FACULTY OF ENGINEERING
Information Engineering
Study Scheme

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

Please read the Study Scheme in conjunction with the following emails:

1. "Completing certain Improving Postgraduate Learning modules in the first year of study (for fulfilment of Ph.D. and Taught Doctoral candidacy requirements) with retroactive effect from 2022-23 intake", dated 27 October 2023: https://www.gs.cuhk.edu.hk/download/IPL.pdf.

2. "Amendments to Research Data Management Practice and Requirements for Candidacy and Graduation -- applicable to RPg and taught doctoral students admitted in 2025/26 or thereafter", dated 20 February 2026: https://www.gs.cuhk.edu.hk/download/Amendments.pdf.

(Applicable to students admitted in 2026-27 and thereafter)

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

The "candidacy requirement" composes of four major parts, namely, coursework requirement, candidacy examination, thesis proposal (and oral defence) and stipulated Improving Postgraduate Learning (IPL) module requirements. Students must complete and fulfill the first three parts within the "maximum period for fulfilling candidacy requirements" and complete the stipulated IPL module(s) in their first year of study. Details of the requirement are listed below:

1. Coursework Requirement

(a) Lecture courses

(i) Ph.D. students have to pass at least FOUR approved graduate courses (each of 3 units or more) before the submission of the thesis proposal.
(ii) Among the courses passed in (i), at least one Faculty of Engineering core course must be taken.

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 and with the approval of the Division Head.

(b) Thesis research courses

In addition to the coursework requirement mentioned above, 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 within 15 months after joining the degree programme)

Ph.D. students are required to take an oral-plus-written examination within 15 months after joining the degree programme. For this exam, a written report is a 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

has passed the examination. Students must follow the "procedure and guidelines for the first-year written and oral examination".
(https://intraweb.ie.cuhk.edu.hk/v3/pg/download/GuidelinesforEngOf1stYearPhDstudentExam.pdf)

Outcomes

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

(i) Pass

(ii) Weak Probation*

(iii)Strong Probation*

(iv)Fail*

Remarks:

Penalty will be imposed on outcomes marked with * (Please refer to the website https://intraweb.ie.cuhk.edu.hk/v3/pg/download/Outcome_details_for_Candidacy_Examination.pdf)

3. *Thesis Proposal* (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 Division of Information Engineering guideline.

4. *Other Requirements*

Students are required to complete the following Improving Postgraduate Learning (IPL) modules in their first year of study for partial fulfillment of candidacy requirements:

(a) Students as advised by their supervisors or Graduate Divisions to take laboratory safety courses, including General Safety (excluding the Animal Experimentation at CUHK), are required to attend the course(s) and pass the corresponding examination(s) in their first year of study, with effect from the 2022-23 intake.

(b) Students are required to complete and pass an IPL module on "Basics of Research Data Management" in their first year of study, with effect from the 2022-23 intake. This is an online module and relevant information can be accessed from the website: https://www.cuhk.edu.hk/clear/prodev/ipl.html (under "Research Skills").

(c) Students are required to submit a Data Management Plan (DMP), with effect from the 2025-26 intake. The guide is available on Library's website: https://libguides.lib.cuhk.edu.hk/rdm/mandate-support.

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

1. *Coursework Requirement*

(a) Lecture courses

Together with the pre-candidacy course requirements, students are required to pass a total of at least SIX approved courses (a total of 18 units or more) from the Department of Information Engineering Course List. 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 and with the approval of the Division Head.

Among all the SIX courses taken by a student,

1. At least TWO of them must be from the list of the *Area-Core* courses of the student's research area, and
2. At least ONE course must be from the list of the *Breadth* courses offered by research areas other than the student's own area.

Research areas:

1. AI, Big Data and Multimedia Processing
2. Cybersecurity and Applied Cryptography
3. Information and Coding Theory
4. Internet Engineering and Networked Applications
5. Optical Communications and Networking
6. Wireless Communication and Networking

The lists of the *Area-Core* courses and *Breadth* courses can be accessed from:

https://intraweb.ie.cuhk.edu.hk/v3/IEPhD_Requirement.html

(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 Clause 13.0 "Unsatisfactory Performance and Discontinuation of Studies" of the General Regulations Governing Postgraduate Studies which can be accessed from the Graduate School Homepage: https://www.gs.cuhk.edu.hk.

(b) Students are required to submit a research thesis and pass an oral examination for graduation.

In addition to completing the IPL modules stipulated for partial fulfillment of candidacy requirements, students are also required to complete the following IPL modules for graduation:

(c) Complete an 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: https://www.cuhk.edu.hk/clear/prodev/ipl.html.

(d) Complete an online Research Ethics Training (RET) module on "Publication Ethics" offered by the Research Office (RO) and obtain a valid Publication Ethics Certificate for graduation. Relevant information can be accessed from the RET website at https://www.research-ethics.cuhk.edu.hk/web/.

(e) The final DMP should have been shared to the CUHK community on DMPTool or the relevant platform that CUHK provides when submitting the final version of the thesis/portfolio to the Graduate School. The guide is available on Library's website: https://libguides.lib.cuhk.edu.hk/rdm/mandate-support.

Department of Information Engineering Course List

Code	*Course Title*	*Unit*
IERG5020	Telecommunication Switching and Network System	3
IERG5040	Lightwave System Technologies	3

IERG5050	AI Foundation Models, Systems and Applications	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
IERG5200	Channel Coding and Modulation	3
IERG5230	Algorithms and Realization of Internet of Things Systems	3
IERG5240	Applied Cryptography	3
IERG5250	Edge AI and Applications	3
IERG5254	Network Information Theory	3
IERG5280	Wireless and Mobile Networking	3
IERG5290	Network Coding Theory	3
IERG5300	Random Processes	3
IERG5310	Security and Privacy in Cyber Systems	3
IERG5320	Digital Forensics	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
IERG5400	Theory of Probability	3
IERG5450	AI for Science	3
IERG5460	Multimodal Machine Learning	3
IERG5470	Convex and Stochastic Optimization and their Applications	3
IERG5590	Advanced Topics in Blockchain	3
IERG5670	Computational Imaging Systems and Algorithms	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
IERG8003	Thesis Research	3
IERG8006	Thesis Research	6
IERG8012	Thesis Research	12

Faculty of Engineering Core Course List

Code	*Course Title*	*Unit*
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