



College of Science and Engineering  
科學及工程學院

Department of Systems Engineering  
and Engineering Management  
系統工程及工程管理學系

**Engineering Doctorate (Engineering Management)**  
工程學博士 (工程管理)

**Admissions Handbook (for 2015 entry)**

[www.sgs.cityu.edu.hk/programme/ENGD\(EM\)](http://www.sgs.cityu.edu.hk/programme/ENGD(EM))

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## **Brief Description of the EngD(EM) Programme**

### **Introduction**

The Engineering Doctorate (Engineering Management) [EngD(EM)] programme at City University is an advanced professional doctorate degree programme aiming at developing students' innovative thinking through tackling strategic, important industrial projects meeting the specific needs of industry.

In the EngD(EM) programme, students will pursue engineering study and industrial research of a high order while carrying out their professions; the originality and value of their research are assessed within the specific professional and industrial context. As professional activity is usually multi-disciplinary and business/management-driven, the programme will include a wide variety of coursework in **Engineering Management**.

The Engineering Doctorate (EngD) is an advanced professional doctorate degree. The successful completion of this programme will lead to the award of "Engineering Doctorate". **Graduates can use the title "Dr." before their names.**

### **Aim and Objectives**

The Engineering Doctorate in Engineering Management programme aims at developing the candidates' creative thinking and overall capability to apply innovative technologies and advanced management methods to meet the strategic needs of their organizations or industries. The program aims to provide a platform for innovation leaders who can apply and commercialize technological innovations in Hong Kong/China manufacturing firms and engineering organizations. EngD(EM) program provides *professional education* and *applied research* to industrialists in engineering and manufacturing industries in Hong Kong/China.

Upon successful completion of this Programme, students should be able to:

1. To obtain creative thinking and entrepreneurial spirit,
2. To make strategic planning with a global perspective and cultural sensitivity,
3. To identify potential and strategic problems in an engineering company,
4. To implement new technologies/methods in an engineering context,
5. To apply quantitative and qualitative analytical skills in problem solving,
6. To initiate and lead global technological projects and/or enterprises,
7. To conduct an applied research project based on the above core competences.

## **Programme Structure and Content**

The programme comprises a taught component and a research component:

**Taught component:** 3 core and 4 elective courses

**Research component:** a doctoral thesis

### ***Study Duration:***

Normal: 4 years

Maximum: 6 years\*

\*excluding a maximum of 4 regular semesters of leave of absence and/or academic suspension. Each application will be subject to the approval of the Head of Department.

## **Taught Component**

As professional activity is usually multi-disciplinary and business/management-driven, the courses available to EngD(EM) students should be comprehensive to cover a mixture of technology, innovation management and experience to provide industry with competent and knowledgeable managers in technology and innovation.

### **I. Core Courses (total 9 credit units):**

#### **1. Integrative Engineering Management (SEEM8024D) 3 credit units**

This course provides theoretical background and knowledge for students to acquire and develop the set of strategic organizational and managerial skills and innovative capabilities in solving strategic and operational engineering/ technology management problems.

#### **2. Research Methods in Engineering Management (SEEM8025D) 3 credit units**

This course aims to familiarize students with the various research methods commonly used in the field of Engineering Management in conducting academic and applied research at the doctorate level. Throughout the course students develop competency in the research methods learned through reflective practice and cooperative learning, and write up an Engineering Doctorate thesis proposal, which will form the blueprint for their subsequent research toward the Engineering Doctorate degree.

In developing their thesis proposals, students also make use of this course as conduit to identify their future thesis supervisors from the academic staff available, who provide guidance and advice to the future supervisees in developing an acceptable thesis proposal in this course. At the end of the course, the identified future supervisor of a student assesses the proposal developed and written by the future supervisee as a part of the coursework requirement.

#### **3. EngD Seminar (SEEM8008D) 3 credit units**

The EngD Seminar provides

- i. a cooperative learning environment in which students from different cohorts of the programme can mix, interact, challenge and support each other throughout their EngD candidature;
- ii. formal periodic forums for the EngD students to:
  - broaden their knowledge and expertise;
  - present their research findings and share their learning experiences with their peers and academic staff;
  - cultivate critical thinking and stimulate generation of new ideas;
  - help promote research culture among the EngD students; provide first-hand interaction with experienced engineering management professionals on contemporary issues.

