REGULATIONS FOR THE DEGREES OF
MASTER OF SCIENCE IN ENGINEERING (MSc[Eng])
MASTER OF SCIENCE IN COMPUTER SCIENCE (MSc[CompSc]), AND
MASTER OF SCIENCE IN ELECTRONIC COMMERCE AND INTERNET COMPUTING (MSc[ECom&IComp])

(Applicable to students admitted in the academic year 2024-25 and thereafter)

(See also General Regulations and Regulations for Taught Postgraduate Curricula)

The degrees of MSc(Eng), MSc(CompSc) and MSc(ECom&IComp) are each a postgraduate degree awarded for the satisfactory completion of a prescribed curriculum in the Faculty of Engineering.

For the MSc(Eng) degree, the major part of the curriculum must include courses offered in one of the following fields: building services engineering, civil engineering, electrical and electronic engineering, energy engineering, industrial engineering and logistics management, innovative design and technology, mechanical engineering, and microelectronic science and technology.

The MSc(Eng), MSc(CompSc) and MSc(ECom&IComp) curricula are offered in part-time and full-time modes.

MSc 1 Admission requirements

To be eligible for admission to the curriculum leading to the degree of MSc(Eng) / MSc(CompSc) / MSc(ECom&IComp), a candidate shall:

(a) comply with the General Regulations;

(b) comply with the Regulations for Taught Postgraduate Curricula;

(c) hold
- (i) a Bachelor's degree of this University in a relevant field; or
- (ii) a relevant qualification of equivalent standard from this University or from another university or comparable institution accepted for this purpose; and
- (iii) in respect of the courses of study leading to the degree of Master of Science in Engineering in the fields of Innovative Design and Technology and Microelectronic Science and Technology, a Bachelor’s degree in Engineering or related Science discipline;
- (iv) in respect of the courses of study leading to the degree of Master of Science in civil engineering, a Bachelor’s degree in related disciplines, such as Environmental Engineering, Chemical Engineering, Mechanical Engineering, Environment-related Sciences, Computer Science, Mathematics or Statistics; and

(d) satisfy the examiners in a qualifying examination if required.

MSc 2 Qualifying Examination

(a) A qualifying examination may be set to test the candidate's academic ability or his/her ability to follow the curriculum prescribed. It shall consist of one or more written papers or their equivalent and may include a dissertation.

(b) A candidate who is required to satisfy the examiners in a qualifying examination shall not be permitted to register until he/she has satisfied the examiners in the examination.

MSc 3 Period of Study

The curriculum of the degree of MSc(Eng) / MSc(CompSc) / MSc(ECom&IComp) shall normally extend over one academic year of full-time study or two academic years of part-time study. Candidates shall not be permitted to extend their studies beyond the maximum period of registration of two academic years of full-time study or three academic years of part-time study, unless otherwise permitted or required by the Board of Faculty. For both full-time and part-time modes, the period of study shall include any assessment to be held during and/or at the end of each semester.

MSc 4 Curriculum Requirements

To complete the curriculum, a candidate shall, within the prescribed maximum period of registration stipulated in Regulation MSc3 above:

(a) satisfy the requirements prescribed in TPG6 of the Regulations for Taught Postgraduate Curricula;

(b) take not fewer than 72 credits of courses, in the manner specified in these regulations and syllabuses and pass all courses as specified in the syllabuses;

(c) follow courses of instruction and complete satisfactorily all prescribed practical / laboratory work; and

(d) satisfy the examiners in all forms of assessment as may be required in either

  (i) 72 credits of courses which must include a dissertation of 24 credits or a project of 12 credits as capstone experience; or

  (ii) at least 60 credits of courses successfully completed at this University (which must include a dissertation of 24 credits or a project of 12 credits) and not more than 12 credits of courses successfully completed at this or another university before admission to the MSc(Eng) / MSc(CompSc) / MSc(ECom&IComp) and approved by the Board of the Faculty.

MSc 5 Dissertation or project report

(a) A candidate who is permitted to select a dissertation or a project is required to submit the dissertation or the project report by a date specified by the Board of Examiners.

(b) All candidates shall submit a statement that the dissertation or the project report represents his/her own work undertaken after the registration as a candidate for the degree.

MSc 6 Selection of Courses

(a) A candidate shall select courses according to the guidelines stipulated in the syllabuses for the degree of MSc(Eng) / MSc(CompSc) / MSc(ECom&IComp).

