



Programme syllabus

[An accessible version of the syllabus can be found in the Course and programme directory.](#)

Degree Programme in Energy and Environment 300 credits

Civilingenjörsutbildning i energi och miljö

Valid for students admitted to the education from autumn 17 (HT - Autumn term; VT - Spring term).

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

Programme objectives

In addition to the objectives specified in the Swedish Higher Education Ordinance, a graduate Master of Science in Engineering from Energy and Environment at KTH shall ...

Knowledge and understanding

- have basic knowledge of all aspects of the energy system in a broad sense, which includes the technologies and subsystems that are found in all stages from energy source to the energy's end use, and be able to understand these as socio-technical systems consisting of both technical components and the actors that develop, manages and use the system
- have good knowledge of the processes of modelling, simulation and validation of energy and environmental systems using modern engineering tools

- possess good knowledge of conditions relating to innovation, corporate enterprises and business in terms of the planning, strategies and objectives of businesses within the energy and environment sector

Skills and abilities

- be able to describe sustainable development and relevant environmental problems at a foundational level, i.e., visions, concepts, definitions, and be able to provide a description of the current global situation
- be able to, in a professional way, express themselves and communicate thoughts, ideas, visions and results to those in their professional proximity and the surrounding community
- be able to critically analyse the historical and future importance of the energy and environment sector for global and local societal development and its relation to ecological systems
- be able to compare and discuss different perspectives on issues of importance to sustainable development

Ability to make judgements and adopt a standpoint

- have a holistic view of sustainable development with systems and life-cycle thinking for products and services and for technical systems, based on an interdisciplinary approach and based on different actor perspectives
- have the ability to assess ethical issues and conflicts of objectives relating to sustainable development, and demonstrate a deep knowledge of the engineer's role and responsibilities in society, especially regarding social and economic aspects and environmental/ecological aspects
- have the skills to challenge, develop and problematise prevailing habits, thought patterns, technical and economic systems, and cultural and societal values.

Extent and content of the programme

The Degree Programme in Energy and Environment comprises 300 higher education credits, which corresponds to 5 years of full-time studies at a normal study pace (10 semesters).

The programme's first three years (180 credits) are primarily first cycle.

During the two final years (120 credits), the student undertakes a Master's programme. Master's programme courses are conducted primarily in the second cycle.

The academic year 2016/2017 offers the following Master's programmes that lead to a Degree of Master of Science in Energy and Environment

- Environmental Engineering and Sustainable Infrastructure
- Sustainable Urban Planning and Design
- Chemical Engineering for Energy and Environment
- Electric Power Engineering
- Sustainable Energy Engineering
- Technology and Sustainable Development

You may also obtain a masters degree in engineering in Energy and Environment by completing the following international masters degree programmes. You apply to these programmes in competition with other students, there is hence no guarantee that you will be admitted to these programmes.

Environomical Pathways for Sustainable Energy Systems

Energy Innovation

Track:

Renewable Energy

Smart Electrical Networks and System

Smart Cities

The range of offered Master's programmes may be revised. An updated list of elective Master's programmes can be found on the KTH student web for each respective academic year.

Language of instruction

The language of instruction for the first three years of first cycle is mainly Swedish, but the language of instruction in the second cycle for the final two years is mostly English.

Eligibility and selection

Admission to the Degree Programme in Energy and Environment requires the general entry requirements for higher education, and also special admission requirements as follows:

Upper-secondary education before 1 July 2011 and upper-secondary adult education before 1 July 2012

Field-specific entry requirement 9

Specific admission requirements corresponding to:

Mathematics E, Physics B and Chemistry A.

In each of the subjects, a minimum grade of Pass or 3 is required.

Upper-secondary education from 1 July 2011 and upper-secondary adult education from 1 July 2012 (Gy11/Vux12)

Field-specific entry requirement A9

Specific admission requirements corresponding to:

Mathematics 4, Physics 2 and Chemistry 1.

A grade of E is required as a minimum in each of the subjects.

For more information on field-specific entry requirements, see www.hsv.se

For entry requirements and selection principles, see the KTH admission regulations, www.kth.se

Implementation of the education

Structure of the education

Academic year

The academic year comprises 40 weeks and is divided into four periods. If necessary, instruction may be provided outside the parameters of the academic year.

The division of the academic year is presented on the KTH student web <http://www.kth.se/>

Year 1 - 3

The programme consists of a compulsory foundation block in the years 1-3 in the first cycle (G), and also of a Master's programme in the second cycle (A) during years 4 and 5, which concludes with a degree project of 30 credits.

The programme is organised around courses in applied subjects relating to mathematics, engineering science and technology but also provides a social sciences foundation for energy and environmental issues, as well as sustainable development in a broader perspective. The teaching and use of professional skills and abilities of great importance to a certified engineer, for example, communication, ethics, entrepreneurship and innovation, corporate and societal aspects, are integrated into the courses.

