended Learning Outcomes	Assessment Methods	Weighting (%)	Intended Learning Outcomes Assessed				
			a	b	c	d	e
	Continuous Assessment						
1. Assignment / Project	Refer to individual Module Description Form	✓	✓	✓	✓	✓	
2. Test			✓		✓	✓	
3. Report / Logbook				✓	✓		
Total	100						
Assessment Methods	Remarks						
1. Assignment / Project	The project is designed to facilitate students to reflect and apply the knowledge periodically throughout the training.						
2. Test	Test is designed to facilitate students to review the breadth and depth of their understanding on specific topics.						
3. Report / Logbook	Report / Logbook is designed to facilitate students to acquire deep understanding on the topics of the training and to present those concepts clearly.						
Student Study Effort Expected	Class Contact	TM8059	TM2009	TM1116	TM0510	TM3014 or TM3300	
▪ Mini-lecture	11 Hrs.	7 Hrs.	2 Hrs.	6 Hrs.	6 Hrs.		
▪ In-class Assignment/ Hands-on Practice	40 Hrs.	8 Hrs.	4 Hrs.	21 Hrs.	15 Hrs.		
Other Study Effort							
▪ Nil							
Total Study Effort	120 Hrs.						

Reading List and References	Reference Software List: <ol style="list-style-type: none">1. AutoCAD from Autodesk Inc.2. SolidWorks from Dassault Systèmes Solidworks Corp.3. MATLAB from The Mathworks Inc.4. Python from Python Software Foundation Reference Standards and Handbooks: <ol style="list-style-type: none">1. BS8888 Technical Product Specification (TPS) Specification.2. Cecil H. Jensen, et al, Engineering Drawing and Design, McGraw-Hill, 2008.3. Warrendale, SAE fastener standards manual, Society of Automotive Engineers, 1997.4. Timothy H Wentzell, et al, Machine Design, Delmar Learning, 2004.5. Czernik, Daniel, Gaskets: Design, Selection, and Testing, McGraw-Hill, 1995.6. Michael M. Khonsari, E. Richard Booser, Applied Tribology: Bearing Design and Lubrication, Wiley-Interscience, 2001.7. IEEE Standard 315 / ANSI Y32.2 / CSA Z99 Graphic Symbols for Electrical and Electronics Diagrams.8. IEC 61082 Preparation of Documents used in Electrotechnology. Reference Books: <p>Training material, manual and articles published by Industrial Centre.</p>
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Subject Description Form

Subject Code	IC2121
Subject Title	Appreciation of Manufacturing Technologies
Credit Value	3 Training Credits
Level	2
Pre-requisite / Co-requisite/ Exclusion	IC2105
Objectives	This subject aims at developing student's knowledge on technologies applied in the product development workflow through an integrated application-oriented learning. The practical use of principles and operation of different manufacturing processes, and properties and application of common materials will be involved. It can enhance student's recognition of the working principle, process capability (e.g. accuracy, limitations) and application in order to strengthen students' engineering competence.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ul style="list-style-type: none"> a) identify working principle and capability of different manufacturing technologies. b) justify appropriate manufacturing processes for specific product requirements. c) collaboratively execute an application oriented training through group work and discussions and inspires oneself to learn continuously about current industrial technologies

