To: 42470-1 and 42470-2 Students of the BEng in EIE Programme
From: Programme Leader, BEng in EIE & Chairman, Departmental Undergraduate Programme Committee (DUPC)
c.c.: Interim Head, EIE
BEng in EIE Programme Executive Group Members
Date: 23 Feb 2017

Dear Students,

Minor Changes to the BEng in EIE (42470/42470-SY) Programme

As communicated with you during our meeting on 20 January 2017, the Department has recently implemented a few minor changes to the BEng in EIE programme curriculum as a result of refocusing the programme to the studies in Information and Communication Technologies (ICT) with an emphasis on "vertical integration". These minor changes are recaptured below for your attention. You can refer to the attached document for more details about the rationales behind these minor changes to the BEng in EIE (42470/42470-SY) programme.

1. Deleting Electives from and Adding Electives to the Curriculum

The technical electives listed in Table 1 below are removed from the curriculum of the BEng in EIE programme since they either do not align closely with the new programme emphasis or are less popular among students (i.e. low subject enrolment):

Table 1: Deletion of technical electives from the BEng in EIE programme:

Subject Code	Subject Title	Credit	Category of Subjects	
			Normal Year 1 Intake	Senior Year Intake
~~EIE3110~~	~~Research Methodology~~	~~3~~	~~ELE~~	~~ELE~~
~~EIE3306~~	~~IC Technology and Processes~~	~~3~~	~~ELE~~	~~ELE~~
~~EIE3338~~	~~Applied Electromagnetics~~	~~3~~	~~ELE~~	~~ELE~~
~~EIE3378~~	~~Semiconductor Optoelectronic Devices~~	~~3~~	~~ELE~~	~~ELE~~
~~EIE4107~~	~~Wireless Communications~~	~~3~~	~~ELE~~	~~ELE~~
~~EIE4111~~	~~Advanced VLSI and Computer-Aided Circuit Design~~	~~3~~	~~ELE~~	~~ELE~~
~~EIE4414~~	~~Computer Architecture and Systems~~	~~3~~	~~ELE~~	~~ELE~~
~~EIE4415~~	~~Multimedia Technology~~	~~3~~	~~ELE~~	~~ELE~~

Subject Code	Subject Title	Credit	Category of Subjects	
			Normal Year 1 Intake	Senior Year Intake
~~EIE4448~~	~~Bioengineering Signals and Systems~~	~~3~~	~~ELE~~	~~ELE~~
~~EIE4450~~	~~Nanoscience and Technology for Electronic Engineering~~	~~3~~	~~ELE~~	~~ELE~~
~~EIE4451~~	~~Circuits for Telecommunications~~	~~3~~	~~ELE~~	~~ELE~~

The technical electives listed in Table 2 below are relevant to the BEng in EIE curriculum and thus have been added to the programme:

Table 2: Addition of technical electives to the BEng in EIE programme:

Subject Code	Subject Title	Credit	Category of Subjects	
			Normal Year 1 Intake	Senior Year Intake
EIE4112	Avionics Systems (Appendix I)	3	ELE	ELE
EIE4113	Wireless and Mobile Systems (Appendix II)	3	ELE	ELE
EIE4114	Digital Forensics for Crime Investigation (Appendix III)	3	ELE	ELE
EIE4115	Intrusion Detection and Prevention (Appendix IV)	3	ELE	ELE
EIE4116	Surveillance Studies and Technologies (Appendix V)	3	ELE	ELE

The above changes will be effective from 2017/18 and onwards.

2. Changing "EIE3333 Data and Computer Communications" from an Elective to a Compulsory Subject

By changing EIE3333 (Appendix VI) from an elective to a compulsory while keeping the total number of credits required for graduation unchanged, the number of technical electives required for the programme has been reduced from 5 to 4. Students are expected to take EIE3333 during Semester 2 of their 3rd year of study (or 1st year of study for senior year entry).

The resultant revised specified progression patterns for Normal Year 1 intake and Senior Year intake can be found in Appendix VII.

The revisions will be effective from 2017/18 and onwards and applicable to all cohorts of Normal Year 1 intakes (42470) from 2015/16 and onwards, and all cohorts of Senior Year intakes (42470-SY) from 2017/18 and onwards to the BEng in EIE programme.

3. Updating the List of Level 5 EIE Electives

The list of Level 5 subjects open for BEng in EIE final-year students' choosing has been updated as follows with reference to the update on the list of Level 5 subjects offered for the MSc in EIE programme:

Table 3: Updated list of Level 5 EIE electives for the BEng in EIE programme:

Subject Code	Subject Title	Credit
EIE509	Satellite Communications - Technology and Applications	3
EIE511	VLSI System Design	3
EIE522	Pattern Recognition: Theory & Applications	3
EIE529	Digital Image Processing	3
EIE531	Mobile Radio Communications	3
EIE546	Video Technology	3
EIE553	Security in Data Communication	3
EIE557	Computational Intelligence and its Applications	3
EIE558	Speech Processing and Recognition	3
EIE563	Digital Audio Processing	3
EIE574	High Frequency Circuit Design	3
EIE575	Vehicular Communications and Inter-Networking Technologies	3
EIE577	Optoelectronic Devices	3
EIE579	Advanced Telecommunication Systems	3
EIE581	Optical Wavelength Division Multiplexing Networks	3
EIE583	Advanced Power Semiconductor Devices and Design Criteria for Applications	3
EIE585	OFDM & MIMO Wireless Communications	3
EIE587	Channel Coding	3
EIE589	Wireless Data Network	3
~~EIE507~~	~~Network Design - Theory and Practice~~	~~3~~
~~EIE528~~	~~Digital Data Transmission~~	~~3~~
~~EIE536~~	~~High Speed Networks~~	~~3~~
~~EIE541~~	~~Digital Signal Processing~~	~~3~~

Subject Code	Subject Title	Credit
~~EIE545~~	~~Consumer Electronics~~	~~3~~
~~EIE552~~	~~Internet Technologies for Multimedia Applications~~	~~3~~
~~EIE555~~	~~Personal Networking Technology~~	~~3~~
~~EIE556~~	~~Advanced DSP for Multimedia Communications~~	~~3~~
~~EIE559~~	~~CDMA Spread Spectrum Communications and Its Applications~~	~~3~~
~~EIE565~~	~~Advanced Multimedia Technology~~	~~3~~
~~EIE576~~	~~Information Technology in Biomedicine~~	~~3~~
~~EIE578~~	~~CMOS Analog Integrated Circuits Design and Analysis~~	~~3~~

The above revisions will take place with immediate effect.

The attached file contains the following information for your reference:

1. Syllabi of EIE4112, EIE4113, EIE4114, EIE4115, EIE4116 and EIE3333
2. Progression patterns and list of subjects offered for the BEng in EIE programme
3. Rationales behind the minor changes to the BEng in EIE programme

For easy reference in the future, students are strongly advised to update your own Programme Booklet by enclosing this email and the attached documents to your own Booklet.

Should you have any question regarding the above, please feel free to talk to me.

Thank you for your attention.

Regards,
Dr C.K. Leung
Programme Leader
BEng(Hons) in Electronic and Information Engineering

The Hong Kong Polytechnic University
Department of Electronic and Information Engineering

Minor Changes to the BEng (Hons) in Electronic and Information Engineering (BEng in EIE) (42470/42470-SY) Programme

Background

Recently the Department has made a thorough discussion on the identity of the academic programmes it offers and came up with a plan to refocus its programmes to the studies in Information and Communication Technologies (ICT) with an emphasis on "vertical integration". It follows from the current trend of many ICT enterprises, such as Google, Microsoft, Verizon, etc., who do not only focus on providing a specific kind of ICT services and products, but also engage themselves in different parts of the ICT vertical supply chain. While the business of these ICT enterprises can range from software applications, hardware systems to even microelectronic devices, it lets us believe that there is a need to provide a vertically integrated education to our students to prepare their future ICT career. It in fact also fully meets the profile and expertise of the Department.

To cope with this emphasis, the Department has recently made a review on all higher diploma, undergraduate degree and taught postgraduate programmes to ensure they follow closely our new emphasis of "vertical integration" in ICT. At the same time, we also try to identify rooms for streamlining and consolidation of subjects while ensuring that the programme aims, objectives and intended learning outcomes are unaffected and sufficient number of electives are provided for students' selection.

In this connection, a number of minor changes have been implemented to the BEng in EIE programme curriculum which are detailed in the following sections.

1. Deleting Electives from and Adding Electives to the Curriculum

The technical electives listed in Table 1 have been removed from the curriculum of the BEng in EIE programme. They either do not align closely with the new programme emphasis or are less popular among students (i.e. low subject enrolment).

