



THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學

PhD / MPhil in Electrical Engineering

2021 – 2022

**Doctor of Philosophy (PhD) /
Master of Philosophy (MPhil)
in Electrical Engineering**

Programme Code : 41601

PROGRAMME DOCUMENT



Department of
Electrical Engineering

機工程學系

Department of
Electrical Engineering
電機工程學系

Doctor of Philosophy (PhD) / Master of Philosophy (MPhil) in Electrical Engineering

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This Programme Document is subject to review and changes which the programme offering Department can decide to make from time to time. Just in case any updated information is necessary after the publication of this document, students will be informed of the changes as and when appropriate.

This Document should be read together with the “Regulations and Administrative Procedures for the Degrees of MPhil and PhD” and the “Research Student Handbook”. Should any discrepancy between the contents of this booklet and University regulations arise, University regulations always prevail.

1 General Information

Programme Titles

DOCTOR OF PHILOSOPHY (PHD) /
MASTER OF PHILOSOPHY (MPHIL)
(FULL-TIME: 41601-FD/41601-FTD/41601-FTM /
PART-TIME: 41601-PD/41601-PTD/41601-PTM)

Offering Department

Department of Electrical Engineering

Final Awards

Doctor of Philosophy (PhD) 哲學博士
Master of Philosophy (MPhil) 哲學碩士

Programme Aims and Rationale

The research degree programmes are designed to enable the students to acquire competence in research methods and scholarship in the discipline of electrical engineering or other related disciplines; and display sustained independent effort and original thought, to become capable professionals, researchers or scholars.

2 Programmes' Intended Learning Outcomes (ILOs)

The programme of research is designed in such a way to enable students to:

- a/ act with integrity, and in an ethical manner in conducting research and in publications;
- b/ demonstrate the ability to read and evaluate the literatures in engineering;
- c / acquire a solid theoretical background in his/ her research area;
- d/ appreciate current research and developments in various areas of his/ her discipline and their challenges;
- e/ publish in international Journals and present research outcomes in conferences
- f/ formulate and solve advanced engineering problems;
- g/ for MPhil students: design and conduct research projects;
for PhD students: design and conduct research projects independently;
- h/ for PhD students: deal with multi-disciplinary approaches and translate knowledge, models, algorithms, processes, solutions from areas to his/her own
- i/ for MPhil students, be competent teacher/ researcher, or pursue PhD studies in his/ her discipline; and
for PhD students, be competent teacher/ researcher, or industrial R&D professional in his/ her discipline.

3 Curriculum

3.1 University Coursework Requirements

All details as specified in 14.1.1 to 14.1.13 of Regulations and Administrative Procedures for the Degrees of MPhil and PhD. (Appendix A of Research Student Handbook https://www.polyu.edu.hk/gs/docdrive/student-handbook/Student_handbook.pdf)

TPS Assistantship recipients (who will be required to undertake teaching assistant activities for 17 hours per week) are also allowed to fulfill part of their teaching assistant duties through the completion of these compulsory Practicum credits.

3.2 Curriculum Map

The curriculum map below illustrates the relationship between the Learning Outcomes of the Programme and the subjects:

Doctor of Philosophy (PhD)

Programme Outcomes	Ethics: Research, Professional & Personal Perspectives HTI6081	Special Topic Subjects EE6811-3 EE6821-3 EE6831-3 EE6841-3 EE6851-3	Research seminars EE6001J-M	Departmental training EE6002	International conference / workshop attendance and presentation	Journal paper publications	Thesis write-up and oral defense
a/ Act with integrity, and in an ethical manner in conducting research and in publications	√				√	√	
b/ Demonstrate the ability to read and evaluate the literatures in engineering		√			√	√	√
c/ Acquire a solid theoretical background in the his/her research area		√				√	√
d/ Appreciate current research and developments in various areas of his/her discipline and their challenges		√	√			√	√
e/ Publish in international journals and present research outcomes in conferences					√	√	
f/ Formulate and solve advanced engineering problems						√	√
g/ Design and conduct research projects independently						√	√
h/ Deal with multi- disciplinary approaches and translate					√	√	√

knowledge, models, algorithms, processes, solutions from areas to his/her own							
i/ Be a competent teacher, researcher, or industrial R&D professional in his/her discipline		√		√	√	√	√