## II. Electives (total 12 credit units):

Managers in engineering and technology need to be competent in a wide spectrum of skills and techniques in technology and management. Different students may have different needs for themselves and their companies. The possible electives covering different aspects in engineering and technology management areas are as follows:

*(3 credit units per course)*

- (a) Project and programme management skills
  - **Operations Management** (SEEM5006)
  - **Project Management** (SEEM6009)
  - **China Engineering Enterprise Management** (SEEM6044)
  
- (b) e-based manufacturing and logistic systems
  - **Supply Chain Management** (SEEM6015)
  
- (c) Managerial decision making
  - **Enterprise Strategy and Technology** (MBE5011)
  - **Micro Systems Technology** (MBE6005)
  - **Engineering Economic Analysis** (SEEM6050)
  - **Estimation and Control of Random Dynamic Systems** (SEEM6101)
  - **Statistical Modelling and Design of Experiments** (SEEM8011)
  - **Advanced Design of Experiments and Taguchi Method** (SEEM8103)
  - **Theoretical Underpinnings of Decision Making Under Uncertainty** (SEEM6104)
  - **Risk and Decision Analysis** (SEEM6105)
  - **Forecasting and Control Using Regression, Time Series, and Dynamic Models** (SEEM8102)
  
- (d) Change and innovation management
  - **Industrial Marketing Management for Engineers** (SEEM5009)
  - **Technological Innovation and Entrepreneurship** (SEEM6012)
  - **Managing Strategic Quality** (SEEM6037)
  - **Industrial Case Study** (SEEM6045)
  - **Quality Improvement: Systems and Methodologies** (SEEM6047)
  - **Marketing Strategy for Engineers** (SEEM6048)
  
- (e) Intelligent maintenance
  - **Asset and Maintenance Management** (SEEM6014)
  
- (f) Automation systems and management
  - **Modelling and Simulation in Enterprises** (SEEM6038)

The offering of a particular course will be subject to the actual enrollment number. The Departments, at all time, reserve the right to cancel the offering of any course due to insufficient enrollment.

## Research Component

This component of the EngD(EM) programme emphasizes independent research and the application of theory and techniques.

### Doctoral Thesis (SEEM8104D) 36 credit units

Candidates will be required to produce a doctoral thesis that demonstrates their ability to make a tangible contribution to learning and to professional practice, and to appreciate and understand the relationship of their own investigations to a wider field of knowledge.

The thesis could be:

1. A specific company-based project; or
2. An industry-based project.

It can also take the form of a collection of small projects from either a single company or a few companies, integrated in a cohesive nature to solve problems with greater impact to the company(ies) or the whole industrial sector. The candidate should aim to improve specific areas of professional practice and demonstrate how his or her findings would lead to improvements in industry.

### Possible research topics/areas for EngD thesis

Topics/Areas	Prospective Supervisors
<b>THEME: INDUSTRIAL ENGINEERING AND ENGINEERING MANAGEMENT</b>	
Analytic Hierarchy Process (AHP) Theory and Applications	Dr. K. S. Chin Dr. Richard Fung
Application of Quality Function Deployment Technique for Product/Process Improvement	Prof. M. Xie
Collaborative Product Development Strategies and Systems	Dr. K. S. Chin Dr. Richard Yam
Customer Oriented Operations and Quality Management	Dr. K. S. Chin Dr. Peter Tse Dr. Richard Fung
Energy Management and Auditing	Dr. Peter Tse
Engineering Asset Management	Dr. Peter Tse Dr. Richard Yam
Enterprise Resources Planning (ERP) and IT Management	Dr. H. Y. Sun Dr. Richard Fung
Ergonomics and Human Factors	Dr. Alan Chan
Healthcare Informatics and Management	Dr. Peter Tse Prof. K. Tsui
Information and Knowledge Management	Dr. Richard Fung Dr. Richard Yam
Information Security & Supply Chain Security	Dr. Richard Fung
Intelligent Decision Making Management System	Dr. K. S. Chin Dr. Peter Tse Prof. H. X. Li

