THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

Department of
Electronic and Information Engineering
電子及資訊工程學系

Higher Diploma Programme in Electronic and Information Engineering

Code: 42375; Full-time, Credit-based

Programme Booklet

(2019/20)

Department of Electronic and Information Engineering

Higher Diploma Programme in

Electronic and Information Engineering

Full-time Credit-based

Code: 42375

Programme Booklet

2019/2020

HIGHER DIPLOMA IN ELECTRONIC AND INFORMATION ENGINEERING

Contents

Practical Training

This Programme Booklet 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.

1. GENERAL INFORMATION

1.1 Cohort of Intakes

This programme booklet is the programme document for the 2019/20 cohort of intakes admitted to the new Higher Diploma in Electronic and Information Engineering programme. Just in case any updated information is necessary after the publication of this booklet, students are requested to refer to the URL 'http://www.eie.polyu.edu.hk/home/42375.html' for the most updated information. Should there be any discrepancy between the contents of this booklet and University regulations, University regulations always prevail.

1.2 Programme Information

Title of Programme	**Higher Diploma in Electronic and Information Engineering**
Host Department	Department of Electronic and Information Engineering
Mode of Attendance	Full-time (predominantly in the daytime)
Duration	Normally 2 years, maximum 4 years* *The maximum period of registration is under review by the University and hence could be changed.
Programme Structure	Credit-based
Final Award	Higher Diploma in Electronic and Information Engineering 電子及資訊工程學高級文憑
Total Credits for Graduation (Academic Credits + Training Credits)	• Academic Credits: - HKDSE Student who have Level 2 or above in HKDSE Physics or Combined Science with Physics: 63 credits - HKDSE Students who do not have Level 2 or above in HKDSE Physics or Combined Science with Physics: 66 credits • Training Credits: 3

2. RATIONALE AND AIMS OF THE PROGRAMME

2.1 Background and Rationale

Electronic and information engineering are among the key technologies that play important roles in daily living. Various sectors, such as business, commerce, communication, education, entertainment, healthcare and transportation require electronic and information engineering for smooth operation. Hence, it is envisioned that there is a great need of professionals who possess knowledge in the areas of electronic and information engineering, as well as generic skills of problem solving, innovation, analysis and adaptability to contribute to the technological and economic development in the region and in the world.

2.2 Aims

This programme aims at producing graduates with the professional knowledge and skills that are relevant for a professional technologist in the field of electronic and information engineering. This programme is designed to equip students with background knowledge necessary to start their careers as technologists in the electronic and information engineering discipline upon graduation.

2.3 Institutional Learning Outcomes

The institutional learning outcomes for PolyU graduates of HD programmes are provided as follows:

1. **Competent Paraprofessional**: Graduates should be able to integrate and apply in practice the fundamental knowledge and skills required for functioning effectively as an entry-level paraprofessional.
2. **Critical Thinker**: Graduates should be able to examine the validity of information, arguments, and different viewpoints, and reach a sound judgement on the basis of credible evidence and logical reasoning.
3. **Effective Communicator**: Graduates should be able to comprehend and communicate effectively in English and Chinese, orally and in writing, in professional and daily contexts.
4. **Practical Problem Solver**: Graduates should be able to identify and define problems in professional and daily contexts, and produce workable solutions to the problems.

5. **Lifelong Learner**: Graduates should recognise the need for continual learning and self- development, and be able to plan, manage and improve their own learning for self-determined development goals.
6. **Ethical Citizen**: Graduates should recognise their leadership potential in their own roles, and should acknowledge their responsibilities as paraprofessionals and citizens to the society and their own nation, and be able to demonstrate ethical reasoning in professional and daily contexts.

3. INTENDED LEARNING OUTCOMES OF THE PROGRAMME

3.1 Intended Learning Outcomes of the Programme

On successful completion of the programme, students will be able to:

Category A Professional/academic knowledge and skills

1. understand the fundamentals of science and engineering, and have the ability to apply them;
2. conduct experiments, as well as to evaluate the outcomes;
3. analyse and evaluate a system, component or process of given specifications and constraints;
4. identify, formulate and solve problems relevant to EIE;
5. have the ability to use modern engineering/IT tools appropriate to EIE practice;

Category B Attributes for all-roundedness

6. work with others collaboratively in a team;
7. recognize professional responsibility;
8. communicate effectively;
9. recognize the need for life-long learning; and
10. understand the impact of engineering solutions in a global and societal context.

3.2 Relationship of Intended Learning Outcomes of the Programme to Institutional Learning Outcomes

The following table illustrates the relationship between Intended Learning Outcomes of the Programme and Institutional Learning Outcomes:

Programme Outcomes	Institutional Learning Outcomes					
	1	2	3	4	5	6
1	X					
2	X	X				
3	X	X		X		
4	X			X		
5	X					
6	X					X
7						X
8			X			
9					X	
10						X

4. ENTRANCE REQUIREMENTS

Candidates should satisfy both the general minimum entrance requirements of The Hong Kong Polytechnic University AND the programme-specific requirements for 2-year Full-time Higher Diploma Programme as set out below.

4.1 University General Minimum Entrance Requirements

(i) For those applying on the basis of HKDSE:

- Level 2 in 5 HKDSE subjects including English Language and Chinese Language

(ii) For those applying on the basis of A-Level results with effect from the 2015/16 entry:

- E in one A-Level subject or in two AS-Level subjects plus satisfying the English Language requirement

(iii) For those applying on the basis of other local qualifications:

- An appropriate Diploma or Higher Certificate (as specified in section 4.2 below) from The Hong Kong Polytechnic University or the Hong Kong Institute of Vocational Education (IVE) – or the former Technical Institutes (TI) or Hong Kong Polytechnic/Technical College

(iv) Other local/non-local qualifications deemed to be acceptable equivalents for admission purpose

- The University accepts attainments in HKALE / HKASLE, GCEALE / GCEASLE and IB for admission to its 2-year HD programmes. Applicants holding A-Level and IB qualifications might be granted credit transfer upon admission.
- The University will consider other qualifications, on their individual merits, as being equivalent to the specified entrance requirements. Applicants concerned may be required to attend interviews or tests to further ascertain their language proficiency.

(v) The public examination results required for admission purpose may be accumulated through multiple sittings.

4.2 Programme-specific Minimum Entrance Requirements

(i) For those applying on the basis of HKDSE:

The following subjects are preferred:

- Level 2 in Mathematics; AND
- Level 2 in Physics, Biology, Chemistry, Combined Science, Information and Communication Technology or Extended modules of Mathematics

(ii) For those applying on the basis of other qualifications:

- A Higher Certificate in Electronic Engineering, Electrical Engineering, Electronic and Communications Engineering, Computer and Information Engineering, or a related discipline; OR
- A Diploma in Electronic and Communications Engineering, Computer and Information Engineering, or a related discipline.

5. PROGRAMME, SUBJECTS, AND CREDITS

Most of the subjects in the programme are of the standard credit value of 3 credits each. The programme includes Level 1, Level 2 and Level 3 subjects. ('Level' of a subject indicates the intellectual demand placed upon students.)

5.1 A summary of the subjects in the programme is shown in the following table. The subjects offered will be updated from time to time according to the trend of the society and the profession.

Subject	Status	Level	Credits	Pre-requisite
General University Requirements (GUR)				
Cluster Areas Requirement (CAR) I #	COM	-	3	Nil
Cluster Areas Requirement (CAR) II #	COM	-	3	Nil
HD Language and Communication Requirement (HDLCR) / Language and Communication Requirement (LCR) I – English *	COM	-	3	Nil
HD Language and Communication Requirement (HDLCR) / Language and Communication Requirement (LCR) II – English *	COM	-	3	Nil
HD Language and Communication Requirement (HDLCR) / Language and Communication Requirement (LCR) III – Chinese *	COM	-	3	Nil
Discipline-Specific Requirements (DSR)				
AMA1110 Basic Mathematics I – Calculus and Probability & Statistics	COM	1	3	Nil
AMA1120 Basic Mathematics II –Calculus and Linear algebra	COM	1	3	AMA1110
AP10001 Introduction to Physics	COM(1)	1	3	Nil
AP10009 University Physics II	COM	1	3	Nil
AMA2111 Mathematics I	COM	2	3	AMA1101 or AMA1102 or AMA1120
EIE2101 Basic Circuit Analysis	COM	2	3	Nil
EIE2102 Basic Electronics	ELE	2	3	EIE2101
EIE2261 Logic Design	COM	2	3	Nil
EIE2264 Computer Programming	COM	2	3	Nil
EIE2282 Information Technology	COM	2	3	Nil
EIE3106 Integrated Project	COM	3	3	EIE2101, EIE2264 and EIE3373
EIE3112 Database System	COM	3	3	Nil

Subject		Status	Level	Credits	Pre-requisite
EIE3311	Computer System Fundamentals	COM	3	3	EIE2261
EIE3312	Linear Systems	ELE	3	3	AMA2111
EIE3320	Object-Oriented Design and Programming	ELE	3	3	EIE2264
EIE3331	Communication Fundamentals	COM	3	3	AMA2111
EIE3333	Data and Computer Communications	ELE	3	3	Nil
EIE3373	Microcontroller Systems and Interface	COM	3	3	EIE2261
IC2115	Industrial Centre Training for EIE	TRN	2	3 (training credits)	Nil

Note:

AMA Department of Applied Mathematics
AP Department of Applied Physics
COM Compulsory
EIE Department of Electronic and Information Engineering
ELE Elective
IC Industrial Centre
TRN Training

* Details of the HD Language and Communication Requirement (HDLCR)/ Language and Communication Requirement (LCR) are set out in Section 5.4.

\# 6 credits of Cluster Areas Requirement (CAR) and one of which (3 credits) should be in subjects designated as 'China-related' (China Study Requirement).

(1) For students who do not have Level 2 or above in HKDSE Physics or Combined Science with Physics only.

5.2 Specified Progression Pattern

In order to be eligible for the award, students have to accumulate at least 63 academic credits (excluding the training credits from practical training), pass all compulsory subjects and practical training in the Industrial Centre (IC2115).

The specified progression patterns stated in this Section are subject to change due to general changes in the University's rules and regulations and reviews by the Department. Students are normally expected to follow the specified progression pattern for discipline-specific subjects. Approval from the Department is required if students do not wish to follow the specified pattern. All compulsory discipline-specific subjects are non-deferrable.

5.2.1 HKDSE Students with Level 2 or above in HKDSE Physics or Combined Science with Physics

Semester	Subject	Credits	Type
Year 1 Semester 1 (16.5 credits + 2 training credits)	HDLCR/ LCR I – English	3	LCR
	AMA1110 Basic Mathematics I – Calculus and Probability & Statistics	3	DSR
	CAR I*	3	CAR
	CAR II*	3	CAR
	EIE2282 Information Technology	3	DSR
	EIE2264 Computer Programming	1.5	DSR
	IC2115 Industrial Centre Training for EIE	2	DSR (training)
Year 1 Semester 2 (16.5 credits + 1 training credit)	HDLCR/ LCR II– English	3	LCR
	AMA1120 Basic Mathematics II –Calculus and Linear algebra	3	DSR
	EIE2264 Computer Programming (Continued)	1.5	DSR
	AP10009 University Physics II	3	DSR
	EIE2261 Logic Design	3	DSR
	HDLCR/ LCR III– Chinese	3	LCR
	IC2115 Industrial Centre Training for EIE (Continued)	1	DSR (training)
Year 2 Semester 1 (15 credits)	AMA2111 Mathematics I	3	DSR
	EIE2101 Basic Circuit Analysis	3	DSR
	EIE3311 Computer System Fundamentals	3	DSR
	EIE3373 Microcontroller Systems and Interface	3	DSR
	Elective 1	3	DSR
Year 2 Semester 2 (15 credits)	EIE3106 Integrated Project	3	DSR
	EIE3112 Database System	3	DSR
	EIE3331 Communication Fundamentals	3	DSR
	Elective 2	3	DSR
	Elective 3	3	DSR

Total Number of Credits: 63

* The study pattern for GUR subjects is indicative only. Students may take these subjects according to their own schedule. They can take these subjects during Year 1 Summer Semester to spread the study load more even across all semesters.

5.2.2 HKDSE Students without Level 2 or above in HKDSE Physics or Combined Science with Physics

Semester	Subject	Credits	Type
Year 1 Semester 1 (16.5 credits + 2 training credits)	AP10001 Introduction to Physics	3	DSR (Add.)
	HDLCR/ LCR I – English	3	LCR
	AMA1110 Basic Mathematics I – Calculus and Probability & Statistics	3	DSR
	CAR I*	3	CAR
	EIE2282 Information Technology	3	DSR
	EIE2264 Computer Programming	1.5	DSR
	IC2115 Industrial Centre Training for EIE	2	DSR (training)
Year 1 Semester 2 (16.5 credits + 1 training credit)	HDLCR/ LCR II– English	3	LCR
	AMA1120 Basic Mathematics II – Calculus and Linear algebra	3	DSR
	AP10009 University Physics II	3	DSR
	EIE2264 Computer Programming (Continued)	1.5	DSR
	HDLCR/ LCR III– Chinese	3	LCR
	EIE2261 Logic Design	3	DSR
	IC2115 Industrial Centre Training for EIE (Continued)	1	DSR (training)
Year 2 Semester 1 (18 credits)	AMA2111 Mathematics I	3	DSR
	CAR II*	3	CAR
	EIE2101 Basic Circuit Analysis	3	DSR
	EIE3311 Computer System Fundamentals	3	DSR
	EIE3373 Microcontroller Systems and Interface	3	DSR
	Elective 1	3	DSR
Year 2 Semester 2 (15 credits)	EIE3106 Integrated Project	3	DSR
	EIE3112 Database System	3	DSR
	EIE3331 Communication Fundamentals	3	DSR
	Elective 2	3	DSR
	Elective 3	3	DSR

Total Number of Credits: 66

* The study pattern for GUR subjects is indicative only. Students may take these subjects according to their own schedule. They can take these subjects during Year 1 Summer Semester to spread the study load more even across all semesters.

5.3 Curriculum Map

Alignment of Subjects with Programme Intended Learning Outcomes:

	Programme Outcomes									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A. GENERAL UNIVERSITY REQUIREMENTS (GUR)										
Language and Communication Requirements (LCR)										
LCR - English - ELCXXXX (2 Subjects)								T,P		
LCR - Chinese - CLCXXXX (1 Subject)								T,P		
Cluster-Area Requirements (CAR) (2 Subjects)										
CAR - Cluster-Area Requirement Subjects+							T,P	T,P	T,P	
B. DISCIPLINE-SPECIFIC REQUIREMENTS (DSR)										
Compulsory - Mathematics and Basic Sciences Subjects										
AMA1110 Basic Mathematics I – Calculus and Probability & Statistics				T,P	T,P				T	
AMA1120 Basic Mathematics II – Calculus and Linear Algebra				T,P	T,P				T	
AMA2111 Mathematics I				T,P	T,P				T	
AP10001 Introduction to Physics	T,P			T,P					T	
AP10009 University Physics II	T,P			T,P						
Compulsory - Engineering Subjects										
EIE2101 Basic Circuit Analysis	T,P,M	T,P,M					T			
EIE2261 Logic Design	T	P	P	T,P	P,M					
EIE2264 Computer Programming			T,P	T,P,M	T,P					
EIE2282 Information Technology				T,P	T,P,M	P,M				T,P,M
EIE3106 Integrated Project	T,P	T,P	T,P,M	T,P	T,P	T,M	T,P,M	T,P,M		
EIE3112 Database System	T	P			T,P			T,P,M		
EIE3311 Computer System Fundamentals	T	P,M	T,M	T						
EIE3373 Microcontroller Systems and Interface	T,P,M	T,P,M		T,P,M	T,P				T,P,M	
EIE3331 Communication Fundamentals	T	T,P	T,P	T	T,P			T	T,M	T,P,M
Compulsory - Industrial Centre Training										
IC2115 Industrial Centre Training for EIE	T,P				T,P		T,P,M		T	
Elective - Engineering Subjects (Select Any 3)										
EIE2102 Basic Electronics	T,P,M	T,P,M								
EIE3312 Linear Systems	T,P,M	T,P	T,P	T,M	P				T	
EIE3320 Object-Oriented Design and Programming	T		T,P,M	T,P	T,P	P,M	T,M			
EIE3333 Data and Computer Communications	T	T,P		T	T,P,M			T		

Note:

Programme Outcomes:

1. Understand the fundamentals of science and engineering, and have the ability to apply them.

2. Conduct experiments, as well as to evaluate the outcomes.

3. Analyse and evaluate a system, component or process of given specifications and constraints.
4. Identify, formulate and solve problems relevant to EIE.
5. Have the ability to use modern engineering/IT tools appropriate to EIE practice.
6. Work with others collaboratively in a team.
7. Recognize professional responsibility.
8. Communicate effectively.
9. Recognize the need for life-long learning.
10. understand the impact of engineering solutions in a global and societal context.

+: Support of outcomes depends on particular project/subject design and requirements

5.4 Language and Communication Requirements for Higher Diploma Programme (HDLCR)

Students are required to fulfil the Language and Communication Requirements for Higher Diploma Programmes (HDLCR) in English (6 credits) and Chinese (3 credits) as stated below in order to be eligible for graduation:

5.4.1 HDLCR – English

All Higher Diploma students must successfully complete <u>two</u> 3-credit English language subjects as stipulated by the University (Table A), according to their English language proficiency level. These subjects are designed to suit students' different levels of English language proficiency at entry, as determined by their HKDSE score or the equivalent 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.

Table A: English LCR subjects (each 3 credits)

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

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

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

5.4.2 HDLCR – Chinese

All Higher Diploma students must successfully complete <u>one</u> 3-credit Chinese language subjects successfully as stipulated by the University, according to their Chinese language proficiency level. (Table C). These subjects are designed to suit students' different levels of Chinese language proficiency at entry, as determined by their HKDSE score or the equivalent or the Chinese Language Centre (CLC) entry assessment.

Table C: Chinese LCR subjects

Categories of students	**Required subject**
For Chinese speaking students	A Chinese LCR subject
For non-Chinese speakers or students whose Chinese standards are at junior secondary level or below	One subject from **Table D** below

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

Subject (3 credits)	**Pre-requisite/exclusion**
Chinese I (for non-Chinese speaking students)	For non-Chinese speaking students at beginners' level
Chinese II (for non-Chinese speaking students)	• For non-Chinese speaking students; and • Students who have completed Chinese I or equivalent
Chinese III (for non-Chinese speaking students)	• For non-Chinese speaking students at higher competence levels; and • Students who have completed Chinese II or equivalent

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

Students who have obtained verified qualifications or certain results in some public examinations [e.g. HKDSE, HKALE, JEE, GSAT(Taiwan)] may be granted credit transfer/exemption for the Chinese LCR subject.