Master of Philosophy (MPhil)

Programme Outcomes	Ethics: Research, Professional & Personal Perspectives HTI6081	Special Topic Subjects EE6811-3 EE6821-3 EE6831-3 EE6841-3 EE6851-3	Research seminars EE6001J-M	Departmental training EE6002	International conference / workshop attendance and presentation	Journal paper publications	Thesis write-up and oral defense
a/ Act with integrity, and in an ethical manner in conducting research and in publications	√				√	√	
b/ Demonstrate the ability to read and evaluate the literatures in engineering		√			√	√	√
c/ Acquire a solid theoretical background in the his/her research area		√				√	√
d/ Appreciate current research and developments in various areas of his/her discipline and their challenges		√	√			√	√
e/ publish in international journals and present research outcomes in conferences					√	√	
f/ Formulate and solve advanced engineering problems						√	√
g/ Design and conduct research projects						√	√
h/ Be a competent teacher, researcher, or industrial R&D professional in his/her discipline		√		√	√	√	√

3.3 Subjects Support to Programme Outcomes

The following subjects support the programme outcomes through teaching activities, practice and examination.

HTI6081	Ethics: Research, Professional and Personal Perspectives
EE6811-EE6813	Special Topics in Advanced Power System I/II/III
EE6821-EE6823	Special Topics in Advanced Utilisation I/II/III
EE6831-EE6833	Special Topics in Advanced Control System I/II/III
EE6841-EE6843	Special Topics in Advanced Fiber Optic I/II/III
EE6851-EE6853	Special Topics in Advanced Smart Materials and Structures I/II/III

Other non-subject base training:

EE6001J - EE6001M	Research Seminars
EE6002	Practicum
Attendance and presentation in international conferences or workshops	
Journal paper publications	
Thesis write-up and oral defense	

3.4 Normal Period of Study

As specified in 9.1 of Regulations and Administrative Procedures for the Degrees of MPhil and PhD. (Appendix A of Research Student Handbook https://www.polyu.edu.hk/gs/docdrive/student-handbook/Student_handbook.pdf).

3.5 Credit Requirement

Students are mainly conducting research study under the supervision of his/ her main supervisor's guidance. Different categories of students are needed to attain different credit requirements. The credit requirements should cover requirement on attending seminars and practicum with details as shown in 14.1 of Regulations and Administrative Procedures for the Degrees of MPhil and PhD. (Appendix A of Research Student Handbook https://www.polyu.edu.hk/gs/docdrive/student-handbook/Student_handbook.pdf)

HTI6081 is a compulsory one-credit subject entitled Ethics: Research, Professional & Personal Perspectives. Students could also take one subject from among the Engineering Doctorate Guided-study subjects.

In terms of study effort, 1 credit on subject is approximately equal to 40 hours of study, including attending classes, private study and examination.

3.6 Credit transfer

As specified in 16 of Regulations and Administrative Procedures for the Degrees of MPhil and PhD. (Appendix A of Research Student Handbook https://www.polyu.edu.hk/gs/docdrive/student-handbook/Student_handbook.pdf)

3.7 English Enhancement Subjects

Arrangements for English Enhancement Subjects for RPg Students admitted between the 2018/19 and 2020/21 Cohorts

All research students admitted between the 2018/19 and 2020/21 cohorts are required to take and pass two mandatory English subjects, ELC6001 (Presentation Skills for Research Students) and ELC6002 (Thesis Writing for Research Students) before their thesis submission. For exemption, research students need to pass the Research Language Skills Assessment (RLSA).