Subject Synopsis/ Indicative Syllabus	<p>The extent of the training will depend on the nature of the product that students work on, not all listed activities are likely to be undertaken for all projects.</p> <ol style="list-style-type: none"> 1. Application and Selection of Engineering Materials 2. Application and Operation of <ul style="list-style-type: none"> ▪ Common Manufacturing Processes for Metal Parts ▪ Common Manufacturing Processes for Plastic Parts ▪ Common Manufacturing Processes for PCBA ▪ Processes for Surface Treatment ▪ Operation of Common Joining Processes ▪ Operation of Computer-Aided Systems ▪ Rapid Prototyping and Production Technologies ▪ Manufacturing metrology ▪ Reverse Engineering 																												
Teaching/Learning Methodology	<p>Short lectures introduce the principle of different manufacturing processes and their applications.</p> <p>Demonstrations provide students with understanding on the operation procedures of processes involved in the training</p> <p>Hands-on activities will be used for students to apply the working principles in the training.</p>																												
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1"> <thead> <tr> <th rowspan="2">Specific Assessment Methods/Tasks</th> <th rowspan="2">Weighting (%)</th> <th colspan="3">Intended Learning Outcomes to be assessed</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> </tr> </thead> <tbody> <tr> <td>1. Assignment</td> <td>50</td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>2. Product Assembly</td> <td>10</td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td>3. Individual Report</td> <td>40</td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>Total</td> <td>100</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>The assignment is designed to facilitate students to reflect and apply the knowledge periodically throughout the class.</p> <p>Product Assembly is designed to facilitate students to show their group performances, collaboration and problem solving capability.</p> <p>Written report is designed to facilitate students to show the recognition and their reflection to the training.</p>	Specific Assessment Methods/Tasks	Weighting (%)	Intended Learning Outcomes to be assessed			a	b	c	1. Assignment	50	✓	✓		2. Product Assembly	10			✓	3. Individual Report	40	✓	✓		Total	100			
Specific Assessment Methods/Tasks	Weighting (%)			Intended Learning Outcomes to be assessed																									
		a	b	c																									
1. Assignment	50	✓	✓																										
2. Product Assembly	10			✓																									
3. Individual Report	40	✓	✓																										
Total	100																												

Student Study Effort Expected	Class Contact	
	▪ Short lecture ,Demonstrations, Hands-on practices and Presentation	90 Hrs.
	Other Student Study Effort	0 Hrs.
	Total Student Study Effort	90 Hrs.
Reading List and References	<p>A. Interpreting Engineering Drawings, Cecil Jensen, Delmar Cengage Learning, 2006</p> <p>B. Fundamental of machining processes: Conventional and nonconventional processes, Hassan El Hofy, CRC, 2006</p> <p>C. Reading Materials published by the Industrial Centre</p>	

Subject Description Form

Subject Code	IC3103
Subject Title	Integrated Project
Credit Value	3 Training Credits
Level	3
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	<p>This subject aims to provide students hands-on engineering-business project experience. In real industrial situations, all projects are related to both engineering and business; such as design feasibility and market opportunity. Engineers are expected having the skills of working in interdisciplinary teams on multidisciplinary projects. In this subject, students have to work in a team with members from other disciplines on an engineering-business project which students may practice and integrate their learned theories and knowledge from academic subjects in their programmes.</p>
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ul style="list-style-type: none"> d) Describe the benefits from experience in working within an interdisciplinary team on a multidisciplinary project of both engineering and business. <i>(Objective 1 and Syllabus Item 1-4). Category A</i> e) Formulate solutions for different stages of a multidisciplinary project such as project planning, market research, design & packaging, CAD & prototyping, technology investigation, inventory & distribution management, and business proposal & presentation. <i>(Objective 1 and Syllabus Item 1-4). Category A</i> f) Integrate knowledge developed over the course of their field of study to achieve the objectives of the project by producing the deliverables <i>(Objective 1 and Syllabus Item 1-4). Category A</i> g) Manifest their work effectiveness in multidisciplinary and multilateral teams, and demonstrate tolerance and awareness of other viewpoints <i>(Objective 1 and Syllabus Item 1-4). Category B</i> h) Collaboratively execute an application oriented project through group work and discussions and inspires oneself to learn continuously about current industrial technologies <i>(Objective 1 and Syllabus Item 1-4). Category B.</i>