5.5 Practical Training

Industrial Centre (IC) Training is a practical training element in this curriculum to provide a chance for the students to develop hands-on experience in various engineering domains in order to prepare for a career in the engineering profession.

Students must pass the IC Training subject in order to be considered for the HD in Electronic and Information Engineering award. IC Training is graded in the normal manner from A+ to F and will be counted in the evaluation of the Grade Point Average (GPA). However, they will not be counted towards Weighted GPA or Award GPA. The assessment method of Industrial Centre Training is based on 100% continuous assessment. The assessment components are workshop reports, competency in practical works, and appreciation tests. To complete the IC Training successfully, students must demonstrate good professional attributes including responsible attitude in training, excellent attendance with active learning, exercising best practice and care in equipment and tools while observing all safety codes. Detail of assessment scheme is available from Industrial Centre.

6. DEPARTMENTAL UNDERGRADUATE PROGRAMME COMMITTEE

6.1 The composition of the Departmental Undergraduate Programme Committee (DUPC) is decided by the Head of Department. Normally, the DUPC consists of Programme Leaders of all degree and higher diploma programmes hosted by the Department, Head of Department, representative from the Departmental Learning and Teaching Committee, teaching staff

representatives, representatives from major serving departments and student representatives. The Committee is responsible for programme review and development.

6.2 The DUPC will collect and consider, on a regular basis, the views of students and other key stakeholders on the relevance and currency of the syllabi, the standards of the examinations, the development of the programme, the adequacy of resources and the local and worldwide trends related to learning and teaching, for the continuous improvement of the programme.

7. STUDENT STATUS

7.1 Students' eligibility for the range of services provided by the University will be governed by the students' status, which is determined with reference to the mode of attendance of the programmes enrolled and/or the study load as described in Sections 7.2 to 7.5 below.

Full-time students:

7.2 Students enrolling on this programme with a study load of 9 credits or more in a semester are classified as *full-time* students. Students who wish to change their study load to less than 9 credits in a semester will have to seek prior approval from their Department.

7.3 Full-time local students enrolled on UGC-funded programmes are eligible to apply for financial assistance from the Government in the form of grant and loan. Government grant and loan may not be granted beyond the normal period of study for the programme.

Self-paced students:

7.4 Students who wish to study at their own pace instead of following the specified progression pattern will have to seek prior approval from their Department. These students are referred to as self-paced students.

Subject-based students:

7.5 Students who wish to take individual subjects, but do not wish to register as a candidate for an award, are classified as subject-based students.

8. SUBJECT REGISTRATION AND WITHDRAWAL

8.1 In addition to programme registration, students need to register for subjects at specified periods prior to the commencement of a semester. An add/drop period will also be scheduled for each 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 host Department Programme Leader concerned (or an alternate academic staff authorised by the programme offering Department). Applications submitted after the commencement of the examination period will not be considered. Once the application of subject withdrawal is approved, 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 in the calculation of the GPA.

8.2 The pre-requisite requirements of a subject must have been fulfilled before a student registers for that subject. However, the subject offering Department has the discretion to waive the pre-requisite requirements of a subject, if deemed appropriate. If the pre-requisite subject concerned forms part of the requirements for award, the subject has to be passed in order to satisfy the graduation requirements for the programme concerned, despite the waiving of the pre-requisite.

8.3 Subject to the maximum study load of 21 credits per semester and the availability of study places, students are allowed to take additional subjects on top of the prescribed credit requirement for award before they become eligible for graduation. Students will be allowed to take additional subjects for the following semester for broadening purpose, after they fulfil the graduation requirements. However, they will still be subject to the maximum study load of 21 credits per semester and the availability of places in the subjects concerned. They will enrol as subject-based students only and be subject to the rules on 'Admission of Subject-based Students', except that graduates from UGC-funded programmes will not be restricted to taking only subjects from a self-financed programme.

9. STUDY LOAD

9.1 For students following the progression pattern specified for their programme, they have to take the number of credits and subjects, as specified in the Programme Booklet, for each semester. Students cannot drop those subjects assigned by the department unless prior approval has been given by the department.

9.2 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.

9.3 To help improve the academic performance of students on academic probation (the meaning of "academic probation" can be found in Section 17.2), 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 in a semester by students on academic probation is 12. If these students have strong reasons to study more credits, they will have to obtain the endorsement/approval of the respective authority:

(i) study 13 to 15 credits in a semester: endorsement by the Programme Leader and approval by the Departmental Learning and Teaching Committee (DLTC);
(ii) study 16 to 18 credits in a semester: endorsement by the Programme Leader, the DLTC and the Head of Department, and approval by the Faculty Dean;
(iii) study more than 18 credits in a semester: endorsement by the Programme Leader, the DLTC and the Head of Department, and approval by QAC(AD).

9.4 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 semester in which the students are allowed to take zero subject will nevertheless be counted towards the maximum period of registration.

9.5 Students who have obtained approval to pace their studies and students on programmes without any specified progression pattern who wish to take more than the normal load of 15 credits in a semester should seek advice from the Department concerned before the selection of subjects.

10. SUBJECT EXEMPTION

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 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 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.

11. CREDIT TRANSFER

11.1 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. In assessing the transferability of subjects previously taken, the syllabus of that subject should be carefully scrutinized to ascertain that it is comparable to the PolyU's curriculum. Whether the previous studies are from institutions on credit-based or non-credit-based system should not be a matter of concern, and the subject size need not be a perfect match. To ascertain the academic standing of the institution offering the previous studies, the Department might need to request the institutions concerned to provide more information.

11.2 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 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. As the application for credit transfer may involve subjects offered by more than one Department, the programme offering Department should coordinate and check whether the maximum limit for credit transfer for a student has been exceeded, and whether the student has fulfilled the residential requirement of the University.

11.3 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. The validity period of credits previously earned is 8 years after the year of attainment.

11.4 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. When 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.

11.5 If the transferred credits are for a PolyU programme accredited by a professional body, the Department concerned should ensure that the transferred credits will also meet the requirement of the relevant professional body.

11.6 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.

11.7 Notwithstanding the upper limits stipulated in Section 11.4 above, (and unless professional bodies stipulate otherwise) students may be given more credit transfer than these upper limits (e.g. upon completion of an exchange programme as mentioned in Section 11.8 below), subject to their satisfying the residential requirement.

11.8 Credit transfer can be applicable to credits earned by students through studying 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. As with all other credit transfer applications, the Departments concerned should scrutinise the syllabuses of the subjects which the students are going to take at the overseas institution, and determine their credit transferability based on academic equivalence with the corresponding subjects on offer at the PolyU, and the comparability of the grading systems adopted by PolyU and the overseas institution. The transferability of credits, and the suitability for allowing grades to be carried over, must be determined and communicated to students before they go abroad for the exchange programme. In order to overcome the problems associated with subject-

to-subject mappings, block credit transfer rather than subject-by-subject credit transfer can be given.

11.9 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.

11.10 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.

11.11 Students will 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 in his current programme.

12. DEFERMENT OF STUDY

12.1 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 offering the programme is required. The deferment period will not be counted towards the maximum period of registration.

12.2 Application for deferment of study will be entertained only in exceptional circumstances for students who have not yet completed the first year of a full-time programme.

12.3 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.

12.4 Students who have been approved for deferment are not entitled to enjoy any campus facilities during the deferment period.

13. PRINCIPLES OF ASSESSMENT

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

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

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

14. ASSESSMENT METHODS

14.1 Students' performance in a subject can be assessed by continuous assessment and/or examination, at the discretion of the individual subject offering Department. Where both continuous assessment and examination are used, the weighting of each in the overall subject grade will be clearly stated in the programme booklet. The subject offering Department can decide whether students are required to pass both the continuous assessment and examination components, or either component only, in order to obtain a subject pass, but this requirement (to pass both, or either components) will be specified in the programme booklet. Learning outcomes should be assessed by continuous assessment and/or examination appropriately, in line with the outcome-based approach.

14.2 Continuous assessment may include tests, assignments, projects, laboratory work, field exercises, presentations and other forms of classroom participation. Continuous

Assessment Assignments which involve group work should nevertheless include some individual components therein. The contribution made by each student in continuous assessment involving a group effort shall be determined and assessed separately, and this can result in different grades being awarded to students in the same group.

14.3 Assessment methods and parameters of subjects shall be determined by the subject offering department.

14.4 At the beginning of each semester, the subject teacher will inform students of the details of the methods of assessments to be used within the assessment framework as specified in the programme booklet.

15. SUBJECT RESULTS

15.1 Subject Lecturers, in respect of the subject they teach, have sole responsibilities for marking and grading students' coursework and examinations scripts. Timely feedback of continuous assessment will be given to students as soon as possible (e.g. not later than a month), and in any case, before the final examination/assessment. In this regard, Subject Lecturers will be accountable to the Head of the subject offering Department, to ensure that all forms of assessment, including the students' coursework and examination scripts, are correctly marked and graded where appropriate. Subject Lecturers will avoid administrative errors at all times, and submit the grades for finalisation by Subject Assessment Review Panel (SARP) according to the schedule of the Department. To ensure consistency and uniformity for a common subject taught by different Subject Lecturers, meetings can be arranged amongst them before the examination papers are set or before the marking is done.

15.2 Subject grades will be reviewed and finalised by SARP before being formally released to students and submitted to the Board of Examiners. Each Department forms one or several SARPs to take care of the subjects it offers. The Board of Examiners will not attempt to change any grades.

15.3 SARP(s) shall be formed by the Head of the Department offering the subjects. It shall include the Head of the Department offering the subject as the Chairman, the relevant subject examiners and where appropriate, and the Programme Leader.

16. BOARD OF EXAMINERS (BoE)

16.1 The authority for approving the overall results of students rests with the Board of Examiners (BoE). The BoE will meet at the end of each semester (except for Summer Term unless there are students who are eligible to graduate after the completion of Summer Term subjects) and is responsible to the Senate for making:

(i) a decision on the classification of awards to be granted to each student on completion of the programme;

(ii) a decision on deregistration cases; and

(iii) a decision on cases with extenuating circumstance.

16.2 These decisions are made by the BoE at the end of each semester in the light of the standard of student achievement appropriate to the award to which the programme is designed to lead, the aims of the programme, the students' performance on the programme in previous years, the general assessment regulations of the University, the specific programme regulations, and good practice established in the University and elsewhere.

16.3 The BoE will not attempt to change the grades for any student in any subject nor condone failures. The decisions of the BoE, except those on award and deregistration cases which are straightforward, will be ratified by the Faculty Board. The Faculty Board may refer the decisions back to the BoE for further consideration and explanation.

16.4 Any decisions by the BoE outside the general assessment regulations of the University, supported by the Faculty Board, should be referred to the Academic Regulations Committee for ratification. All such cases shall be reported to the Senate. Decisions by BoE outside the programme regulations but within the general assessment regulations of the University fall within the authority of the Faculty Board.

16.5 Students shall be formally notified of decisions affecting them after the BoE meeting except for those whose cases require ratification of the Faculty Board. For the latter cases, students shall be formally notified of decisions after the Faculty Board's ratification or, if a decision is outside the General Assessment Regulations, after the Academic Regulations Committee ratifies that decision. Any prior communication of results to these students shall be subject to formal ratification.

17. PROGRESSION / ACADEMIC PROBATION / DEREGISTRATION

17.1 The Board of Examiners shall, at the end of each semester (except for Summer Term unless there are students who are eligible to graduate after completion of Summer Term subjects or the Summer Term study is mandatory for the programme), determine whether each student is

(i) eligible for progression towards an award; or

(ii) eligible for an award; or

(iii) required to be deregistered from the programme.

17.2 When a student has a Grade Point Average (GPA) (see Section 21.3 below) lower than 2.0, he/she will be put on academic probation in the following semester. If a student is able to pull his/her GPA up to 2.0 or above at the end of that following semester, the status of 'academic probation' will be lifted. The status of 'academic probation' will be reflected in the examination result notification but not in the transcript of studies.

17.3 A student will have 'progressing' status unless he/she falls within any one of the following categories, which may be regarded as grounds for deregistration from the programme:

(i) the student has exceeded the maximum period of registration for the programme as specified in this programme booklet; or

(ii) the student's GPA is lower than 2.0 for two consecutive semesters and his/her Semester GPA in the second semester is also lower than 2.0; or

(iii) the student's GPA is lower than 2.0 for three consecutive semesters.

When a student falls within the categories as stipulated above, the Board of Examiners shall de-register the student from the programme without exception.

17.4 The progression of students to the following academic year will not be affected by the GPA obtained in the Summer Term, unless Summer Term study is mandatory for all students of the programme and constitutes a requirement for graduation, and is so specified in this programme booklet.

17.5 A student may be de-registered from the programme enrolled before the time frame specified in Sections 17.3(ii) or 17.3(iii) above if his/her academic performance is poor to the extent that the Board of Examiners deems that his/her chance of attaining a GPA of 2.0 at the end of the programme is slim or impossible.

17.6 If the student is not satisfied with the de-registration decision of the Board of Examiners, he/she can lodge an appeal. All such appeal cases will be referred directly to Academic

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

18. APPEAL AGAINST ASSESSMENT RESULTS

A student may appeal against a decision on their assessment results or the decision on deregistration upon the public announcement of the overall results. The procedures for appeals against examination results are detailed in the Student Handbook.

19. RETAKING OF SUBJECTS

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

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

19.3 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. In the circumstances when students do not have a choice to retake a failed subject, such as when the failed subject has been phased out, a 'tie-subject' arrangement can be made with the approval of the

Faculty/School Board. Under the arrangement, another appropriate subject can be taken as equivalent to the subject which is not offered. Upon passing the equivalent subject, the fail grade of the original subject will be replaced by the latest grade of the retake subject and the failure grade of the original subject will not be taken into account in the calculation of the GPA.

20. EXCEPTIONAL CIRCUMSTANCES

Absence from an assessment component

20.1.1 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 before the commencement of the following academic year, the Faculty/School Board Chairman shall decide on an appropriate time for completing the late assessment.

20.1.2 The student concerned is required to submit his/her application for late assessment in writing to the Head of Department offering the subject, within five working days from the date of the examination, together with any supporting documents. Approval of applications for late assessment and the means for such late assessments shall be given by the Head of Department offering the subject or the Subject Lecturer concerned, in consultation with the Programme Leader.

Assessment to be completed

20.2 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

20.3 If a student is unable to complete the requirements of the programme in question for the award due to very serious illness, or other very special circumstances which are beyond

his/her control, and considered by the Board of Examiners as legitimate, the Faculty/School Board will determine whether the student will be granted an aegrotat award. Aegrotat award will be granted under very exceptional circumstances.

20.4 A student who has been offered an aegrotat award shall have the right to opt to either ~~to~~ accept such an award, or request to be assessed on another occasion to be stipulated by the Board of Examiners; the student's exercise of this option shall be irrevocable.

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

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

Other particular circumstances

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

21. GRADING

21.1 Assessment grades shall be awarded on a criterion-referenced basis. A student's overall performance in a subject (including GUR subjects) shall be graded as follows:

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

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

21.2 A numeral grade point is assigned to each subject grade, as follows:

Grade	***Grade Point***
A+	4.5
A	4
B+	3.5
B	3
C+	2.5
C	2
D+	1.5
D	1
F	0

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

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

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

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

(i) Exempted subjects

(ii) Ungraded subjects

(iii) Incomplete subjects

(iv) Subjects for which credit transfer has been approved, but without any grade assigned (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.)

(v) Subjects from which a student has been allowed to withdraw (i.e. those with the code 'W')

Subject which has been given an 'S' code, i.e. absent from assessment, will be included in the GPA calculation and will be counted as 'zero' grade point. GPA is thus the unweighted cumulative average calculated for a student, for all relevant subjects taken from the start of the programme to a particular point of time. GPA is an indicator of overall performance, and is capped at 4.0.

21.4 Different types of GPA's

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

21.4.2 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.

21.4.3 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 a student will likely get if he/she makes steady progress on his/her academic studies. GUR subjects will be included in the calculation of weighted GPA for all programmes.

21.4.4 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.

21.4.5 The relationship between the different types of GPA's, and the methods for calculating each, is further explained in Appendix 1.

22. ELIGIBILITY FOR HIGHER DIPLOMA IN ELECTRONIC AND INFORMATION ENGINEERING AWARD

In order to be eligible for the award, a student must meet:

(i) the University Graduation Requirements, as explained in Section 22.1 below; and
(ii) the specific graduation requirements of their chosen programme of study, as stated in Sections 22.2 below.

22.1 University Graduation Requirements

(i) Satisfy the following requirements in general education (GUR):
  (a) 9 credits of Language and Communication Requirements for Higher Diploma Programmes (HDLCR) as set out in Section 5.4.
  (b) 6 credits of Cluster Areas Requirement (CAR); 3 credits should be in subjects designated as 'China-related' (China Studies Requirement).
(ii) Earn a cumulative GPA of 2.0 or above at graduation.
(iii) Satisfy the residential requirement for at least 1/3 of the credits to be completed for the award the student is currently enrolled, unless the professional bodies stipulate otherwise

22.2 Specific Graduation Requirements for the **Higher Diploma in Electronic and Information Engineering** Programme

(i) Complete successfully a minimum of **63** academic credits composed of the following:
  (a) 15 credits of General University Requirements (GUR) as set out in Section 22.1(i).
  (b) 48 credits of Discipline-Specific Requirements (DSR).
(ii) Pass the practical training at the Industrial Centre and obtain the 3 training credits.
(iii) In addition to the minimum 63 academic credits, HKDSE students who do not have Level 2 or above in HKDSE Physics or Combined Science with Physics are required to study 3 more credits on Physics in order to graduate. They have to complete a minimum of **66** academic credits in order to be eligible for graduation.

22.3 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.

22.4 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. With effect from the 2015/16 intake cohort, the regular credit requirement for award will count the lowest number of credits taken by the students in the same subject area.

22.5 Level-0 subjects and training subjects (including clinical/field training) will not be counted to fulfill free elective requirement for graduation purpose.

22.6 A student is required to graduate as soon as he/she satisfies all the conditions for award as set out in Sections 22.1 and 22.2 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.

23. GUIDELINES FOR AWARD CLASSIFICATION

23.1 The guidelines for award classification are stated in the following. In using these guidelines, the Board of Examiners shall exercise its judgement in coming to its conclusions as to the award for each student, and where appropriate, may use other relevant information.