Arrangements for Research Language Skills Assessment (RLSA) and English Enhancement Subjects for RPg Students of the 2021/22 Intake Cohort and After

New students are required to take the RLSA in their first semester of study at PolyU to be arranged by ELC. Based on their performance of the RLSA, students will need to take relevant subjects according to the following arrangement:

RLSA Performance¹	English enhancement subjects
Band 1 in both Writing, and Speaking tasks	exempted
Band 2 or above in both Writing, and Speaking tasks	ENGL6016: <i>Advanced Academic English for Research Students: Publishing and Presenting</i>
Band 3 or below in either Writing, or Speaking tasks	ELC6011 and ELC6012 ELC6011: <i>Presentation Skills for Research Students</i> ELC6012: <i>Thesis Writing for Research Students</i>

Note 1: Band 1 is the highest grade and Band 5 the lowest.

Subject Description From

Subject Code	EE6001J, EE6001K, EE6001L, EE6001M																											
Subject Title	Research Seminar I/II/III/IV																											
Credit Value	1																											
Level	6																											
Pre-requisite/co-requisite/Exclusion	EE6001J Pre-requisite: Nil EE6001K Pre-requisite: Nil EE6001L Pre-requisite: EE6001J or EE6001K EE6001M Pre-requisite: EE6001J and EE6001K																											
Objectives	To encourage students to appreciate the latest research and development in various areas of his/her discipline.																											
Subject Intended Learning Outcomes	Upon completion of the subject students will be able: 1. To appreciate the latest research and development in various research areas and disciplines. 2. To meet and discuss with experts and leaders in person in various research areas and disciplines. 3. To disseminate and promote research outputs in various research areas and disciplines through discussions and report.																											
Subject Synopsis / Indicative Syllabus	To attend research seminars in various research areas and disciplines.																											
Teaching / Learning Methodology	Students are required to attend at least 10 research seminars which may or may not be organized by the Department. The duration of each seminar should not be less than an hour. Students are required to submit a report with no less than 1500 words (excluding references) on one of the attended seminars to their Chief Supervisors. The topic of the seminar reported on should not be related directly to the thesis title of the student. Assessment of the report will be given with a pass or failure grade. Students who failed to submit a report to the satisfaction of their Chief Supervisors are required to make a re-submission until a pass grade is obtained.																											
	<table border="1"> <thead> <tr> <th rowspan="2">Teaching/Learning Methodology</th> <th colspan="3">Intended subject learning outcomes</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> </tr> </thead> <tbody> <tr> <td>Seminars</td> <td align="center">✓</td> <td align="center">✓</td> <td align="center">✓</td> </tr> <tr> <td>Report</td> <td align="center">✓</td> <td></td> <td align="center">✓</td> </tr> </tbody> </table>					Teaching/Learning Methodology	Intended subject learning outcomes			1	2	3	Seminars	✓	✓	✓	Report	✓		✓								
Teaching/Learning Methodology	Intended subject learning outcomes																											
	1	2	3																									
Seminars	✓	✓	✓																									
Report	✓		✓																									
Assessment Methods, its alignment of Intended Subject Learning Outcomes	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods</th> <th rowspan="2">% weighting</th> <th colspan="3">Intended subject learning outcomes to be assessed</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> </tr> </thead> <tbody> <tr> <td>Attendance</td> <td align="center">50</td> <td align="center">✓</td> <td align="center">✓</td> <td align="center">✓</td> </tr> <tr> <td>Report</td> <td align="center">50</td> <td align="center">✓</td> <td></td> <td align="center">✓</td> </tr> <tr> <td>Total</td> <td align="center">100</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					Specific assessment methods	% weighting	Intended subject learning outcomes to be assessed			1	2	3	Attendance	50	✓	✓	✓	Report	50	✓		✓	Total	100			
Specific assessment methods	% weighting	Intended subject learning outcomes to be assessed																										
		1	2	3																								
Attendance	50	✓	✓	✓																								
Report	50	✓		✓																								
Total	100																											
Measurements of the Intended Subject Learning Outcomes	Intended Subject Learning Outcomes	Related Programme Learning Outcome	Assessment Methods	Measurement Level	Assessment Standard																							
	1	e	Attendance and report	Pass	Not less than 70% of students in the class achieving the Measurement Level																							
	2																											
	3																											

