Department of Industrial Engineering and Logistics Management

Head of Department:
Fugee TSUNG, Professor of Industrial Engineering and Logistics Management

Associate Head:
Neville Ka-Shek LEE, Associate Professor of Industrial Engineering and Logistics Management

Technological advances in business and industry have created a pressing demand for industrial engineers, who work out the most effective ways to produce a product or provide a service. Industrial Engineering is among the highest-earning college degrees and we have designed our course to provide students with both management and engineering skills, giving them a solid foundation for career advancement to executive level positions.

Research in IELM falls along two themes: Logistics and Supply Chain Management, and Product Design and Manufacturing. Our work in Logistics and Supply Chain Management emphasizes on integrating the logistics and supply chain needs of Hong Kong with its vicinity for further enhancing the cooperation with the provinces and hence adding value to the economic development. In the area of Product Design and Manufacturing, the research focuses on bringing competitive advantages to industry by leveraging on the technological advances in the financial, communication and logistics sectors.

The Department has a host of state-of-the-art facilities to support our teaching and research. Government and industry funded projects are on-going. Collaborations with renowned universities and professional institutions have been established. The Department has also built partnerships with major service industry sectors, in particular with the logistics industry. For example, the Logistics and Supply Chain Management Institute seeks excellence in research and the transfer of research results to assist informed decision-making and efficient operations. In addition, the Zhejiang Advanced Manufacturing Institute (ZAMI) has been co-established by HKUST, Zhejiang Department of Science and Technology and Yuhang District People's Government of Hangzhou City to advance research on mass customization, enterprise information integration, industrial product design and development, among other areas.

IT solutions are emphasized in teaching, research and industry collaborations, together with the impact of the globalization of the world’s economy.

UNDERGRADUATE PROGRAMS

The roles and responsibilities of industrial engineers have gone through changes of revolutionary magnitude because of changing technology, convergence of product and service businesses, globalization of the supply chain, customization of product requirements, increasing competition and dramatically compressed product life cycles.
The focus of the Department is to equip students with the knowledge, skills and tools in the mathematical, physical and social sciences, together with the principles and methods of engineering analysis and design, to solve problems arising in a variety of different systems. Industrial Engineering and Logistics Management involvement with systems is at all stages, from initial conception and planning, through design and implementation, to management, together with the analysis and improvement of existing systems.

The Department offers two undergraduate programs: Bachelor of Engineering (BEng) in Industrial Engineering and Engineering Management, and Bachelor of Engineering (BEng) in Logistics Management and Engineering.

HKUST is the first university in Hong Kong offering a Bachelor’s degree in Logistics Management. Our program trains a new generation of engineers for both managerial and technical positions in the logistics industry. The knowledge and skills of our graduates are highly valued by companies in the industry.

Our BEng programs are accredited by the Hong Kong Institution of Engineers and our graduates are en route to becoming internationally recognized professional engineers. The programs are also accredited by the Chartered Institute of Logistics and Transport in Hong Kong.

**Curriculum**

Description of the curriculum and courses for the following programs are presented online at [http://publish.ust.hk/calendar](http://publish.ust.hk/calendar):

- BEng in Industrial Engineering and Engineering Management (IEEM)
- BEng in Logistics Management and Engineering (IELM)

**POSTGRADUATE PROGRAMS AND RESEARCH**

Industrial engineers are trained from the total system perspective to practice as a system integrator, as a cross-function trainer and a change facilitator. We also emphasize strategic issues, integration and customer-orientation. Core knowledge of Industrial Engineering is combined with courses and research projects in key engineering management subjects to enable our graduates to have a comprehensive grasp of both technological and managerial aspects of contemporary issues.

The Department covers two main research areas: Logistics and Supply Chain Management; and Product Design and Manufacturing. Within these areas, research projects investigate a range of subjects encompassing logistics and supply chain systems, simulation, quality management, ergonomics, manufacturing systems, and information technology, creating a dynamic environment for postgraduate study.

The Department offers postgraduate programs leading to the degrees of Master of Science (MSc) in Engineering Enterprise Management, Master of Philosophy (MPhil) and Doctor of Philosophy (PhD). Full-time and part-time options are available for most of these programs.
In the PhD program, a student should learn formulating an original research project that addresses some of the significant issues, and independently creating an effective solution to the problem. In the MPhil program, a student is trained for engineering research and development to prepare them for taking up leading technical roles in high value-added business organizations.

The Department seeks excellence in research with lasting impact on the field. In addition to global impact, much of our research work is focused on deployment in local and regional industries to enhance their competitiveness. We also provide a stimulating environment in which to train future leaders in the Industrial Engineering and Logistics Management arena. We equip students with the knowledge, skills and tools to make contributions to the economy through translating business vision into reality and the continuous improvement of organizations.