23.2 This programme uses Weighted GPA as a guide for helping to determine award classifications. The weighting given for Level 1 and Level 2 subjects is 2 and the weighting given for Level 3 subjects is 3. The weighting given for Practical Training is zero.

Weighted GPA will be computed as follows:

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

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

n = number of subjects counted towards the award as listed in Table 5.1 according to the Specified Progression Pattern (Section 5.2) (inclusive of failed subjects) taken by the student up to and including the latest semester. (For subjects that have been retaken, only the grade obtained in the final attempt will be included in the GPA calculation except those exclusions specified in Section 23.3.)

Same as GPA, Weighted GPA is capped at 4.0.

23.3 Any subjects passed after the graduation requirement has been met will not be taken into account in the grade point calculation for award classification.

23.4 The following are guidelines for the Board for Examiners' reference in determining award classifications:

Classification	**Guidelines**
Distinction	The student's performance/attainment is outstanding, and identifies him/her as exceptionally able in the field covered by the programme in question.
Credit	The student has reached a standard of performance/attainment which is more than satisfactory but less than outstanding.
Pass	The student has attained the 'essential minimum' required for graduation at a standard ranging from just adequate to just satisfactory.

23.5 Students who have committed academic dishonesty or non-compliance with examination regulations will be subject to the penalty of lowering the award classification by one level. 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.

23.6 The following is a set of indicators, for the Board of Examiners' reference, which can be used in helping to determine award classification:

Classification	**Weighted GPA**
Distinction	3.7^{+} – 4.0
Credit	3.2^{+} – 3.7^{-}
Pass	2.0 – 3.2^{-}

Note: '+' sign denotes 'equal to or more than'; '–' sign denotes 'less than'.

23.7 There is no requirement for the Board of Examiners to produce an award list which conforms to the guidelines in Section 23.6 above but this ruling is subject to further review and hence could be modified.

24. RECORDING OF DISCIPLINARY ACTIONS IN STUDENTS' RECORDS

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

24.2 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.

24.3 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. The disciplinary probation is normally one year unless otherwise decided by the Student Discipline Committee.

24.4 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 who is subject to disciplinary action.

25. SYLLABI

(Please see pages 35 to 111.)

APPENDIX

(Please see page 112.)

Subject Description Form

<table>
<tr><td>Subject Code</td><td>AMA1110</td></tr>
<tr><td>Subject Title</td><td>Basic Mathematics I – Calculus and Probability & Statistics</td></tr>
<tr><td>Credit Value</td><td>3</td></tr>
<tr><td>Level</td><td>1</td></tr>
<tr><td>Pre-requisite</td><td>Nil</td></tr>
<tr><td>Objectives</td><td>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.</td></tr>
<tr><td>Intended Subject Learning Outcomes</td><td>Upon completion of the subject, students will be able to:
1. Apply analytical reasoning to solve problems in science and engineering;
2. Make use of the knowledge of mathematical/statistical techniques and adapt known solutions to various situations;
3. Apply mathematical modeling in problem solving;
4. Demonstrate abilities of logical and analytical thinking.</td></tr>
<tr><td>Subject Synopsis/ Indicative Syllabus</td><td>Elementary calculus: 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.

Elementary Probability and Statistics: Descriptive statistics, random variables, probability and probability distributions, binomial, Poisson and normal distributions, applications.

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.</td></tr>
<tr><td>Teaching/Learning Methodology</td><td>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.</td></tr>
<tr><td>Assessment Methods in Alignment with Intended Subject Learning Outcomes</td><td>
<table>
<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>
<tr><td>1. Assignments and mid-term 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>
</table>
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.

Questions used in assignments, quizzes, tests and examinations are used to assess students' level of understanding of the basic concepts and their ability</td></tr>
</table>

	to use mathematical techniques in solving problems in science and engineering. **Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:** 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.	
Student Study Effort Expected	**Class contact:**	
	• Lecture	26 Hours
	• Tutorial	13 Hours
	Other student study effort:	
	• Homework and self-study	81 Hours
	Total student study effort	**120 Hours**
Reading List and References	1. Chung, K.C. *A Short Course in Calculus and Matrices*, McGraw Hill 2013 2. Hung, K.F., Kwan, Wilson, Pong, T.Y. *Foundation Mathematics & Statistics*, McGraw Hill 2013 3. Larson, R., Edwards, B. *Single Variable Calculus*, Brooks/Cole 2012 4. Walpole, R.E., Myers, R.H., Myers, S.L. Ye, K. *Probability and Statistics for Engineers and Scientists*, Prentice Hall, 2012	
Last Updated	June 2019	
Prepared by	AMA Department	

Subject Description Form

<table>
<tr><td>Subject Code</td><td>AMA1120</td></tr>
<tr><td>Subject Title</td><td>Basic Mathematics II –Calculus and Linear algebra</td></tr>
<tr><td>Credit Value</td><td>3</td></tr>
<tr><td>Level</td><td>1</td></tr>
<tr><td>Pre-requisite</td><td>AMA1110 Basic Mathematics I – Calculus and Probability & Statistics</td></tr>
<tr><td>Objectives</td><td>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.</td></tr>
<tr><td>Intended Subject Learning Outcomes</td><td>Upon completion of the subject, students will be able to:
1. Apply analytical reasoning to solve problems in science and engineering;
2. Make use of the knowledge of mathematical/statistical techniques and adapt known solutions to various situations;
3. Apply mathematical modeling in problem solving;
4. Demonstrate abilities of logical and analytical thinking.</td></tr>
<tr><td>Subject Synopsis/ Indicative Syllabus</td><td>Elementary calculus: 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.

Linear algebra: 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.</td></tr>
<tr><td>Teaching/Learning Methodology</td><td>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.</td></tr>
<tr><td>Assessment Methods in Alignment with Intended Subject Learning Outcomes</td><td>
<table>
<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>
<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>
</table>

Continuous Assessment comprises of assignments and tests. An examination is held at the end of the semester.

Questions used in assignments, 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.

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

The subject focuses on understanding of basic concepts and application of techniques in differential/integral calculus, elementary statistics and</td></tr>
</table>

	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.	
Student Study Effort Expected	**Class contact:**	
	• Lecture	26 Hours
	• Tutorial	13 Hours
	Other student study effort:	
	• Homework and self-study	81 Hours
	Total student study effort	**120 Hours**
Reading List and References	1. Chung, K.C. *A Short Course in Calculus and Matrices*, McGraw Hill 2013 2. Hung, K.F., Kwan, Wilson, Pong, T.Y. *Foundation Mathematics & Statistics*, McGraw Hill 2013 3. Larson, R., Edwards, B. *Single Variable Calculus*, Brooks/Cole 2012 4. Larson, R. *Elementary Linear Algebra*, Brooks/Cole 2013	
Last Updated	June 2019	
Prepared by	AMA Department	

Subject Description Form

Subject Code	AP10001
Subject Title	Introduction to Physics
Credit Value	3
Level	1
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	This is a subject designed for students with no background in physics studies. Fundamental concepts in major topics of physics (mechanics, heat, wave and electromagnetism) will be discussed. The aim of this subject is to equip students with some basic physics knowledge, and to appreciate its applications in various branches of science and technology.
Intended Subject Learning Outcomes	**Upon completion of the subject, students will be able to:** 1. Solve simple problems in kinematics Newton's law and Energy; 2. Solve problems in heat capacity and latent heat; 3. Explain phenomena related to the wave character of light; 4. Apply the superposition of waves; 5. Understand electrostatic field and potential; 6. Solve problems on interaction between current and magnetic field; and 7. Describe and demonstrate the phenomenon of electromagnetism.
Subject Synopsis/ Indicative Syllabus	**Syllabus:** **Mechanics**: scalars and vectors; kinematics and dynamics; Newton's laws; momentum, impulse, work and energy; conservation of momentum and conservation of energy. **Thermal physics**: heat and internal energy; heat capacity; conduction, convection and radiation; latent heat. **Waves**: nature of waves; wave motion; reflection and refraction; image formation by mirrors and lenses; superposition of waves; standing waves; diffraction and interference; electromagnetic spectrum; sound waves. **Electromagnetism**: charges; Coulomb's law; electric field and potential; current and resistance; Ohm's law; magnetic field; magnetic force on moving charges and current-carrying conductors; Faraday's law and Lenz's law.
Teaching/Learning Methodology	**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. **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 develop a deeper understanding of the subject in relation to daily life phenomena or experience. **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.

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	4	5	6	7
1. Continuous assessment	40%	✓	✓	✓	✓	✓	✓	✓
2. Examination	60%	✓	✓	✓	✓	✓	✓	✓
Total	100%							

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.

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.

Student Study Effort Expected		
	Class contact:	
	• Lecture	33 Hours
	• Tutorial	6 Hours
	Other student study effort:	
	• Self-study	81 Hours
	Total student study effort	**120 Hours**

Reading List and References

1. John D. Cutnell & Kenneth W. Johnson, *Introduction to Physics*, 9th ed., 2013, John Wiley & Sons.
2. Hewitt, *Conceptual Physics*, 11th ed., 2010, Benjamin Cummings.

Last Updated: July 2016

Prepared by: AP Department

Subject Description Form

Subject Code	AP10009
Subject Title	University 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:** 1. Apply simple laws in optics to explain image formation; 2. Understand phenomena related to the wave character of light; 3. Solve problems in electrostatics; 4. Solve problems on interaction between current and magnetic field; 5. Apply electromagnetic induction to various phenomena; and 6. Solve problems in simple circuits.
Subject Synopsis/ Indicative Syllabus	**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 develop a deeper understanding of the subject in relation to daily life phenomena or experience. **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.

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	4	5	6
1. Continuous assessment	40%	✓	✓	✓	✓	✓	✓
2. Examination	60%	✓	✓	✓	✓	✓	✓
Total	100%						

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.

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.

Student Study Effort Expected		
	Class contact:	
	• Lecture	33 Hours
	• Tutorial	6 Hours
	Other student study effort:	
	• Self-study	81 Hours
	Total student study effort	**120 Hours**

Reading List and References

1. John W. Jewett and Raymond A. Serway, *Physics for Scientists and Engineers,* 2014, 9th ed, Brooks/Cole Cengage Learning.
2. Hafez A. Radi, John O. Rasmussen, *Principles of physics: for scientists and engineers*, 2013, Springer.
3. W. Bauer and G.D. Westfall, *University Physics with Modern Physics*, 2011, McGraw-Hill.

Last Updated	July 2016
Prepared by	AP Department

Subject Description Form

Subject Code	CLC1104C (Cantonese) / CLC1104P (Putonghua) [2019-20 onward] / CBS1104C (Cantonese) / CBS1104P (Putonghua) [2018-19 and before] *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).*
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:** 1. Consolidate the ability to identify and correct the most common errors in written texts; 2. Develop Chinese writing skills through the analysis and in-depth reading of selected literary masterpieces; 3. Master the format, organization, language and style of expression of various genres of Chinese writing; 4. Produce formal presentations in spoken Chinese effectively and appropriately.
Subject Synopsis/ Indicative Syllabus	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.

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

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.</td></tr>
<tr><td>Assessment Methods in Alignment with Intended Subject Learning Outcomes</td><td>
<table>
<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>
<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 colspan="4"></td></tr>
</table>
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 provided in classroom teaching.
</td></tr>
<tr><td rowspan="8">Student Study Effort Expected</td><td>Class contact:</td><td></td></tr>
<tr><td>• Seminar</td><td>39 Hours</td></tr>
<tr><td>Additional activity:</td><td></td></tr>
<tr><td>• e-Learning in Putonghua and written Chinese</td><td>9 Hours</td></tr>
<tr><td>Other student study effort:</td><td></td></tr>
<tr><td>• Outside Class Practice</td><td>39 Hours</td></tr>
<tr><td>• Self-study</td><td>39 Hours</td></tr>
<tr><td>Total student study effort</td><td>126 Hours</td></tr>
<tr><td>Reading List and References</td><td>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。</td></tr>
</table>

	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

Subject Description Form

Subject Code	CLC1105C (Cantonese) / CLC1105P (Putonghua) [2019-20 onward] / CBS1105C (Cantonese) / CBS1105P (Putonghua) [2018-19 and before]
Subject Title	University Chinese for Higher Diploma Students 大學中文（高級文憑課程) *Remarks: Students taking the Cantonese version of CLC/CBS1105 (i.e. CLC/CBS1105C) will be offered a 39 hour non-credit bearing e-learning course in Putonghua (optional).*
Credit Value	3
Level	1
Pre-requisite / Co-requisite/ Exclusion	Students with HKDSE Chinese subject result at level 2 or equivalent
Objectives	This subject aims at enhancing higher diploma students' command of Chinese language knowledge to communicate accurately and appropriately in both written and spoken forms, with particular reference to their basic proficiency in Chinese at the tertiary level.
Intended Subject Learning Outcomes	**Upon completion of the subject, students will be able to:** 1. Improve their Chinese language ability by revising the most common grammatical errors in written texts in terms of accuracy, relevance, appropriateness and completeness; 2. Demonstrate the basic logic, format, structure and potentials behind Chinese writing; 3. Make use of the resources available in producing different genres such as expository / persuasive / argumentative tasks, according to the different communicative purposes; 4. Perform oral presentations in a clear and systematic way.
Subject Synopsis/ Indicative Syllabus	1. Written communication • editing language errors to develop the awareness of choice of words. • enhancing basic competence in the skill of summarizing • producing a topic in a systematic way with linguistic accuracy, clear arguments and logical structure. • applying expository/persuasive/argumentative skills to practical usage. 2. Spoken communication • different strategies to convey messages in a well-structured way. • appropriate verbal and non-verbal strategies in oral interactions to convince people. • effective skills of seeking clarity/consent/disagreement/answer to a question • critical thinking skills for group discussions of issues. 3. Language development • vocabulary building and word choice. • accuracy in Chinese language usage.
Teaching/Learning Methodology	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. 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. Additional reference materials will be recommended as required.

Assessment Methods in Alignment with Intended Subject Learning Outcomes

Specific Assessment Methods/Tasks	% Weighting	Intended Subject Learning Outcomes to be Assessed (Please tick as appropriate)			
		1	2	3	4
Quizzes / Exercises	35%	√	√		
Written Assignments	45%	√	√	√	
Oral presentation	20%	√	√	√	√
Total	100 %				

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 (2). The writing assessments aim to obtain an objective measurement of students' basic competence in the use of written Chinese with 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), (2), (3) and (4)). In addition to these assessments, students are required to complete further language training through web-based language work. Explanations and exercises are 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

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：《生活錯別字》，香港：中華書局，2000年。 13. 陳瑞端，《生活病語》，香港 : 中華書局，2000。 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

Subject Description Form

Subject Code	ELC1007
Subject Title	University English for Higher Diploma Students I
Credit Value	3
Level	1
Pre-requisite / Co-requisite/ Exclusion	Nil
Objectives	This subject aims to help higher diploma students entering with HKDSE English Language Level 2 to study effectively in an English medium tertiary learning environment, and to acquire English skills to enable them to further their studies at university.
Intended Subject Learning Outcomes	**Upon successful completion of the subject, students will be able to:** 1. Plan and write a text that effectively describes data 2. Plan and write a well-structured and coherent comparison and contrast text 3. Employ appropriate and effective verbal and non-verbal skills in oral presentations 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.
Subject Synopsis/ Indicative Syllabus	1. Written communication Analysing and practising common writing functions; improving the ability of writing topic sentences and concluding sentence; developing skills in descriptive writing description; employing appropriate strategies for paragraph development; understanding common patterns of organisation in writing; improving coherence and cohesion in writing; developing revision and proofreading skills. 2. Spoken communication Recognising the differences between spoken and written communication in English in university study contexts; identifying and practising verbal and non-verbal interaction strategies in oral presentations. 3. Language development Improving and extending relevant features of grammar, vocabulary and pronunciation; developing appropriate academic reading and listening skills.
Teaching/Learning Methodology	The study method is a combination of seminar, self-access work and online learning. Following a blended delivery approach, activities include teacher input as well as in- and out-of-class work and online learning. Students make use of elearning resources to further improve their proficiency and English skills. 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.

<table>
<tr><td>Assessment Methods in Alignment with Intended Subject Learning Outcomes</td><td>
<table>
<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>1</th><th>2</th><th>3</th></tr>
<tr><td>1. Writing a descriptive text</td><td>30%</td><td>✓</td><td></td><td></td></tr>
<tr><td>2. Writing an essay</td><td>30%</td><td></td><td>✓</td><td></td></tr>
<tr><td>3. Oral presentation</td><td>40%</td><td></td><td></td><td>✓</td></tr>
<tr><td>Total</td><td>100%</td><td colspan="3"></td></tr>
</table>
Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

Assessment 1 demonstrates achievement of LO (1) for students to plan, write and revise a descriptive text. Assessment 2 necessitates achievement of LO (2) in order for students to write an accurate and coherent text. Assessment 3 requires students to demonstrate their achievement of LO (3).

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.
</td></tr>
<tr><td rowspan="5">Student Study Effort Expected</td><td>Class contact:</td><td></td></tr>
<tr><td>• Seminars</td><td>39 Hours</td></tr>
<tr><td>Other student study effort:</td><td></td></tr>
<tr><td>• Self-study /preparation</td><td>78 Hours</td></tr>
<tr><td>Total student study effort</td><td>117 Hours</td></tr>
<tr><td>Reading List and References</td><td colspan="2">Course material:
Learning materials developed by the English Language Centre

Recommended references:
1. Boyle, J. & Boyle, L. (1998). Common Spoken English Errors in Hong Kong. Hong Kong: Longman.
2. Hung, T. T. N. (2005). Understanding English grammar: A course book for Chinese learners of English. Hong Kong: Hong Kong University Press.
3. McWhorter, K. T. (2012). The successful writer's handbook. (2nd ed.). Boston, MA: Longman.
4. Templeton, M. (2010). Public speaking and presentations demystified. New York, NY: McGraw-Hill.
5. Zwier, L. J. (2002). Building academic vocabulary. Ann Arbor, MI: University of Michigan Press.</td></tr>
<tr><td>Last Updated</td><td colspan="2">July 2018</td></tr>
<tr><td>Prepared by</td><td colspan="2">English Language Centre</td></tr>
</table>

Subject Description Form

Subject Code	ELC1008
Subject Title	University English for Higher Diploma Students II
Credit Value	3
Level	1
Pre-requisite	ELC1007 University English for Higher Diploma Students I
Objectives	This subject aims to help higher diploma students entering with HKDSE English Language Level 2 to study effectively in an English medium tertiary learning environment, and to enhance their proficiency and communication skills in English.
Intended Subject Learning Outcomes	**Upon successful completion of the subject, students will be able to:** 1. Plan, write and revise academic essays. 2. Refer to sources in written texts by using summarising, paraphrasing and synthesising skills 3. Use appropriate verbal and non-verbal skills in spoken communication in a group context 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.
Subject Synopsis/ Indicative Syllabus	1. Written communication Further developing the ability of writing succinct topic sentences and employing appropriate strategies for paragraph development; taking effective notes from written and spoken sources; further developing the skills needed for effective use of sources in written texts; further extending coherence and cohesion in writing; revising and proofreading effectively. 2. Spoken communication Further developing the verbal and non-verbal strategies in oral interactions; developing and applying critical thinking skills to discussions of issues. 3. Language development Further improving and extending relevant features of grammar, vocabulary and pronunciation; extending appropriate reading and listening skills.
Teaching/Learning Methodology	The study method is a combination of seminar, self-access work and online learning. Following a blended delivery approach, activities include teacher input as well as in- and out-of-class work and online learning. Students make use of elearning resources to further improve their proficiency and academic English skills. 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.