Student Study Effort Expected	- Seminars	20 Hrs
	- Self-study and Preparation of report	15 Hrs
	Total student study effort	35 Hrs
Reading List and References	NA	

Subject Description From

Subject Code	EE6002																						
Subject Title	Practicum																						
Credit Value	2 training credits																						
Level	6																						
Pre-requisite/co-requisite/Exclusion	Nil																						
Objectives	To train student as a competent teacher, researcher, or industrial R& D professional in his/ her discipline.																						
Subject Intended Learning Outcomes	Upon completion of the subject students will be able: 1. To engage in teaching support activities. 2. To engage in departmental research support activities.																						
Subject Synopsis / Indicative Syllabus	To engage in teaching/research supporting activities.																						
Teaching / Learning Methodology	<p>For 1 credit, students are required to engage in teaching / research supporting activities assigned by the Head of Department or his/her delegate for up to 6 hours per week in any 13-week semester. Before the commencement of any teaching supporting activities, students are required to complete the training programmes organized by the Education Development Centre. Students who are required to interact directly with students in English as a part of their duties in supporting teaching and learning must demonstrate their language competence to fulfill the intended duties to the satisfaction of the host department. All eligible students except those who are native English speakers will also be required to successfully complete a language training programme offered by the English Learning Centre before taking up any teaching supporting activities.</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Teaching/Learning Methodology</th> <th colspan="2">Intended subject learning outcomes</th> </tr> <tr> <th>1</th> <th>2</th> </tr> </thead> <tbody> <tr> <td>Teaching support duties</td> <td align="center">✓</td> <td></td> </tr> <tr> <td>Research support duties</td> <td></td> <td align="center">✓</td> </tr> </tbody> </table>					Teaching/Learning Methodology	Intended subject learning outcomes		1	2	Teaching support duties	✓		Research support duties		✓							
Teaching/Learning Methodology	Intended subject learning outcomes																						
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Lecturer evaluation	50	✓	✓																				
Total	100																						
Measurements of the Intended Subject Learning Outcomes	Intended Subject Learning Outcomes	Related Programme Learning Outcome	Assessment Methods	Measurement Level	Assessment Standard																		
	1	h	Student feedback and lecturer evaluation	Pass	Not less than 70% of students in the class achieving the Measurement Level																		
	2																						
Student Study Effort Expected	- Teaching/research support activities				156 Hrs																		
	Total student study effort				156 Hrs																		
Reading List and References	NA																						

Subject Description Form

Subject Code	EE6811 – EE6813
Subject Title	Special Topics in Advanced Power System I/II/III
Credit Value	3
Level	6
Pre-requisite / Co-requisite/ Exclusion	<p><u>Recommended background knowledge:</u></p> <p>Knowledge of Power Systems equivalent to the final year of an Honours Degree in Electrical Engineering course. Preference will be given to those who has had research or working experience in the topic chosen.</p>
Objectives	To provide practising electrical engineers with an opportunity to study in depth a topic in advanced power system engineering and management which are important to engineers and researchers.
Intended Learning Outcomes	<p>Upon completion of the subject students will be able:</p> <ol style="list-style-type: none"> 1. To acquire an understanding of a selected topic in this area, up to the expertise knowledge level, through self study and guidance by the supervisor. 2. To possess the ability of developing latest innovations and cutting edge technologies, through literature studies, simulation studies, and/or experimental studies. 3. To be able to report and explain the above selected area of knowledge, through written and oral means.
Subject Synopsis/ Indicative Syllabus	To conduct an in-depth study in a particular topic in Advanced Power System. The topic content will be fixed after mutual discussion with the prospective supervisor prior to the start of the module.
Teaching/Learning Methodology	The subject can be conducted via guided study in two modes for individual students. Mode I requires a student to take an MSc subject related to the topics of the guided study subject or a relevant short course as the basis of the guided study subject. The student will be required to participate fully in the MSc subject/relevant short course (i.e. attend all the lectures, complete both the coursework and examination requirements). To bring the subject up to the doctoral level, a student is required to submit further write-ups and presentations. An overall grade for the guided study subject is then derived from the result of the MSc subject as well as the extra writes-up and presentations. Mode II is operated for guided study subjects with no relevant MSc subject/short course available. A student is required, under the supervision of the subject supervisor, to read specified monographs, journal publications and/or a book. The student and the subject supervisor must meet once per week to discuss the progress made by the student in the subject. Courseworks in terms of literature survey reports and presentations should normally be included. At the end of the semester the student will be examined, normally both orally and in written form.