(b) Selection of study patterns, as stipulated in the respective syllabus, shall be subject to the approval of the Head of the Department concerned.

(c) Candidates shall select their courses in accordance with these regulations and the guidelines specified in the syllabuses before the beginning of each academic year.

(d) Changes to the selection of courses may be made only during the add/drop period of the semester in which the course begins, and such changes shall not be reflected in the transcript of the candidate.

(e) Subject to the approval of the Committee on Taught Postgraduate Curricula on the recommendation of the Head of the Department concerned, a candidate may in exceptional circumstances be permitted to select additional course(s).

(f) Requests for changes after the designated add/drop period of the semester shall be subject to the approval of the Committee on Taught Postgraduate Curricula. Withdrawal from courses beyond the designated add/drop period will be subject to the approval of the Committee on Taught Postgraduate Curricula.

MSc 7 Assessment

(a) The written examination for each course shall be held after the completion of the prescribed course of study for that course, and not later than January, May or August immediately following the completion of the course of study for that course unless otherwise specified in the syllabuses.

(b) A candidate, who is unable to complete the requirements within the prescribed maximum period of registration specified in Regulation MSc 3 because of illness or circumstances beyond his/her control, may apply for permission to extend his/her period of studies.

(c) A candidate who has failed to satisfy the examiners in any course(s) is required to make up for failed course(s) in the following manners:

  (i) undergoing re-assessment/re-examination in the failed course(s); or

  (ii) repeating the failed course(s) by undergoing instruction and satisfying the assessments; or

  (iii) taking another course in lieu and satisfying the assessment requirements.

(d) A candidate who has failed to satisfy the examiners in his/her dissertation or project report may be required to submit or resubmit a dissertation or a project report on the same subject within a period specified by the Board of Examiners.

(e) In accordance with G9(h) of the General Regulation and TPG8(d) of the Regulations for Taught Postgraduate Curricula, there shall be no appeal against the results of examinations and all other forms of assessment.

MSc 8 Grading system

Individual courses shall be graded according to the following grading system as determined by the Board of Examiners:

Standard	Grade	Grade Point
Excellent	A+	4.3
	A	4.0
	A-	3.7
Good	B+	3.3
	B	3.0
	B-	2.7
Satisfactory	C+	2.3
	C	2.0
	C-	1.7
Pass	D+	1.3
	D	1.0
Fail	F	0

MSc 9 Discontinuation of Studies

Unless otherwise permitted by the Board of the Faculty, a candidate will be recommended for discontinuation of their studies in accordance with General Regulation G12 if he/she has:

(a) failed to pass 12 credits in an academic year; or

(b) failed to satisfy the examiners at a second attempt in his/her dissertation or project report within the specified period; or

(c) failed to achieve a cumulative grade point average* (CGPA) of 1.0 or higher for two consecutive semesters with course enrolment; or

(d) exceeded the maximum period of registration specified in Regulation MSc3.

* *At the end of each semester, a cumulative grade point average (CGPA) for all courses, except cross-listed undergraduate courses and outside curriculum requirement optional courses as specified in the syllabuses, taken by a student (including failed courses) at the time of calculation is computed.*

MSc 10 Advanced Standing

Advanced standing may be granted to candidates in recognition of studies completed successfully before admission to the curriculum in accordance with TPG3 of the Regulations for Taught Postgraduate Curricula. Candidates who are awarded Advanced Standing will not be granted any further credit transfer for those studies for which Advanced Standing has been granted. The amount of credits to be granted for Advanced Standing shall be determined by the Board of the Faculty, in accordance with the following principles:

(a) a candidate may be granted a total of not more than 20% of the total credits normally required under a curriculum for Advanced Standing unless otherwise approved by the Senate; and

(b) credits granted for advanced standing shall not be included in the calculation of the GPA but will be recorded on the transcript of the candidate.

MSc 11 Award of Degree

To be eligible for the award of the degree of MSc(Eng) / MSc(CompSc) / MSc(ECom&IComp), a candidate shall:

(a) comply with the General Regulations and the Regulations for Taught Postgraduate Curricula;

(b) complete the curriculum and satisfy the examiners in accordance with the regulations set out; and

(c) achieve a cumulative grade point average (CGPA) of 1.0 or higher.

MSc 12 Assessment results

On successful completion of the curriculum, candidates who have shown exceptional merit of achieving a cumulative grade point average (CGPA) of 3.6 or higher may be awarded a mark of distinction, and this mark shall be recorded on the candidates' degree diploma.