<table>
<tr><td>Assessment Methods in Alignment with Intended Learning Outcomes</td><td>
<table>
<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>1</th><th>2</th><th>3</th></tr>
<tr><td>1. Academic essay (first draft)</td><td>30%</td><td>✓</td><td>✓</td><td></td></tr>
<tr><td>2. Extended academic essay (final)</td><td>30%</td><td>✓</td><td>✓</td><td></td></tr>
<tr><td>3. Group discussion</td><td>40%</td><td></td><td></td><td>✓</td></tr>
<tr><td>Total</td><td>100 %</td><td colspan="3"></td></tr>
</table>
Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

Assessments 1 and 2 necessitate achievement of LOs (1) and (2) in order for students to write effective extended essays. Assessment 3 requires students to demonstrate their achievement of LO (3).

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.
</td></tr>
<tr><td>Student Study Effort Expected</td><td>
<table>
<tr><td>Class contact:</td><td></td></tr>
<tr><td>• Seminars</td><td>39 Hours</td></tr>
<tr><td>Other student study effort:</td><td></td></tr>
<tr><td>• Self study/preparation</td><td>78 Hours</td></tr>
<tr><td>Total student study effort</td><td>117 Hours</td></tr>
</table>
</td></tr>
<tr><td>Reading List and References</td><td>
Course material:
Learning materials developed by the English Language Centre

Recommended references:
1. Bullock, R. & Weinberg, F. (2001). The little seagull handbook. New York, N.Y.: W.W. Norton & Co.
2. Engleberg, I. (2013). Think: Public speaking. Boston, MA: Pearson.
3. Hung, T. T. N. (2005). Understanding English grammar: a course book for Chinese learners of English. Hong Kong: Hong Kong University Press.
4. Parker, G. M. & Hoffman, R. (2006). Meeting excellence: 33 tools to lead meetings that get results. San Francisco, CA: Jossey-Bass.
</td></tr>
<tr><td>Last Updated</td><td>July 2018</td></tr>
<tr><td>Prepared by</td><td>English Language Centre</td></tr>
</table>

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 Subject Learning Outcomes	**Upon successful completion of the subject, students will be able to:** 1. Organise and write accurate and coherent short texts 2. Improve language accuracy and the ability to proofread for common errors in written texts 3. Use appropriate verbal and non-verbal skills to enhance fluency and accuracy in spoken communication such as short presentations 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.
Subject Synopsis/ Indicative Syllabus	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	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. 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.

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
1. In-class paragraph writing	20%	✓	✓	
2. Essay writing	40%	✓	✓	
3. Documentary presentation	40%	✓	✓	✓
Total	100 %			

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

The paragraph writing test, which assess students' grammar, vocabulary and paragraph organization skills, necessitate achievement of LOs (1) and (2).

The essay writing assessment evaluates students' ability write a longer text in accurate and appropriate grammatical structures (ref. LOs (1) and (2)).

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 (1), (2) and (3)).

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.

Student Study Effort Expected

Class contact:	
• Seminar	39 Hours
Other student study effort:	
• Self-study/preparation	78 Hours
Total student study effort	**117 Hours**

Reading List and References

Course material:

Learning materials developed by the English Language Centre

Recommended references:

1. Boyle, J. & Boyle, L. (1998). *Common Spoken English Errors in Hong Kong*. Hong Kong: Longman.
2. Brannan, B. (2003). *A writer's workshop: Crafting paragraphs, building essays (3rd ed.)*. Boston: McGraw-Hill.
3. Hancock, M. (2003). *English pronunciation in use*. Cambridge: Cambridge University Press.
4. Nettle, M. and Hopkins, D. (2003). *Developing grammar in context: Intermediate*. Cambridge: Cambridge University Press.
5. Redman, S. (2003). *English vocabulary in use: Pre-intermediate and intermediate*. Cambridge: Cambridge University Press.
6. Powell, M. (2011). *Presenting in English. How to get successful presentations.* USA. Heinle & Heinle Publishers.

Last Updated	July 2018
Prepared by	English Language Centre

Subject Description Form

Subject Code	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 Subject Learning Outcomes	**Upon successful completion of the subject, students will be able to:** 1. Refer to sources in written texts and oral presentations 2. Paraphrase and summarise materials from written and spoken sources 3. Plan, write and revise expository essays with references to sources 4. Deliver effective oral presentations 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.
Subject Synopsis/ Indicative Syllabus	1. Written communication ● Analysing and practicing common writing functions; improving the ability of writing topic sentences and strategies for paragraph development; understanding common patterns of organization in expository writing; taking notes from written and spoken sources; practicing summarizing and paraphrasing skills; improving coherence and cohesion in writing; developing revision and proofreading skills. 2. Spoken communication ● Recognising the purposes of and differences between spoken and written communication in English in university study contexts; identifying and practicing the verbal and non-verbal interaction strategies in oral presentations; developing and applying critical thinking skills to discussions of issues. 3. Language development ● Improving and extending relevant features of grammar, vocabulary and pronunciation.

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

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.</td></tr>
<tr><td>Assessment Methods in Alignment with Intended Learning Outcomes</td><td>
<table>
<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>
<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>
</table>
Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

Assessments 1 and 2 necessitate achievement of LOs (1), (2) and (3) 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 synthesize from a variety of sources, and refer to those sources in their presentation (ref. LOs (1), (2) and (4)).

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 summarize information contained in a variety of sources, as required in LOs (1) and (2).</td></tr>
<tr><td>Student Study Effort Expected</td><td>
<table>
<tr><td>Class contact:</td><td></td></tr>
<tr><td>• Seminars</td><td>39 Hours</td></tr>
<tr><td>Other student study effort:</td><td></td></tr>
<tr><td>• Self-study / Preparation</td><td>78 Hours</td></tr>
<tr><td>Total student study effort</td><td>117 Hours</td></tr>
</table>
</td></tr>
</table>

Reading List and References	**Course material:** Learning materials developed by the English Language Centre **Recommended references:** 1. Bailey, S. (2014). *Academic writing: a handbook for international students*. Abingdon: Routledge. 2. Comfort, J. (2001). *Effective presentations.* Oxford: Cornelsen & Oxford University Press. 3. Hung, T. T. N. (2005). *Understanding English grammar: A course book for Chinese learners of English*. Hong Kong: Hong Kong University Press. 4. Tang, R. (2012). *Academic writing in a second or foreign language: Issues and challenges facing ESL/EFL academic writers in higher education contexts*. London: Continuum International Pub. 5. Zwier, L. J. (2002). *Building academic vocabulary.* Ann Arbor, MI: University of Michigan Press.
Last Updated	July 2019
Prepared by	English Language Centre

Subject Description Form

Subject Code	AMA2111
Subject Title	Mathematics I
Credit Value	3
Level	2
Pre-requisite	AMA1007 Calculus and Linear Algebra or AMA1101 Calculus I or AMA1102 Calculus IA or AMA1120 Basic Mathematics II – Calculus and Linear Algebra or AMA1130 Calculus for Engineers or AMA1500 Foundation Mathematics for Accounting and Finance
Exclusion	AMA2007 Intermediate Calculus and Linear Algebra AMA2008 Introduction to Differential Equations AMA2308 Mathematics for Engineers AMA2380 Engineering Mathematics AMA2511 Applied Mathematics I AMA2882 Mathematics for Scientists and Engineers AMA290 Engineering Mathematics
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 Subject 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> ODE of first and second order, linear systems, Laplace transforms, Convolution theorem, applications to mechanical vibrations and simple circuits. 4. <u>Differential calculus of functions of several variables</u> Partial derivatives, total differential, chain rule, Taylor's expansion, maxima and minima, directional derivatives, Lagrange multipliers, implicit differentiation, applications.
Teaching/Learning Methodology	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.

<table>
<tr><td>Assessment Methods in Alignment with Intended Subject Learning Outcomes</td><td>
<table>
<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>
<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 colspan="5"></td></tr>
</table>
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.

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.

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

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.
</td></tr>
<tr><td>Student Study Effort Expected</td><td>
<table>
<tr><td>Class contact:</td><td></td></tr>
<tr><td>• Lecture</td><td>26 Hours</td></tr>
<tr><td>• Tutorial</td><td>13 Hours</td></tr>
<tr><td>• Mid-term test and examination</td><td></td></tr>
<tr><td>Other student study effort</td><td></td></tr>
<tr><td>• Assignments and Self study</td><td>78 Hours</td></tr>
<tr><td>Total student study effort:</td><td>117 Hours</td></tr>
</table>
</td></tr>
<tr><td>Reading List and References</td><td>
1. C.K. Chan, C.W. Chan and K.F. Hung, Basic Engineering Mathematics, McGraw-Hill, 2015.
2. Anton, H. Elementary Linear Algebra (11th edition). Wiley, 2014.
3. Kreyszig, E. (2011). Advanced Engineering Mathematics, 10th ed. Wiley.
4. James, G. (2015). Modern Engineering Mathematics, 5th ed. Pearson Education Limited
5. Thomas, G. B., Weir, M. D. & Hass, J. R. Thomas' Calculus, 14th ed. Pearson Education 2017
</td></tr>
<tr><td>Last Updated</td><td>August 2019</td></tr>
<tr><td>Prepared by</td><td>AMA Department</td></tr>
</table>

Subject Description Form

Subject Code	EIE2101
Subject Title	Basic Circuit Analysis
Credit Value	3
Level	2
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	1. Introduce fundamental circuit theory. 2. Develop ability for solving problems involving electric circuits. 3. Develop skills for experimentation on electric circuits. 4. Impart relevant skills and knowledge for independent learning of other subjects that require such skills and knowledge.
Intended Subject Learning Outcomes	**Upon completion of the subject, students will be able to:** Category A: Professional/academic knowledge and skills 1. Acquire a good understanding of fundamental circuit theory. 2. Solve simple problems in electric circuits. 3. Use suitable instrumentation to carry out experimental investigations to validate the theoretical investigations. Category B: Attributes for all-roundedness 4. Search for useful information in solving problems in electric circuits.
Subject Synopsis/ Indicative Syllabus	**Syllabus:** 1. DC Circuits Introduction to electric circuits. Kirchhoff's current and voltage laws. Independent and dependent sources. Simple circuits: voltage divider, current divider, series and parallel circuits. Nodal and mesh analyses. Thévenin and Norton theorems. Power dissipation. Source loading and maximum power transfer. 2. Capacitance, Inductance and First Order Transient Constitutive relations of capacitor and inductor. Introduction to time-varying circuits. Time-domain solution and transient behaviour of simple RC and LC circuits. 3. Introduction to Transformers Concept of ideal transformer. Dot convention. Applications in galvanic isolation and voltage/current level conversion. 4. Steady-state Analysis of AC Circuits Average and rms values. Phasors (rotating vectors). Steady-state analysis of circuits driven by single fixed frequency sinusoidal sources. Impedance and admittance. Systematic complex number analysis, i.e., same treatment as DC circuits but with complex numbers representing phase and magnitude of AC voltages and currents. Real and reactive powers. Power factor. 5. Diode Circuits Current-voltage characteristics of p-n junction diode. Practical diode circuits. 6. Amplifiers Ideal operational amplifier. Defining characteristics (i.e., infinite gain and infinite input resistance). Op-amp circuits: inverting amplifier, non-inverting amplifier, summer, difference amplifier, integrator and differentiator. DC

biasing of bipolar junction transistors (BJT). Basic BJT amplifier configurations.

Laboratory Experiments:

1. Introduction to laboratory instrumentation / Thévenin and Norton theorems
2. First order transient
3. Use of operational amplifiers.

Teaching/ Learning Methodology

Teaching and Learning Method	Intended Subject Learning Outcome	Remarks
Lectures, supplemented with interactive questions and answers	1, 2, 4	In lectures, students are introduced to the *knowledge* of the subject, and *comprehension* is strengthened with interactive Q&A.
Practice classes, where problems are discussed and are given to students for them to solve	1, 2, 4	In practice classes, students *apply* what they have learnt in solving the problems given by the tutor.
Laboratory sessions, where students will perform experimental verifications. They will have to record results and write a report on one of the experiments.	2, 3, 4	Students *acquire* hands-on experience in using electronic equipment and *apply* what they have learnt in lectures/tutorials to experimentally validate the theoretical investigations.
Assignments	1, 2, 3, 4	Through working assignments, students will develop a firm understanding and *comprehension* of the *knowledge* taught.

Assessment Methods in Alignment with Intended Subject 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%)					
• Laboratory works and reports	16%		✓	✓	✓
• Laboratory reports	4%		✓	✓	✓
• 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 *knowledge* and *comprehension*. The criteria (i.e. *what* to be demonstrated) and level (i.e. the *extent*) 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 improvement 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 assignments.
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	24 Hours
	• Tutorial/Laboratory/Practice Classes	15 hours
	Other student study effort:	
	• Lecture: preview/review of notes; homework/assignment; preparation for test/quizzes/examination	36 Hours
	• Tutorial/Laboratory/Practice Classes: preview of materials, revision and/or reports writing	30 Hours
	Total student study effort:	**105 Hours**

Reading List and References

Textbook:

1. W.H. Hayt, J.E. Kemmerly and S.M. Durbin, *Engineering Circuit Analysis,* 7th ed., New York: McGraw-Hill, 2006.
2. G. Rizzoni, *Fundamentals of Electrical Engineering*, 1st ed., McGraw-Hill, 2009.

References:

1. C.K. Tse, *Linear Circuit Analysis,* London: Addison-Wesley, 1998.
2. D.A. Neamen, *Micoelectronics:Circuit Analysis and Design*, Boston: McGraw-Hill, 3rd ed., 2007.
3. R.A. DeCarlo and P.M. Lin, *Linear Circuit Analysis*, 2nd ed., OxfordUniversity Press, 2001.
4. A.H. Robbins and W.C. Miller, *Circuit Analysis: Theory and Practice*, Thomson Learning, 4th ed., 2006.

Last Updated	July 2019
Prepared by	Dr WY Tam

Subject Description Form

Subject Code	EIE2102
Subject Title	Basic Electronics
Credit Value	3
Level	2
Pre-requisite	For 42470: EIE2100 Basic Circuit Analysis For 42375: EIE2101 Basic Circuit Analysis
Co-requisite/ Exclusion	Nil
Objectives	To introduce the operating principles of electronic circuits. Several classes of electronic circuits will be covered in this subject – diode circuits, BJT transistor circuits, FET transistor circuits. An introduction to power amplifiers will also be given.
Intended Subject Learning Outcomes	**Upon completion of the subject, students will be able to:** Category A: Professional/academic knowledge and skills 1. Acquire some understanding in the fundamental electric and electronics principles. 2. Solve basic problems in electric and electronic circuits. 3. Acquire better skills in performing the laboratory experiments. Category B: Attributes for all-roundedness 4. Perform independent learning in basic electric and electronic principles. 5. Work as a team in laboratory sessions.
Subject Synopsis/ Indicative Syllabus	**Syllabus:** 1. Load Line Analysis and Diode Circuits I-V characteristics of diodes and general nonlinear components. DC solution based on load line construction. Practical diode circuits: rectifier circuits, clipping and clamping circuits. 2. Transistors and Biasing Circuits The bipolar junction transistors (BJT). DC biasing and analysis of BJT circuits. Metal-oxide-semiconductor field-effect transistor (MOSFET). DC biasing and analysis of MOSFET circuits. Load line and graphical large-signal analysis. Transistor amplification concept. 3. Transistor Amplifiers and Small-signal Concepts Basic BJT and MOSFET amplifier configurations: common emitter and common source configurations. Small-signal models and parameters with reference to two-port networks. Concept of transconductance. Voltage gain. Input and output impedances. Introduction to loading effect. 4. Introduction to Frequency Domain Analysis Transfer functions from ac circuits in terms of $j\omega$. Introduction to frequency domain, from $j\omega$ to s. General s-domain transfer functions. Simple first-order filter circuits. Introducing concepts of pole, corner frequency, bandwidth. For sinusoidal driving sources, use of $j\omega$ axis for magnitude and phase plots. Extension to asymptotic plots and hence Bode plots.

5. Fundamentals of Power Amplifiers
Concept of conversion efficiency. Class A, Class B & Class AB operations of power amplifiers and the related circuits.

Laboratory Experiments:

1. DC transistor biasing/load line and diode clamping circuits.
2. Transistor amplifier circuits.
3. Design of a simple transistor amplifier.
4. OCL class AB power amplifier.

Teaching/ Learning Methodology

Teaching and Learning Method	Intended Subject Learning Outcome	Remarks
Lectures, supplemented with interactive questions and answers	1, 2, 4	In lectures, students are introduced to the *knowledge* of the subject, and *comprehension* is strengthened with interactive Q&A.
Tutorials, where problems are discussed and are given to students for them to solve	1, 2, 4	In tutorials, students *apply* what they have learnt in solving the problems given by the tutor.
Laboratory sessions, where students will perform experimental verifications. They will have to record results and write a report on one of the experiments.	2, 3, 5	Students *acquire* hands-on experience in using electronic equipment and *apply* what they have learnt in lectures/tutorials to experimentally validate the theoretical investigations.
Assignments, mini-project	1, 2, 3, 4	Through working assignments, mini-project, students will develop a firm understanding and *comprehension* of the *knowledge* taught.