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One-to-one guided tutorial	✓		✓																					
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Student Study Effort Expected (Mode I)	<table border="1"> <tbody> <tr> <td colspan="2">Class contact (time-tabled):</td> <td></td> </tr> <tr> <td>▪ Lecture</td> <td></td> <td>24 Hrs.</td> </tr> <tr> <td>▪ Tutorial/Laboratory/Practical Classes</td> <td></td> <td>15 Hrs.</td> </tr> <tr> <td colspan="2">Guided activities:</td> <td></td> </tr> <tr> <td>▪ Meeting with the supervisor / Presentations/ Viva examination</td> <td></td> <td>10 Hrs.</td> </tr> <tr> <td>▪ Self-study / Preparation of reports and presentation materials</td> <td></td> <td>56 Hrs.</td> </tr> <tr> <td colspan="2">Total student study effort</td> <td>105 Hrs.</td> </tr> </tbody> </table>	Class contact (time-tabled):			▪ Lecture		24 Hrs.	▪ Tutorial/Laboratory/Practical Classes		15 Hrs.	Guided activities:			▪ Meeting with the supervisor / Presentations/ Viva examination		10 Hrs.	▪ Self-study / Preparation of reports and presentation materials		56 Hrs.	Total student study effort		105 Hrs.		
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(Mode II)	<table border="1"> <tbody> <tr> <td colspan="2">Guided activities:</td> <td></td> </tr> <tr> <td>▪ Meeting with the supervisor / Presentations/ Viva examination</td> <td></td> <td>20 Hrs.</td> </tr> <tr> <td>▪ Self-study / Preparation of reports and presentation materials</td> <td></td> <td>85 Hrs.</td> </tr> <tr> <td colspan="2">Total student study effort</td> <td>105 Hrs.</td> </tr> </tbody> </table>	Guided activities:			▪ Meeting with the supervisor / Presentations/ Viva examination		20 Hrs.	▪ Self-study / Preparation of reports and presentation materials		85 Hrs.	Total student study effort		105 Hrs.											
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▪ Meeting with the supervisor / Presentations/ Viva examination		20 Hrs.																						
▪ Self-study / Preparation of reports and presentation materials		85 Hrs.																						
Total student study effort		105 Hrs.																						
Reading List and References	To be assigned by the subject lecturer.																							

Subject Description Form

Subject Code	EE6821 – EE6823
Subject Title	Special Topics in Advanced Utilisation I/II/III
Credit Value	3
Level	6
Pre-requisite / Co-requisite/ Exclusion	<p><u>Recommended background knowledge:</u></p> <p>Knowledge of Power Electronics and Drives equivalent to the final year of an Honours Degree in Electrical Engineering course. Preference will be given to those who has had research or working experience in the topic chosen.</p>
Objectives	To provide practising electrical engineers with an opportunity to study in depth a topic in advanced utilisation engineering and management which are important to engineers and researchers.
Intended Learning Outcomes	<p>Upon completion of the subject students will be able:</p> <ol style="list-style-type: none"> 1. To acquire an understanding of a selected topic in this area, up to the expertise knowledge level, through self study and guidance by the supervisor. 2. To possess the ability of developing latest innovations and cutting edge technologies, through literature studies, simulation studies, and/or experimental studies. 3. To be able to report and explain the above selected area of knowledge, through written and oral means.
Subject Synopsis/ Indicative Syllabus	To conduct an in-depth study in a particular topic in Advanced Utilisation. The topic content will be fixed after mutual discussion with the prospective supervisor prior to the start of the module.
Teaching/Learning Methodology	The subject can be conducted via guided study in two modes for individual students. Mode I requires a student to take an MSc subject related to the topics of the guided study subject or a relevant short course as the basis of the guided study subject. The student will be required to participate fully in the MSc subject/relevant short course (i.e. attend all the lectures, complete both the coursework and examination requirements). To bring the subject up to the doctoral level, a student is required to submit further write-ups and presentations. An overall grade for the guided study subject is then derived from the result of the MSc subject as well as the extra writes-up and presentations. Mode II is operated for guided study subjects with no relevant MSc subject/short course available. A student is required, under the supervision of the subject supervisor, to read specified monographs, journal publications and/or a book. The student and the subject supervisor must meet once per week to discuss the progress made by the student in the subject. Courseworks in terms of literature survey reports and presentations should normally be included. At the end of the semester the student will be examined, normally both orally and in written form.