<b>TOPICS/AREAS</b> <b>THEME: INDUSTRIAL ENGINEERING AND ENGINEERING MANAGEMENT</b>	<b>PROSPECTIVE SUPERVISORS</b>
Intelligent Maintenance and Management	Dr. Peter Tse Dr. Richard Yam
Knowledge Management and Organizational Learning for Innovation	Dr. H. Y. Sun Dr. Richard Yam
Lean Manufacturing and Value Stream Management	Dr. K. S. Chin
Learning Organisation and Organisational Learning	Dr. K. B. Chuah
Logistics and Optimization	Dr. C. Y. Dang
Manufacturing Strategy and Supply Chain Management	Dr. H. Y. Sun Dr. Richard Fung Dr. Richard Yam
Occupational Safety and Health Engineering and Management	Dr. Alan Chan Dr. Peter Tse
Performance Analysis and Quality Control	Dr. K. S. Chin Prof. K. L. Tsui Prof. H. X. Li
Product Development Strategies and Management	Dr. K. S. Chin Dr. Peter Tse Dr. Richard Yam Prof. K. L. Tsui
Product Life Cycle Management	Dr. Peter Tse
Prognostics and System Health Management	Dr. Peter Tse Prof. K. L. Tsui
Project Conflicts – By-passing, Abusing or Ignoring Rules of Engagement	Dr. K. B. Chuah
Project Evaluation, Planning, Scheduling and Management	Dr. K. B. Chuah Dr. Richard Fung
Quality and Reliability Engineering	Prof. K. L. Tsui
Reliability Analysis for Decision Making and Cost Reduction	Prof. M. Xie
Study of Control Chart Applications for Process Monitoring/Management	Prof. M. Xie
Study/Analysis of Software Metrics/Quality or Development Processes	Prof. M. Xie
Supply Chain and Logistics Management	Dr. Richard Fung Dr. Richard Yam
System Informatics and Data Mining	Dr. Peter Tse Prof. K. L. Tsui Prof. H. X. Li
Technological Innovation and Entrepreneurship Management	Dr. H. Y. Sun Dr. K. S. Chin Dr. Peter Tse Dr. Richard Yam
Technology Commercialization and Entrepreneurship	Dr. H. Y. Sun



## **Credit Transfer**

Credit transfer is allowed for students who possess postgraduate or other qualifications of relevance to the Engineering Doctorate degree. An applicant applying for credit transfer will have to demonstrate a high level of competency in the completed graduate coursework for which credit transfer is requested. Normally, credit transfer will only be granted for previously completed units of study that can be demonstrated as contributing to the candidate's total programme of study in the Engineering Doctorate degree.

- For students with a master's degree from relevant fields:  
Up to a maximum of 12 credit units of elective courses

Applications for credit transfer should be submitted to the Chow Yei Ching School of Graduate Studies before the deadline set by the University. A fee of HK\$140 will be charged for each application form submitted, which is non-refundable.

## **Programme Fee**

(Fees are reviewed annually and are subject to revision from time to time without prior notification.)

The following highlights the major fees for the programme:

<b>Type of Fee</b>	<b>Amount (in HK\$)</b>	<b>Remarks</b>
Course fee *	\$7,090 per credit unit	Non-refundable; to be paid on a semester basis #
Fee for thesis component (36 credit units)	\$255,240 (\$7,090 per credit unit)	Non-refundable; normally to be paid in six installments of \$42,540 each and on a semester basis on commencement of the thesis; early thesis completion will not result in a reduction of the fees
Continuation fee for research component	Equivalent to 6 credit units per semester	Non-refundable; to be paid only if students cannot complete their thesis components in 6 semesters
Thesis examination fee	\$1,000	Non-refundable

\* When credit transfer is granted, students do not need to attend the exempted courses or pay the relevant course fees.

# Minimum 2 credit units still required even students not taking any courses.

## **Minimum Entrance Requirements**

Applicants must:

- hold a Master's degree in a related engineering discipline/profession (or equivalent qualification\*) from a recognized university; AND
- have at least five years' recent work experience at a senior level

\* Equivalent qualifications mentioned above include relevant professional qualifications or other scholarly achievements recognized by the University.

## **English Proficiency Requirement**

Applicants from a university where the language of teaching is not English should satisfy the following minimum English proficiency requirement:

- a TOEFL score of 550 (paper-based test) or 213 (computer-based) or 79 (Internet-based); or
- an overall band score of 6.5 on the International English Language Testing System (IELTS); or
- band 6 in mainland China's College English Test; or
- other equivalent qualifications.

Candidates who do not fulfil the above requirements will be required to pass a test following guidelines stipulated by the Chow Yei Ching School of Graduate Studies to ascertain their English standard.

