THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY | SCHOOL OF ENGINEERING

MSc in Electronic Engineering – Course Schedule

Students are required to complete a total of 24 credits of coursework. An Independent Study can also be undertaken for a maximum of 3 credits. Students may take EESM 5900 for a maximum of 6 credits. Subject to prior approval of the Program Director, students may take a maximum of 9 credits of courses offered by other MSc programs.

Tentative course offering schedule:

2021-22 Fall Term

- EESM 5620 Flat Panel Displays
- EESM 5650 Digital Communication Networks and Systems
- EESM 5730 Modern Control Systems Design
- EESM 5900J Special Topics: Diagnostic Medical Imaging
- EESM 5900K Special Topics: Business for Electronic Engineers
- EESM 5900L Special Topics: Integrated Design of RF Wireless Transceiver Systems and Building Blocks

Course Description of Special Topics: EESM5900J Diagnostic Medical Imaging:

This course introduces diagnostic medical imaging methods to graduate students. It covers the following topics: radiation, radiography, computer tomography, radioisotope imaging, diagnostic ultrasound imaging, magnetic resonance imaging, and applications of different imaging modalities. This course requires basic knowledge of linear algebra, calculus, and geometry. Familiarity with a programming language such as MATLAB is needed.

Course Description of Special Topics: EESM5900K Business for Electronic Engineers:

This course covers the organization of technology enterprises, engineering economics, fundamentals of accounting, cost accounting, understanding an enterprise from its financial statements, products and markets, the engineering process, and individual case studies.

Course Description of Special Topics: EESM5900L Integrated Design of RF Wireless Transceiver Systems and Building Blocks:

This course is to introduce design challenges and considerations of radio-frequency transceiver systems for wireless communication, covering RF concepts, RF wireless system architectures, and basic designs of their building blocks. Key blocks include phase-locked-loop-based frequency synthesizers, low-noise amplifiers, mixers, power amplifiers, filters, ADCs, and analog baseband amplifiers. Toward the end, integration of all blocks for complete integrated wireless transceivers will be discussed together with some comprehensive case studies.

2021-22 Spring Term

- EESM 5600 Photonics Technology and Applications
- EESM 5670 Advanced Architectures and Designs for Communication Networks
- EESM 5720 Signal Analysis and Pattern Recognition
- EESM 5900M Special Topics: Stochastic Learning, Estimation, and Control *[Background: EESM 5730]*
- EESM 5900N Special Topics: Radio Frequency Engineering

Course Description of EESM 5900M Special Topics: Stochastic Learning, Estimation, and Control:

This course will first cover the basics of linear state estimation starting from an introduction of deterministic and stochastic least square estimation. Then it will focus on Kalman filtering algorithm and its applications in remote state estimation. After that, it will introduce dynamic programming and optimal control (LQR and LQG). It will also present a brief introduction to Markov decision process and reinforcement learning.

Course Description of EESM 5900N Special Topics: Radio Frequency Engineering

From the course, the student will derive and understand properties of various RF/microwave passive components and circuits, and learn how to apply these properties for particular designs. The student will grasp the theoretical foundations and concepts for specific microwave components, circuits. The students will understand that the passive components and circuits are indispensable in RF applications, and how they work together with active components in RF circuits.

Courses are offered subject to needs and availability.

For course details, please refer to:

(Version: 27 August 2021)