To create a unified whole, the programme emphasises collaboration between different subjects, both within a specific year and between years. Integration of the courses in year 1 occurs through the profile course “Energy, climate and environment”, which runs throughout the academic year and in collaboration with the parallel courses. In year 2, the majority of courses collaborate through a focus on a systems perspective and modelling, while the Bachelor's degree project and focus on communication are integrated between the compulsory courses in year 3. The Bachelor's degree

project centres around and deepens the theoretical knowledge and practical skills within sustainable development and its integration within their chosen technical field.

The courses in years 1 and 2 and parts of the courses in year 3 are common for all students on the programme. Year 3 is organised into different profiles within which there is room for elective courses and courses that qualify the student for subsequent Master's programmes. Prior to the concluding stage of the education, the student chooses a Master's programme.

The first three years conclude with a degree project for a Degree of Bachelor worth 15 credits within a chosen technical field. After successfully completing 180 credits within the programme, the student can apply for a technical Degree of Bachelor. If the qualification requirements are met, a Degree of Bachelor of Science is obtained.

Year 4/Master's year 1 – Year 5/Master's year 2, second-cycle studies

The Master's programmes consist mainly of second-cycle courses and a degree project within one and the same engineering science discipline. Students on the programme can choose from a wide range of Master's programmes with programme syllabuses established in advance. There is no restriction on the number of places on the Master's programmes for students on the Degree Programme in Energy and Environment. Each student may undertake the programme chosen.

Elective Master's programmes that lead to a Degree of Master of Science in Engineering are found under the heading “Scope and content of the programme”.

The range of offered Master's programmes may be revised. An updated list of Master's programmes can be found on the KTH student web for each respective academic year.

Courses

The programme is course-based. Lists of courses are included in appendix 1.

The programme consists of compulsory, conditionally elective, recommended and optional courses. The compulsory courses are defined for each year in course lists. The goals, entry requirements, contents and course requirements for each course can be found in the adopted course syllabuses.

The forms of teaching and examination vary between courses. These are indicated in each official course syllabus.

The optional courses can be chosen from KTH's range of offered courses. Courses at other universities/higher education institutions can also be credited to the student as optional courses.

The following limitations apply to optional courses:

- Optional courses may not be taken in year 1.
- There is a limit imposed on the number of credits that may be chosen per semester
- An optional course may not correspond to a significant extent to an existing programme course or an already credited course

- Higher education preparatory courses may not be counted as optional courses
- Optional courses may be chosen but should be relevant to the professional role of engineer.

Course lists are found 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.

As the grading systems differ widely between countries, grades from exchange studies are not translated to the KTH grading scale.

Conditions for participation in the programme

Semester registration

At the beginning of the semester, the student must submit a compulsory semester registration via the Personal menu at www.kth.se

Semester registration is required to take new courses and for credits awarded to be reported, and for payments of student aid to be made by CSN.

Application for courses on the programme

Prior to each semester, the student must apply for all courses the student intends to take. Course applications are made via www.antagning.se

- 1 - 15 May for autumn semesters
- 1 - 15 November for spring semesters

If the student does not apply via www.antagning.se, the application is only considered subject to availability.

The student can obtain information on how to apply from the school's office of student affairs.

Course registration

Course registration requires that the student is admitted to the course.

At course start, the student must register on the course to which they have been admitted. Course registration must be done individually, either via the student's personal login at www.kth.se or according to instructions from the school offering the course.

A person who has registered on a course, but has subsequently decided not to proceed with the course, must inform the school offering the course as soon as possible or, within three weeks, remove the course registration via the personal login. www.kth.se

Choice of technical specialisation

Prior to the autumn semester of year 3, semester 5, the year-2 student selects an engineering profile. During the spring semester of year 2 (1 – 15 May), the selection function is activated via the personal login. www.kth.se

The student can choose one of the following engineering profiles:

- **Environmental Engineering and Sustainable Infrastructure**
- **Sustainable Urban Planning and Design**
- **Chemical Engineering for Energy and Environment**
- **Electric Power Engineering**
- **Sustainable Energy Engineering**
- **Technology and Sustainable Development**

Each engineering profile prepares the student for a Master's programme and may include compulsory course required to qualify for the programme. Certain Master's programmes may accept students from other engineering profiles.

The range of engineering profiles may be revised. An updated list of engineering profiles can be found on the KTH student web for each respective academic year.

Applying for year 4/Master's year 1, second cycle, within the Degree Programme.

Prior to year 4/Master's year 1, second cycle, the student chooses a Master's programme within the framework of their Degree Programme. Choice of Master's programme is made during the period 1-15 May.

Choice of Master's programme is made by the students within the Degree Programme according to KTH instructions.

In addition to the general conditions for participation in the teaching of studies in year 4/Master's year 1, second cycle, there are special entry requirements for each Master's programme. The assessment of the conditions and special entry requirements is performed by the admissions office.

Conditions for participation in the instruction

For studies in the next year, there are certain moving-up/performance requirements according to the programme's course list. Students who do not fulfil these requirements must establish an individual study plan together with the study advisor.

Requirements from year 1 to year 2:

At least 45 credits from year 1

shall be completed by the end of the examination period in August, according to the course list of the programme syllabus for the Degree Programme in Energy and Environment.