## **Application Procedures and Related Issues**

### **Application Procedures**

1. The application period for the EngD programmes (for 2015 entry) is **17 November 2014 - 28 February 2015**.
2. Application for admission should be made on-line at [www.cityu.edu.hk/sgs/](http://www.cityu.edu.hk/sgs/)
3. Applicants are required to upload the following documents through the online application system:
  - (a) **completed application form** (online through the Web); and
  - (b) **application fee payment** (see "Application Fee"); and
  - (c) **a photocopy of the following supporting documents:**
    - (i) **official certificates and transcripts of academic qualifications** (certificates and transcripts that are not in English should be accompanied by a formal certified translation in English)

- (ii) **certificates of professional qualifications**, if applicable
  - (iii) (in support of the applicant's publication record, if applicable) **the front page of the papers** (for papers that have been published) **or the letter of acceptance** (for papers that have been accepted for publication)
  - (iv) **results of international English language tests**, if applicable
- (d) **a letter from the applicant's company**, indicating (i) its support of this EngD(EM) application, and (ii) if the applicant is admitted, its permission for the applicant to work on a company-related research topic for the doctoral thesis. This company reference letter can be submitted after the selection interview.
3. Applicants are also required to **nominate an academic referee** who can comment on their academic performance (the proposed supervisor and persons from non-academic circles are normally not acceptable as academic referees). Please send the Referee's Report Form (available under Prospective Students/Download at [www.cityu.edu.hk/sgs/](http://www.cityu.edu.hk/sgs/)) to the referee and invite him or her to complete the form and return it directly to the Chow Yei Ching School of Graduate Studies under confidential cover.
  4. If necessary, the letter of support from the employer and the academic referee's report can be submitted after the applicant's interview.
  5. After the interview, applicants may be asked to provide an outline (minimum of one full page of A4) of their proposed EngD(EM) project.

### **Application Fee**

- (a) An application fee of HK\$300 will be charged for online application, which is non-refundable. Settlement of the application fee shall be made via online credit card payment.
- (b) Please note that applications will not be processed if the payment of the application fee has not been settled.

### **Multiple Applications**

You may apply for more than one programme of study at the University. However, if you receive more than one admission offer, you can only enrol in one programme.

### **Use of Application Information**

The information provided in the application form will be used for the following purposes:

- (a) as a basis for various types of processing in relation to your application;
- (b) as a basis for selection of applicants for admission to the EngD(EM) programme offered by the University and for other relevant or related purposes;
- (c) as a basis for consideration of credit transfer as appropriate;
- (d) for identifying multiple applications and checking records of academic/professional qualifications with the parties concerned;
- (e) for transferring information to the student records system of the University, if and when the application is successful.

Any false information and misrepresentation will result in disqualification of the applicant for admission to the University.

In accordance with the Personal Data (Privacy) Ordinance, applicants have the right to access all personal information relevant to their application and the right to correct the personal information contained in the application form. To obtain more details about this, please write to the Chow Yei Ching School of Graduate Studies.

### **Change of Contact Information**

Please inform the Chow Yei Ching School of Graduate Studies immediately in writing or through e-mail ([sg@cityu.edu.hk](mailto:sg@cityu.edu.hk)) of any changes to your correspondence address and contact phone number during the application period. In the notification, please state clearly your name, application/on-line form reference number and the programme applied for.

### **Assessment of Applications**

Shortlisted applicants will be notified by phone and invited to attend an interview as part of the selection process.

Applications will be considered on a competitive basis based on the information provided in the application form and the applicants' performance at the interview. All applicants will receive individual notification of the application result.

### **Applicants with Physical or Other Disabilities**

The admission of an applicant to a programme is based on academic criteria and any other entrance requirements specified by individual Departments and Schools. Applicants with physical or other disabilities can choose not to declare their disability at the application stage. Such applicants, however, are advised to select programmes with which they are physically able to cope. If they have any queries in this regard or wish to have information on facilities available for people with disabilities generally, they should consult the Programme Director (see the back of the front cover page).

## **Registration**

Successful applicants must pay an acceptance fee and complete the registration procedures in person at the Chow Yei Ching School of Graduate Studies within the period specified in the offer letter. Those who fail to do so will be considered to have declined the offer and will be replaced by reserve candidates.

Successful applicants are required, on registration, to produce for verification the original copy of the supporting documents for qualifications claimed in the application form. Provision of any false or misleading information therein will lead to disqualification of the applicant for admission to the University. All fees paid will not be refunded.

Students are not allowed to register simultaneously in another programme of study in the University or in any other institution without prior permission from the Chow Yei Ching School of Graduate Studies.