Assessment Methods in Alignment with Intended Learning Outcomes

Specific Assessment Methods/ Task	% Weighting	Intended Subject Learning Outcomes to be Assessed (Please tick as appropriate)				
		1	2	3	4	5
1. Continuous Assessment Assignment Test Lab	 13% 13% 14%	✓	✓	✓	✓	✓
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 *knowledge* and *comprehension*. The criteria (i.e. *what* to be demonstrated) and level (i.e. the *extent*) 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 improvement their learning.
Laboratory works and reports	Students will be required to perform four experiments and submit a report on one of the experiments. Expectation and grading criteria will be given as in the case of assignments.
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	24 Hours
	• Tutorial/Laboratory/Practice Classes	15 hours
	Other student study effort:	
	• Lecture: preview/review of notes; homework/assignment; preparation for test/quizzes/examination	36 Hours
	• Tutorial/Laboratory/Practice Classes: preview of materials, revision and/or reports writing	30 Hours
	Total student study effort:	**105 Hours**

Reading List and References

Textbook:

1. G. Rizzoni, *Fundamentals of Electrical Engineering*, 1st ed., McGraw-Hill, 2009.

References:

1. D.A. Neamen, *Micoelectronics: Circuit Analysis and Design*, Boston: McGraw-Hill, 3rd ed., 2007.
2. A.H. Robbins and W.C. Miller, *Circuit Analysis: Theory and Practice*, Thomson Learning, 4th ed., 2006.

Last Updated	May 2018
Prepared by	Dr S. C. Wong

Subject Description Form

Subject Code	EIE2261
Subject Title	Logic Design
Credit Value	3
Level	2
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	To provide students with a broad view in digital logic design and enable them to gain understanding and skills that will be used in later computer-related courses.
Intended Subject Learning Outcomes	**Upon completion of the subject, students will be able to:** Category A: Professional/academic knowledge and skills 1. Understand the fundamentals of digital systems and associated technologies. 2. Analyse and design simple systems related to digital logic. 3. Apply logic design techniques to construct digital systems with programmable logic devices and microprocessors, and appreciate the use of them. 4. Appreciate the importance of creativity and critical thinking on finding "good" solutions or making "good" designs. Category B: Attributes for all-roundedness 5. Think critically.
Subject Synopsis/ Indicative Syllabus	**Syllabus:** 1. Logic Circuit and ICs 1.1 Decoders and encoders 1.2 Multiplexers and demultiplexers 1.3 Binary adders, binary adder-subtractors 1.4 Binary multipliers 1.5 Sequential circuit analysis and design 1.6 Registers and counters 1.7 HDL representation. 2. Memory and Programmable Logic Devices 2.1 RAM: Write and read operations, timing waveforms, RAM integrated circuits, three-state buffers, DRAM ICs 2.2 Programmable logic technologies 2.3 ROM, PLA and PAL 2.4 VLSI programmable logic devices: Xilinx FPGA. 3. Microprocessor 3.1 Register transfer operations 3.2 Microoperations 3.3 Bus-based transfer 3.4 ALU 3.5 Shifter 3.6 Datapath representation 3.7 Control word 3.8 Control unit 3.9 Hardwired control 3.10 Basic Assembly Language Programming.

Laboratory Experiment:

1. Basic logic gates and their applications
2. Hardware description language and programmable logic devices

Teaching/ Learning Methodology

Teaching and Learning Method	Intended Subject Learning Outcome	Remarks
Lectures	1, 2, 3, 4	Fundamental principles and key concepts of the subject are delivered to students.
Tutorials	1, 2, 3, 4, 5	Supplementary to lectures and are conducted with smaller class size. Students will be able to clarify concepts and to have a deeper understanding of the lecture materials. Problems and application examples are given and discussed.
Laboratory sessions	1, 2, 3, 4, 5	students will make use of the software and hardware tools to develop simple digital systems, perform simulations

Assessment Methods in Alignment with Intended Subject Learning Outcomes

Specific Assessment Methods/Tasks	% Weighting	Intended Subject Learning Outcomes to be Assessed (Please tick as appropriate)				
		1	2	3	4	5
1. Continuous Assessment (40%)						
• Assignments	8%	✓	✓	✓	✓	✓
• Tests	12%	✓	✓	✓	✓	
• Laboratory sessions	20%	✓	✓	✓	✓	✓
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	Enhance the understanding of the taught materials in the lectures.
Tests and examination	End-of chapter type problems are used frequently to evaluate students' ability in applying concepts and skills learned in class. The students are also needed to think critically and creatively in the process of solving problems.
Laboratory sessions	Each student is required to do a demonstration and submit a lab report after the laboratory.

Student Study Effort Expected	**Class contact (time-tabled):**	
	• Lecture	24 Hours
	• Tutorial/Laboratory/Practice Classes	15 hours
	Other student study effort:	
	• Lecture: preview/review of notes; homework/assignment; preparation for test/quizzes/examination	36 Hours
	• Tutorial/Laboratory/Practice Classes: preview of materials, revision and/or reports writing	30 Hours
	Total student study effort:	**105 Hours**

Reading List and References

Textbooks:

1. M.M. Mano and C.R. Kime, *Logic and Computer Design Fundamentals*, 4th ed., Upper Saddle River, NJ: Prentice-Hall, 2008.

Reference Books:

1. M.M. Mano and M.D. Ciletti, *Digital Design*.Upper Saddle River, NJ: Prentice-Hall, 2007.
2. S. Yalamanchili, *VHDL – A Starter's Guide*, 2nd ed. Prentice-Hall, 2005.
3. E.O. Hwang, *Digital Logic and Microprocessor Design With VHDL*, 1st ed., CL-Engineering, 2006.

Last Updated	February 2018
Prepared by	Mr Ivan Lau

Subject Description Form

Subject Code	EIE2264
Subject Title	Computer Programming
Credit Value	3
Level	2
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	1. To introduce the fundamental concepts of computer programming. 2. To equip students with sound skills in C/C++ programming language. 3. To equip students with techniques for developing structured computer programs. 4. To demonstrate the techniques for implementing engineering applications using computer programs.
Intended Subject Learning Outcomes	**Upon completion of the subject, students will be able to:** Category A: Professional/academic knowledge and skills 1. Familiarize with at least one C/C++ programming environment. 2. Be proficient in using the basic constructs of C/C++, such as variables and expressions, looping, arrays and pointers, to develop a computer program. 3. Able to develop a structured and documented computer program. 4. Understand the fundamentals of object-oriented programming and be able to apply it in computer program development. 5. Able to apply the computer programming techniques to solve practical engineering problems. Category B: Attributes for all-roundedness 6. Solve problems by using systematic approaches. 7. Write technical reports and present the findings. 8. Learn team working skills.
Subject Synopsis/ Indicative Syllabus	**Syllabus:** 1. Introduction to programming Software components of a computer – Operating system, directories, files. Evolution of programming languages. Programming environment – Compiler, linker and loader. Building the first program – Hello World. 2. Bolts and Nuts of C/C++ Preprocessor, program codes, functions, comments. Variables and constants. Expressions and statements. Operators. 3. Program Flow Control If, else, switch, case. Looping – for, while, do. Functions, parameters passing, return values. Local and global variables. Scope of variables. 4. Program Design and Debugging Structured program design. Improving program readability. Flow chart. Modular programming – static library. Programming bugs, errors, mistakes and code rot. Exceptions and debugging. Case study: Using Visual C++ debugger. 5. Basic Object Oriented Programming Objects and classes. Encapsulation. Private versus public. Implementing class methods. Constructors and destructors.

6. Pointer and Array
   The stack and free store. Create and delete objects in free store. Pointer arithmetic. Passing function arguments by pointer. Returning values by pointer. Array of Objects. Multidimensional array. Array and pointer. Array of pointers. Pointer of array. Character array – Strings. Command line processing.

7. Stream I/O
   Input and Output. Input using cin. Output using cout. File I/O using streams.

8. Using C/C++ in Engineering Applications
   Solving numerical problems using C/C++. Developing graphical user interfaces for Engineering applications.

Teaching/ Learning Methodology

Teaching and Learning Method	Intended Subject Learning Outcome	Remarks
Lectures	1, 2, 3, 4, 5	Fundamental principles and key concepts of the subject are delivered to the students
Laboratory	1, 2, 3, 4, 5, 6	Students will be able to clarify concepts and to have a deeper understanding of the lecture material. Problems are given to be solved.

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	4	5	6	7	8
Continuous Assessment									
• Quizzes	8%	✓	✓	✓	✓	✓	✓		
• Laboratory Exercises	10%	✓	✓	✓	✓	✓	✓		
• Assignments	10%	✓	✓	✓	✓	✓	✓	✓	
• Mini-project	30%	✓	✓	✓	✓	✓	✓	✓	✓
• Tests	42%	✓	✓	✓	✓	✓	✓		
Total	100%								

For this subject, students need to go through two 2-hours programming tests in which students will be asked, within the allowed time period, to develop a set of computer programs using C/C++ programming language to solve a problem. These two tests are worth 42% of the total marks.

Besides, students need to finish a mini-project in this subject. Students are expected to spend not less than 35 hours of self-studying in order to finish the mini-project. The mini-project is worth 30% of the total marks.

The remaining 28% of marks are allotted to assignments, quizzes and laboratory exercises that will be given during and after the classes.

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

Specific Assessment Methods/Tasks	Remark
Laboratory Exercises/Quizzes	Students will be able to clarify concepts and to have a deeper understanding of the lecture material. Problems are given to be solved.
Assignments	Students will be able to clarify concepts and to have a deeper understanding of the lecture material. Problems are given to be solved.
Mini-Project	Students will be able to clarify concepts and to have a deeper understanding of the lecture material. Problems are given to be solved.
Tests	Evaluate students' ability in applying computer programming skills learned in classes. Problems are given to be solved.

Student Study Effort Expected		
	Class contact (time-tabled):	
	• Lecture/Tutorial/Laboratory/Practice Classes	33 Hours
	Other student study effort:	
	• Lecture: preview/review of notes; homework/assignment; preparation for test/quizzes/examination	77 Hours
	• Tutorial/Laboratory/Practice Classes: preview of materials, revision and/or reports writing	30 Hours
	Total student study effort:	**140 Hours**

Reading List and References

Textbooks:

1. H.M. Deitel and P.J. Deitel, *C++ How To Program*, 9th ed., Prentice-Hall, 2014.

Reference Books:

1. K. Gregory, *Microsoft® Visual C++® .NET 2003 Kick Start*, Sams Publishing, 2003.
2. H.M. Deitel, P.J. Deitel, J.P. Liperi and C.H. Yaeger, *Visual C++.NET How to Program*, Prentice-Hall, 2004.

Last Updated	May 2018
Prepared by	Dr Lawrence Cheung

Subject Description Form

Subject Code	EIE2282
Subject Title	Information Technology
Credit Value	3
Level	2
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	1. To provide the foundation knowledge in computer engineering, computer networking and data processing that is essential to modern information system construction. 2. To appreciate how information technologies may be deployed in solving engineering problems.
Intended Subject Learning Outcomes	**Upon completion of the subject, students will be able to:** Category A: Professional/academic knowledge and skills 1. Identify different components of a computer system and understand their features. 2. Understand the basic functions of a computer operating system. 3. Understand the basic principles underlining a database system and be able to set up a simple database. 4. Develop simple database applications. 5. Have the ability to develop simple Web document. 6. Identify different components and technologies used in the Internet and understand their features. Category B: Attributes for all-roundedness 7. Solve problems using systematic approaches. 8. Learn independently and be able to search for the information required.
Subject Synopsis/ Indicative Syllabus	**Syllabus:** 1. Introduction to Computers Introduction to Internet of Things. Introduction to modern computers including number systems, representations of digital data and evolution of computers. Overview of modern hardware and software components including memory, input/output devices, utilities and operating systems. 2. Introduction to data processing and information systems Database systems - data modelling, relational database concept, structured query language (SQL), database management, Web and database linking, database application development. 3. Networking Essentials and the Internet Introduction to computer network: clients and servers, network devices, addressing, routing, Ethernet, Internet, TCP/IP.

Teaching/ Learning Methodology

Teaching and Learning Method	Intended Subject Learning Outcome	Remarks
Lectures	1,2,3,4,6	fundamental principles and key concepts of the subject are delivered to students
Tutorials	1,2,3,4,5,6,7,8	supplementary to lectures with exercises and discussion questions; students will be able to clarify concepts and to have a deeper understanding of the lecture material; students will be given opportunities to present their ideas and solutions to quizzes and small problems; problems and application examples are given and discussed
Laboratory sessions	3,4,5,6,7	students will use open source website creation tool to develop simple Web document; students will examine and test a real-life network setup (IP address, network mask); students will develop simple database applications; students will demonstrate their works to Lab supervisors or submit Lab report

Assessment Methods in Alignment with Intended Subject Learning Outcomes

Specific Assessment Methods/Tasks	% Weighting	Intended Subject Learning Outcomes to be Assessed (Please tick as appropriate)							
		1	2	3	4	5	6	7	8
1. Continuous Assessment (total 100%)									
• 3 Online Quizzes	30%	✓	✓	✓			✓		
• 1 Written Test	20%	✓	✓	✓			✓	✓	
• 3 Laboratory sessions	30%			✓	✓	✓	✓	✓	✓
• Case study (report + presentation)	20%	✓	✓	✓			✓	✓	✓
Total	100%								

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

Specific Assessment Methods/Tasks	Remark
Online quizzes	Objectives of quiz (e.g., multiple-choice, true-false, matching items, and fill in the blanks questions) conducted to measure the students' ability to remember facts and figures as well as their comprehension of subject materials such as related to computer architect concepts, networking, and databases
Written test	End-of chapter type problems used to evaluate students' understanding of concepts and skills learnt in the classroom
Laboratory sessions	Demonstrations/Lab report based on laboratory exercises will be assessed to evaluate students technical knowledge and communication skills
Case study	Students are required to search for the information of how information technologies may be deployed in solving engineering problems. They need to give presentations to the whole class so that students can learn from other students. Also, they need to submit a case study report of the findings.

Student Study Effort Expected	**Class contact (time-tabled):**	
	• Lecture/Tutorial	24 Hours
	• Laboratory	9 Hours
	• Presentation	6 Hours
	Other student study effort:	
	• Self-study	44 Hours
	• Case study	22 Hours
	Total student study effort:	**105 Hours**

Reading List and References

Reference Books:

1. J.F. Kurose & K.W. Ross, *Computer Networking: A Top-Down Approach Featuring the Internet*, 5th edition, Addison-Wesley, 2009.
2. Carlos Coronel & Steven Morris, *Database Systems: Design, Implementation, & Management* 12th Edition, Course Technology, 2016
3. B. Williams and S. Sawyer, *Using Information Technology: A Practical Introduction to Computers and Communications*, 10th ed. McGraw-Hill, 2013.

Last Updated	June 2017
Prepared by	Dr Pauli Lai, Ms Doris Lin

Subject Description Form

Subject Code	ELC2011
Subject Title	Advanced English Reading and Writing Skills
Credit Value	3
Level	2
Pre-requisite	ELC1012 or 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 Subject Learning Outcomes	**Upon successful completion of the subject, students will be able to examine a variety of texts, including literary texts, and:** 1. Reflect on and critically analyze texts of different genres and styles, identifying the writer's aims and stance 2. Identify and evaluate language used to make claims and support these with valid arguments 3. 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	**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. **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.
Teaching/Learning Methodology	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. 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.

<table>
<tr><td>Assessment Methods in Alignment with Intended Learning Outcomes</td><td>
<table>
<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>1</th><th>2</th><th>3</th></tr>
<tr><td>1. Reflective writing</td><td>20%</td><td>✓</td><td></td><td></td></tr>
<tr><td>2. Analyzing genres of writing</td><td>40%</td><td>✓</td><td>✓</td><td></td></tr>
<tr><td>3. Feature article writing</td><td>40%</td><td></td><td></td><td>✓</td></tr>
<tr><td>Total</td><td>100%</td><td colspan="3"></td></tr>
</table>
Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:
Assessment 1 requires students to write a reflection after reading a range of literary genres and sharing their ideas in class; and is aligned with ILO (1). Assessment 2 (an in-class assessment) 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 (1) and (2). 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 (3). Through these assessments, students will be able to develop and demonstrate more advanced reading and writing skills.
</td></tr>
<tr><td rowspan="5">Student Study Effort Expected</td><td>Class contact:</td><td></td></tr>
<tr><td>• Seminars</td><td>39 Hours</td></tr>
<tr><td>Other student study effort:</td><td></td></tr>
<tr><td>• Online forums and blogs
• Readings and sharing session preparation
• Research and drafting/revising of texts</td><td>78 Hours</td></tr>
<tr><td>Total student study effort:</td><td>117 Hours</td></tr>
<tr><td>Reading List and References</td><td colspan="2">Course material:
Learning materials developed by the English Language Centre

Recommended references:

1. Best, J. (2001). Damned lies and statistics: Untangling numbers from the media, politicians, and activists. Berkeley, CA: University of California Press.
2. Cooper, S. & Patton, R. (2010). Writing logically, thinking critically. New York, NY: Longman.
3. Damer, T. E. (2009). Attacking faulty reasoning: A practical guide to fallacy-free arguments. Belmont, CA: Wadsworth Cengage Learning.
4. Kennedy, X. J. & Gioia, D. (2010). Literature: An introduction to fiction, poetry, drama, and writing (11th ed.). New York, NY: Longman.
5. Mefcalfe, M. (2006). Reading critically at university. Thousand Oaks, CA: Sage.

</td></tr>
<tr><td>Last Updated</td><td colspan="2">July 2019</td></tr>
<tr><td>Prepared by</td><td colspan="2">English Language Centre</td></tr>
</table>

Subject Description Form

<table>
<tr><td>Subject Code</td><td>ELC2012</td></tr>
<tr><td>Subject Title</td><td>Persuasive Communication</td></tr>
<tr><td>Credit Value</td><td>3</td></tr>
<tr><td>Level</td><td>2</td></tr>
<tr><td>Pre-requisite</td><td>ELC1012 or ELC1013 English for University Studies</td></tr>
<tr><td>Objectives</td><td>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.</td></tr>
<tr><td>Intended Subject Learning Outcomes</td><td>By the end of the subject, students should be able to communicate effectively in an English-medium environment through:

1. Writing persuasive texts intended for a variety of audiences
2. Communicating persuasively in oral contexts
3. Making persuasive arguments in formal discussions

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.</td></tr>
<tr><td>Subject Synopsis/ Indicative Syllabus</td><td>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.

2. Persuasion through writing
Developing and practising appropriate language, tone, style and structure; achieving cohesion and coherence.