Subject to the University's approval

MSC(ENG) IN ENERGY ENGINEERING
(Applicable to students admitted to the curriculum in the academic year 2019-2020 and thereafter)

Definition and Terminology

Discipline course – any course on a list of courses in the discipline of curriculum which a candidate must pass at least a certain number of credits as specified in the Regulations.

Elective course – any course offered by the Departments of the Faculty of Engineering for the fulfilment of the curriculum requirements of the degree of MSc(Eng) in Energy Engineering that are not classified as discipline courses.

Capstone Experience – a 12-credit project or a 24-credit dissertation which is a compulsory and integral part of the curriculum.

Curriculum Structure

Candidates are required to complete 72 credits of courses as set out below, normally over one academic year of full-time study or two academic years of part-time study:

	Enrolment Mode of 10 courses + Project	**Enrolment Mode of 8 courses + Dissertation**
Course Category	**No. of Credits**	**No. of Credits**
Discipline Courses	Not less than 36	Not less than 30
Elective Courses	Not more than 24	Not more than 18
Capstone Experience	12	24
Total	72	72

Candidates shall select courses in accordance with the regulations of the degree. Candidates are required to follow a prescribed curriculum comprising either a 24-credit dissertation and another 8 courses, including at least 5 discipline courses from the List of Discipline Courses (including at least 2 fundamental courses) and no more than 3 courses offered by other taught postgraduate curricula in the Faculty of Engineering as electives ;or a 12-credit project and 10 courses, including at least 6 discipline courses from the List of Discipline Courses (including at least 2 fundamental courses) and no more than 4 courses offered by other taught postgraduate curricula in the Faculty of Engineering as electives. All course selection will be subject to approval by the Course Coordinators.

List of Discipline Courses for MSc(Eng) in Energy Engineering

Fundamental courses (select at least two out of three):
EMEE6002. Sustainability and climate change (fundamental)
EMEE6005. Renewable energy technology I: Fundamental (fundamental)
EMEE6010. Electricity quality and energy efficiency (fundamental)

ELEC6095. Smart grid
ELEC7011. Energy Internet
ELEC7402. Advanced electric vehicle technology
ELEC7403. Advanced power electronics
ELEC7404. Advanced railway engineering
ELEC7405. Advanced signaling systems for railway
ELEC7408. Power, Control and Signalling Facilities for High-Speed Trains
EMEE6003. Nuclear energy

EMEE6004. Energy conservation and management
EMEE6006. Renewable energy technology II: Advanced
EMEE6007. Energy and carbon audit
EMEE6008. Green project management
EMEE6009. Green facilities management
EMEE6011. Energy saving lighting
EMEE7012. Power systems practicum
EMEE7013. Leadership in future energy industry
EMEE7014. Building information modelling for E&M engineers
MEBS6016. Energy performance of buildings
MECH7011. Applied thermodynamics and power plant technology

The list below is not final and some courses may not be offered every year.

All courses are assessed through examination and/or coursework assessment.

ELEC6095. Smart grid (6 credits)

This course aims at providing fundamental knowledge of various smart grid technologies. The challenges of the future electric power grid, renewable energy integration, energy utilization, energy storage system, automation and communication technologies in smart grid will be covered. Topics on the smart devices/appliances and energy saving control are included.

Mutually exclusive with: ELEC6096, MEBS6018

ELEC7011. Energy Internet (6 credits)

The aim of this course is to provide basic knowledge on the emerging energy technologies in Energy Internet, which offer innovative solutions to accommodate renewable energy and achieve carbon neutrality goals. This calls for an interdisciplinary understanding of aspects such as electrical engineering, thermal engineering, information technology, data science, management science, and economics. This course will showcase the advances by combining these aspects and introduce the layered structure of the Energy Internet with rich illustrative examples of the key concepts, components, and technologies. The latest technical developments and industrial demonstrations will be covered as well.

ELEC7402. Advanced electric vehicle technology (6 credits)

This course aims at providing in-depth understanding of the latest technologies of electric vehicles (EVs), with emphasis on their system configurations, propulsion systems, energy systems, and development trends.

Specifically, the course covers the following topics: latest EV system concepts and designs, advanced electric machines and drives for EVs, advanced hybrid powertrains for hybrid EVs, advanced EV energy sources and energy management systems, and EV-to-grid technology.

