Master of Science (MSc) Program in IC Design Engineering

Program Director:

Amine BERMAK, Associate Professor of Electronic and Computer Engineering

Hong Kong is rapidly shifting to a knowledge-based economy. There is an increasing need to upgrade the knowledge of the professional workforce, particularly on subjects which are related to modern technological advances in the fields of information technology and integrated circuit (IC) design engineering.

IC design is a prime example of a knowledge-based industry. Workers in the industry are highly skilled professionals. The chips they design provide high added-value to the end-products. Today, IC design and manufacturing is a highly specialized and global business. A chip may be designed by an IC design company in Hong Kong and fabricated in a wafer foundry in Taiwan. The wafer packaging and assembly may be done in Hong Kong and the final testing may be carried out in Malaysia. The finished chips are then shipped to customers in the Pearl River Delta region. The IC business is now a highly segmented business and there are many specialized and low-cost service providers. These service providers are extremely competitive. IC design is on the top of the 'food-chain'. The IC design companies provide the most added value in the entire product development and manufacturing cycle. They are often called fabless design houses since these companies do not have their own manufacturing facility (or Fab). Hong Kong has several geographic and infrastructural advantages for engaging in the fabless IC design business, thus creating enormous need for education.

The Master of Science (MSc) program in IC Design Engineering is designed for professionals with a bachelor's degree in Engineering or Science who are interested in acquiring in-depth knowledge in microelectronic engineering, or upgrade their knowledge in the subjects of IC design engineering. Students may choose the full-time option to finish the program in around a year, or the part-time option to finish in two years.

Admission Requirements

Applicants must possess a bachelor's degree in Electronic Engineering/ Engineering/Physical Sciences, with second class honors or higher, or an equivalent qualification from a recognized university or tertiary institution.

Program Duration

The program can normally be completed in one year in full-time mode, or two years in part-time mode. All lectures will be delivered at HKUST, or suitable venues in Hong Kong and/or Mainland China. Classes will be held in weekday evenings and/or weekends.

Program Fee

The program fee is HK$86,520. New students admitted with credit transfer are also required to pay the full program fee.

Curriculum

The program comprises a total of 24 credits of coursework.   Students are required to take 21 credits from the following course list and complete 3 credits of MSc Project:

EESM	5000	CMOS VLSI Design
EESM	5020	Digital VLSI System Design and Design Automation
EESM	5030	VLSI Signal Processing Architecture
EESM	5060	Embedded Systems
EESM	5100	Analog IC Analysis and Design
EESM	5120	Advanced Analog IC Analysis and Design
EESM	5200	Semiconductor Devices for Integrated Circuit Designs
EESM	5900*	Special Topics
EESM	5920	Topics in Analog IC Systems and Design
EESM	6980	MSc Project

Alternatively, subject to prior approval of the Program Director, students may take a maximum of 9 credits from outside this list offered by other programs. These 9 credits may include:

- EESM courses not in the above list, and
- A maximum of 3 credits of non-EESM courses.

The availability of courses offered by other programs may be subject to quota limitations imposed by individual programs.

Part-time students may take a maximum of 9 credits in each term.

Credit Transfer

Credit transfer may be granted to students in recognition of studies completed successfully elsewhere.   Upon the approval of the Program Director, a maximum of 3 credits can be transferred to the program, subject to University regulations governing credit transfer for postgraduate programs.

Graduation Requirements

Students in the program must complete the program with a graduation grade average (GGA) of 2.850 or above as required of all postgraduate students at the University. Students failing to meet the GGA requirement are required to repeat or take additional course(s) even if they attain passing grades for all courses.

_____

* Students may take EESM 5900 for a maximum of 6 credits.*