



Programme syllabus

Master's Programme, Sustainable Energy Engineering, 120 credits
Masterprogram, hållbar energiteknik
120.0 credits

Valid for students admitted to the education from autumn 09 (HT - Autumn term; VT - Spring term).

This is a translation of the Swedish, legally binding, programme syllabus.

Programme objectives

Beyond the objectives which are specified in the Higher Education Degree Ordinance, there are also specific goals for this programme. After completing the programme, the student will:

Knowledge and understanding

Knowledge and understanding

- Have a broad, scientific foundation to be able to work within the energy engineering area. It should comprise knowledge about sustainable systems, energy sources and usage, and judgements of technical, economical, and environmentally-related consequences related to different energy re-usage processes.
- Show broad knowledge within this technical area, including knowledge in mathematics and natural science, and essentially deepened knowledge within certain parts of the area.

Skills and abilities

- Show a good ability to, independently as well as in a group, be able to apply knowledge and abilities in practical activities with regard to relevant scientific professional and social judgements and viewpoints.
- Show a good ability to analyse, formulate, and handle technical problems from a system perspective, with an overview on their life-cycle, from idea/need to specification, development, maintenance and termination, and the ability to set conditions, decide necessary resource consumption and manage processes for problem solving and realisation.
- Possess individual and professional skills like languages, leadership, project management, and communication for work as an engineer in a leadership role or as a leader in a technical intensive company, or in order to be able to continue toward a research career.

Ability to make judgements and adopt a standpoint

- Have especially good understanding that engineering-related problems are often complex, can be incompletely defined and sometimes contain conflicting conditions.
- Be aware of the responsibility and the ethical viewpoints which can arise in connection with different technical, organisational, economical, ecological and social activities.

Reference to the local degree ordinance of the Royal Institute of Technology (The KTH Regulations).

Extent and content of the programme

The programme consists of 120 credits which correspond to two years full time studies. The programme is mainly on the second level.

The language of instruction for the programme is English.

Eligibility and selection

Basic eligibility requirements

A Bachelor degree equivalent to a Swedish Bachelor's degree (180 ECTS), from a university recognized by government or accredited by other recognized organization. Students in their final year of undergraduate education may also apply and if qualified, receive a conditional acceptance. A good knowledge of written and spoken English is required. Applicants must provide proof of their proficiency in English. KTH accepts a TOEFL test score of a minimum of 550 (213 in the computer-based test, 79 in the internet based test) or an IELTS score of at least 6.0, no band lower than 5.0 (both general and academic accepted). English proficiency tests are waived for applicants with English as language of instruction (minimum 3 years of full-time higher education studies). A relevant certificate from the university has to be enclosed with the application. For EU citizens from KTH's partner universities, a certificate from the University language department or the relevant Head of department stating the student's good level of English will be enough.

Specific eligibility requirements

In order to be eligible to the master's programme, a relevant higher education degree of at least 180 higher education credits, degree of bachelor in science and engineering or technical bachelor's degree preferably within Mechanical Engineering or Chemical Engineering is required. Other corresponding technical or natural scientific degrees on the first level can also give eligibility, providing that courses in technical thermodynamics, heat transference and technical Electro-mechanics are included. Other studies or work experiences are judged on the basis of the actual competencies which are referred to.

Selection criteria

The selection to the programme is based on the evaluation of the following criteria: university/higher education institute, grades, courses relevance for the programme, suggestion to the degree project, recommendation letters, work experience and references.

The reference to KTH's admission policy can be found in the KTH Regulations.

Implementation of the education

Structure of the education

The programme begins with a common course packet which gives a solid base for the three specialisations – Power Production, Energy Usage and Solar Energy – which is given mainly during the second term. The third term consists of extended studies within the energy area with a research preparation perspective. The programme is concluded with a degree project during the last term.

Study years, terms, and study period descriptions can be found in the KTH Regulations.