ELEC7403. Advanced power electronics (6 credits)

The aim of this course is to provide students with an understanding of advanced subject matters in power electronics, which include (i) high-frequency switching converters; (ii) dynamics and control of switching converters; (iii) modeling of switching converters; (iv) components and devices; and (v) industrial requirements. Students enrolled in the course are expected to have prior understanding of basic power electronic principles and the operations of rectifier and phase controlled circuits, and DC/DC buck, boost, buck-boost, and Cuk converters, and knowledge of basic power devices such as power transistor, power MOSFET, and IGBT.

ELEC7404. Advanced railway engineering (6 credits)

The aim of this course is to provide students with an understanding of advanced subject matters in railway engineering, which include (i) railway operations; (ii) rolling stock; (iii) railway traction supply systems; (iv) signaling system;(v) railway infrastructures; and (vi) railway business management. Students enrolled in the module are expected to have prior understanding of basic electrical engineering and power electronic principles, the operations of AC and DC circuits, rectifier and phase controlled circuits.

ELEC7405. Advanced signaling systems for railway (6 credits)

The course aims at providing students with a sound understanding of various advanced signaling systems for railway lines as well as the latest signaling technologies in the market. The course covers 6 main areas – time table and headway, trackside signaling equipment (including train position detection and navigation systems), automatic train supervision and automatic train protection, interlocking principles, block concepts (moving block and fixed block systems), Communication-based train control systems and China and European Train control systems. Students enrolled in the module are expected to have knowledge and know-how of basic electrical engineering principles.

ELEC7408. Power, Control and Signalling Facilities for High-Speed Trains (6 credits)

Due to the rapid development of High-Speed Railway worldwide, there is a strong demand for railway professionals in the areas of railway planning, design, construction, maintenance and operations. The railway engineering professionals, in particular those with High-Speed knowledge and experience are scarce in supply. This course aims to provide students with specialized knowledges and practical skills on the key Electrical and Electronic Systems in a High-Speed Rail, including Rolling Stocks, Power System, Signalling and Control and Communications Systems. The course can also broaden the knowledge of those engineers who are already working in the railway industry and prepare them to take up more senior positions.

EMEE6002. Sustainability and climate change (fundamental) **(6 credits)**

This course aims at introducing the cause and consequence of climate change. A few technical solutions for solving the climate change problems, such as solar energy, nuclear energy, smart grid, electric vehicle, green ICT and energy efficiency audit, will be introduced. In addition, other non-technical solution such as: carbon trade, Clean Development Mechanism, Kyoto protocol and carbon audit will be discussed. The course provides both theoretical background and practical knowledge of the causes and solutions of the problem. The sustainability and issues in Hong Kong and China, such as air, water, solid waste and electronic waste pollutions, will be discussed.

Mutually exclusive with ELEC7407

EMEE6003. Nuclear energy (6 credits)

Students in this course will acquire the fundamental knowledge on nuclear energy and nuclear power system, ranging from the fundamental principles of nuclear physics, nuclear power system design and operation, waste disposal, to risk assessment and safety management. In addition to technical knowledge, nuclear governance and policy governing the safe and effective operation of nuclear power plants will be covered. Students will be equipped with the necessary knowledge benefitting their careers development in the nuclear power industry.

Mutually exclusive with ELEC6104

EMEE6004. Energy conservation and management (6 credits)

This course aims to: (1) understand the technological, social, economic and environmental factors related to the use of fossil fuels and renewable energy; (2) understand the major energy consumers in buildings, transportation and industrial processes; and (3) identify effective energy conservation and conduct energy audits and management systems.

Topics include: energy sources and environmental impact; energy in buildings; energy-efficient industrial processes; waste heat recovery; energy storage; energy auditing; energy strategies and management.

Students who have taken and passed MECH 6033 will not be allowed to take EMEE6004.

EMEE6005. Renewable energy technology I: Fundamental (fundamental) **(6 credits)**

This course focuses mainly on different renewable energy technologies including hydro power, wind power, bioenergy, solar thermal, solar PV, energy storage, and energy usage. The specific course objectives are: (1) to have a deep understanding of the important role played by renewable energy in our energy supply; and (2) to grasp the fundamentals of different energy resources; (3) to understand energy storage and its important role in solving intermittency and other issues; and (4) to understand how to use energy more efficiently with solid state lighting and other energy saving technologies.

Topics include: renewable energy in a big picture; hydro power; wind power; solar thermal; solar PV; bioenergy; energy storage: energy usage.

Students who have taken and passed MECH 6042 will not be allowed to take EMEE6005.