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

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.</td></tr>
<tr><td>Assessment Methods in Alignment with Intended Learning Outcomes</td><td>
<table>
<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>1</th><th>2</th><th>3</th></tr>
<tr><td>1. Speech</td><td>30%</td><td></td><td>✓</td><td></td></tr>
<tr><td>2. Persuasive written text</td><td>40%</td><td>✓</td><td></td><td></td></tr>
<tr><td>3. Debate</td><td>30%</td><td></td><td>✓</td><td>✓</td></tr>
<tr><td>Total</td><td>100 %</td><td colspan="3"></td></tr>
</table>
</td></tr>
</table>

<table>
<tr><td></td><td colspan="2">Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:
Assessment 1 is an individual speech. Assessment 2 concentrates on persuasive writing. Assessment 3 examines a different aspect of persuasion, the debate.</td></tr>
<tr><td rowspan="5">Student Study Effort Expected</td><td>Class contact:</td><td></td></tr>
<tr><td>• Seminars</td><td>39 Hours</td></tr>
<tr><td>Other student study effort:</td><td></td></tr>
<tr><td>• Self study/preparation</td><td>78 Hours</td></tr>
<tr><td>Total student study effort:</td><td>117 Hours</td></tr>
<tr><td>Reading List and References</td><td colspan="2">Required readings:
ELC-provided subject materials.

Other readings:
1. Breaden, B. L. (1996). Speaking to persuade. Fort Worth, TX: Harcourt Brace College.
2. Covino, W.A. (1998). The elements of persuasion. Boston: Allyn and Bacon.
3. Edwards, R. E. (2008). Competitive debate: The official guide. New York: Alpha Books.
4. Leanne, S. (2008). Say it like Obama: The power of speaking with purpose and vision. New York: McGraw Hill.
5. Rogers, W. (2007). Persuasion: messages, receivers, and contexts. Lanham, MD: Rowman & Littlefield Publishers.
6. Stiff, J. B. (2003). Persuasive communication (2nd ed.). New York: Guilford Press.</td></tr>
<tr><td>Last Updated</td><td colspan="2">July 2019</td></tr>
<tr><td>Prepared by</td><td colspan="2">English Language Centre</td></tr>
</table>

Subject Description Form

Subject Code	ELC2013
Subject Title	English in Literature and Film
Credit Value	3
Level	2
Pre-requisite /	English for University Studies (ELC1012/1013)
Objectives	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. It is also intended that the subject will help students further develop literacy, as well as higher order thinking and life-long learning skills.
Intended Subject Learning Outcomes	**Upon successful completion of the subject, students will be able to:** 1. Examine and analyse literary texts from different perspectives 2. Discuss literary techniques employed by writers 3. Appreciate and articulate differences in textual and visual media representations To achieve the above outcomes, students are expected to use language and text structure appropriate to the context, select information critically, and present and support stance and opinion.
Subject Synopsis/ Indicative Syllabus	1. Written communication Describing and interpreting content and language in literary texts; employing appropriate grammatical structures and vocabulary. 2. Spoken communication Presenting critical evaluation of literary works effectively and convincingly. 3. Reading Developing understanding of and competence in using literary devices such as metaphor, simile and symbolism, via reading literary texts and viewing film versions. 4. Language development Improving fluency and pronunciation, and extending grammatical and lexical competence.
Teaching/Learning Methodology	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. 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.

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
1. Individual Essay	40%	✓	✓	✓
2. Group Presentation	30%	✓	✓	✓
3. Individual Project	30%	✓	✓	✓
Total	100 %			

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

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 (1). 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.

Student Study Effort Expected

Class contact:	
• Seminars	39 Hours
Other student study effort:	
• Self study/preparation	78 Hours
Total student study effort:	**117 Hours**

Reading List and References

Recommended reading:
The PolyU library retains either hardcopies or electronic copies of the following titles. The titles can also be found online.

Stam, R., and Raengo, A. (eds.). (2004). *A companion to literature and film*. [electronic source] Blackwell reference online. Malden: Blackwell. Call number PN1995.3.C65 2004eb 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.

Last Updated: July 2019

Prepared by: English Language Centre

Subject Description Form

Subject Code	ELC2014
Subject Title	Advanced English for University Studies
Credit Value	3
Level	2
Pre-requisite	ELC1012 or ELC1013 English for University Studies (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 Subject Learning Outcomes	**Upon successful completion of the subject, students will be able to:** 1. Research relevant academic texts for a topic and integrate the sources into a position argument essay appropriately and effectively; 2. Plan, research for, write and revise a position argument essay; and 3. Present and justify views effectively in a mini oral defence. 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.
Subject Synopsis/ Indicative Syllabus	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. 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. 3. Reading and listening Understanding the content and structure of information in oral and written texts; comprehending, inferring and evaluating messages and attitude. 4. Language development Improving and extending relevant features of grammar, vocabulary and pronunciation.
Teaching/Learning Methodology	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. 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.

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
1. Position Argument Essay (draft)	20%	✓	✓	
2. Academic Presentation & discussion	35%	✓		✓
3. Position Argument Essay (final)	45%	✓	✓	
Total	100 %			

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

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 (1) and (2)). Assessment 2 assesses their abilities to plan, present and justify their views in an oral defence (ref. LOs (1) and (3).

In addition to their assessments, students complete further language training by carrying out academic research and by completing a variety of independent-learning tasks focusing on grammar and academic skills such as paraphrasing and discussion strategies.

Student Study Effort Expected

Class contact:	
• Seminars	39 Hours
Other student study effort:	
• Self study/preparation	78 Hours
Total student study effort:	**117 Hours**

Reading List and References

Course material:

Learning materials developed by the English Language Centre

Recommended references:

1. Davies, B. (2012). *Reading research: A user friendly guide for health professionals* (5th ed.). Toronto, ON: Elsevier Canada.
2. Faigley, L. (2012). *Backpack writing: Reflecting, arguing, informing, analyzing, evaluating* (3rd ed.). Boston, MA: Pearson.
3. Madden, C. and Rohlck, T. N. (1997). *Discussion and interaction in the academic community*. Ann Arbor, MI: University of Michigan Press.
4. McWhorter, K. T. (2007). *Academic reading* (6th ed.). New York, NY: Pearson/Longman
5. Oshima, A. & Hogue, A. (2006). *Writing academic English* (4th ed.). White Plains, NY: Pearson/Longman.
6. Reinhart, S. M. (2013). *Giving academic presentations* (2nd ed.). Ann Arbor, MI: University of Michigan Press.
7. Rost, M. (2013). *Active listening.* Harlow, England: Pearson.
8. Wood, N. V. (2012). *Perspectives on argument* (7th ed.). Boston, MA: Pearson.

Last Updated	July 2018
Prepared by	English Language Centre

Subject Description Form

Subject Code	IC2115
Subject Title	Industrial Centre Training for EIE
Credit Value	3 training credits
Level	2
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	The objective of this subject is to equip students with knowledge and skills through technical training that are fundamental and essential in their study and professional practice in electronic and information engineering (EIE).
Intended Subject Learning Outcomes	**Upon completion of the subject, students will be able to:** 1. Explain legal duties related to occupational safety, identify common workplace health and safety hazards, corresponding control measures and apply personal protection equipment; 2. Design electronic circuit on printed wiring board with EDA tool; 3. Fabricate prototype electronic circuit on printed wiring board for experimentation, demonstration and development purposes; 4. Explain pragmatic electronic manufacturing processes, circuit interconnects and assembly methods for electronic product or equipment, specify basic industrial process for mass production and fabricate simple prototype for test and investigation; 5. Design and programme simple embedded systems; 6. Recognize training as an important part for a professional engineering career and the needs for multi-disciplinary training and continual professional development in professional engineering practice.
Subject Synopsis/ Indicative Syllabus	**Syllabus:** 1. <u>Industrial Safety Overview (15 hours)</u> 1.1. Safety Management: Overview, essential elements of safety management, safety training, accident management, and emergency procedures. 1.2. Safety Law: F&IU Ordinance and principal regulations, OSH Ordinance and principal regulations. 1.3. Occupational Hygiene and Environmental Safety: Noise hazard and control; dust hazard and control; ergonomics of manual handling. 1.4. 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. 2. <u>Electronic Circuit Design Practice (18 hours)</u> 2.1. Introduction to electronic design automation (EDA) software; circuit schematics capture and representation; placement of components, capturing, annotation, labeling, net list. Electronic parts library, symbols, decals, physical packages, discrete components, integrated circuits, logic and analogue circuits, electronic parts creation and application. 2.2. Printed Circuit Board (PCB) design, hands on practice on PCB circuit design with EDA tools. 2.3. Wiring diagram and wiring table for electronic and electrical installation, functional representation of circuit, system block diagram, electrical &

<table>
<tr><td></td><td>
electronic device symbols and layout, Circuit artwork, etching process, prototype PCB fabrication.

3. <u>Electronic Workshop Practice for EIE (30 hours)</u>
3.1. Introduction to common electronics parts, use of basic test instruments, best practice and basic troubleshooting techniques, electronic workshop safety.
3.2. Introduction to electronic assembly design and manufacturing process, components, tools and machines.
3.3. Introduction to electronic circuit interconnect technologies: Surface Mounted Technology (SMT), Chip-on-board (COB) and wave-soldering.
3.4. Introduction to advanced electronic packaging and assembly process: fine-pitch SMT, Ball Grid Array (BGA), Flip-chip and Chip Scale Package (CSP).
3.5. Soldering and de-soldering techniques, mounting and installation of electronic circuits, wiring of subassemblies.
3.6. Hands-on practice on reflow soldering, SMT process, chip level wire bonding, chip-on-board encapsulation, LCD display attachment with heat-seal connector.
3.7. Soldering quality of BGA assembly and X-ray inspection machine.

4. <u>Embedded System Application and Practice (27 hours)</u>
4.1. Introduction to Microchip Microcomputer families and development tools.
4.2. Hands-on practice on memory, I/O, data communications, ADC operations.
4.3. Hands-on practice on LED and LCD displays.
4.4. Hands-on practice on motor control and sensors.
4.5. Application of Microcomputer on consumer electronic products, mechatronics, home automation products, wired and wireless connectivity.

Training Schedule: 3 hours per week in Year 1 semester 1 to semester 3 or semester 1 to semester 2 and 6 hours in semester break.
</td></tr>
<tr><td>Teaching/ Learning Methodology</td><td>The teaching and learning methods include lectures, workshop tutorials, and practical works. The lectures aim 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 aim 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.</td></tr>
<tr><td>Assessment Methods in Alignment with Intended Subject Learning Outcomes</td><td>
<table>
<tr><th rowspan="2">Specific Assessment Methods/ Task</th><th rowspan="2">% Weighting</th><th colspan="6">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><th>6</th></tr>
<tr><td>Continuous Assessment</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>• Assignment / Project</td><td>30%</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td></td></tr>
<tr><td>• Tests</td><td>30%</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td></td></tr>
<tr><td>• Others (Reports & Logbook)</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>
</table>
</td></tr>
</table>

<table>
<tr><td></td><td colspan="2">Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

<table><tr><th>Specific Assessment Methods/ Task</th><th>Remarks</th></tr><tr><td>Assignment / Project</td><td>The projects are designed to facilitate students to reflect and apply the knowledge periodically throughout the training.</td></tr><tr><td>Tests</td><td>Tests are designed to facilitate students to review the breadth and depth of their understanding on specific topics.</td></tr><tr><td>Others (Reports & Logbook)</td><td>Report writing is designed to facilitate students to acquire deep understanding on the topics of the training and to present those concepts clearly.</td></tr></table></td></tr>
<tr><td rowspan="4">Student Study Effort Expected</td><td>Class contact (Time-tabled)</td><td></td></tr>
<tr><td>• Lecture/Tutorial</td><td>20 Hours</td></tr>
<tr><td>• Workshop</td><td>70 Hours</td></tr>
<tr><td>Other student study effort</td><td>0 Hour</td></tr>
<tr><td>Total student study effort</td><td>90 Hours</td></tr>
<tr><td>Reading List and References</td><td colspan="2">Reference Software List:
1. PADS from Mentor Graphics Inc.
2. MPLAB from Microchip Corp.

Reference Standards and Handbooks:
1. IEEE Standard 315 / ANSI Y32.2 / CSA Z99 Graphic Symbols for Electrical and Electronics Diagrams
2. IEC 61082 Preparation of Documents used in Electrotechnology
3. IPC-D-279-1996, Design Guidelines for Reliable Surface Mount Technology Printed Board Assemblies, IPC.
4. IPC-J-STD-001F-2014, Requirements for Soldered Electrical and Electronic Assemblies, IPC.
5. IPC-A-610F-2014, Acceptability of Electronic Assemblies, IPC.

Reference Books:
1. R.S. Villanucci, A.W. Avtgis, W.F. Megow, Electronic Techniques: Shop Practices and Construction, 7th ed., Practice-Hall, 2002.
2. Training material, manual and articles published by Industrial Centre</td></tr>
<tr><td>Last Updated</td><td colspan="2">Jul 2017</td></tr>
<tr><td>Prepared by</td><td colspan="2">Industrial Centre</td></tr>
</table>

Subject Description Form

Subject Code	EIE3106
Subject Title	Integrated Project
Credit Value	3
Level	3
Pre-requisites	EIE2101 Basic Circuit Analysis EIE2264 Computer Programming EIE3373 Microcontroller Systems and Interface
Co-requisite/ Exclusion	Nil
Objectives	This subject is to be taken upon successful progression to mid-stage of the programme. Covering different topics, this subject plays the role of applying knowledge acquired in preceding core subjects in an integrated manner. While the emphasis will mainly be placed on the technical challenges that may encompass circuit design or system integration, software development and troubleshooting, students will also need to address typical non-technical issues involved in conducting a project of product-development.
Intended Subject Learning Outcomes	**Upon completion of the subject, students will be able to:** Category A: Professional/academic knowledge and skills 1. Integrate and apply knowledge acquired in previous subjects. 2. Design under cost constraints and with component limitations/tolerances in mind. 3. Locate and resolve practical problems on project development. Category B: Attributes for all-roundedness 4. Search, self-learn and try untaught solutions. 5. Exercise discipline and time-planning to meet deadlines. 6. Present ideas and findings effectively. 7. Work with others in a team collaboratively.
Subject Synopsis/ Indicative Syllabus	**Submissions/ deliverables:** The project(s) is of engineering/software development, with objectively defined milestones (or **Subtasks**). The scope to be covered shall either include mechanical work, embedded software development and circuit design, or multimedia and network system design. The project(s) shall not be close-ended in nature and shall provide ample headroom for the more enthusiastic students to excel. Students shall work in small groups of two or three. Each **Subtask** will be given a certain period of time to complete. Each student will have a chance to play the role of Team Leader to lead the group in accomplishing a subtask assigned. Progress will be measured by functional **Demonstrations**, and written **Progress Reports**. Upon the completion of the project, each group should give a demonstration/presentation of the completed product or system and submit a **Final Report**. Students are required to individually keep a **Logbook** on the work performed during the entire period. The logbooks are to be evaluated and signed by the supervisor /assessor on a periodic basis. **Lectures:** Most of the lectures are to be conducted at the beginning of the semester. During these lectures, the instructor shall give clear explanation on the functional and technical requirements, with a schedule for submitting deliverables. Concepts specific to the project(s), which are not yet learnt by the students, are to be covered in these lectures. Concepts behind critical use of tools and equipment will also be strengthened. Copies of

supplementary/reference material shall be distributed, or, links to on-line material shall be provided for self-paced learning.

Guided Laboratory Experiments:

The project will normally require the students to learn to use specific tools and/or equipment. Laboratory demonstrations and exercises will be arranged in the early weeks. Below are some examples:

1. Troubleshooting and measurement techniques using typical equipment.
2. Use of project-specific development tools, software and hardware.
3. Use of specialized equipment for project-specific measurements.

Self-Paced Work:

The class could well be composed of a good mix of students with different timetables. Multiple sessions of laboratory, inevitably some evening slots, will be scheduled to cater for self-paced work in the laboratory, particularly during the second half of the semester.

Teaching/Learning Methodology

Teaching and Learning Method	Intended Subject Learning Outcome	Remarks
Lectures	1, 2, 3	Principles and key concepts of the project are explained to students. Uses of tools are demonstrated. The goals are specified. The various problems to be encountered are explained.
Supervised Laboratory sessions	1, 2, 3	Students need to learn to use the provided hardware or software modules and expand them to accommodate new functionalities.
Extended self-paced laboratory work	1, 2, 3, 4, 5, 6, 7	Students will work in teams of two or three to construct a product or system. They need to learn to use the provided modules and expand them to accommodate new functionalities.

Assessment Methods in Alignment with Intended Subject Learning Outcomes

Specific Assessment Methods/Tasks	% Weighting	Intended Subject Learning Outcomes to be Assessed (Please tick as appropriate)						
		1	2	3	4	5	6	7
Continuous Assessment								
1. Exercises	2%	✓		✓				
2. Tests	20%	✓		✓				
3. Project demonstrations	60%	✓	✓	✓	✓	✓		✓
4. Project logbook	8%	✓	✓	✓	✓	✓	✓	✓
5. Project report and presentation	10%	✓	✓	✓	✓	✓	✓	✓
Total	100%							

Student Study Effort Expected	**Class contact (time-tabled):**	
	• Lecture	15 Hours
	• Tutorial/Laboratory/Practical Classes	20 Hours
	• Tests/Quizzes	3 Hours
	• Demonstration	2 Hours
	Other student study effort:	
	• Lecture: preview/review of notes; homework/assignment; preparation for test/quizzes/examination	10 Hours
	• Tutorial/Laboratory/Practice Classes: preview of materials, revision and logbook/report writing	25 Hours
	• Project Development	25 Hours
	Total student study effort:	**100 Hours**
Reading List and References	**Reference Books:** *To be specified by the subject lecturer for each project.*	
Last Updated	May 2018	
Prepared by	Dr Lawrence Cheung	

Subject Description Form

Subject Code	EIE3112
Subject Title	Database System
Credit Value	3
Level	3
Pre-requisite / Co-requisite/ Exclusion	Nil
Objectives	**To introduce:** 1. database design, development, and programming 2. advanced database queries and database security 3. data warehousing and data mining
Intended Subject Learning Outcomes	**Upon completion of the subject, students will be able to:** Category A: Professional/academic knowledge and skills 1. Database design, development, and programming 2. Advanced database queries and database security. 3. Data warehousing and data mining Category B: Attributes for all-roundedness 4. Communicate effectively
Subject Synopsis/ Indicative Syllabus	**Syllabus:** 1. Database Design and Development 1.1 DBMS systems; Client-server architecture; Database architectures and the web 1.2 SQL: data manipulation; data definition; 1.3 DB Development: DB applications and views; 1.4 Advanced SQL: SQL programming language; stored procedures; functions; triggers; cursors; exception handling 1.5 ER Modelling: ER diagrams; Transforming ER diagrams to relations 1.6 Normalization: Data redundancy and update anomalies; functional dependencies; normalization processes; normal forms 2. Managing Database Environments 2.1 Database Security: Database security best practices; SQL injection; Preventing SQL injection 3. Data Warehouse and Data Mining 3.1 Architectures of data warehouse; applications of data warehouse; data warehouse tools and technologies 3.2 Data warehouse queries; OLTP versus OLAP; 3.3. Data-mining processes; Data representation; 3.4. Classification, regression, and cluster Analysis **Laboratory Experiments** Lab 1: Database Implementation and SQL Lab 2: Advanced SQL Lab 3: Data Mining and Data Analysis
Teaching/Learning Methodology	Lectures: Fundamental principles and key concepts of the subject are delivered to students. Tutorials: Students will be able to clarify concepts and to have a deeper understanding of the lecture material; problems and application examples are given and discussed. Students will be given programming exercises and use database development tools to design database.