Courses

The programme is course-based. Lists of courses are included in [appendix 1](#).

Grading system

Courses in the first and the second cycle are graded on a scale from A to F. A-E are passing grades, A is the highest grade. The grades pass (P) and fail (F) are used for courses under certain circumstances.

Conditions for participation in the programme

Term Enrolment

A condition in order to be able to participate in the studies is that the student must enrol for the next term every spring and fall.

With the enrolment, the student has submitted their intention of studying and participating in the programme. Only after that is it possible for the student to:

- register for courses
- register for the term
- get results

Course Application

Certain opportunities to take optional courses exist.

Conditions for participation in the programme

For studies in study year 2:

At least 45 credits from study year 1 must be completed not later than the exam period in August.

Students which have not fulfilled this requirement must consult the study counsellor and set up an individual study plan. The main goal with the study plan is that the student should complete the remaining

elements during the next study year. In the study plan, the remaining elements and also suitable courses from the next study year are included. Special regard should be taken to the courses' prerequisites.

Recognition of previous academic studies

The student has the possibility to apply to receive credit from courses taken at another university/higher education institution both in Sweden and from abroad.

KTH's policy for recognition of previous academic studies can be found entirely in the KTH Regulations.

Studies abroad

Students in this programme have no possibility to study abroad.

Degree project

KTH's rules for the degree project can be found in the KTH Regulations.

Generally, the degree project work can be started only after a large portion of the studies have been completed.

Degree

In order to graduate with the Degree of Master of Science (Two Years), a passing grade must be achieved in all courses which are in the student's study plan. The study plan must constitute 120 credits including a degree project consisting of 30 credits.

KTH's local degree ordinance can be found in the KTH Regulations

[Appendix 1 - Course list](#)

[Appendix 2 - Programme syllabus descriptions](#)



Appendix 1: Course list

Master's Programme, Sustainable Energy Engineering, 120 credits (TSUEM), Programme syllabus for studies starting in autumn 2009

Programme syllabus

Established Programme syllabus as PDF:

- [Valid for studies starting in autumn 2009](#)

General courses

Year 1

Mandatory courses (48.0 credits)

Course code	Course name	Credits	Edu. level
MJ1402	Introduction to Energy Technology	3.0	First cycle
MJ2405	Sustainable Power Generation	9.0	Second cycle
MJ2407	Sustainable Energy Utilisation	9.0	Second cycle
MJ2409	Applied Energy Technology, Project Course	9.0	Second cycle
MJ2410	Energy Management	6.0	Second cycle
MJ2411	Renewable Energy Technology	6.0	Second cycle
MJ2413	Energy and Environment	6.0	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
MJ2412	Renewable Energy Technology, Advanced Course for Power Generation	6.0	Second cycle
MJ2422	Thermal Comfort and Indoor Climate for Energy Consumption Applied Refrigeration and Heat Pump Technology	6.0	Second cycle

MJ2423	for Energy Consumption	6.0	Second cycle
MJ2426	Applied Heat and Power Technology for Power Generation	6.0	Second cycle
MJ2427	Applied Reactor Technology and Nuclear Power Safety for Power Generation	6.0	Second cycle

Supplementary information

For Power Generation you have to study MJ2426 + MJ2427 or MJ2412.

Year 2

Mandatory courses (13.5 credits)

Course code	Course name	Credits	Edu. level
AK2030	Theory and Methodology of Science (Natural and Technological Science)	4.5	Second cycle
MJ2424	Computational Methods in Energy Technology	6.0	Second cycle
MJ2440	Measurement Techniques	3.0	Second cycle



Appendix 2: Specialisations

Master's Programme, Sustainable Energy Engineering, 120 credits (TSUEM), Programme syllabus for studies starting in autumn 2009

Programme syllabus

Established Programme syllabus as PDF:

- [Valid for studies starting in autumn 2009](#)

This programme has no specialisations.