<p>Subject Synopsis/ Indicative Syllabus</p>	<p>The extent of the project will depend on the nature of the project that students work on, not all listed activities are likely to be undertaken for all projects.</p> <ol style="list-style-type: none"> 1. <u>Project Planning</u> Scheduling of Market Research, Design, Prototype, Technology Audit, Inventory and Distribution Management, and Business Proposal. Allocation of resources of Manpower, Machines, and Money. 2. <u>Market Research</u> Start with collecting information in market in the view of the given project theme. Then analyze the potential market, estimate the market opportunity, and identify the market niche, 3. <u>Design Activity</u> Iterative design processes to evaluate & make concept decisions for the theme product and also packaging; document and communicate the concept information to designer, engineers, and marketing people. 4. <u>Prototype Development</u> Build a prototype with the facilities in the centre such as CAD, RP, or CNC; to evaluate, demonstrate, and present the design concepts as well as functionality. 5. <u>Technology Investigation</u> Investigate the existing technologies and equipment in the centre. Evaluate the cost and performance of different manufacturing processes. Study the feasibility of manufacturing of the product. 6. <u>Inventory & Distribution Management</u> Estimate the production volume and the inventory control level, or if necessary as well as the warehouse management. Propose the wholesale and retail distribution channels. 7. <u>Business Proposal and Presentation</u> Present a business proposal with consolidating the findings from Market Research to Distribution Management. Summarize the pricing strategy, cost, resources, volume, time and prediction of the profit.
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Learning Methodology	All projects assigned will be of ‘real’ work basis proposed by supervisors. Typical projects are product for a specific application, material handling systems, testing jig and fixture...etc. These projects are always having a real problem of serious interest to the clients which requires students to meet the expected demand.						
Assessment Methods in Alignment with Intended Learning Outcomes	Assessment Methods	Weighting (%)	Intended Learning Outcomes Assessed				
			a	b	c	d	e
	4. In-class Assignment	30	✓	✓	✓		✓
	5. Project Performance	30	✓	✓	✓	✓	
	6. Oral Presentation	20	✓	✓		✓	
	7. Written Report	20			✓	✓	✓
	Total	100					
The In-class assignment is aimed at assessing student’s individual performance and practical ability in the project works.							
The Project Performance is a group assessment on the deliverables in different stages during the project.							
Oral Presentation allows students presenting their project clearly and logically including the project objectives, approaches, and deliverables. It consists both “group” and “individual” works to reflect the overall group performance and individual student’s contribution.							
Written Report is to facilitate students to sum up the project holistically. The assessment will focus on the discussion and reflection. It consists both “group” and “individual” works to reflect the overall group performance and individual student’s contribution.							

Student Study Effort Required	Class Contact	
	▪ Practical appreciation and Group Project	90 Hrs.
	Total Study Effort	90 Hrs.
Reading List and References	Reading materials published by the Industrial Centre on <ol style="list-style-type: none"> 1. Rapid Prototyping 2. Computer Aided Manufacturing 3. Plastics Processing 4. Surface Finishing 	

GENERAL UNIVERSITY REQUIREMENTS FOR NORMAL STUDENTS

General University Requirements (GUR)

(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
		Total = 30 credits

(a) Language and Communication Requirements (LCR)

English

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

Students entering the University with specified attainment grades in certain public examinations can be given credit transfer or exemption for one or both LCR English subjects, as listed in **Table C**.

Table A: English LCR subjects (each 3 credits)

English language competence level/ Subject	<i>Practical English for University Studies (ELC1011)</i>	<i>English for University Studies (ELC1012/1013)</i>	Any LCR Proficient level elective subject in English (Table B)
HKDSE Level 4 and above or equivalent	--	Subject 1	Subject 2
HKDSE Level 3 or equivalent	Subject 1	Subject 2	--

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

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

Table C: Credit transfer/ exemption for English LCR subjects

Examination	Result	Subject 1	Subject 2
HKDSE – English Language	Level 5* and 5**	English for University Studies	Exemption
GCEOL/GCSE/IGCSE – English	Grade A		
HKALE – Use of English	Grade A and B		Credit transfer
GCE(AL/ASL) – English Language			
IB	English A (HL): 4 or above English A (SL): 6 or above English B (HL): 5 or above	Credit transfer	Any LCR proficient level elective subject in English (Table B above)
	English A (HL): 3 or below English A (SL): 5 or below English B (HL): 4 or below English B (SL): any level		
IELTS	Score 7.0 or above, with no sub-test score below 6.5	English for University Studies	Exemption
TOEFL Paper-based	600 or above		
TOEFL Internet-based	100 or above		

Chinese

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

Table D: Chinese LCR subjects

Categories of students	Required subject
For Chinese speaking students	University Chinese (CLC1104C/P) 3 credits
For non-Chinese speakers or students whose Chinese standards are at junior secondary level or below	One subject from Table E below