Table 1: Deletion of technical electives from the BEng in EIE programme:

Subject Code	Subject Title	Credit	Category of Subjects	
			Normal Year 1 Intake	Senior Year Intake
~~EIE3110~~	~~Research Methodology~~	~~3~~	~~ELE~~	~~ELE~~
~~EIE3306~~	~~IC Technology and Processes~~	~~3~~	~~ELE~~	~~ELE~~
~~EIE3338~~	~~Applied Electromagnetics~~	~~3~~	~~ELE~~	~~ELE~~
~~EIE3378~~	~~Semiconductor Optoelectronic Devices~~	~~3~~	~~ELE~~	~~ELE~~
~~EIE4107~~	~~Wireless Communications~~	~~3~~	~~ELE~~	~~ELE~~
~~EIE4111~~	~~Advanced VLSI and Computer-Aided Circuit Design~~	~~3~~	~~ELE~~	~~ELE~~
~~EIE4414~~	~~Computer Architecture and Systems~~	~~3~~	~~ELE~~	~~ELE~~
~~EIE4415~~	~~Multimedia Technology~~	~~3~~	~~ELE~~	~~ELE~~
~~EIE4448~~	~~Bioengineering Signals and Systems~~	~~3~~	~~ELE~~	~~ELE~~
~~EIE4450~~	~~Nanoscience and Technology for Electronic Engineering~~	~~3~~	~~ELE~~	~~ELE~~
~~EIE4451~~	~~Circuits for Telecommunications~~	~~3~~	~~ELE~~	~~ELE~~

During the review, the Department has also identified certain subjects currently offered to the BSc (Hons) in Information Security (BSc in INS) (42480) and BEng (Hons) in Air Transport Engineering (48401)/BEng (Hons) in Aviation Engineering (48402) programmes which are relevant to the BEng in EIE discipline. These subjects have thus been added to the BEng in EIE curriculum as electives to broaden students' scope of learning. The subjects to be added to the BEng in EIE curriculum are listed in Table 2 as follows:

Table 2: Addition of technical electives to the BEng in EIE programme:

Subject Code	Subject Title	Credit	Category of Subjects	
			Normal Year 1 Intake	Senior Year Intake
EIE4112	Avionics Systems	3	ELE	ELE
EIE4113	Wireless and Mobile Systems	3	ELE	ELE
EIE4114	Digital Forensics for Crime Investigation	3	ELE	ELE
EIE4115	Intrusion Detection and Prevention	3	ELE	ELE
EIE4116	Surveillance Studies and Technologies	3	ELE	ELE

"EIE4112 Avionics Systems" (Appendix I) intends to provide students with knowledge of communications, electronics aspects of avionics, including aircraft instruments and integrated systems, and navigation systems; "EIE4113 Wireless and Mobile Systems" (Appendix II) aims to provide students with an understanding of various security concerns in wireless networks (e.g., WiFi and mobile cellular networks) and mobile systems and applications (e.g., Android and iOS); "EIE4114 Digital Forensics for Crime Investigation" (Appendix III) intends to provide students with basic concepts about digital forensic techniques for crime investigation, and train students to appreciate how different forensic techniques are used for information security; "EIE4115 Intrusion Detection and Prevention" (Appendix IV) aims to provide a solid foundation to students in network security and intrusion detection and prevention, enable students to master the knowledge about intrusion detection and prevention in the context of real-life applications, and prepare students for understanding, evaluating critically, and assimilating new knowledge and emerging technology in network security; "EIE4116 Surveillance Studies and Technologies" (Appendix V) is designed to provide students with a thorough understanding of recent surveillance technologies and their emerging trends, and enable them to learn the pros and cons of various surveillance technologies.

The revisions listed in Table 1 and Table 2 above will be effective from 2017/18 and onwards and applicable to all cohorts of intake to the BEng in EIE programme.

2. Changing "EIE3333 Data and Computer Communications" from an Elective to a Compulsory Subject

To match the curriculum with the new emphasis of "vertical integration" in ICT of the programme and clearly project this refreshed identity of the programme to students, the Department is of the view that students should be provided with more hands-on practice related to data and computer communications which are comparable to industry standard protocols. In this connection, certain existing electives have been removed (as detailed in Section 1), and "EIE3333 Data and Computer Communications" (Appendix VI) has been made a compulsory subject of the programme. EIE3333, currently an elective of the programme, aims to provide solid foundation to students about the architectures and operations of communication networks. It also intends to enable students to master the knowledge about computer networking in the context of real-life applications, and prepare students to learn and to critically evaluate new knowledge and emerging technology in communication networks.

By changing EIE3333 from an elective to a compulsory while keeping the total number of credits required for graduation unchanged, the number of technical electives required for the programme has been reduced from 5 to 4. Students are expected to take EIE3333 during Semester 2 of their 3rd year of study (or 1st year of study for senior year entry). The resultant

revised specified progression patterns for Normal Year 1 intake and Senior Year intake can be found in Appendix VII.

These revisions will be effective from 2017/18 and onwards and applicable to all cohorts of Normal Year 1 intakes (42470) from 2015/16 and onwards, and all cohorts of Senior Year intakes (42470-SY) from 2017/18 and onwards to the BEng in EIE programme.

3. Updating the List of Level 5 EIE Electives

According to current curriculum design of the BEng in EIE (42470/42470-SY) programme, students may take at most one Level 5 EIE subject per semester as a final-year technical elective during their final year of study subject to the approval by the Programme Leader. The total number of Level 5 EIE subjects taken by a student shall not exceed 2. Below are the Level 5 EIE subjects currently listed in the BEng in EIE programme:

Table 3: Existing list of Level 5 EIE electives for the BEng in EIE programme:

Subject Code	Subject Title	Credit
EIE507	Network Design - Theory and Practice	3
EIE509	Satellite Communications - Technology and Applications	3
EIE511	VLSI System Design	3
EIE522	Pattern Recognition: Theory & Applications	3
EIE528	Digital Data Transmission	3
EIE529	Digital Image Processing	3
EIE531	Mobile Radio Communications	3
EIE536	High Speed Networks	3
EIE541	Digital Signal Processing	3
EIE545	Consumer Electronics	3
EIE546	Video Technology	3
EIE552	Internet Technologies for Multimedia Applications	3
EIE553	Security in Data Communication	3
EIE555	Personal Networking Technology	3
EIE556	Advanced DSP for Multimedia Communications	3
EIE557	Computational Intelligence and its Applications	3
EIE558	Speech Processing and Recognition	3
EIE559	CDMA Spread Spectrum Communications and Its Applications	3
EIE563	Digital Audio Processing	3
EIE565	Advanced Multimedia Technology	3

Subject Code	Subject Title	Credit
EIE576	Information Technology in Biomedicine	3
EIE577	Optoelectronic Devices	3
EIE578	CMOS Analog Integrated Circuits Design and Analysis	3
EIE579	Advanced Telecommunication Systems	3

The Level 5 EIE subjects are primarily offered for MSc in Electronic and Information Engineering (MSc in EIE) programme, and the BEng in EIE programme merely adopts these subjects to broaden the students' scope of learning. With reference to the update on the list of Level 5 subjects offered for the MSc in EIE programme, the list of Level 5 subjects open for BEng in EIE final-year students' choosing has been updated as follows:

Table 4: Updated list of Level 5 EIE electives for the BEng in EIE programme:

Subject Code	Subject Title	Credit
EIE509	Satellite Communications - Technology and Applications	3
EIE511	VLSI System Design	3
EIE522	Pattern Recognition: Theory & Applications	3
EIE529	Digital Image Processing	3
EIE531	Mobile Radio Communications	3
EIE546	Video Technology	3
EIE553	Security in Data Communication	3
EIE557	Computational Intelligence and its Applications	3
EIE558	Speech Processing and Recognition	3
EIE563	Digital Audio Processing	3
EIE574	High Frequency Circuit Design	3
EIE575	Vehicular Communications and Inter-Networking Technologies	3
EIE577	Optoelectronic Devices	3
EIE579	Advanced Telecommunication Systems	3
EIE581	Optical Wavelength Division Multiplexing Networks	3
EIE583	Advanced Power Semiconductor Devices and Design Criteria for Applications	3
EIE585	OFDM & MIMO Wireless Communications	3
EIE587	Channel Coding	3
EIE589	Wireless Data Network	3
~~EIE507~~	~~Network Design - Theory and Practice~~	~~3~~
~~EIE528~~	~~Digital Data Transmission~~	~~3~~
~~EIE536~~	~~High Speed Networks~~	~~3~~

Subject Code	Subject Title	Credit
~~EIE541~~	~~Digital Signal Processing~~	~~3~~
~~EIE545~~	~~Consumer Electronics~~	~~3~~
~~EIE552~~	~~Internet Technologies for Multimedia Applications~~	~~3~~
~~EIE555~~	~~Personal Networking Technology~~	~~3~~
~~EIE556~~	~~Advanced DSP for Multimedia Communications~~	~~3~~
~~EIE559~~	~~CDMA Spread Spectrum Communications and Its Applications~~	~~3~~
~~EIE565~~	~~Advanced Multimedia Technology~~	~~3~~
~~EIE576~~	~~Information Technology in Biomedicine~~	~~3~~
~~EIE578~~	~~CMOS Analog Integrated Circuits Design and Analysis~~	~~3~~

The revisions will take place with immediate effect and applicable to all cohorts of intake to the BEng in EIE programme.

