Energy Engineering

Hosted by
Department of Mechanical and Automation Engineering
The Chinese University of Hong Kong
Introduction
The Energy Engineering Programme of CUHK is designed to face the challenge that energy has become one of the most important areas of concern in the world in the 21st century, and renewable energy, environment, sustainable development, and green technology have been attracting unprecedented interests from a broad spectrum of the global community including governments, businesses, industries, and academia.

Programme Objectives
The Programme emphasizes emerging technologies on how energy and especially clean energy can be generated and harvested. The Programme stresses a balance between fundamental concepts and hands-on practice, with the goal of producing engineers who can contribute to the well being of the environment and the Hong Kong society through innovative problem-solving skills and adaptability toward the latest technological advances.

Programme Features
- Fundamental knowledge in energy principles, technologies and systems
- Foundational concepts on energy generation, storage, consumption, distribution, management, efficiency optimization, and tradeoffs
- Specialized learning on solar power, wind power, thermoelectric power, nuclear power, kinetic energy harvesting, biofuel, batteries and fuel cells
- Macroscope studies in energy utilization and management, energy policies, and energy-environment inter-relation
- Professional training in technical communications, engineering ethics, design application and final year projects
- Project-based learning on practical solutions for targeted energy-related problems and themes

Career Prospects
Upon graduation, Energy Engineering students will find career opportunities as power engineers, energy device engineers, energy auditors, environmental engineers, technical analysts or consultants for corporations, inspectors or officers to enforce government regulations on energy and environment, and other professions. They can also pursue a career in the Hong Kong BEAM Society (Building Environmental Assessment Method) or postgraduate studies in their specialized areas of interest in Hong Kong or overseas.
The Energy Engineering Programme includes core courses covering fundamental knowledge of energy engineering, and elective courses to specialize in specific technology areas. The courses include joint offerings with the Faculty of Science and other faculties to cover subject matters including chemical and environmental sciences, energy efficiency design of buildings, energy economics, and government policy making.

Faculty Package (9 units)
- ENGG1100 Introduction to Engineering Design
- ENGG1110 Problem Solving By Programming
- ENGG2601 Technology, Society and Engineering Practice (2 units)
- ENGG2602 Engineering Practicum (1 unit)

Foundation Science Courses (9 units)
- CHEM1070 Principles of Modern Chemistry
- CHEM1380 Basic Chemistry for Engineers
- ENGG1310 Engineering Physics: Electromagnetics, Optics and Modern Physics
- LSCI1001 Basic Concepts in Biological Sciences
- LSCI1003 Life Sciences for Engineers
- PHYS1003 General Physics for Engineers
- PHYS1110 Engineering Physics: Mechanics and Thermodynamics

Foundation Mathematics Courses (12 units)
- ENGG1410 Linear Algebra and Vector Calculus for Engineers
- ENGG2420 Complex Analysis and Differential Equations for Engineers
- ENGG2430 Probability and Statistics for Engineers
- MATH1510 Calculus for Engineers

Major Required Courses (18 units)
- ELEG2202 Circuits and Devices I
- ENER2010 Energy Technologies and the Environment
- ENER2020 Renewable Energy Technologies
- ENER3030 Engineering Materials
- MAEG2030 Thermodynamics
- SEEM2540 Energy Economics and Management

Major Electives (21 units)

Core Electives: (at least 8 units)
- CHEM4280 Chemistry in Biofuel (2 units)
- ELEG3601 Introduction to Electric Power Systems
- ENER4010 Kinetic Energy Harvesting Devices and Systems
- ENER4020 Solar Energy and Photovoltaic Technology
- ENER4030 Nuclear Energy and Risk Assessment
- ENER4050 Energy Storage Devices and Systems
- ENER4060 Energy Distribution
- MAEG4030 Heat Transfer
- MAEG4080 Introduction to Combustion

Non-core Electives:
- ARCH2421 Introduction to Building Technology
- CSCI1020 Hands-on Introduction to C++ (1 unit)
- CSCI1040 Hands-on Introduction to Python (1 unit)
- CSCI2100 Data Structures
- ENER3020 Energy Utilization and Human Behaviour
- ENGG1820 Engineering Internship (1 unit)
- ENSC2270 Introduction to Environmental Science
- ENSC3230 Principles of Environmental Protection and Pollution Control
- ENSC4240 Environmental Impact Assessment
- GRMD2404 Energy and Society
- GRMD3203 Urban Environmental Problems
- GRMD4202 Hydrology and Water Resources
- GRMD4204 Environmental Planning and Assessment
- MAEG2020 Engineering Mechanics
- MAEG3010 Mechanics of Materials
- MAEG3030 Fluid Mechanics
- MAEG3050 Introduction to Control Systems
- MAEG3920 Engineering Design and Applications
- MAEG4020 Finite Element Modelling and Analysis

Research Component Courses (6 units)
- ENER4998 Final Year Project I
- ENER4999 Final Year Project II

For updated information, please refer to http://www.ener.cuhk.edu.hk.
Admissions

For details of the admission information, please refer to the Faculty brochure or the Faculty website: http://www.erg.cuhk.edu.hk.

Enquiry
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