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Teaching/Learning Methodology	Intended subject learning outcomes																							
	1	2	3																					
Lecture & Tutorial (for mode I study only)	✓	✓	✓																					
One-to-one guided tutorial	✓		✓																					
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Subject Description Form

Subject Code	EE6831 – EE6833
Subject Title	Special Topics in Advanced Control System I/II/III
Credit Value	3
Level	6
Pre-requisite / Co-requisite/ Exclusion	<p><u>Recommended background knowledge:</u></p> <p>Knowledge of Control Systems equivalent to the final year of an Honours Degree in Electrical Engineering course. Preference will be given to those who has had research or working experience in the topic chosen.</p>
Objectives	To provide practising electrical engineers with an opportunity to study in depth a topic in advanced control system engineering and management which are important to engineers and researchers.
Intended Learning Outcomes	<p>Upon completion of the subject students will be able:</p> <ol style="list-style-type: none"> 1. To acquire an understanding of a selected topic in this area, up to the expertise knowledge level, through self study and guidance by the supervisor. 2. To possess the ability of developing latest innovations and cutting edge technologies, through literature studies, simulation studies, and/or experimental studies. 3. To be able to report and explain the above selected area of knowledge, through written and oral means.
Subject Synopsis/ Indicative Syllabus	To conduct an in-depth study in a particular topic in Advanced Control System. The topic content will be fixed after mutual discussion with the prospective supervisor prior to the start of the module.
Teaching/Learning Methodology	<p>The subject can be conducted via guided study in two modes for individual students. Mode I requires a student to take an MSc subject related to the topics of the guided study subject or a relevant short course as the basis of the guided study subject. The student will be required to participate fully in the MSc subject/relevant short course (i.e. attend all the lectures, complete both the coursework and examination requirements). To bring the subject up to the doctoral level, a student is required to submit further write-ups and presentations. An overall grade for the guided study subject is then derived from the result of the MSc subject as well as the extra writes-up and presentations. Mode II is operated for guided study subjects with no relevant MSc subject/short course available. A student is required, under the supervision of the subject supervisor, to read specified monographs, journal publications and/or a book. The student and the subject supervisor must meet once per week to discuss the progress made by the student in the subject. Courseworks in terms of literature survey reports and presentations should normally be included. At the end of the semester the student will be examined, normally both orally and in written form.</p>