The updated list of subjects offered to the BEng in EIE programme as a result of the above minor changes to the programme can be found in Appendix VIII.

Subject Description Form

Subject Code	EIE4112
Subject Title	Avionics Systems
Credit Value	3
Level	4
Pre-requisite	ENG3005 Introduction to Aircraft Design & Aviation Systems or EIE3331/EIE3381/EIE331/EIE381 Communication Fundamentals or ME45002 Aircraft Systems
Co-requisite/ Exclusion	Nil
Objectives	To provide students with knowledge of communications, electronics aspects of avionics, including aircraft instruments and integrated systems, and navigation systems.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: 1. possess essential knowledge and skills in the area of avionics systems; 2. apply their knowledge, skills and hand-on experience to manufacture and maintain existing products; analyze and develop new modules and components in avionics systems for desired needs; 3. extend their knowledge of avionics systems to different situations of engineering context and professional practice; and
Subject Synopsis/ Indicative Syllabus	**Regulatory Agencies & related documents:** ICAO Annex 10, FAA, RTCA; Concept of TSO; ARINC; DO-160. **Airborne Communications Systems:** VHF & HF transceivers, VDL modes; NAVCOM; EPIRB. **Terrestrial Radio Navigation & Landing Aids:** NDB**;** VOR; DVOR; DME; ILS & GP; Radar altimeters & AID. **Satellite Navigation:** Introduction to GNSS and its impacts on Performance-based navigation – RNAV & RNP. **Surveillance Systems:** Primary & Secondary Radars; ATCRBS replies; TCAS; ADS-B. **Cockpit Integration:** Display technologies; Instrument Placement. **On Board Data Buses:** ARINC 429; ARINC 629; ARINC 825 CAN Bus. **Electronic Flight Control:** FBW flight control features. Control laws. Safety and integrity. Redundancy and failure survival. Digital implementation and problems. Flight control software functions. **Case study:** • Case study on an avionics system/avionics subsystem/avionics component

Teaching/Learning Methodology

1. The teaching and learning methods include lectures/tutorial sessions, homework assignments, test, case study report and examination.

2. The continuous assessment and examination are aimed at providing students with integrated knowledge required for avionics systems.

3. Technical/practical examples and problems are raised and discussed in class/tutorial sessions.

Teaching/Learning Methodology	**Intended subject learning outcomes**		
	1	**2**	**3**
1. Lecture	√	√	
2. Tutorial	√	√	
3. Homework assignment	√	√	
4. Case study report	√	√	√

Assessment Methods in Alignment with Intended Learning Outcomes

Specific assessment methods/tasks	**% weighting**	**Intended subject learning outcomes to be assessed**		
		1	**2**	**3**
1. Homework assignment	20%	√	√	√
2. Test	20%	√	√	
3. Case study report	20%	√	√	√
4. Examination	40%	√	√	√
Total	100%			

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

Overall Assessment:

$$0.40 \times \text{End of Subject Examination} + 0.60 \times \text{Continuous Assessment}$$

The continuous assessment consists of three components: homework assignments, test, and case study report. They are aimed at evaluating the progress of students study, assisting them in self-monitoring of fulfilling the respective subject learning outcomes, and enhancing the integration of the knowledge learnt.

The examination is used to assess the knowledge acquired by the students for understanding and analyzing the problems critically and independently; as well as to determine the degree of achieving the subject learning outcomes.

Student Study Effort Expected		
	Class contact:	
	• Lecture	26 Hours
	• Tutorial	13 Hours
	Other student study effort:	

	• Self Study	44 Hours
	• Case Study	22 Hours
	Total student study effort:	**105 Hours**
Reading List and References	1. Helfrick A, Principles of Avionics, 7th Edition, Avionics Communications, 2012. 2. Tooley M, and Wyatt, Aircraft Electrical and Electronic Systems: Principles, Maintenance and Operation, Elsevier Ltd, 2009. 3. Collinson R.P.G., Introduction to Avionics Systems, Third Edition, Springer, Feb 2011. 4. Kayton Myron Walter R. Fried Avionics Navigation Systems, Second Edition, John Wiley and Son, Published online 2007.	
Last Updated	March 2015	
Prepared by	Dr Martin Chow	

Subject Description Form

Subject Code	EIE4113
Subject Title	Wireless and Mobile Systems
Credit Value	3
Level	4
Pre-requisite	For 42480: Network Technologies and Security (EIE3120) For 42470: Data and Computer Communications (EIE3333)
Exclusion	Mobile Networking (EIE4104)
Objectives	This subject aims to provide students with an understanding of various security concerns in wireless networks (e.g., WiFi and mobile cellular networks) and mobile systems and applications (e.g., Android and iOS).
Intended Subject Learning Outcomes	**Upon completion of the subject, students will be able to:** Category A: Professional/academic knowledge and skills 1. Understand the security threats, concerns, and vulnerabilities in wireless and mobile systems, and the corresponding security mechanisms and authentication procedures 2. Understand the strategies for developing secure mobile applications, and the use of mobile security penetration tools for evaluating the robustness of mobile applications 3. Apply the knowledge to develop practical applications that are robust against mobile platform attack tools Category B: Attributes for all-roundedness 4. Understand the creative process when designing solutions to a problem
Subject Synopsis/ Indicative Syllabus	**Syllabus:** 1. Introduction to Mobile and Wireless Networks Mobile cellular networks (3G/4G LTE), IEEE wireless networks (IEEE 802.11, IEEE 802.15), mobile networks (NEMO, MANET). 2. Vulnerability of Wireless Networks Threats and risks to telecommunication systems, vulnerabilities from wired to wireless communications, fundamental security mechanisms. 3. WiFi Security Attacks on wireless networks, security in the IEEE 802.11 standard, security in 802.11i, authentication in wireless networks, layer 3 security mechanisms. 4. Security in Mobile Telecommunication Networks Vulnerability of signaling systems, GSM and GPRS security, 3G security, network interconnection. 5. Mobile Systems and Development Strategies Top issues facing mobile devices, tips for secure mobile application development, mobile HTML security, SMS security, mobile geolocation. 6. Android and iOS Security Android IPC mechanisms, security model, permission review, security tools. iOS security testing, application format, permissions and user

<table>
<tr><td></td><td>controls. Mobile security penetration testing tools.</td></tr>
<tr><td>Teaching/Learning Methodology</td><td>Lectures: The subject matters will be delivered through lectures. Students will be engaged in the lectures through Q&A, discussions and specially designed classroom activities.

Tutorials: During tutorials, students will work on/discuss some chosen topics in small group. This will help strengthen the knowledge taught in lectures.

Laboratory and assignments: During laboratory exercises, students will perform hands-on tasks to practice what they have learned. They will evaluate the vulnerability of systems and design solutions to problems. The assignments will help students to review the knowledge taught in class.
While lectures and tutorials will help to achieve the professional outcomes, the open-ended questions in laboratory exercises and assignments will provide the chance to students to exercise their creativity in 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. Continuous Assessment</td><td>(50%)</td><td></td><td></td><td></td><td></td></tr>
<tr><td>• Homework and assignments</td><td>10%</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr>
<tr><td>• Tests</td><td>10%</td><td>✓</td><td>✓</td><td></td><td></td></tr>
<tr><td>• Laboratory exercises</td><td>30%</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 colspan="4"></td></tr>
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</td></tr>
<tr><td>Student Study Effort Expected</td><td>
<table>
<tr><td>Class contact (time-tabled):</td><td></td></tr>
<tr><td>• Lecture</td><td>24 Hours</td></tr>
<tr><td>• Tutorial/Laboratory/Practice Classes</td><td>15 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>Reference Books:

1. H Chaouchi, M Laurent-Maknavicius, Wireless and Mobile Network Security, Wiley, 2009.
2. P. Venkataram, B. Sathish Babu, Wireless and Mobile Network Security, Tata McGraw-Hill, 2010.
3. H. Dwivedi, C. Clark, D. Thiel, Mobile Application Security, McGraw-Hill, 2010.</td></tr>
<tr><td>Last Updated</td><td>November 2014</td></tr>
<tr><td>Prepared by</td><td>Dr Ivan Ho</td></tr>
</table>