<table>
<tr><td></td><td>Laboratory Sessions: Students will do some programming exercises to enhance their understanding on database design and development.</td></tr>
<tr><td>Alignment of Assessment and Intended Subject Learning Outcomes</td><td>
<table>
<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>
<tr><td>1. Continuous Assessment (Total: 50%)</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>• Assignment</td><td>10%</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr>
<tr><td>• Test / quizzes</td><td>20%</td><td>✓</td><td>✓</td><td></td><td></td></tr>
<tr><td>• Laboratory</td><td>20%</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr>
<tr><td>2. 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>
</table>
Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:
Short quizzes: These can measure the students' understanding of the theories and concepts as well as their comprehension of subject materials.
Test & Examination: End-of-chapter-type problems are used to evaluate the students' ability in applying concepts and skills learnt in the classroom; students need to think critically and to learn independently in order to come up with an appropriate design.
Laboratory: Each student is required to produce a report; the accuracy and presentation of the report will be assessed.
</td></tr>
<tr><td>Student Study Effort Expected</td><td>
<table>
<tr><td>Class contact (time-tabled):</td><td></td></tr>
<tr><td>• Lecture/Tutorial</td><td>30 Hours</td></tr>
<tr><td>• Laboratory/Practice Classes</td><td>9 Hours</td></tr>
<tr><td>Other student study effort:</td><td></td></tr>
<tr><td>• Lecture: preview/review of notes; homework/assignment; preparation for test/quizzes/examination</td><td>36 Hours</td></tr>
<tr><td>• Tutorial/Laboratory/Practice Classes: preview of materials, revision and/or reports writing</td><td>30 Hours</td></tr>
<tr><td>Total student study effort:</td><td>105 Hours</td></tr>
</table>
</td></tr>
<tr><td>Reading List and References</td><td>

Thomas Connolly and Carolyn Begg, Database Systems: A Practical Approach to Design, Implementation, and Management, 6/E, Pearson, 2015.
Mark L. Gillenson, Fundamentals of database management systems, Wiley, 2nd ed., Wiley, 2012.
I.H. Witten, Data Mining: Practical Machine Learning Tools and Techniques, 3rd ed., Morgan Kaufmann, 2011

</td></tr>
<tr><td>Last Updated</td><td>July 2019</td></tr>
<tr><td>Prepared by</td><td>Dr Pauli Lai and Mr Ivan Lau</td></tr>
</table>

Subject Description Form

Subject Code	EIE3311
Subject Title	Computer System Fundamentals
Credit Value	3
Level	3
Pre-requisite	For 42470: EIE2211 Logic Design For 42375: EIE2261 Logic Design
Co-requisite/ Exclusion	Nil
Objectives	To provide a broad treatment of the fundamentals of computer systems.
Intended Subject Learning Outcomes	**Upon completion of the subject, students will be able to:** Category A: Professional/academic knowledge and skills 1. Apply knowledge of mathematics, science, and engineering appropriate to a basic computer system. 2. Use computer tools with an understanding of the processes and limitations. 3. Understand the fundamentals of computer systems and associated technologies. Category B: Attributes for all-roundedness 4. Communicate effectively.
Subject Synopsis/ Indicative Syllabus	**Syllabus:** 1. Microprocessors and Microcomputers The following topics will be discussed in detail with references to one or two well-established (contemporary) microprocessor systems. 1.1 CPU architecture: instruction fetch and execution, pipelining, instruction types, examples of assembly language programs, processor control units and micro-programmed control unit, real mode and protected mode of x86 processors, advanced processors, Graphics Processing Units (GPUs) and general-purpose computing. 1.2 Memory interface and memory management: memory devices, address decoding, memory interface, banking, bus buffering and driving, bus cycle and wait state, memory segmentation and paging. 1.3 Basic I/O interface: memory-mapped I/O, I/O port address decoding, programmable peripheral interface, handshaking. 1.4 Interrupts: polling, programmed I/O, interrupt I/O; basic interrupt processing, software interrupt, expanding the interrupt structure. 1.5 Direct Memory Access and DMA-controlled I/O: basic DMA operation, DMA controller, shared-bus operation. 1.6 Cache memory: mapping, associativity, replacement policies, write policies, performance. 1.7 Computer buses: evolution of bus architectures, PCI (PCIe) local bus, USB bus 2. Introduction to Operating System 2.1 File systems: secondary memory, disk formatting, file allocation table, file management, directory entry and file control block. 2.2 Multitasking and time-sharing: time-slicing, process states and process control block, context-switching mechanism, scheduling schemes and process priorities.

2.3 Boot-up ROM, firmware, hardware, device drivers.
2.4 Extension of OS and computing system to cloud Computing.

3. Computer Arithmetic
3.1 Data formats: signed/unsigned numbers, binary/decimal/BCD numbers, ASCII, fixed/floating point numbers, IEEE standard.
3.2 Arithmetic algorithms: fast addition, multiplication and division algorithms.

Laboratory Experiment:

1. x86 registers and memory architecture
2. x86 assembly language programming
3. Cache memory
4. I/O interface and Interrupt I/O

Teaching/ Learning Methodology

Teaching and Learning Method	**Intended Subject Learning Outcome**	**Remarks**
Lectures	1, 2, 3	fundamental principles and key concepts of the subject are delivered to students
Tutorials and Assignments	1, 2, 3, 4	supplementary to lectures and are conducted with a smaller class size; students will be able to clarify concepts and to have a deeper understanding of the lecture material; problems and application examples are given and discussed Students take home more questions after each tutorial session and hand in their answers in the subsequent tutorial session
Laboratory sessions	1, 2, 3, 4	students will make use of a x86 assembler and debugger to develop an assembly program; software to simulate various OS management techniques and evaluate their performance; and circuit board to study various interfacing techniques and evaluate their efficiency and performance

Assessment Methods in Alignment with Intended Subject 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 sessions	10%	✓	✓	✓	✓
• Test	20%	✓		✓	✓
2. Examination	60%	✓		✓	✓
Total	100%				

The continuous assessment consists of short quizzes, assignments, laboratory reports and tests.

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

Specific Assessment Methods/Tasks	Remark
Assignments, tests and examination	end-of chapter type problems used to evaluate students' ability in applying concepts and skills learnt in the classroom;
Laboratory sessions	each student is required to produce a written report; accuracy and the presentation of the report will be assessed;

Student Study Effort Expected

Class contact (time-tabled):	
• Lecture	24 Hours
• Tutorial/Laboratory	15 hours
Other student study effort:	
• Lecture/Tutorial: preview/review of notes; assignments; preparation for test/examination	54 Hours
• Laboratory: preview of materials, revision and/or reports writing	12 Hours
Total student study effort:	**105 Hours**

Reading List and References	**Reference Books:** 1. B.B. Bery, The Intel Microprocessors 8086/8088, 80186/80188, 8086, 80386, 80486, Pentium, Pentium pro processor, Pentium II, Pentium III, Pentium 4 and Core2 with 64-bit extensions: Architecture, Programming, and Interfacing, 8th ed., Pearson Prentice Hall, 2009. 2. C. Hamacher, Z. Vranesic, S. Zaky, and N. Manjikian, Computer Organization and Embedded Systems, 6th ed., McGraw-Hill, 2012. 3. W. Stallings, Computer Organization & Architecture: Designing for Performance, 10th ed., Prentice Hall, 2016. 4. Muhammad A. Mazidi and Janice G. Mazidi, The 80x86 IBM PC and Compatible Computers: Assembly Language, Design, and Interfacing, International Edition, 5th ed., Pearson Education, 2010. 5. J. Uffenbeck, The 80x86 Family: Design, Programming, and Interfacing, 3rd ed., Prentice Hall, 2002. 6. T. Erl, Z Mahmood, and R. Puttini, Cloud Computing: Concepts, Technology & Architecture, Prentice Hall, 2013.
Last Updated	February 2018
Prepared by	Dr Zheru Chi

Subject Description Form

Subject Code	EIE3312
Subject Title	Linear Systems
Credit Value	3
Level	3
Pre-requisite	AMA2111 Mathematics I
Co-requisite/ Exclusion	Nil
Objectives	1. To provide students with basic concepts and techniques for the modelling and analysis of linear continuous-time and discrete-time signals and systems. 2. To provide students with an analytical foundation for further studies in Communication Engineering and Digital Signal Processing.
Intended Subject Learning Outcomes	**Upon completion of the subject, students will be able to:** Category A: Professional/academic knowledge and skills 1. Understand the representations and classifications of the signals and systems. 2. Understand the modelling of linear systems. 3. Use different techniques to analyze and design systems. 4. Apply software tools to laboratory exercises for experimenting with theories, and to the analysis and design of signals and systems. 5. Appreciate the advantages and disadvantages of using the different representations and modeling approaches. Category B: Attributes for all-roundedness 6. Present ideas and findings effectively. 7. Think critically and learn independently. 8. Work in a team and collaborate effectively with others.
Subject Synopsis/ Indicative Syllabus	**Syllabus:** 1. Signal Representation Signal Classification, Continuous and Discrete-Time Signals, Random Signals. Time-Domain and Frequency-Domain Representations. 2. Continuous-Time and Discrete-Time Systems Impulse Representation and Convolution, Linear Time-Invariant Systems. Properties of Systems: Causality, Time Invariance, Linearity, Systems with Memory, Inverse of a System, Stability. LTI Systems: Differential and Difference Equation Representation, Block Diagram Representations. 3. Fourier Representations for Signals Reviews on Periodic and Nonperiodic Signals, Continuous and Discrete Signal, Fourier Series and Transform, Frequency Spectra. Properties of Fourier Representations, Time Functions, Applications on System Frequency Response and Signal Frequency Spectrum. Frequency Response of LTI Systems, Sampling. Discrete-Time Fourier Transform, 4. Laplace Transform Definition and Properties of Laplace Transform, Inversion of Laplace Transform, Bilateral Laplace Transform. Transform Analysis of LTI Systems, Poles and Zeros. Relationship of Laplace Transform and Fourier Transform.

5. Analogue Filters
Ideal Filters, Bode Plots. Filter Design: Butterworth Filters, Chebyshev Filters, Frequency Transformations.

Laboratory Experiments:

1. Fundamentals of Signals
2. Linear Time-Invariant Systems
3. Fourier Analysis of Continuous-time Signals
4. Sampling
5. Fourier Analysis of Discrete-time Signals

Teaching/ Learning Methodology

Teaching and Learning Method	Intended Subject Learning Outcome	Remarks
Lectures	1, 2, 3, 5, 7	Fundamental principles and key concepts of the subject are delivered to students.
Tutorials	1, 2, 3, 5, 7	These are supplementary to lectures and are conducted with smaller class sizes; students will be able to clarify concepts and to gain a deeper understanding of the lecture material; problems and application examples are given and discussed.
Laboratory sessions	4, 6, 7, 8	Students will make use of the software MATLAB to simulate the various theories and visualize the results.

Assessment Methods in Alignment with Intended Subject Learning Outcomes

Specific Assessment Methods/ Task	% Weighting	Intended Subject Learning Outcomes to be Assessed (Please tick as appropriate)							
		1	2	3	4	5	6	7	8
1. Continuous Assessment	40%								
• Assignments	10%	✓	✓	✓		✓	✓	✓	
• Laboratory sessions	10%				✓		✓		✓
• Tests	20%	✓	✓	✓		✓	✓	✓	
2. Examination	60%	✓	✓	✓		✓	✓	✓	
Total	100%								

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

Specific Assessment Methods/Tasks	Remark
Short quizzes	These can measure the students' understanding of the theories and concepts as well as their comprehension of subject materials.
Assignments, tests and examination	End-of-chapter-type problems are used to evaluate the students' ability in applying concepts and skills learnt in the classroom; students need to think critically and to learn independently in order to come up with an alternative solution to an existing problem.
Laboratory sessions	Each student is required to produce a written report; the accuracy and presentation of the report will be assessed; oral examination based on the laboratory exercises will be conducted for each student to evaluate his/her technical knowledge and communication skills.

Student Study Effort Required	**Class contact (time-tabled):**	
	• Lecture	24 Hours
	• Tutorial/Laboratory/Practice Classes	15 hours
	Other student study effort:	
	• Lecture: preview/review of notes; homework/assignment; preparation for test/quizzes/examination	36 Hours
	• Tutorial/Laboratory/Practice Classes: preview of materials, revision and/or reports writing	30 Hours
	Total student study effort:	**105 Hours**
Reading List and References	**Reference Books:** 1. Ed. Kamen and Bonnie Heck, *Fundamentals of Signals and Systems Using the Web and Matlab*, 3/e, Prentice-Hall, 2007. 2. M.J. Roberts, *Fundamentals of Signals & Systems,* McGraw-Hill, 2008 3. Simon Haykin and Barry Van Veen, *Signals and Systems*, Wiley, 2003. 4. Charles L. Phillips, et al., *Signals, Systems, and Transforms,* 3/e, Prentice-Hall, 2003.	
Last Updated	May 2018	
Prepared by	Prof. Kenneth Lam	

Subject Description Form

Subject Code	EIE3320
Subject Title	Object-Oriented Design and Programming
Credit Value	3
Level	3
Pre-requisite	For 42470 and 42477: ENG2002 Computer Programming For 42375: EIE2264 Computer Programming
Co-requisite/ Exclusion	Nil
Objectives	This subject will provide students with the principles of object-oriented software design and programming from the perspective of Java implementation and UML. Students are expected to learn the concepts of and practical approaches to object-oriented analysis, design and programming using UML and Java.
Intended Subject Learning Outcomes	**Upon completion of the subject, students will be able to:** Category A: Professional/academic knowledge and skills 1. Understand the principles of object oriented design. 2. Apply Java in object oriented software development. 3. Apply UML in object oriented software modeling. 4. Apply object oriented approach to developing computer software. Category B: Attributes for all-roundedness 5. Learn independently and be able to search for the information required in solving problems. 6. Present ideas and findings effectively. 7. Think critically. 8. Work in a team and collaborate effectively with others.
Subject Synopsis/ Indicative Syllabus	**Syllabus:** 1. Introduction to Software Engineering Software products; software processes; software process models; 2. Java Programming Basic Java technologies; Java platform; Java language basic: variables, operators, expressions, statements, blocks, control flow, methods, arrays. 3. Object-Oriented Programming with Java Objects and classes; class definition; fields, constructors and methods; object interaction; grouping objects; array and collections; designing classes; inheritance and polymorphism; managing inheritance: creating subclasses and super-classes, hiding member variables, overriding methods. Interfaces and packages. 4. Web Programming with Java *JavaScript:* Client-side Web programming; JavaScript and HTML; Object, events, and event handlers in JavaScript. *Java Servlets*: architecture of servlets, client interaction, life cycle of servlets, saving client states; servlet communications, session tracking, and using server resources. 5. Unified Modelling Language (UML) Purposes of modelling. Structural Modelling: classes, relationships, class Diagrams, interfaces, packages, and object diagrams. Behavioural

modelling interactions, use cases, use case diagrams, interaction diagrams, activity diagrams. Architectural modelling: components, deployment, and collaborations. Mapping UML diagrams to Java Code.

Laboratory Experiment:

1. Laboratory Work
   Students will implement an on-line shopping system using Java Servlets and Tomcat Web server.

2. Practical Work
   Students will be requested to use integrated development environment (IDE) to write and debug Java programs during tutorial and lab sessions.

Teaching/ Learning Methodology

Teaching and Learning Method	Intended Subject Learning Outcome	Remarks
Lectures	1, 2, 3	fundamental principles and key concepts of the subject are delivered to students
MC Quizzes	1, 2, 3	students' knowledge on/understanding of certain topics can be easily estimated, and the corresponding teaching time will be adjusted accordingly
Tutorials	1,2,4,5,6	supplementary to lectures and are conducted with smaller class size; students will be able to clarify concepts through developing simple Java programs.
Laboratory sessions	4,5,7	Students will need to design, develop, test, and document Java programs.
Mini-project	3,4,5,7,8	Students in groups of 2-3 are required to build a 3-tier online shopping software. They will also need to use UML to document their software.

Assessment Methods in Alignment with Intended Subject Learning Outcomes

Specific Assessment Methods/ Task	% Weighting	Intended Subject Learning Outcomes to be Assessed (Please tick as appropriate)							
		1	2	3	4	5	6	7	8
1. Continuous Assessment (Total: 50%)									
• Assignments	8%		✓	✓	✓	✓		✓	
• Laboratory sessions	10%		✓		✓		✓	✓	✓
• Test	32%	✓							
2. Examination	50%	✓							
Total	100%								

The continuous assessment consists of a number of short quizzes, programming assignments, a mini-project, laboratory reports and a mid-term test.

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

Specific Assessment Methods/Tasks	Remark
Short quizzes	Multiple choices and true/false questions will be used to test and enhance students' understanding about the topics covered in lectures.
Assignments	Students will be asked to write Java programs and test the programs. They will also need to use UML diagram to illustrate the structure of their programs. Students will need to think critically and creatively in order to come up with a good solution for an existing problem.
Laboratory sessions and mini-project	Each group of students are required to produce a written report. Students will be accessed based on (1) the quality of their programs and (2) the clarity of their reports. Students will be asked to work as a team to develop a web application. Each of them will be responsible for part of the software.
Test and Exam	End-of-chapter problems will be used to evaluate students' ability in applying concepts and skills learnt in the classroom

Student Study Effort Expected	**Class contact (time-tabled):**	
	• Lecture	24 Hours
	• Tutorial/Laboratory/Practice Classes	15 hours
	Other student study effort:	
	• Lecture: preview/review of notes; homework/assignment; preparation for test/quizzes/examination	36 Hours
	• Tutorial/Laboratory/Practice Classes: preview of materials, revision and/or reports writing	30 Hours
	Total student study effort:	**105 Hours**

Reading List and References

Textbooks:

1. G. Booch, I. Jacobson and J. Rumbaugh, *The Unified Modeling Language User Guide*, 2nd ed., Addison-Wesley, 2005.
2. D.J. Barnes and M. Kolling, *Objects First with Java: A Practical Introduction using BlueJ*, 5th ed., Prentice-Hall, 2012.