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Subject Description Form

Subject Code	EE6841 – EE6843
Subject Title	Special Topics in Advanced Fiber Optic I/II/III
Credit Value	3
Level	6
Pre-requisite / Co-requisite/ Exclusion	<p><u>Recommended background knowledge:</u></p> <p>Knowledge of Fiber Optic equivalent to the final year of an Honours Degree in Electrical Engineering course. Preference will be given to those who has had research or working experience in the topic chosen.</p>
Objectives	To provide practising electrical engineers with an opportunity to study in depth a topic in advanced fiber optic engineering and management which are important to engineers and managers.
Intended Learning Outcomes	<p>Upon completion of the subject students will be able:</p> <ol style="list-style-type: none"> 1. To acquire an understanding of a selected topic in this area, up to the expertise knowledge level, through self study and guidance by the supervisor. 2. To possess the ability of developing latest innovations and cutting edge technologies, through literature studies, simulation studies, and/or experimental studies. 3. To be able to report and explain the above selected area of knowledge, through written and oral means.
Subject Synopsis/ Indicative Syllabus	To conduct an in-depth study in a particular topic in Advanced Fiber Optic. The topic content will be fixed after mutual discussion with the prospective supervisor prior to the start of the module.
Teaching/Learning Methodology	<p>The subject can be conducted via guided study in two modes for individual students. Mode I requires a student to take an MSc subject related to the topics of the guided study subject or a relevant short course as the basis of the guided study subject. The student will be required to participate fully in the MSc subject/relevant short course (i.e. attend all the lectures, complete both the coursework and examination requirements). To bring the subject up to the doctoral level, a student is required to submit further write-ups and presentations. An overall grade for the guided study subject is then derived from the result of the MSc subject as well as the extra writes-up and presentations. Mode II is operated for guided study subjects with no relevant MSc subject/short course available. A student is required, under the supervision of the subject supervisor, to read specified monographs, journal publications and/or a book. The student and the subject supervisor must meet once per week to discuss the progress made by the student in the subject. Courseworks in terms of literature survey reports and presentations should normally be included. At the end of the semester the student will be examined, normally both orally and in written form.</p>

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Reading List and References	To be assigned by the subject lecturer.																							

Subject Description Form

Subject Code	EE6851 – EE6853
Subject Title	Special Topics in Smart Materials and Structures I/II/III
Credit Value	3
Level	6
Pre-requisite / Co-requisite/ Exclusion	<p><u>Recommended background knowledge:</u></p> <p>Knowledge of Electrical Engineering equivalent to the final year of an Honours Degree in Electrical Engineering course. Preference will be given to those who have had research or working experience in the topic chosen.</p>
Objectives	To provide practising engineers with an opportunity to study in depth a topic in smart materials and structures which are becoming increasingly important to engineers and researchers.
Intended Learning Outcomes	<p>Upon completion of the subject students will be able:</p> <ol style="list-style-type: none"> 4. To acquire an understanding of a selected topic in this area, up to the expertise knowledge level, through self study and guidance by the supervisor. 5. To possess the ability of developing latest innovations and cutting edge technologies, through literature studies, simulation studies, and/or experimental studies. 6. To be able to report and explain the above selected area of knowledge, through written and oral means.
Subject Synopsis/ Indicative Syllabus	To conduct an in-depth study in a particular topic in Smart Materials and Structures. The topic content will be fixed after mutual discussion with the prospective supervisor prior to the start of the module.
Teaching/Learning Methodology	<p>The subject can be conducted via guided study in two modes for individual students. Mode I requires a student to take an MSc subject related to the topics of the guided study subject or a relevant short course as the basis of the guided study subject. The student will be required to participate fully in the MSc subject/relevant short course (i.e. attend all the lectures, complete both the coursework and examination requirements). To bring the subject up to the doctoral level, a student is required to submit further write-ups and presentations. An overall grade for the guided study subject is then derived from the result of the MSc subject as well as the extra writes-up and presentations. Mode II is operated for guided study subjects with no relevant MSc subject/short course available. A student is required, under the supervision of the subject supervisor, to read specified monographs, journal publications and/or a book. The student and the subject supervisor must meet once per week to discuss the progress made by the student in the subject. Courseworks in terms of literature survey reports and presentations should normally be included. At the end of the semester the student will be examined, normally both orally and in written form.</p>

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Reading List and References	To be assigned by the subject lecturer.																							