Subject Description Form

Subject Code	EIE4114
Subject Title	Digital Forensics for Crime Investigation
Credit Value	3
Level	4
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	1. To provide students with basic concepts about digital forensic techniques for crime investigation 2. To appreciate how different forensic techniques are used for information security
Intended Subject Learning Outcomes	**Upon completion of the subject, students will be able to:** Category A: Professional/academic knowledge and skills 1. Understand different approaches for digital forensics 2. Use different techniques for forensic investigation Category B: Attributes for all-roundedness 3. Present ideas and findings effectively
Subject Synopsis/ Indicative Syllabus	**Syllabus:** 1. Digital and Computational Forensics Context Introduction to digital and computational forensics; Historical aspects in digital and computational forensics; Introduction to techniques for multimedia manipulation; different classes of techniques for forensics: basic idea, framework and applications. 2. Forensics based on Intrinsic Data Models of digital data capturing device; idea of the use of intrinsic data in digital forensic investigation; introduction to forensics techniques using intrinsic data; applications in source device identification, device linking and integrity verification. 3. Forensics based on Extrinsic Data Introduction to techniques for multimedia content protection and authentication; different classes of watermarking techniques; performance measure; attacks modelling; copyright protection applications (e.g., ownership identification and transaction tracking). 4. Digital Evidence Models of digital evidence; event analytics: surveillance, monitoring, forensic and security; data evaluation from various domains (e.g., mobile phone, SMS messages and social media) for user behaviour and forensic analysis. 5. Robustness of Forensic Techniques Robustness and security of forensic techniques; adversary model; case studies of reliabilities of forensic techniques. **Laboratory Experiments:** Practical Works: 1. Evaluation of forensic techniques based on intrinsic data. 2. Evaluation of forensic techniques based on extrinsic data.

3. Forensic analysis of digital evidence.

Teaching/Learning Methodology

Teaching and Learning Method	Intended Subject Learning Outcome	Remarks
Lectures	1, 2	Fundamental principles and key concepts of the subject are delivered to students.
Tutorials	1, 2	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	2, 3	Students will evaluate different kinds of forensic techniques.
Mini-project	1, 2, 3	Students are required to study a problem in forensic application. Students will need to submit a written report and make a presentation.

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
1. Continuous Assessment (total 50%)				
• Tests	20%	√	√	
• Short quizzes	10%	√	√	
• Laboratory sessions	5%		√	√
• Mini-project	15%		√	√
2. Examination	50%	√	√	
Total	100%			

The continuous assessment consists of tests, short quizzes, laboratory exercises and a mini-project.

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

Specific Assessment Methods/Tasks	Remark
Short quizzes	These can measure students' understanding of the theories and concepts as well as their comprehension of subject materials.
Tests and examination	end-of chapter type problems used to evaluate students' ability in applying concepts and skills learnt in the classroom;

		students need to think critically in order to come with a solution for a problem.
	Laboratory sessions, mini-project	oral examination will be conducted to evaluate student's technical knowledge and communication skills.
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. Li Chang-Tsun, "*Emerging Digital Forensics Applications for Crime Protection, Prevention and Security",* IGI Global 2013, doi:10.4018/978-1-4666-4006-1, 2013. 2. Li Chang-Tsun and Anthony T.S. Ho, *"Crime Prevention Technologies and Applications for Advancing Criminal Investigation",* IGI Global 2012, doi:10.4018/978-1-4666-1758-2, 2012. **Reference Books:** 1. Larry Daniel and Lars Daniel, *"Digital Forensics for Legal Professionals*", Syngress, 2011. 2. Azah Kamilah Muda, Yun-Huoy Choo, Ajith Abraham and Sargur N. Srihari (editors), "*Computational Intelligence in Digital Forensics: Forensic Investigation and Applications"*, Springer, 2014. 3. Husrev Taha Sencar and Nasir Memon (editors), *"Digital Image Forensics"*, Springer, 2013. 4. John R. Vacca, *"Managing Information Security",* Waltham, Mass., Syngress, 2014. 5. Frank Y. Shih, *"Multimedia Security Watermarking, Steganography and Forensics"*, CRC Press, 2013.	
Last Updated	November 2014	
Prepared by	Dr Bonnie Law	

Subject Description Form

Subject Code	EIE4115
Subject Title	Intrusion Detection and Prevention
Credit Value	3
Level	4
Pre-requisite	For 42480: Network Technologies and Security (EIE3120) For 42470: Network Management and Security (EIE4106)
Co-requisite/ Exclusion	Nil
Objectives	1. To provide a solid foundation to the students in network security and intrusion detection and prevention 2. To enable the students to master the knowledge about intrusion detection and prevention in the context of real-life applications 3. To prepare the students for understanding, evaluating critically, and assimilating new knowledge and emerging technology in network security
Intended Subject Learning Outcomes	**Upon completion of the subject, students will be able to:** Category A: Professional/academic knowledge and skills 1. Understand the physical location, the operational characteristics and the various functions performed by the intrusion detection/prevention system 2. Describe how components in different layers inter-operate in the intrusion detection/prevention system 3. Understand the current and effective procedures to deal with network security threats 4. Learn new techniques and to align new security 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. Vulnerabilities and Security Threats to Computer Networks Sources of vulnerabilities, types of attacks, attacks against various security objectives, countermeasures of attacks. 2. Intrusion Detection and Prevention Technologies Host-based intrusion detection system (IDS) / intrusion prevention system (IPS), network-based IDS/IPS. Data collection for IDS/IPS. Intrusion detection techniques, misuse detection: pattern matching, rule-based and state-based; anomaly detection: statistical based, machine learning based, data mining based; hybrid detection. 3. IDS and IPS Architecture Tiered architectures, single-tiered, multi-tiered, peer-to-peer. Sensor: sensor functions, sensor deployment and security. Agents: agent functions, agent deployment and security. Manager component: manager functions, manager deployment and security. Information flow in IDS and IPS, defending IDS/IPS.

4. Alert Management and Correlation
   Data fusion. Alert correlation, pre-process, correlation techniques, post-process, alert correlation architectures. Cooperative intrusion detection, cooperative discovery of intrusion chain, abstraction-based intrusion detection, interest-based communication and cooperation, agent-based cooperation.

5. Deployment of IDS/IPS
   Case study on CISCO IDS and Snort.

Possible Laboratory Experiments:

1. Network monitoring
2. Protocol and traffic analysis
   Intrusion detection using Snort

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, 6	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 material; Problems and application examples are given and discussed.
Laboratory sessions	5, 6	Students will conduct practical exercises in intrusion detection and prevention to reinforce concepts and techniques learned.

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**
1. Continuous Assessment	40%						
• Tests		✓	✓	✓	✓	✓	
• Assignments		✓	✓	✓	✓	✓	
• Laboratories				✓		✓	✓
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	Mainly objective tests conducted to 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 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 computer 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 produce a written report; Accuracy and the presentation of the report will be assessed; Oral examination based on the laboratory exercises will be conducted for each group member to evaluate his technical knowledge and communication skills.

Student Study Effort Expected	**Class contact (time-tabled):**	
	1. Lecture	24 Hours
	2. Tutorial/Laboratory/Practice Classes	15 Hours
	Other student study effort:	
	3. Lecture: preview/review of notes; homework/assignment; preparation for test/quizzes/examination	36 Hours
	4. 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. C. Endorf, E. Schultz and J. Mellander, *Intrusion Detection & Prevention,* McGraw-Hill/Osborne, 2004. 2. Ali A. Ghorbani, *Network intrusion detection and prevention concepts and techniques,* Springer, 2010. 3. J. M. Kizza, *Computer Network Security*, Springer, 2005. 4. D. Jacobson, *Introduction to Network Security*, CRC Press, 2009.	
Last Updated	December 2016	
Prepared by	Dr H. Hu	

Subject Description Form

Subject Code	EIE4116
Subject Title	Surveillance Studies and Technologies
Credit Value	3
Level	4
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	This course aims at providing students with thorough understanding of recent surveillance technologies and their emerging trends. They will also learn the pros and cons of various surveillance technologies.
Intended Subject Learning Outcomes	**Upon completion of the subject, students will be able to:** Category A: Professional/academic knowledge and skills 1. Introduce a brief history to provide context for the evolution of today's surveillance technologies 2. Understand the different surveillance technologies 3. Understand the system design principle of CCTV and other related video security and surveillance technologies Category B: Attributes for all-roundedness 4. Understand professional, ethical, legal, security and social issues and responsibilities
Subject Synopsis/ Indicative Syllabus	**Syllabus:** 1. Overview of Surveillance Studies Brief history, key developments leading to current surveillance technologies; public controversy and accountability. 2. Surveillance Technologies and Techniques Visual surveillance; audio surveillance; aerial surveillance; radio-wave surveillance; GPS surveillance; sensors; computer, Internet and social media surveillance; data cards; biochemical surveillance; animal surveillance; Biometrics; pros and cons of surveillance technologies. 3. Case Study: Video and CCTV Surveillance Video's critical role in the security plan; the evolution of video and CCTV surveillance systems, network videos; cameras – analog, digital and network, cameras technologies; analog and digital video; video compression technologies; video processing equipments; video recorders, servers and storage; video management; video motion detectors; video analytics. 4. Privacy and Legislation Ubiquity of surveillance devices; balance between the needs of law enforcement of the privacy of law-abiding citizens. **Laboratory Experiments:** 1. Analysis of video compression in surveillance systems 2. Critical scene detection in surveillance systems 3. Video signal analysis.

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	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 material; problems and application examples are given and discussed
Laboratory sessions	3	students will make use of the software to develop surveillance applications.

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
1. Continuous Assessment (total 40%)					
• Short quizzes/ Assignments	10%	✓	✓	✓	✓
• Tests	20%	✓	✓	✓	✓
• Laboratory sessions	10%			✓	
2. Examination	60%	✓	✓	✓	✓
Total	100%				

The continuous assessment will consist of laboratory reports, a number of short quizzes, assignments, and tests.

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

Specific Assessment Methods/Tasks	Remark
Short quizzes	mainly objective tests (e.g., multiple-choice questions, true-false, and matching items) conducted to measure the students' ability to remember facts and figures as well as their comprehension of subject materials
Assignments, tests and examination	end-of chapter type problems used to evaluate students' ability in applying concepts and skills learnt in the classroom; students need to think critically and creatively in order to come with an alternate solution for an existing problem
Laboratory sessions	Each students is required to produce a written report; accuracy and the 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 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. J.K. Petersen, *Introduction to Surveillance Studies*, CRC Press, 2013.
2. Vlado Damjanovski, *CCTV: Networking and Digital Technology*, Elsevier, 2005.
3. Herman Kruegle, *CCTV Surveillance: Analog and Digital Video Practices and Technology*, Elsevier Butterworth-Heinemann, 2007.
4. Fredrik Nilsson and Axis Communications, *Intelligent Network Video: Understanding Modern Video Surveillance Systems*, CRC Press, 2009.
5. Daniel Neyland, *Privacy, Surveillance and Public Trust*, Palgrave Macmillan, 2006.
6. Fredrika Bjorklund and Ola Svenonius, *Video Surveillance and Social Control in a Comparative Perspective*, Routledge, 2013.

Last Updated	November 2014
Prepared by	Dr YL Chan

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	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%						
• Tests		✓	✓	✓	✓	✓	
• Assignments		✓	✓	✓	✓	✓	
• Laboratories				✓		✓	✓
2. Examination	60%	✓	✓	✓	✓	✓	
Total	100%						

The continuous assessment will consist of a number of assignments, laboratory reports, case study reports (administered in tutorial sessions), and two tests.

<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/ Tasks</th><th>Remark</th></tr>
<tr><td>Assignments, Tests and examination</td><td>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.</td></tr>
<tr><td>Laboratory sessions</td><td>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;</td></tr>
</table></td></tr>
<tr><td rowspan="7">Student Study Effort Expected</td><td>Class contact (time-tabled):</td><td></td></tr>
<tr><td>• Lecture</td><td>24 Hours</td></tr>
<tr><td>• Tutorial/Laboratory/Practice Classes</td><td>15 hours</td></tr>
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<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>
<tr><td>Reading List and References</td><td colspan="2">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.</td></tr>
<tr><td>Last Updated</td><td colspan="2">December 2016</td></tr>
<tr><td>Prepared by</td><td colspan="2">Dr K.T. Lo</td></tr>
</table>

5. SPECIFIED PROGRESSION PATTERN

5.1 Normal Year 1 Intake (Applicable to intake cohort of 2015/16 and onwards):
- HKDSE students who have Level 2 or above in HKDSE Physics or Combined Science with Physics
- Non-local students from the Chinese Mainland who have a Pass (a pass is taken as 60% of the total marks of the subject) in the Physics or Integrated Science subject in the Joint Entrance Examination for Universities

Year 1	
Semester 1 (12 credits)	**Semester 2 (18 credits)**
IC2114 Industrial Centre Training I for EIE (5 training credits)	
AMA1110 Basic Mathematics I – Calculus and Probability & Statistics (3 credits)	AMA1120 Basic Mathematics II –Calculus and Linear algebra (3 credits)
AP10005 Physics I (3 credits)	AP10006 Physics II (3 credits)
ENG1003 Freshman Seminar for Engineering (3 credits)	CAR I (3 credits) Note 1
LCR I – English (3 credits)	ENG2003 Information Technology (3 credits)
	LCR II – English (3 credits)
	Leadership and Intra-Personal Development (3 credits)
Healthy Lifestyle (0 credit) Note 1	
Year 2	
Semester 1 (18 credits)	**Semester 2 (15 credits)**
IC2114 Industrial Centre Training I for EIE (continued)	
AMA2111 Mathematics I (3 credits)	AF3625 Engineering Economics (3 credits)
CAR II (3 credits) Note 1	AMA2112 Mathematics II (3 credits)
EIE2100 Basic Circuit Analysis (3 credits)	EIE2102 Basic Electronics (3 credits)
ENG2002 Computer Programming (3 credits)	EIE2211 Logic Design (3 credits)
LCR III – Chinese (3 credits)	EIE3312 Linear Systems (3 credits)
Choose one subject in either "Engineering Materials", "Biology" or "Chemistry" (3 credits)	
Year 3	
Semester 1 (15 credits)	**Semester 2 (18 credits)**
EIE3105 Integrated Project (6 credits)	
IC382 Multidisciplinary Manufacturing Project (3 training credits)	
AMA2104 Probability and Engineering Statistics (3 credits)	EIE3331 Communication Fundamentals (3 credits)
EIE3100 Analogue Circuit Fundamentals (3 credits)	EIE4413 Digital Signal Processing (3 credits)
EIE3311 Computer System Fundamentals (3 credits)	Technical Elective 1 (3 credits) Note 2
Service-Learning (3 credits) Note 1	~~Technical Elective 2 (3 credits)~~ ~~Note 2~~ EIE3333 Data and Computer Communications (3 credits)
	CAR III (3 credits) Note 1
Year 4	
Semester 1 (15 credits)	**Semester 2 (13 credits)**
EIE4433 Honours Project (6 credits)	
CAR IV (3 credits) Note 1	CBS3241P Professional Communication in Chinese (2 credits)
ENG3003 Engineering Management (3 credits)	ELC3521 Professional Communication in English (2 credits)
Technical Elective 2 (3 credits) Note 2	ENG3004 Society and the Engineer (3 credits)
Technical Elective 3 (3 credits) Note 2	Technical Elective 4 (3 credits) Note 2

Total Number of Credits: 124

Note 1: The study pattern for the subjects is indicative only. Students may take these subjects according to their own schedule. They are recommended to consult their Academic Advisor for guidance and planning if necessary.

Note 2: At least 2 technical electives must be at level 4 or above.

Note 3: The programme has been granted provisional accreditation from the Hong Kong Institution of Engineers (HKIE). Provisional Accreditation Status enjoys all the rights and privileges that are equivalent to an accreditation status. One of the requirements for qualified professional engineer under HKIE is that the candidate has "received adequate training". Scheme "A" Training is a possible pathway for graduates to fulfil this training requirement in certain disciplines. Graduates of this programme are eligible for registering onto Scheme "A" Training* in Information Discipline. If students would like to consider registering onto Scheme "A" Training in Electronics Discipline after graduation, they must complete the following subjects during their undergraduate degree study:

- EIE3333 Data and Computer Communications
- EIE4110 Introduction to VLSI and Computer-Aided Circuit Design
- EIE4104 Mobile Networking

* Graduates can also go along other pathways than Scheme "A" Training to fulfil this training requirement. Students are advised to consult the programme leader or academic advisor if they have query about this issue.

5.2 Normal Year 1 Intake (Applicable to intake cohort of 2015/16 and onwards):
- HKDSE students who do not have Level 2 or above in HKDSE Physics or Combined Science with Physics
- Non-local students from the Chinese Mainland who do not have a Pass (a pass is taken as 60% of the total marks of the subject) in the Physics or Integrated Science subject in the Joint Entrance Examination for Universities

Year 1	
Semester 1 (12 credits)	**Semester 2 (18 credits)**
IC2114 Industrial Centre Training I for EIE (5 training credits)	
AMA1110 Basic Mathematics I – Calculus and Probability & Statistics (3 credits)	AMA1120 Basic Mathematics II –Calculus and Linear algebra (3 credits)
AP10001 Introduction to Physics (3 credits)	AP10006 Physics II (3 credits)
ENG1003 Freshman Seminar for Engineering (3 credits)	CAR I (3 credits) Note 1
LCR I – English (3 credits)	LCR II – English (3 credits)
	ENG2003 Information Technology (3 credits)
	Leadership and Intra-Personal Development (3 credits)
Healthy Lifestyle (0 credit) Note 1	
Year 2	
Semester 1 (18 credits)	**Semester 2 (15 credits)**
IC2114 Industrial Centre Training I for EIE (continued)	
AMA2111 Mathematics I (3 credits)	AF3625 Engineering Economics (3 credits)
AP10005 Physics I (3 credits)	AMA2112 Mathematics II (3 credits)
EIE2100 Basic Circuit Analysis (3 credits)	EIE2102 Basic Electronics (3 credits)
ENG2002 Computer Programming (3 credits)	EIE2211 Logic Design (3 credits)
LCR III – Chinese (3 credits)	EIE3312 Linear Systems (3 credits)
Choose one subject in either "Engineering Materials", "Biology" or "Chemistry" (3 credits)	
Year 3	
Semester 1 (15 credits)	**Semester 2 (18 credits)**
EIE3105 Integrated Project (6 credits)	
IC382 Multidisciplinary Manufacturing Project (3 training credits)	
CAR II (3 credits) Note 1	EIE3331 Communication Fundamentals (3 credits)
AMA2104 Probability and Engineering Statistics (3 credits)	EIE4413 Digital Signal Processing (3 credits)
EIE3100 Analogue Circuit Fundamentals (3 credits)	Service-Learning (3 credits) Note 1
EIE3311 Computer System Fundamentals (3 credits)	Technical Elective 1 (3 credits) Note 2
	~~Technical Elective 2 (3 credits)~~ ~~Note 2~~ EIE3333 Data and Computer Communications (3 credits)
Year 4	
Semester 1 (15 credits)	**Semester 2 (16 credits)**
EIE4433 Honours Project (6 credits)	
CAR III (3 credits) Note 1	CAR IV (3 credits) Note 1
ENG3003 Engineering Management (3 credits)	CBS3241P Professional Communication in Chinese (2 credits)
Technical Elective 2 (3 credits) Note 2	ELC3521 Professional Communication in English (2 credits)
Technical Elective 3 (3 credits) Note 2	ENG3004 Society and the Engineer (3 credits)
	Technical Elective 4 (3 credits) Note 2

Total Number of Credits: 127

Note 1: The study pattern for the subjects is indicative only. Students may take these subjects according to their own schedule. They are recommended to consult their Academic Advisor for guidance and planning if necessary.

Note 2: At least 2 technical electives must be at level 4 or above.

Note 3: The programme has been granted provisional accreditation from the Hong Kong Institution of Engineers (HKIE). Provisional Accreditation Status enjoys all the rights and privileges that are equivalent to an accreditation status. One of the requirements for qualified professional engineer under HKIE is that the candidate has "received adequate training". Scheme "A" Training is a possible pathway for graduates to fulfil this training requirement in certain disciplines. Graduates of this programme are eligible for registering onto Scheme "A" Training* in Information Discipline. If students would like to consider registering onto Scheme "A" Training in Electronics Discipline after graduation, they must complete the following subjects during their undergraduate degree study:

- EIE3333 Data and Computer Communications
- EIE4110 Introduction to VLSI and Computer-Aided Circuit Design
- EIE4104 Mobile Networking

* Graduates can also go along other pathways than Scheme "A" Training to fulfil this training requirement. Students are advised to consult the programme leader or academic advisor if they have query about this issue.

5.3 Senior Year Intake (Applicable to intake cohort of 2017/18 and onwards):
- For Senior Year students with relevant Higher Diploma/Associate Degree from a recognized institution Note 3

Year 1	
Semester 1 (15 credits)	**Semester 2 (18 credits)**
EIE3105 Integrated Project (6 credits)	
AMA2104 Probability and Engineering Statistics (3 credits)	EIE3312 Linear Systems (3 credits)
EIE3100 Analogue Circuit Fundamentals (3 credits)	EIE3331 Communication Fundamentals (3 credits)
EIE3311 Computer System Fundamentals (3 credits)	ENG3004 Society and the Engineer (3 credits)
Service-Learning (3 credits)	Technical Elective 1 (3 credits) Note 2
	~~Technical Elective 2 (3 credits)~~ Note 2 EIE3333 Data and Computer Communications (3 credits)
IC2114 Industrial Centre Training I for EIE (5 training credits)	IC2114 Industrial Centre Training I for EIE (continued)
Year 2	
Semester 1 (18 credits)	**Semester 2 (16 credits)**
EIE4433 Honours Project (6 credits)	
AF3625 Engineering Economics (3 credits)	CAR II (3 credits) Note 1,4
CAR I (3 credits) Note 1, 4	CBS3241P Professional Communication in Chinese (2 credits)
ENG3003 Engineering Management (3 credits)	EIE4413 Digital Signal Processing (3 credits)
Technical Elective 2 (3 credits) Note 2	ELC3521 Professional Communication in English (2 credits)
Technical Elective 3 (3 credits) Note 2	Technical Elective 4 (3 credits) Note 2
IC382 Multidisciplinary Manufacturing Project (3 training credits)	IC382 Multidisciplinary Manufacturing Project (continued)

Total Number of Credits: 67

Note 1: The study pattern for the subjects is indicative only. Students may take these subjects according to their own schedule. They are recommended to consult their Academic Advisor for guidance and planning if necessary.

Note 2: At least 2 technical electives must be at level 4 or above.

Note 3: This is an example only, which shows a possible study pattern for graduates with relevant Higher Diploma/Associate Degree from a recognized institution. The exact study pattern for senior year intakes varies from student to student depending on the approved subjects transferred.

Note 4: 6 credits of Cluster Areas Requirement (CAR) from two different cluster areas. Students also need to fulfil the English and Chinese reading and writing requirements and take 3 of the 6 CAR credits designated as “China-related” (China Studies Requirement), if such requirements have not been fulfilled in previous studies.

Note 5: The credits required and progression pattern presented above are for students who have been given credit transfer of the 9 credits Undergraduate Degree LCR subjects based upon their previous studies. Students not meeting the equivalent standard of the Undergraduate Degree LCR will be required to take the required subjects. Details on the Undergraduate Degree LCR subjects are given in section 4.2 of this booklet.

Note 6: The programme has been granted provisional accreditation from the Hong Kong Institution of Engineers (HKIE). Provisional Accreditation Status enjoys all the rights and privileges that are equivalent to an accreditation status. One of the requirements for qualified professional engineer under HKIE is that the candidate has “received adequate training”. Scheme “A” Training is a possible pathway for graduates to fulfil this training requirement in certain disciplines. Graduates of this programme are eligible for registering onto Scheme “A” Training* in Information Discipline. If students would like to consider registering onto Scheme “A” Training in Electronics Discipline after graduation, they must complete the following subjects during their undergraduate degree study:

- EIE3333 Data and Computer Communications
- EIE4110 Introduction to VLSI and Computer-Aided Circuit Design
- EIE4104 Mobile Networking

* Graduates can also go along other pathways than Scheme “A” Training to fulfil this training requirement. Students are advised to consult the programme leader or academic advisor if they have query about this issue.

6. 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 - CBSXXXX (1 Subject)									T,P	
Cluster-Area Requirements (CAR) (4 Subjects)										
CAR - Cluster-Area Requirement Subjects+								T,P	T,P	T,P
Other Requirements										
ENG1003 Freshman Seminar for Engineering							T,P, M		T,P	T,P
LIPD - Leadership and Intra-Personal Development							T,P		T,P	
SL - Service-Learning								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
AMA2104 Probability and Engineering Statistics	T,P			T,P	T,P				T,P	T
AMA2111 Mathematics I				T,P	T,P					T
AMA2112 Mathematics II				T,P	T,P					T
AP10001 Introduction to Physics	T,P			T,P						T
AP10005 Physics I	T,P			T,P						
AP10006 Physics II	T,P			T,P						
Choose one subject in either "Engineering Materials", "Biology" or "Chemistry" below:										
ENG2001 Fundamentals of Materials Science and Engineering/	T,P		T,P							
ABCT1101 Introductory Life Science/	T,P		T,P							
ABCT1301 Chemistry and Modern Living/	T,P		T,P							
ABCT1314 Chemistry and Sustainable Development/	T,P		T,P							
ABCT1303 Biotechnology and Human Health/	T,P		T,P							
BME11101 Bionic Human and the Future of Being Human	T,P					T,P		T	T,P	
Compulsory - Engineering Subjects										
EIE2100 Basic Circuit Analysis	T,P	T,P								
EIE2102 Basic Electronics	T,P	T,P								
EIE2211 Logic Design	T	P	P	T,P	P					
EIE3100 Analogue Circuit Fundamentals	T,P			T,P						
EIE3105 Integrated Project	T,P	T,P	T,P, M	T,P	T,P		T,M		T,P, M	
EIE3311 Computer System Fundamentals	T	P	T							
EIE3312 Linear Systems	T,P	T,P	T,P	T	P					T
EIE3331 Communication Fundamentals	T	T,P	T,P	T	T,P				T	
EIE3333 Data and Computer	T	T,P		T	T,P				T	