EMEE6006. Renewable energy technology II: Advanced (6 credits)

This course is on the working principles of advanced energy conversion devices including solar cells, fuel cells, batteries, photoelectrochemical (PEC) water splitting cells, and thermoelectric cells. Also covered are the energy carriers in different materials and the connection between different energy conversion devices. The specific course objectives are as: (1) to have a deep understanding of the energy carriers in different materials and their important roles in energy conversion; (2) to grasp the working principles of different energy conversion devices; (3) to be able to tell the differences and similarities between different energy conversion devices; and (4) to be able to design more efficient energy conversion devices.

Topics include: introduction: energy carriers in energy conversion cells; solar cells; fuel cells; electrochemical cells; photoelectrochemical (PEC) water splitting; thermoelectric cells.

Students who have taken and passed MECH 6043 will not be allowed to take EMEE6006.

EMEE6007. Energy and carbon audit (6 credits)

This course aims to: (1) provide students with the fundamental principles, skills and guidelines needed to carry out effective energy and carbon audits for the commercial and industrial sectors; (2) enable students to identify energy saving and carbon reduction measures and perform quantitative analysis to predict the energy savings and carbon reduction, environmental and economic benefits; and (3) enable students to verify the performance of implemented energy saving and carbon reduction measures.

Topics include: greenhouse gas emission; global warming; energy benchmarking; electrical distribution system; power quality and power factor; energy efficient lighting; motor; HVAC energy audit; refrigeration cycle; passive cooling; heating appliances; energy consumptions in compressors and pumps; energy saving measurements; local and international guidelines in energy and carbon audit; carbon footprint calculator.

Students who have taken and passed MECH 6044 will not be allowed to take EMEE6007.

EMEE6008. Green project management (6 credits)

This course aims at introducing Green Project Management. By giving a brief account on the environmental issues, the course will begin by explaining the scope and value of green projects. It will illustrate the importance of clarity of mission and goals of green projects; and how these could be done by means of audit and feasibility study. It will also describe how green project planning and control can be implemented with proper system tools. The basic theory regarding contract management: project strategy, contract documents, tendering procedure and contingency shall be introduced. It will also give examples of site implementation: partnership collaboration; project quality assurance; safety management; environmental issues and risk management. The course shall be concluded by detailing project quality assurance; safety management.

Mutually exclusive with ELEC6092

EMEE6009. Green facilities management (6 credits)

The course shall enhance classmates' engineering mindset in designing and performing maintenance activities and management in green facilities and related plants. The mindset shall cover analysis and synthesis of plant operations individually and also as entities in a system. The classmates shall utilize quantitative approach, qualitative approach and management rules to tackle problems. The manager so trained shall perform professionalism in achieving optimal benefits in green assets in a safe and effective manner.

This course covers the following topics: Value Chains with Green Facilities; Types of Green Facilities; Current Trend and Development; Operational Stresses in Facilities; Reliability and Availability, Maintainability and Sustainability; Preventive and Corrective Maintenance Management Tools: Quantitative Tools and Qualitative Tools; and Asset Management.

Mutually exclusive with ELEC6093

EMEE6010. Electricity quality and energy efficiency (fundamental) (6 credits)

The course shall enhance students' engineering concepts in designing the selecting activities in electrical services and related plants. The mindset shall cover analysis and synthesis of plant performance quality, plant invulnerability, and energy efficiency. The classmates shall utilize quantitative approach, qualitative approach and management rules to settle issues. The students shall perform professionalism in achieving optimal benefits.

EMEE6011. Energy saving lighting (6 credits)

This course begins with a review of the importance of lighting, the different forms of electrical lighting and their energy consumptions, as well as their environmental impacts. This is followed by an introduction to the properties and measurement of light. The physics and technologies of different forms of electrical lighting, namely incandescent, electric discharge and semiconductor lighting will be studied in details. This includes the mechanism of light generation, the methods of driving the light sources, the efficiencies of each lighting technologies, the optical properties of light emission amongst other topics. The merits and disadvantages of each technology are highlighted and critically compared. At the end of the course, the candidate should be able to make a learned choice on energy-efficient light sources.

Mutually exclusive with ELEC6090

EMEE7012. Power systems practicum (6 credits)

Students in this module will acquire the required knowledge and soft-skill in providing a quality, stable and reliable power system with effective integration and execution of design, operation, control, protection, maintenance and communication. A practicum approach involves understanding various power system problems, applying fundamental principles to derive the required solutions for implementation. Past experiences sharing in dealing with incidents will be highlighted and some emerging technologies will also be discussed thus benefitting the students in their careers development in power systems industry.