Subject Description Form

Subject Code	HTI6081
Subject Title	Ethics: Research, Professional & Personal Perspectives
Credit Value	1
Level	6
Pre-requisite / Co-requisite/ Exclusion	None
Objective	<ul style="list-style-type: none"> • To equip students with a deep appreciation of ethical guidelines and codes of conduct that they can apply in their research studies at PolyU and in their future professional and personal lives.
Intended Learning Outcomes <i>(Note 1)</i>	<p>On successful completion of this subject, students will be able to:</p> <ol style="list-style-type: none"> 1. Demonstrate knowledge and understanding of the need for ethical behavior and guiding codes of ethics in research and the professions. 2. Understand, discuss and apply ethical principles and codes across a range of disciplines and scenarios 3. Demonstrate awareness of current ethical issues and problems in relation to their own discipline and research area 4. Critically analyze and discuss scenarios cases of possible or actual ethical misconduct 5. Discuss how the guiding principles of ethics in research extend and apply to business, professional and personal codes of conduct and why this important to integrity and the well being of business, the professions and our community. 6. Show a fundamental understanding of the issues of copyright, plagiarism and proper citation, and be able to apply this in their own work.
Subject Synopsis/ Indicative Syllabus <i>(Note 2)</i>	<ul style="list-style-type: none"> • The need for ethics training and the meaning of ethical behavior in research: case studies, disasters and learning by the mistakes of others • Philosophy and codes of ethics and their origins • Culture, religion and the law – how these relate to ethical codes of conduct • Obtaining ethical approval for a research project: procedures and processes • Ethics in life science, humanities, education, business and industry: common issues, guiding principles, discipline specific scenarios • Ethics and human behavior: individual, professional and societal responsibilities • Recent ethical issues affecting Hong Kong and the society in general • Ethical use of information in thesis writing: understanding copyright, plagiarism and proper citation
Teaching/Learning Methodology <i>(Note 3)</i>	Lecture/seminar/workshop

Assessment Methods in Alignment with Intended Learning Outcomes <i>(Note 4)</i>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> </tr> </thead> <tbody> <tr> <td>1. Group assignment on discipline specific scenario/case study analysis</td> <td>100%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>Total</td> <td>100 %</td> <td colspan="6"></td> </tr> </tbody> </table>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)						1	2	3	4	5	6	1. Group assignment on discipline specific scenario/case study analysis	100%	✓	✓	✓	✓	✓	✓	Total	100 %						
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Total	100 %																														
<p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>1. Discipline specific scenario/case study analysis will assess ability to identify and analyze ethical issues in the student’s own discipline and to present a coherent and detailed critique and plan on how these could be avoided or resolved (giving sources and written work accompanied by a Turn-it-in Report). The group assignment will assess the student’s ability to identify, discuss and analyze ethical principles and issues from a wide perspective, and evaluate how individual, professions and societies benefit from following ethically acceptable behavior and practices.</p>																															
Student Study Effort Required	<p>Class contact:</p> <table border="1"> <tr> <td>• Lecture/seminar/workshop/oral presentation</td> <td>16 Hrs.</td> </tr> </table> <p>Other student study effort:</p> <table border="1"> <tr> <td>• Self study and group work</td> <td>27.5 Hrs.</td> </tr> <tr> <td>• Assignment preparation</td> <td>15 Hrs.</td> </tr> <tr> <td>Total student study effort</td> <td>58.5 Hrs.</td> </tr> </table>	• Lecture/seminar/workshop/oral presentation	16 Hrs.	• Self study and group work	27.5 Hrs.	• Assignment preparation	15 Hrs.	Total student study effort	58.5 Hrs.																						
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Reading List and References	<p>Materials from the Hong Kong Ethics development website (http://www.icac.org.hk/hkedc/eng/library2.asp)</p> <p>Materials from EthicsWeb.ca (http://www.ethicsweb.ca/resources/professional/issues.html)</p> <p>Selected readings and videos</p> <p>Declaration of Helsinki (revised 2008)</p>																														

Note 1: Intended Learning Outcomes

Intended learning outcomes should state what students should be able to do or attain upon completion of the subject. Subject outcomes are expected to contribute to the attainment of the overall programme outcomes.

Note 2: Subject Synopsis/ Indicative Syllabus

The syllabus should adequately address the intended learning outcomes. At the same time over-crowding of the syllabus should be avoided.

Note 3: Teaching/Leaning Methodology

This section should include a brief description of the teaching and learning methods to be employed to facilitate learning, and a justification of how the methods are aligned with the intended learning outcomes of the subject.

Note 4: Assessment Method

This section should include the assessment method(s) to be used and its relative weighting, and indicate which of the subject intended learning outcomes that each method purports to assess. It should also provide a brief explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes.