

FACULTY OF ENGINEERING

Information Engineering

Study Scheme

M.Phil. – Ph.D. Programme in Information Engineering (Full-time and Part-time)

(Applicable to students admitted between 2015-16 and 2016-17)

B. Ph.D. Student (Pre-candidacy)

The “candidacy requirement” composes of three major parts, namely, Coursework Requirement, Candidacy Examination, and Thesis Proposal (and Oral Defence). Students must complete and fulfill all three parts within the “maximum period for fulfilling candidacy requirements”. Details of the requirement are listed below:

1. Coursework Requirement

(a) Lecture courses

1. At least one Faculty of Engineering core course must be taken.
2. To satisfy the Faculty core course requirement, students must achieve at least a grade B in the course. Otherwise, the course will only be counted as an elective.
3. Ph.D. students have to take at least 12 units of 4 graduate courses.

Courses outside the Department of Information Engineering Course List or Faculty of Engineering Core Course List may be selected on the recommendation of the thesis supervisor with the approval of the Division Head. The courses need to be taken normally within the first two terms but should not be more than three terms (or four terms for part-time students) unless with the approval of the Division Head.

(b) Thesis research courses

Ph.D. students must register for the relevant thesis research course in every term throughout his/her study period.

- Full-time Ph.D. (pre-candidacy) students: IERG8006

- Part-time Ph.D. (pre-candidacy) students: IERG8003

2. Candidacy Examination (To be taken at the end of the first year or the first month of the second year)

Each Ph.D. student is required to pass an oral-plus-written examination to be taken at the end of the first year or the first month of the second year. For this exam, a written report is compulsory component. It will be graded by the Division of Information Engineering Graduate Panel. The grade for the written component will be combined with the grade of the oral component to arrive at the final decision as to whether the student passes the examination. The written report and the subsequent oral presentation can be based on the student's result so far, or based on the study of a set of papers drawn from an approved list. Although actual presentation of research results is not expected, the general knowledge and the research potential of the student in the chosen area will be tested.

Outcomes

The Division of Information Engineering Graduate Panel recommends the following four possible decisions:

- (i) Pass
- (ii) Weak Probation*
- (iii) Strong Probation*
- (iv) Fail*

Remarks:

Penalty will be imposed with outcome marked with * (Please refer to the website <https://inraweb.ie.cuhk.edu.hk/v3/pg/>)

3. *Thesis Proposal and Oral Defence* (To be taken at the end of the second year)

Each Ph.D. student must submit a research proposal and pass an oral examination. The examination panel should be set up according to the Division of Information Engineering's guidelines.

4. *Remarks*

For the advancement to his/her post-candidacy stage, each Ph.D. student is required to pass:

- (a) Coursework requirement.
- (b) Candidacy examination. (To be taken at the end of the first year or the first month of the second year)
- (c) Thesis proposal and oral defence. (To be taken at the end of the second year)

C. Ph.D. Student (Post-candidacy)

1. *Coursework Requirement*

(a) Lecture courses

Students are required to register and pass one more course from the Department of Information Engineering Course List. There will be a total of five or more approved courses together with the pre-candidacy course requirement. Courses outside the Department of Information Engineering Course List or Faculty of Engineering Core Course List may be selected on the recommendation of the thesis supervisor with the approval of the Division Head.

(b) Thesis research/monitoring courses

Ph.D. students must register for a thesis research course every term throughout his/her study period.

- Full-time Ph.D. (post-candidacy) students: IERG8012
- Part-time Ph.D. (post-candidacy) students: IERG8006
- Continuing Ph.D. students: IERG8003

2. *Other Requirements*

- (a) Students must fulfill the Term Assessment Requirement of the Graduate School. For details, please refer to Section 13.0 “Unsatisfactory Performance and Discontinuation of Studies” of the General Regulations Governing Postgraduate Studies which can be accessed from the Graduate School Homepage: <http://www.gs.cuhk.edu.hk>.
- (b) Students are required to submit a research thesis and pass an oral examination for graduation.
- (c) Complete an Improving Postgraduate Learning (IPL) module on “Observing Intellectual Property and Copyright Law during Research”. This is an online module and relevant information can be accessed from the website: <http://www.cuhk.edu.hk/clear/prodev/ipl.html>.

Department of Information Engineering Course List

<i>Code</i>	<i>Course Title</i>	<i>Unit</i>
IERG5020	Telecommunication Switching and Network System	3
IERG5040	Lightwave System Technologies	3
IERG5090	Advanced Networking Protocols and Systems	3
IERG5100	Advanced Wireless Communications	3
IERG5110	Signal Processing in Wireless Communications and Sensing	3
IERG5130	Probabilistic Models and Inference Algorithms for Machine Learning	3
IERG5154	Information Theory	3
IERG5200	Channel Coding and Modulation	3
IERG5230	Algorithms and Realization of Internet of Things Systems	3
IERG5240	Applied Cryptography	3
IERG5290	Network Coding Theory	3
IERG5300	Random Processes	3
IERG5310	Security and Privacy in Cyber Systems	3
IERG5320	Digital Forensics	3
IERG5330	Network Economics	3
IERG5340	IT Innovation and Entrepreneurship	3
IERG5350	Reinforcement Learning	3
IERG5360	Program Representation, Modeling and Understanding for Software Security	3
IERG5380	Quantum Information Processing	3
IERG5590	Advanced Topics in Blockchain	3
IERG6120	Advanced Topics in Information Engineering I	3
IERG6130	Advanced Topics in Information Engineering II	3
IERG6154	Network Information Theory	3
IERG6200	Advanced Topics in Computer Networks	3
IERG6210	Advanced Topics in Information Processing	3
IERG6270	Advanced Wireless Communications	3
IERG6280	Network Economics	3
IERG6300	Theory of Probability	3
IERG8003	Thesis Research	3

IERG8006	Thesis Research	6
IERG8012	Thesis Research	12

Faculty of Engineering Core Course List

<u>Code</u>	<u>Course Title</u>	<u>Unit</u>
ENGG5101	Advanced Computer Architecture	3
ENGG5103	Techniques for Data Mining	3
ENGG5104	Image Processing and Computer Vision	3
ENGG5105	Computer and Network Security	3
ENGG5106	Information Retrieval and Search Engines	3
ENGG5108	Big Data Analytics	3
ENGG5281	Advanced Microwave Engineering	3
ENGG5202	Pattern Recognition	3
ENGG5282	Nanoelectronics	3
ENGG5291	Fiber Optics: Principles and Technologies	3
ENGG5301	Information Theory	3
ENGG5303	Advanced Wireless Communications	3
ENGG5383	Applied Cryptography	3
ENGG5392	Lightwave System Technologies	3
ENGG5402	Advanced Robotics	3
ENGG5403	Linear System Theory and Design	3
ENGG5404	Micromachining and Microelectromechanical Systems	3
ENGG5501	Foundations of Optimization	3
ENGG5601	Principles of Biomechanics and Biomaterials	3
ENGG5781	Matrix Analysis and Computations	3