	Programme Outcomes									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Communications										
EIE4413 Digital Signal Processing	T,M	P	T,P, M	T	P					T
ENG2002 Computer Programming			T,P	T,P	T,P					
ENG2003 Information Technology				T,P	T,P					
Compulsory - Language and Complementary Studies										
CBS3241P Professional Communication in Chinese									T,P, M	
ELC3521 Professional Communication in English									T,P, M	
AF3625 Engineering Economics						T,P, M	T,P		T,P	T,P
ENG3003 Engineering Management						T	T,P, M	T	T,P, M	
ENG3004 Society and The Engineer						T,P, M	T,P, M	T,P, M	T,P	
Compulsory - Capstone Project										
EIE4433 Honours Project+	T,P, M	T,P, M	T,P, M	T,P, M	T,P, M	T,P, M	T,P		T,P, M	T,P, M
Compulsory - Industrial Centre Training										
IC2114 Industrial Centre Training I for EIE	T,P				T,P			T,P, M		T
IC382 Multidisciplinary Manufacturing Project			T,P, M		T,P		T,P, M			
Elective - Engineering Subjects (Select Any 4)										
EIE3109 Mobile Systems and Application Development			T,P		T,P					
~~EIE3110 Research Methodology~~	~~T~~	~~T~~	~~-~~	~~T~~	~~-~~	~~-~~	~~-~~	~~-~~	~~T~~	~~T,P, M~~
EIE3112 Database System	T				T				T,P	
EIE3305 Integrated Analogue and Digital Circuits	T,P			T,P	T,P		T,P			
~~EIE3306 IC Technology and Processes~~	~~T,P~~	~~T,P~~	~~-~~	~~-~~	~~-~~	~~-~~		~~-~~	~~T,P~~	-
EIE3320 Object-Oriented Design and Programming	T		T,P, M	T,P	P		P			
~~EIE3338 Applied Electromagnetics~~	~~T~~	~~-~~	~~T,P~~	~~T~~	-	-	-	-	-	-
~~EIE3378 Semiconductor Optoelectronic Devices~~	~~T~~								~~T~~	
EIE4100 Computer Vision and Pattern Recognition	T	T	T	T	T		T			T
EIE4102 IP Networks	T				T,P	T				T
EIE4103 Mobile Computer System Architecture				T	T,P					
EIE4104 Mobile Networking	T				T,P	T				T
EIE4105 Multimodal Human Computer Interaction Technology	T,P				T,P					
EIE4106 Network Management and Security	T	T,P	T	T	T,P				T	T
~~EIE4107 Wireless Communications~~	~~T~~	~~T~~	~~-~~	~~T,M~~	~~T~~	~~-~~		~~-~~	~~T~~	-
EIE4108 Distributed Systems and Cloud Computing	T,P		T,P	T	P,M				T,P	
EIE4110 Introduction to VLSI and Computer-Aided Circuit Design	T,P	T,P, M		T,P			T,P			
~~EIE4111 Advanced VLSI and Computer-Aided Circuit Design~~	~~T,P~~	~~T,P, M~~	~~-~~	~~T,P~~	~~-~~	~~-~~	~~T,P~~	-	-	-
EIE4112 Avionics Systems	T,P, M	T,P, M		T,P	T,P					
EIE4113 Wireless and Mobile Systems	T,P,	T,P,			T,P	T,P				

	Programme Outcomes									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
	M	M								
EIE4114 Digital Forensics for Crime Investigation	T,P, M				T,P				T,P	
EIE4115 Intrusion Detection and Prevention	T,P, M	T,P			T,P	T,P		T,P	T,P	
EIE4116 Surveillance Studies and Technologies	T,P, M				T,P			T,P		
EIE4402 Power Electronics	T,P, M	T,P, M		T,P			T,P			
~~EIE4414 Computer Architecture and Systems~~	~~T~~	~~P~~	~~-~~	~~T,M~~	~~T~~	-	-	-	-	-
~~EIE4415 Multimedia Technology~~	~~T,P~~	~~P,M~~	~~-~~	~~T~~	-	-	-	-	-	-
EIE4432 Web Systems and Technologies	T		T,P							T
EIE4435 Image and Audio Processing	T,M	P		P			P			
~~EIE4448 Bioengineering Signals and Systems~~	~~T~~	~~P~~	~~-~~	~~-~~	~~T,M~~	-	-	-	-	-
EIE4449 Optical Communication Systems and Networks	T	T,P	T	T,M			T		T	
~~EIE4450 Nanoscience and Technology for Electronic Engineering~~	~~T~~	~~T~~	~~-~~	~~-~~	~~-~~	~~T~~	-	-	-	-
~~EIE4451 Circuits for Telecommunications~~	~~T,P~~	~~-~~	~~T,P, M~~	~~T,P~~	~~-~~	~~-~~	~~T,P~~	-	-	-
ENG4001 Project Management			T,P		T,P				T,P	

Note:

Programme Outcomes:

1. Understand the fundamentals of science and engineering, and have the ability to apply them.
2. Design and conduct experiments, as well as to evaluate the outcomes.
3. Design systems, components and processes to meet 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. Have a knowledge of contemporary issues, and understand the impact of engineering solutions in a global and societal context.
7. Be able to work with others collaboratively in a multi-disciplinary team and have a knowledge of leadership.
8. Recognize social, professional and ethical responsibility.
9. Communicate effectively.
10. Recognize the need for and to engage in life-long learning

T: Teach
P: Practise
M: Measured
+: Support of outcomes depends on particular project/subject design and requirements

26. GRADUATION REQUIREMENTS FOR BENG(HONS) IN ELECTRONIC AND INFORMATION ENGINEERING PROGRAMME

26.2 Specific Graduation Requirements for the **BEng(Hons) in Electronic and Information Engineering** Programme

26.2.1 Normal Year 1 Intake (Applicable to intake cohort of 2015/16 and onwards):

(i) Complete successfully a minimum of **124** academic credits composed of the following:
   (a) 30 credits of General University Requirements (GUR) as set out in Section 26.1.1(i).
   (b) 94 credits of Discipline-Specific Requirements (DSR), of which 82 credits from subjects categorized as COM (compulsory) and 12 credits from subjects categorized as ELE (elective) (at least 2 of these electives must be at level 4 or above) as stated in Table 4.1.

(ii) Obtain a total 8 credits in TRN (Training) as stated in Table 4.1.

(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.

(iv) In addition to the minimum 124 academic credits, HKDSE students who do not have Level 2 or above in HKDSE Physics or Combined Science with Physics, and non-local students from the Chinese Mainland who do not have a Pass (a pass is taken as 60% of the total marks of the subject) in the Physics or Integrated Science subject in the Joint Entrance Examination for Universities are required to study 3 more credits on Physics in order to graduate. They have to complete a minimum of **127** academic credits in order to be eligible for graduation.

26.2.2 Senior Year Intake (Applicable to intake cohort of 2017/18 and onwards):

(i) Complete successfully a minimum of **67** academic credits composed of the following:
   (a) 9 credits of General University Requirements (GUR) as set out in Section 26.1.2 (i).
   (b) 58 credits of Discipline-Specific Requirements (DSR), of which 46 credits from subjects categorized as COM (compulsory) and 12 credits from subjects categorized as ELE (elective) (at least 2 of these electives must be at level 4 or above) as stated in Table 4.1.

(ii) Obtain a total 8 credits in TRN (Training) as stated in Table 4.1.

(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.

4. PROGRAMME, SUBJECTS, AND CREDITS

Table 4.1 Subjects Category and Credits

Year 1, Year 2, Year 3 and Year 4 Curricula

Subject Code	Subject Title	CR	Category of Subjects	
			Normal Year 1 Intake	Senior Year Intake
General University Requirements (GUR)				
-	Cluster-Area Requirement I (CAR I)	3	COM	COM
-	Cluster-Area Requirement II (CAR II)	3	COM	COM
-	Cluster-Area Requirement III (CAR III)	3	COM	-
-	Cluster-Area Requirement IV (CAR IV)	3	COM	-
-	Language and Communication Requirement I (LCR I) – English *	3	COM	-
-	Language and Communication Requirement II (LCR II) – English *	3	COM	-
-	Language and Communication Requirement III (LCR III) – Chinese *	3	COM	-
-	Leadership and Intra-Personal Development	3	COM	-
-	Service-Learning	3	COM	COM
ENG1003	Freshman Seminar for Engineering	3	COM	-
-	Healthy Lifestyle	0	COM	-
Discipline-Specific Requirement (DSR)				
AF3625	Engineering Economics	3	COM	COM
AMA1110	Basic Mathematics I – Calculus and Probability & Statistics	3	COM	-
AMA1120	Basic Mathematics II –Calculus and Linear algebra	3	COM	-
AMA2104	Probability and Engineering Statistics	3	COM	COM
AMA2111	Mathematics I	3	COM	-
AMA2112	Mathematics II	3	COM	-
AP10001	Introduction to Physics	3	COM(1)	-
AP10005	Physics I	3	COM	-
AP10006	Physics II	3	COM	-
CBS3241	Professional Communication in Chinese	2	COM	COM
EIE2100	Basic Circuit Analysis	3	COM	-
EIE2102	Basic Electronics	3	COM	-
EIE2211	Logic Design	3	COM	-
EIE3100	Analogue Circuit Fundamentals	3	COM	COM
EIE3105	Integrated Project	6	COM	COM
EIE3109	Mobile Systems and Application Development	3	ELE	ELE
~~EIE3110~~	~~Research Methodology~~	~~3~~	~~ELE~~	~~ELE~~
EIE3112	Database System	3	ELE	ELE
EIE3305	Integrated Analogue and Digital Circuits	3	ELE	ELE
~~EIE3306~~	~~IC Technology and Processes~~	~~3~~	~~ELE~~	~~ELE~~