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

Subject (3 credits)	Pre-requisite/exclusion
Chinese I (for non-Chinese speaking students) CLC1151	For non-Chinese speaking students at beginners' level
Chinese II (for non-Chinese speaking students) CLC1152	<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) CLC2151	<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 IV (for Non-Chinese speaking students) CLC2154	<ul style="list-style-type: none"> • For non-Chinese students at intermediate competence levels; and • Students who have completed Chinese III or equivalent
Chinese Literature – Linguistics and Cultural Perspectives (for non-Chinese speaking students) CLC2152	For non-Chinese speaking students at higher competence levels

Students who have obtained verified qualifications or certain results in some public examinations [e.g. HKDSE, HKALE, JEE, GSAT(Taiwan)] should be granted exemption for the Chinese LCR subject. Please refer to the guideline for credit transfer provided by OGUR.

Writing Requirement

In additional 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 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 (i) introduce students to their chosen discipline and enthuse them about their Major study, (ii) foster students' creativity, problem-solving ability and global outlook, (iii) give students an exposure to the concepts and an understanding of their discipline-based professional career development with the incorporation of entrepreneurship, and (iv) engage students, in their first year of study, in desirable forms of university learning that are conducive to smooth adjustment to University life, self-regulation, and autonomous learning.

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. Students are required to successfully complete a non-credit-bearing programme in healthy lifestyle.

For the 2012/13 to 2014/15 intake cohorts, the programme covers: (i) fitness evaluation, (ii) concepts on health and fitness, (iii) sports skills acquisition, and (iv) exercise practicum. More details can be found at: <http://www.polyu.edu.hk/ogur/student/4yr/gur/hls/1214>

With effect from the 2015/16 intake cohort, students will be required to complete the following components: (i) sports training/participation, (ii) e-learning modules, and (iii) lectures/talks. The syllabus covers physical health, mental health, social health, spiritual health, values and priorities on health behaviour with reference to competing priorities in life, reflection on healthy living and plans for self-improvement or maintenance of health behaviour. Details of the programme can be found at:

<http://www.polyu.edu.hk/ogur/student/4yr/gur/hls/revised>

Students on Articulation Degree Programmes and Senior Year Intakes to the 4-year Ug degree programmes are not required to take Healthy Lifestyle Programme. Advanced Standing students are required to take HLS (except for those who are HD/AD holders who follow the Senior Year/Articulation Degree programme GUR curriculum).

GENERAL UNIVERSITY REQUIREMENTS FOR SENIOR YEAR STUDENTS

General University Requirements (GUR)

(a)	Cluster Areas Requirement (CAR)	6 credits
(b)	China Studies Requirement	(3 of the 6 CAR credits)
(c)	Service-Learning	3 credits
		Total = 9 credits

(a) Language and Communication Requirements (LCR)

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. The Programme offering department will refer to the guidelines provided by the Language Centres (ELC and CLC) to determine whether a new student has met the equivalent standard. 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.

Degree LCR subjects include

TWO English language subjects

- Practical English for University Studies (ELC1011) 3 credits
- English for University Studies (ELC1012/1013) 3 credits
- Advanced English for University Studies (ELC2014) 3 credits

ONE Chinese language subject

- University Chinese (CLC1104C/P) 3 credits

(b) Cluster Areas Requirement (CAR)

Students should not take more than 3 credits (normally 1 subject) from the same cluster area. Students need to fulfill the English and Chinese reading and writing requirements. Students may apply for a waiver if they have fulfilled the English and Chinese reading and writing requirements and/or CSR requirement in their previous studies. The following four Cluster Areas:

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

Writing Requirement

In additional to the LCR in English and Chinese explained above, all students must also, among the Cluster Areas Requirement (CAR) subjects they take, 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 CAR subjects under each of the four Cluster Areas is available at:

<https://www2.polyu.edu.hk/as/Polyu/GUR/index.htm>

(c) China Studies Requirement

Of the 6 credits of CAR described in (b) 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>

(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
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- 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>