Mutually exclusive with: ELEC7012

EMEE7013. Leadership in future energy industry (6 credits)

Climate Change, together with other technical and non-technical factors, is reshaping the fossil fuel based energy industry in the last two decades and, for sure, in the foreseeable future. Business as usual is no longer a viable option for existing and emerging energy players. Visionary leadership and ability to embrace future energy technologies are two essential elements to stay competitive in the future energy sector. The course, by integrating the engineering knowledge on future energy technologies and business knowledge on leadership and management of utility of the future, shall enable the students to develop a holistic view on energy industry to date and tomorrow, understand major business trend and transition in the energy industry, and build up basic knowledge and skill to evaluate and analyze different emerging energy technologies that may become the mainstream energy in the future for achieving the net carbon zero target.

At the end of this course, students who fulfill the requirements of this course will be able to:

1. describe the challenges and trends in the energy industry

2. appreciate the role of leadership and management in the evolving energy industry

3. understand the working principle of the fossil fuel-based energy technologies and their impact on climate change and other environmental/sustainable issues.

4. understand the working principle of the emerging no/low carbon energy technologies and their contribution in mitigating climate change and other environmental/sustainable issues.

Mutually exclusive with ELEC7013

EMEE7014. Building information modelling for E&M engineers (6 credits)

This course provides training for electrical & mechanical (E&M) engineers to acquire the knowledge and ability in Building Information Modelling (BIM) viewing, editing, and commenting skills. The contents shall cover theory and practice of BIM application in the construction industry. The students shall perform professionalism in achieving optimal benefits.

At the end of this course, students who fulfil the requirements of this course will be able to:

1. understand the operational principles of building information management workflow;

2. application of BIM model in planning, coordinating, and managing installation of E&M systems for buildings;

3. familiarise with the BIM software;

4. analyse the trend and impacts of latest development in BIM regulations and standards.

Mutually exclusive with ELEC7014

EMEE7001. Dissertation (24 credits)

Students will undertake an assigned and supervised dissertation which will be assessed. The dissertation must relate to the subject matter of the curriculum and be agreed by either the Department of Electrical and Electronic Engineering or the Department of Mechanical Engineering.

EMEE7002. Project (12 credits)

The aim of the project is to provide an opportunity for the student to apply what they have learnt from classes to conduct an individual design project in a specific topic related to their profession to be agreed upon by the respective supervisor and endorsed by the Head. The objectives of the project are not limited to technical achievement, but also reflected on self-awareness, self-management and probing the limitation of oneself. Another objective is to make the learning experience inclusive, enjoyable, and career beneficial.

Upon supervision by the teacher, the student will develop skills through individually carrying out the Project Requirement and Design, Implementation and Evaluation, Report and Presentation on the designated project. Students are encouraged to explore and make suggestions on the direction of the project over the project development process. The project supervisor shall provide assistance and aids along each phase in the project development process with the student.

Each project student is generally required to have meetings and discussions with his/her supervisors on a regular basis. Mid-term Review will be held with both the supervisors and the 2nd examiner in order to review the student's progress. The final assessment will be based on Project Report, Presentation, and Demonstration.

EMEE7003. Capstone Workshop (0 credits)

Students are required to attend and satisfactorily complete a capstone workshop in his/her respective stream/programme.

MEBS6016. Energy performance of buildings (6 credits)

Energy terms and concepts; energy use in buildings; energy efficient building design and operation; energy efficient technologies; building energy standards and codes; building energy analysis techniques; energy auditing of building; economic and financial analyses.

MECH7011. Applied thermodynamics and power plant technology (6 credits)

This course is focused on understanding the operating principles of power plants for the generation of electric power. The course objectives are to: (1) provide students with the working principles of various types of power plants, including fossil fuels, nuclear fuels and renewable energy; and (2) enable students to understand the thermodynamic principles, emission controls, environmental impact, cycle analysis, component design, plant operation and control technologies of power plant.

Topics include: sources of energy; thermodynamic properties of states; types of power plants; portable combustion engines; Brayton cycle; gas turbines; Rankine cycle; steam power plants; nuclear power plant; solar farm; wind turbines; thermoelectric energy.

Students who have taken and passed MECH6023 will not be allowed to take MECH7011.