Reference Books:

1. H.M. Deitel and P.J. Deitel, *Java: How To Program (Early Objects)*, 10th ed., Prentice-Hall, 2014.
2. J. Lewis and W. Loftus, Java Software Solutions, 8th Edition, Pearson, 2015.
3. J. Rumbaugh, I. Jacobson and G. Booch, *The Unified Modeling Language Reference Manual*, 2nd ed., Addison-Wesley, 2004.

Last Updated	February 2018
Prepared by	Dr Lawrence Cheung

Subject Description Form

Subject Code	EIE3331
Subject Title	Communication Fundamentals
Credit Value	3
Level	3
Pre-requisite	AMA2111 Mathematics I
Co-requisite/ Exclusion	Nil
Objectives	Telecommunication plays an important role in modern societies that rely heavily on a knowledge economy. Telecommunication systems enable the transfer and exchange of information over communication channels that are corrupted by disturbances and noises in a cost-effective manner. The major objectives of this subject are for the students to establish a firm foundation for the understanding of telecommunication systems, and the relationship among various technical and socio-economic factors when such systems are designed and operated.
Intended Subject Learning Outcomes	**Upon completion of the subject, students will be able to:** Category A: Professional/academic knowledge and skills 1. Identify various elements, processes, and parameters in telecommunication systems, and describe their functions, effects, and interrelationship. 2. Analyze, measure, and evaluate the performance of a telecommunication system against given criteria. 3. Design typical telecommunication systems that consist of basic and essential building blocks. Category B: Attributes for all-roundedness 4. Communicate effectively. 5. Think critically and creatively. 6. Assimilate new technological development in related field.
Subject Synopsis/ Indicative Syllabus	**Syllabus:** 1. Introduction (1 hour) 1.1 Introduction to telecommunication systems, their past and present development; elements of a basic communication system; examples of practical telecommunication systems. 2. Analog Communications (10 hours) 2.1 Amplitude Modulation (AM): double sideband, double sideband with suppressed carrier, single sideband, frequency spectrum and power of the AM signal, Frequency Division Multiplexing. 2.2 Demodulation of AM signals: coherent detector, direct demodulation 2.3 Frequency modulation: bandwidth of FM signals, Stereo FM. 2.4 Demodulation of FM signals: Phase-Locked Loop (PLL) detector. 2.5 Comparison of AM and FM performance: bandwidth, signal-to-noise ratio 3. Analog to Digital Conversion (4 hours) 3.1 Sampling theorem; pulse amplitude modulation 3.2 Quantizing: uniform quantization and quantization noise, SNR (e.g.: Audio CD standard), non-uniform quantization (e.g. A-law, u-law) 3.3 Pulse code modulation (PCM) 3.4 Time division multiplexing: T1 multiplexing system 4. Digital Modulation and Demodulation (9 hours)

4.1 ASK, FSK, PSK, DPSK, QPSK (e.g. satellite system), OQPSK, QAM (e.g. Microwave link applications), constellation diagram, bandwidth.
4.2 Coherent demodulation
4.3 Non-coherent demodulation (e.g. DPSK, OQPSK)
4.4 BER performance over Additive White Gaussian Noise (AWGN) channel
4.5 Effects of bandwidth, distortion, noise, timing error on detection, eye diagram

Practical:

- Analog communication experiments (6 hours)
- Matlab simulation/experiments in digital communication systems (6 hours)

Assignment:

- Reception survey of analog sound broadcast quality in Hong Kong

Teaching/ Learning Methodology

Teaching and Learning Method	Intended Subject Learning Outcome	Remarks
Lectures, supplemented with interactive questions and answers, and short quizzes	1,2,3,5,6	In lectures, students are introduced to the *knowledge* of the telecommunication field; *comprehension* of the knowledge is strengthened with interactive Q&A and short quizzes. The students will be able to *define* and *describe* key terms and concepts about telecommunication. They will also be able to *explain* and *generalize* knowledge about telecommunication (e.g. different modulation techniques and their performance, difference between analog and digital modulation techniques)
Tutorials where case studies are conducted, and problems are given to students for them to solve	1,2,3,4,5,6	In tutorials, students *apply* what they have learnt in analyzing cases (e.g. superheterodyne receiver structure) and solving problems (e.g. calculating the channel capacity of a given channel). They will *analyze* the given information, *compare* and *contrast* different scenarios and propose solutions or alternatives.
Laboratories, where students will conduct experiments on digital communication systems	2,3,4,5,6	By performing hands-on authentic tasks, the students will be able to *synthesize* a structure of knowledge by *designing* a solution to a communication problem. They will *relate* the observation to theories and principles. They will also *evaluate* outcomes of the tasks they perform and *interpret* the data they gather.
Assignment/ homework, online quizzes, tests, end-of-chapter problems	1,2,3,4,5,6	Through working assignment and homework, online quizzes, and end-of-chapter problems in text books, students will develop a firm understanding and *comprehension* of the *knowledge* taught. They will *analyze* given information and *apply* knowledge in solving problems. For some design type of questions (e.g. design a communication link with a given S/N ratio), they will have to *synthesize* solutions by *evaluating* different alternatives.

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	4	5	6
1. Continuous Assessment (total 50%)							
• Assignments	10%	✓	✓	✓	✓	✓	
• Laboratory report	10%		✓	✓	✓	✓	✓
• Quiz	10%	✓	✓	✓	✓	✓	
• Test	20%	✓	✓	✓	✓	✓	
2. Examination	50%	✓	✓	✓	✓	✓	
Total	100 %						

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

Specific Assessment Methods/Tasks	Remark
Assignment/ Homework/ tests/examination	Assignment/Homework, tests, and examinations are given to students to assess their competence level of *knowledge* and *comprehension*, ability to *analyze* given information, ability to *apply* knowledge and skills in new situation, ability to *synthesize* structure, and ability to evaluate given data to make judgment. The criteria (i.e. *what* to be demonstrated) and level (i.e. the *extent*) of achievement will be graded according to six levels: Excellent (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/homework is given. Feedback about their performance will be given promptly to students to help them improvement their learning.
Laboratory report	Students are required to conduct experiments in team of 2 students each in four laboratory sessions. The emphasis is on assessing their ability to *apply* knowledge and skills learned in *designing*, *synthesizing* and ev*aluating*, ability in working with other people, and ability to take data and relate the measurement results to theory. Expectation and grading criteria will be given as in the case of assignment/ homework.

Student Study Effort Expected	**Class contact (time-tabled):**	
	• Lecture	24 Hours
	• Tutorial/Laboratory/Practice Classes	15 hours
	Other student study effort:	
	• Lecture: preview/review of notes; homework/assignment; preparation for test/quizzes/examination	36 Hours
	• Tutorial/Laboratory/Practice Classes: preview of materials, revision and/or reports writing	30 Hours
	Total student study effort:	**105 Hours**
Reading List and References	**Recommended Textbook:** 1. J.G. Proakis and M. Salehi, *Communication Systems Engineering*, Prentice Hall, 2002. **Reference Books:** 1. R.E. Ziemer, W.H. Tranter, *Principles of Communications: Systems, Modulation and Noise*, 5th ed., New York : John Wiley & Sons, c2002. 2. A.B. Carlson, P.B. Crilly and J.C. Ruthledge, *Communication Systems: an introduction to signals and noise in electrical communication,* 4th ed., McGraw-Hill, 2002. 3. S. Haykin, *Communication Systems,* 4th ed., John Wiley & Sons, 2001. 4. W.D. Stanley and J.M. Jeffords, *Electronic Communications: Principles and Systems*, Thomson Delmar Lerning, 2006.	
Last Updated	March 2018	
Prepared by	Dr W.C. Lee	

Subject Description Form

Subject Code	EIE3333
Subject Title	Data and Computer Communications
Credit Value	3
Level	3
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	1. To provide solid foundation to students about the architectures and operations of communication networks. 2. To enable students to master the knowledge about computer networking in the context of real-life applications. 3. To prepare students to learn and to critically evaluate new knowledge and emerging technology in communication networks.
Intended Subject Learning Outcomes	**Upon completion of the subject, students will be able to:** Category A: Professional/academic knowledge and skills 1. Understand the services, functions, and inter-relationship of different layers in communication network models 2. Describe how components in different layers inter-operate and analyze their performance. 3. Understand and apply the principles and practices of communication networks. 4. Learn new techniques and to align new technologies to existing network infrastructure. Category B: Attributes for all-roundedness 5. Present ideas and findings effectively. 6. Learn independently.
Subject Synopsis/ Indicative Syllabus	**Syllabus:** 1. Computer Networks, Services, and Layered Architectures Evolution of networking and switching technology. Protocol and services. Layered network architectures: OSI 7-layer model, TCP/IP architecture. 2. Digital Transmission and Protocols in Data Link Layer Line coding techniques, error detection and correction. Automatic Repeat Request (ARQ) protocol and reliable data transfer service. Sliding-window flow control. Framing and point-to-point protocol, flow control and error controls. High level data link control (HDLC) protocol and point-to-point protocol (PPP). 3. Local Area Networks (LANs) and Wireless LANs Media Access Control (MAC) protocols: the IEEE802.3 Ethernet and IEEE802.11 wireless LAN standards. Interconnection of LANs: bridge, switch, and virtual LAN. 4. Network Layer Protocols Network layer operations, connection oriented and connectionless services. Internet protocol (IP): IP datagram format, IP addressing, subnetting, IP routing and router operations. Internet control message protocol (ICMP), dynamic host configuration protocol (DHCP), network address translation (NAT).

5. Transport Layer Protocols
   Transmission control protocol (TCP) and user datagram protocol (UDP)

Possible Laboratory Experiments:
1. Cisco router configuration and programming.
2. Static and Dynamic routing.
3. Network monitoring and analysis
4. Address resolution, ARP, IP, and TCP.

Teaching/ Learning Methodology

Teaching and Learning Method	**Intended Subject Learning Outcome**	**Remarks**
Lectures	1, 2, 3, 4	Fundamental principles and key concepts of the subject are delivered to students.
Tutorials	1, 2, 3, 4, 5	Supplementary to lectures. Students will be able to clarify concepts and to have a deeper understanding of the lecture material; Problems and application examples are given and discussed.
Laboratory sessions	3, 5, 6	Students will conduct practical exercises to reinforce concepts and techniques learned.

Alignment of Assessment and Intended Subject Learning Outcomes

Specific Assessment Methods/ Task	**% Weighting**	**Intended Subject Learning Outcomes to be Assessed (Please tick as appropriate)**					
		1	**2**	**3**	**4**	**5**	**6**
1. Continuous Assessment	40%						
• Mid-Term Test	12.5%	✓	✓	✓	✓	✓	
• End-of-Term Test	12.5%	✓	✓	✓	✓	✓	
• Assignments	6%	✓	✓	✓	✓	✓	
• Laboratories	9%			✓		✓	✓
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, Tests and examination	These can measure the students' understanding of the theories and the concepts of the subject. End-of-chapter type problems used to evaluate students' ability in applying concepts and skills learnt in the classroom; Assignments of reading report type to assess students' ability in acquiring new knowledge related to communication networks; Students need to think critically and creatively in order to come with an alternate solution for an existing problem.
Laboratory sessions	Each group of students is required to complete work-sheets, to indicate their understanding and correct completion of the laboratories. Accuracy and the presentation of the work-sheets will be assessed;

Student Study Effort Expected	**Class contact (time-tabled):**	
	• Lecture	24 Hours
	• Tutorial/Laboratory/Practice Classes	15 hours
	Other student study effort:	
	• Lecture: preview/review of notes; homework/assignment; preparation for test/quizzes/examination	36 Hours
	• Tutorial/Laboratory/Practice Classes: preview of materials, revision and/or reports writing	30 Hours
	Total student study effort:	**105 Hours**
Reading List and References	**Textbook :** 1. Behrouz A. Forouzan, *Data Communications & Networking,* 5th ed., McGraw-Hill, 2012. **Reference Books:** 1. Behrouz A. Forouzan, *Computer Networks: A Top-Down Approach*, McGraw-Hill, 2012. 2. William Stallings, *Data and Computer Communications*, 9th ed., Pearson/ Prentice-Hall, 2012. 3. Douglas Comer, *Computer Networks and Internets*, 5th ed., Pearson/ Prentice-Hall, 2009.	
Last Updated	May 2019	
Prepared by	Dr K.T. Lo	

Subject Description Form

Subject Code	EIE3373
Subject Title	Microcontroller Systems and Interface
Credit Value	3
Level	3
Pre-requisite	EIE2261 Logic Design
Co-requisite/ Exclusion	Nil
Objectives	To provide students with the concepts and techniques required in designing computer hardware interfaces and embedded software for microcontrollers.
Intended Subject Learning Outcomes	**Upon completion of the subject, students will be able to:** Category A: Professional/academic knowledge and skills 1. Use assembly languages in developing programs for the use of microcontrollers. 2. Use the C programming language in developing more complicate program for the use of microcontrollers. 3. Apply basic skills for interfacing common devices to microcontrollers. Category B: Attributes for All-roundedness 4. Present ideas and findings effectively. 5. Think critically and creatively.
Subject Synopsis/ Indicative Syllabus	**Syllabus:** 1. Architecture of Typical Microcontrollers Overview of programming model, instruction set, interface to external memory; use of stack in subroutine calls and interrupt services; access of built-in I/O ports, timers and counters. 2. Software Development Environment Features of a selected macro assembler, working principle of assembler; assembler directives, examples of assembly language programs; features of a selected C compiler, examples of C programs for controlling microcontrollers. 3. I/O Interfacing Output-pin driving limitations, current driving, inductive load driving; pulse generation and measurement; keyboard scanning, display multiplexing, LCD controllers, use of peripheral interface IC; analogue signal sensing, analogue and digital conversion; serial interface standards; examples of microcontroller-based industrial I/O standards. 4. Embedded Software Development and Testing Embedded software issues; tasks and events; interrupt system: nesting, priority and latencies; simulator, debugger and emulator. **Laboratory Experiments:** Practical Works: Supervised laboratory sessions: 1. Develop interrupt service routines serving timer interrupts and external interrupts. 2. Embedded software development using MCU development tools.

Mini-project:
Build and test a microcontroller system employing external peripheral interface IC, multiple 7-segment displays, LEDs and small keyboard, etc.

Teaching/ Learning Methodology

Teaching and Learning Method	Intended Subject Learning Outcome	Remarks
Lectures	1,2,3	Fundamental principles and key concepts of the subject are delivered to students
Laboratory sessions	1,2,3,4,5	Students will make use of software and hardware tools to carry out laboratory assignments

Assessment Methods in Alignment with Intended Subject Learning Outcomes

Specific Assessment Methods/ Task	% Weighting	Intended Subject Learning Outcomes to be Assessed (Please tick as appropriate)				
		1	2	3	4	5
1. Continuous Assessment (Total: 45%)						
• Laboratory Exercises	12%	✓	✓	✓	✓	✓
• Tests	33%	✓	✓	✓		
2. Examination	55%	✓	✓	✓		
Total	100%					

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

Specific Assessment Methods/Tasks	Remark
Assignments	Enhance the understanding of the taught materials in the lectures
Tests and examination	End-of chapter type problems are used frequently to evaluate students' ability in applying concepts and skills learned in class The students are also needed to think critically and creatively in the process of solving problems
Laboratory sessions	Each student is required to illustrated their achievement and produce a detailed work record when presenting his/her demonstrations Students are also needed to think critically and creatively to accomplish certain laboratory assignments

Student Study Effort Expected	**Class contact (time-tabled):**	
	• Lecture	24 Hours
	• Tutorial/Laboratory/Practice Classes	15 Hours
	Other student study effort:	
	• Lecture: preview/review of notes; homework/assignment; preparation for test/quizzes/examination	36 Hours
	• Tutorial/Laboratory/Practice Classes: preview of materials, revision and/or reports writing	30 Hours
	Total student study effort:	**105 Hours**
Reading List and References	**Reference Books:** 1. A.V. Deshmukh, *Microcontrollers [Theory and Appications]*, Tata Mcgraw Hill, 2006. 2. M.J. Pont, *Embedded C*, Addison-Wesley, 2002. 3. S.R. Ball, *Debugging Embedded Microprocessor Systems*, Butterworth-Heinemann, 1998. 4. M.A. Mazidi and J.G. Mazidi, *The 8051 Microcontroller and Embedded Systems*, Prentice-Hall, 2000. 5. J. Labrosse, *Micro C/OS-II*, R & D Books, Miller Freeman, 1999. 6. D.V. Hall, *Microprocessors and Interfacing: Programming and Hardware*, 2nd ed., McGraw-Hill, 1992.	
Last Updated	February 2018	
Prepared by	Dr Lawrence Cheung	

Different types of GPA, and their calculation methods

Types of GPA	Purpose	Rules for GPA calculation
GPA	Determine Progression/ Graduation	(1) All academic subjects taken by the student throughout his study, both inside and outside the programme curriculum, are included in the GPA calculation. (2) For training subjects, including IC training subjects, they will be included in the GPA calculation. (3) For retake subjects, only the last attempt will be taken in the GPA calculation. (4) Level weighting, if any, will be ignored.
Semester GPA	Determine Progression	Similar to the rules for GPA as described above, except that only subjects taken in that Semester, including retaken subjects, will be included in the calculation.
Weighted GPA	To give an interim indication on the likely Award GPA	(1) Similar to the rules for GPA, except that only subjects inside the programme curriculum concerned will be included in the calculation. Subjects outside the programme curriculum will be excluded. (2) Only academic subjects will be counted towards the Weighted GPA. (3) For retake subjects, only the last attempt will be taken in the Weighted GPA calculation. (4) A weighting of 2 for Level 1 and 2 subjects, and a weighting of 3 for Level 3 and 4 subjects, will be included in the calculation to determine the Award/Honours classifications. (5) The weighted GPA will be the same as the Award GPA unless a student has taken more subjects than required.
Award GPA	For determination of award classification	If the student has not taken more subjects than required, the Award GPA will be as follows: Award GPA = Weighted GPA