Subject Code	Subject Title	CR	Category of Subjects	
			Normal Year 1 Intake	Senior Year Intake
EIE3311	Computer System Fundamentals	3	COM	COM
EIE3312	Linear Systems	3	COM	COM
EIE3320	Object-Oriented Design and Programming	3	ELE	ELE
EIE3331	Communication Fundamentals	3	COM	COM
EIE3333	Data and Computer Communications	3	COM	COM
~~EIE3338~~	~~Applied Electromagnetics~~	~~3~~	~~ELE~~	~~ELE~~
~~EIE3378~~	~~Semiconductor Optoelectronic Devices~~	~~3~~	~~ELE~~	~~ELE~~
EIE4100	Computer Vision and Pattern Recognition	3	ELE	ELE
EIE4102	IP Networks	3	ELE	ELE
EIE4103	Mobile Computer System Architecture	3	ELE	ELE
EIE4104	Mobile Networking	3	ELE	ELE
EIE4105	Multimodal Human Computer Interaction Technology	3	ELE	ELE
EIE4106	Network Management and Security	3	ELE	ELE
~~EIE4107~~	~~Wireless Communications~~	~~3~~	~~ELE~~	~~ELE~~
EIE4108	Distributed Systems and Cloud Computing	3	ELE	ELE
EIE4110	Introduction to VLSI and Computer-Aided Circuit Design	3	ELE	ELE
~~EIE4111~~	~~Advanced VLSI and Computer-Aided Circuit Design~~	~~3~~	~~ELE~~	~~ELE~~
EIE4112	Avionics Systems	3	ELE	ELE
EIE4113	Wireless and Mobile Systems	3	ELE	ELE
EIE4114	Digital Forensics for Crime Investigation	3	ELE	ELE
EIE4115	Intrusion Detection and Prevention	3	ELE	ELE
EIE4116	Surveillance Studies and Technologies	3	ELE	ELE
EIE4402	Power Electronics	3	ELE	ELE
EIE4413	Digital Signal Processing	3	COM	COM
~~EIE4414~~	~~Computer Architecture and Systems~~	~~3~~	~~ELE~~	~~ELE~~
~~EIE4415~~	~~Multimedia Technology~~	~~3~~	~~ELE~~	~~ELE~~
EIE4432	Web Systems and Technologies	3	ELE	ELE
EIE4433	Honours Project	6	COM	COM
EIE4435	Image and Audio Processing	3	ELE	ELE
~~EIE4448~~	~~Bioengineering Signals and Systems~~	~~3~~	~~ELE~~	~~ELE~~
EIE4449	Optical Communication Systems and Networks	3	ELE	ELE
~~EIE4450~~	~~Nanoscience and Technology for Electronic Engineering~~	~~3~~	~~ELE~~	~~ELE~~
~~EIE4451~~	~~Circuits for Telecommunications~~	~~3~~	~~ELE~~	~~ELE~~
ELC3521	Professional Communication in English	2	COM	COM
ENG2001	Fundamentals of Materials Science and Engineering	3	COM[(2)] (Select any 1 subject out of these 6 subjects)	-
ABCT1101	Introductory Life Science	3		
ABCT1301	Chemistry and Modern Living	3		
ABCT1314	Chemistry and Sustainable Development	3		
ABCT1303	Biotechnology and Human Health	3		
BME11101	Bionic Human and the Future of Being Human	3		
ENG2002	Computer Programming	3	COM	-

Subject Code	Subject Title	CR	Category of Subjects	
			Normal Year 1 Intake	Senior Year Intake
ENG2003	Information Technology	3	COM	-
ENG3003	Engineering Management	3	COM	COM
ENG3004	Society and The Engineer	3	COM	COM
ENG4001	Project Management	3	ELE	ELE
IC2114	Industrial Centre Training I for EIE	5	TRN	TRN
IC382	Multidisciplinary Manufacturing Project	3	TRN	TRN

Note:

AF	School of Accounting and Finance
ABCT	Department of Applied Biology and Chemical Technology
AMA	Department of Applied Mathematics
AP	Department of Applied Physics
BME	Interdisciplinary Division of Biomedical Engineering
CBS	Department of Chinese and Bilingual Studies
COM	Compulsory
EIE	Department of Electronic and Information Engineering
ELC	English Language Centre
ELE	Elective
ENG	Faculty of Engineering
IC	Industrial Centre
TRN	Training
*	Details of the Language and Communication Requirement (LCR) are set out in Section 4.2.
(1)	For HKDSE students who do not have Level 2 or above in HKDSE Physics or Combined Science with Physics, and non-local students from the Chinese Mainland who do not have a Pass (a pass is taken as 60% of the total marks of the subject) in the Physics or Integrated Science subject in the Joint Entrance Examination for Universities only.
(2)	Students should choose 1 subject in either “Engineering Materials”, “Biology” or “Chemistry”: Engineering Materials: ENG2001 Fundamentals of Materials Science and Engineering Biology: ABCT1101 Introductory Life Science ABCT1303 Biotechnology and Human Health BME11101 Bionic Human and the Future of Being Human Chemistry: ABCT1301 Chemistry and Modern Living ABCT1314 Chemistry and Sustainable Development Students choosing any one of the five subjects in the “Biology” and “Chemistry” areas will have the subject double-counted towards the fulfilment of both the Discipline-Specific Requirement (DSR) and CAR-D (Science, Technology and Environment). They are required to choose any 3-credit subject (from level 1 to level 4) to make up for the total credit requirement.

Subject to the approval by the Programme Leader, students may take at most one Level 5 subject per semester as a final-year technical elective during their final year of study. The total number of Level 5 subjects taken shall not exceed 2. The following is the list of Level 5 subjects currently available.

Subject Code	Subject Title	CR	Category of Subjects
EIE509	Satellite Communications - Technology and Applications	3	ELE
EIE511	VLSI System Design	3	ELE
EIE522	Pattern Recognition: Theory & Applications	3	ELE
EIE529	Digital Image Processing	3	ELE
EIE531	Mobile Radio Communications	3	ELE
EIE546	Video Technology	3	ELE
EIE553	Security in Data Communication	3	ELE
EIE557	Computational Intelligence and its Applications	3	ELE
EIE558	Speech Processing and Recognition	3	ELE
EIE563	Digital Audio Processing	3	ELE
EIE574	High Frequency Circuit Design	3	ELE
EIE575	Vehicular Communications and Inter-Networking Technologies	3	ELE
EIE577	Optoelectronic Devices	3	ELE
EIE579	Advanced Telecommunication Systems	3	ELE
EIE581	Optical Wavelength Division Multiplexing Networks	3	ELE
EIE583	Advanced Power Semiconductor Devices and Design Criteria for Applications	3	ELE
EIE585	OFDM & MIMO Wireless Communications	3	ELE
EIE587	Channel Coding	3	ELE
EIE589	Wireless Data Network	3	ELE
~~EIE507~~	~~Network Design - Theory and Practice~~	~~3~~	~~ELE~~
~~EIE528~~	~~Digital Data Transmission~~	~~3~~	~~ELE~~
~~EIE536~~	~~High Speed Networks~~	~~3~~	~~ELE~~
~~EIE541~~	~~Digital Signal Processing~~	~~3~~	~~ELE~~
~~EIE545~~	~~Consumer Electronics~~	~~3~~	~~ELE~~
~~EIE552~~	~~Internet Technologies for Multimedia Applications~~	~~3~~	~~ELE~~
~~EIE555~~	~~Personal Networking Technology~~	~~3~~	~~ELE~~
~~EIE556~~	~~Advanced DSP for Multimedia Communications~~	~~3~~	~~ELE~~
~~EIE559~~	~~CDMA Spread Spectrum Communications and Its Applications~~	~~3~~	~~ELE~~
~~EIE565~~	~~Advanced Multimedia Technology~~	~~3~~	~~ELE~~
~~EIE576~~	~~Information Technology in Biomedicine~~	~~3~~	~~ELE~~
~~EIE578~~	~~CMOS Analog Integrated Circuits Design and Analysis~~	~~3~~	~~ELE~~