Curriculum

Description of the curriculum and courses for the following programs are presented online at http://publish.ust.hk/calendar:

**Taught Postgraduate Programs:**
- Master of Science (MSc) in Engineering Enterprise Management

**Research Postgraduate Programs:**
- Master of Philosophy (MPhil) in Industrial Engineering and Logistics Management
- Doctor of Philosophy (PhD) in Industrial Engineering and Logistics Management

FACULTY AND THEIR RESEARCH INTERESTS

**Chair Professors**

Chung-Yee LEE (李忠義), BS, MS National Chiao-Tung; MS Northwestern; PhD Yale
(Director of Logistics and Supply Chain Management Institute)

Research Interests: Logistics management; production scheduling; production and operations management.

Mitchell M. TSENG (曾明哲), BSc National Tsing Hua; MSc, PhD Purdue
(Director of Advanced Manufacturing Institute)

Research Interests: Mass customization and personalization technology; systems integration technology; design technology; manufacturing automation technology.
SCHOOL OF ENGINEERING

Professors

Ravindra S. GOONETILLEKE (耿樂偉), BSc Univ of Moratuwa, Sri Lanka; MSAE Georgia Inst of Tech; MS, PhD State Univ of New York, Buffalo

Research Interests: Innovative design and development of footwear; design of user-friendly products and systems; product usability; human performance modelling.

Fugee TSUNG (宗福季), BS National Taiwan; MSc, PhD Michigan (Head of Department)

Research Interests: Statistical process control (SPC), monitoring and diagnosis; quality engineering and management to service and manufacturing.

Rachel Q. ZHANG (張荃), BS Zheng Zhou Inst of Tech; MS Zhejiang; MS, PhD Northwestern

Research Interests: Inventory and supply chain management; joint operational and financial decisions.

Adjunct Professors

Raymond K. M. CHEUNG, BS, MA York Univ, Toronto; MA, PhD Princeton

Research Interests: Transportation systems management; logistics and distribution planning; network modeling and optimization; stochastic and dynamic optimization.

Hau L. LEE (李效良), BSc Hong Kong; MSc London Sch of Econ; MS, PhD Pennsylvania

Research Interests: Supply chain management; global logistics systems design and control; inventory systems; manufacturing strategy; social responsibility and sustainability.

Otto C.C. LIN (林垂宙), BS National Taiwan; MA, PhD Columbia (Adjunct Professor of Chemical and Biomolecular Engineering)

Research Interests: Management of R&D and innovation; technology diffusion; science parks; science-technology and national competitiveness; polymers in electronics.
Associate Professors

Jeff L. HONG (洪 流), BE Tsinghua; MS Cincinnati; MS, PhD Northwestern
(Associate Director of Logistics and Supply Chain Management Institute)

Research Interests: Simulation and optimization methodologies, and their applications in risk management; operations and logistics management; environmental issues.

Ajay JONEJA (莊 納 雅), BTech Indian Inst of Tech, Kanpur; MSc, PhD Purdue

Research Interests: CAD/CAM integration for manufacturing processes; computer-aided process planning; mass customization; rapid prototyping.

Neville Ka-Shek LEE (李 家 碩), BS Univ of California, Los Angeles; PhD Massachusetts Inst of Tech
(Associate Head of Department)

Research Interests: Development of precision manufacturing system; development of advanced precision instruments and equipments; development of state-of-the-art material handling system.

Xiangtong QI (齊 向 彤), BSc, MEng, DEng Nankai; PhD Univ of Texas, Austin

Research Interests: System modeling; discrete and combinatorial optimization; stochastic optimization; production scheduling; inventory control; logistics; supply chain management.

Richard H. Y. SO (蘇 孝 宇), BSc, PhD Southampton

Research Interests: Human responses to advance visual and audio interfaces; computational ergonomics; mass customization of spatial hearing devices and spatial visualization devices.

Kaijie ZHU (朱 彥 捷), BS, MS Shanghai Jiao Tong; PhD Stanford

Research Interests: Supply chain management; production planning; inventory control.
Visiting Associate Professor

Wei JIANG (蔣煒), BS, MS Xi’an Jiaotong; PhD Hong Kong Univ of Sc & Tech

Research Interests: Statistical learning and data mining; information systems and quality management; quality control; risk management in logistics management and financial applications.

Assistant Professors

Ning CAI (蔡寧), BS, MS Peking; PhD Columbia

Research Interests: Financial engineering; applied probability in operations research and finance.

Qian LIU (劉倩), BE, ME Tsinghua; MPhil, PhD Columbia

Research Interests: Pricing and revenue management; consumer behavior driven operations management; supply chain contracting.

Ho-Yin MAK (麥浩然), BS Northwestern; MS, PhD Univ of California, Berkeley

Research Interests: Integrated supply chain design and management; logistics and transport operations; facility location and inventory control; applied optimization and metaheuristics.

Jiheng ZHANG (張季恒), BS Nanjing; MS Ohio State; PhD Georgia Inst of Tech

Research Interests: Service operations management; health care management; stochastic processing networks; applied probability; stochastic optimization.

Visiting Assistant Professor

Lucy FU (付琦), BE, ME Huazhong Univ of Sc & Tech; PhD Hong Kong Univ of Sc & Tech

Research Interests: Logistics and supply chain management; procurement risk management; inventory management; information sharing.