The University of Hong Kong
Department of Mechanical Engineering

The field of Mechanical Engineering is broad and involves studies at the fundamental scientific level as well as frontier of technology. To assist students in planning their career, 'guided electives' – recommended combinations of courses appropriate for popular disciplines within Mechanical Engineering, are listed here.

Guided Electives on Biomechanical Engineering
Guided Electives on Building Services Engineering
Guided electives on Energy Engineering
Guided electives on Environmental Engineering
Guided Electives on Materials Science and Engineering

Guided Electives on Biomechanical Engineering

In recent years, integrating knowledge from the fields of engineering and life sciences has received increasing attention both in academia and industry. To prepare our graduates with the appropriate analyzing and problem solving skills in this emerging area, the Mechanical Engineering Department offers a list of guided electives in Biomechanical Engineering. Students interested in mechanical phenomena in biological systems at various levels, e.g. molecular, cellular or tissue engineering aspect, are encouraged to select these electives.

Electives
MEDE4602 Molecular and cellular biomechanics (6 credits)
MEDE4603 Transport phenomena in biological systems (6 credits)
MEDE4604 Cell and tissue engineering (6 credits)
MEDE4601 Biomaterials II (6 credits, for students admitted in the academic year 2013-2014 and 2014-2015)
MEDE4605 Biomaterials design and applications (6 credits, for students admitted in the academic year 2015-2016 and thereafter)

Related topics/training
MECH3417 Industrial training (6 credits)
MECH3428 Research experience for undergraduates (6 credits)
MECH4429 Integrated capstone experience (12 credits)

Guided Electives on Building Services Engineering

Building services engineering is one of the major career pathway for mechanical engineering graduates. It covers the design, installation and maintenance of electrical and mechanical systems in building constructions. The guided electives target at guiding students to satisfy the top up requirements as laid down by the HKIE Building Services Discipline for graduates with a mechanical engineering background. Students who follow the guided electives may be granted exemptions from taking further courses in the related subject areas, namely HVAC, fire services, utility services, electrical installations and project management.

Electives

MECH3429	Air conditioning and refrigeration (6 credits)
MECH3430	Fire protection in buildings (6 credits)
MECH3431	Utility services in buildings (6 credits)
ELEC4146	Building services – electrical installations (6 credits) *

CIVL3103 Construction project management (6 credits) *

* Students may take the course as a free elective, a pre-requisite requirement may be applied.

Related topics/training

MECH3417 Industrial training (6 credits) – work related training in building services consultants, contractors or other related trades

MECH4429 Integrated Capstone Experience (12 credits) – project title related to the area of building services engineering

Guided electives on Energy Engineering

Energy engineering is an important sector in the discipline of mechanical engineering. The studies on power and energy cover different areas, including energy conversion devices, power generation principles, renewable energy systems and energy consumptions. Students who intend to work on these and related areas are advised to choose electives from this list. These courses cover a wide spectrum of topics from fundamental physics of energy conversion to their practical applications, manufacturing of solar cells, wind turbines and power plant systems.

Electives

MECH 3406 Electrical and electronic engineering (6 credits)
MECH 4409 Energy conversion systems (6 credits)
MECH 4411 Heat transfer (6 credits)
MECH 4423 Building energy management and control systems (6 credits)

Related topics/training

MECH3417 Industrial training (6 credits)
MECH3428 Research experience for undergraduates (6 credits)
MECH4429 Integrated capstone experience (12 credits)

Guided electives on Environmental Engineering

Environmental engineering is an important discipline in the fields of civil and mechanical engineering program. Studies of the environment cover different areas, including the nature and treatment of various pollution problems, such as those concerning air, noise, water and solid waste. Students who intend to join industries specializing in these and related areas, as well as those aspiring to pursue advanced graduate degrees, are advised to consider the following electives. These courses cover a wide spectrum of topics, ranging from fundamental pollution physics/chemistry to their practical applications such as source control, remedial measures and environmental management. Students passing these electives are eligible to apply for a scheme A training under the HKIE Environmental Discipline as well as the Mechanical Discipline.

Electives

CIME 2101 Water and air quality: concepts and measurements (6 credits)
CIVL 3111 Municipal and industrial waste treatment (6 credits)
CIVL 3115 Solid and hazardous waste management (6 credits)
MECH 3420 Air pollution control (6 credits)
MECH 4428 Sound and vibration (6 credits)

Related topics/training

MECH3417 Industrial training (6 credits)
MECH3428 Research experience for undergraduates (6 credits)