Requirements from year 2 to year 3:

At least 90 credits from year 1 and 2, of which

at least 50 credits are from year 1,

shall be completed by the end of the examination period in August, according to the course list of the programme syllabus for the Degree Programme in Energy and Environment.

Requirements from year 3 to year 4/year 1 of the Master's Programme:

At least 150 credits from years 1-3

at least 110 credits from years 1-2

a Bachelor's degree project (15 credits),

shall be completed by the end of the examination period in August, according to the course list of the programme syllabus for the Degree Programme in Energy and Environment.

Requirements from year 4 to year 5/year 1 to year 2 of the Master's Programme:

In addition to what is required for moving up to year 4/year 1 of the Master's Programme,

at least 45 credits* from year 4/year 1 of the Master's Programme must be completed by the end of the re-examination period in August,

according to the course list of the programme syllabus for the Degree Programme in Energy and Environment.

* In addition to compulsory courses, optional courses that are included in the degree may also be counted

Individual study plan

Students who do not meet the above requirements should, in consultation with the programme's study advisor, establish an individual study plan for the continuing studies.

An individual study plan may mean that the student cannot be guaranteed full-time studies.

See the KTH regulatory framework:

www.kth.se

Recognition of previous academic studies

Students have the opportunity to apply to be given credit for results from a course or courses at another higher education institution/university within or outside the country. An application is made by submitting a form to the school's office of student affairs.

The entire KTH policy for credit transfer is included in KTH's regulatory framework. www.kth.se

Studies abroad

Students on the Energy and Environment Programme have the opportunity to study abroad through agreements KTH has with universities within and outside the EU.

Exchange studies normally cannot be pursued during years 1 and 2. Instead they can take place during years 3, 4 or 5 depending on the choice of engineering profile and Master's programme. It is often possible to do a degree project abroad, both at the Bachelor and Master level.

The application deadline for studies abroad is around 15 December for the following academic year. The transfer of credits from courses should be planned with an International Coordinator for the programme and examined by the programme director in advance, according to instructions from the ITM School's office of student affairs (year 3 and 4) or the school where the Master's programme is based (year 5).

Degree project

Degree project, first cycle

Year 3 of the programme includes a degree project for a Degree of Bachelor of Science which is a course of 15 credits.

The degree project will be conducted during the spring term in study year 3.

In order to be eligible for the degree project, the following requirements are reported in Ladok before the degree project starts

- Promoted to grade 3.
- At least 120 credits of the program's mandatory courses.
- Specific requirements for the degree project course

In order to enable the approval of the exam in good time before the degree project begins in period 3, there is the possibility of meeting an alternative qualification requirement for degree projects that start spring term 2019. For this alternative eligibility, the following requirements are reported in Ladok at the latest, December 1, 2018

- Promoted to grade 3.
- At least 105 credits of the program's mandatory courses.

- Specific requirements for the degree project course

KTH's General Regulations for Degree Projects, first cycle, 15 credits for a Degree of Bachelor of Science 180 credits, are in KTH's regulations. www.kth.se

Degree project, second cycle

The programme includes a degree project for a Degree of Master of Science in Engineering/Degree of Master worth 30 credits. The degree project is usually done during the spring term in study year 5. To begin the degree project is required

- At least 240 credits completed courses that may be included in the Degree in Master of Science in Engineering.
- Maximum 2 unfinished courses (mandatory and conditionally elective) from study year 1 - 3
- The requirement for studies in study year 5 are met.

KTH's General Regulations for Degree Projects, second cycle, 30 credits for a Degree in Master of Science in Engineering 300 credits, are in KTH's regulations. www.kth.se

Degree

Application for a certificate

The student has the possibility of applying for the following degrees:

a Degree of Bachelor of Science and a Degree of Master of Science in Engineering.

The student is also able to apply for a Degree of Master of Science if the requirements for such are met.

The student must personally apply for a certificate. Applications are made via the web service "Applications for degrees" via the personal login under "Programme".

Title of general qualification at first cycle Bachelor of Science (180 credits)

Teknologie kandidatexamen

Title of professional qualifications at second cycle

Degree of Master of Science in Engineering

Civilingenjörsexamen,

Title of general qualification at second cycle

Degree of Master of Science (120 credits)

Teknologie masterexamen

Optional introductory courses and preparatory courses cannot be included as part of the degree.

Courses whose content is similar to one or more other courses within the programme cannot be counted as part of the 300 credits that form the basis for the degree.

Refer to the KTH guidelines (KTH regulatory framework), local directions for higher education qualifications at first and second cycle, the local Degree Ordinance www.kth.se

Appendix 1 - Course list
Appendix 2 - Programme syllabus descriptions



Appendix 1: Course list

Degree Programme in Energy and Environment (CENMI)

General courses

Year 1

Mandatory courses (60.0 Credits)

Code	Name	Credits	Edu. level
AG1808	Energy, Climate and The Environment	9.0 hp	First cycle
KA1020	Fundamental Chemistry	7.5 hp	First cycle
MJ1508	Ecology and Environmental Effects	7.5 hp	First cycle
SF1624	Algebra and Geometry	7.5 hp	First cycle
SF1625	Calculus in One Variable	7.5 hp	First cycle
SF1626	Calculus in Several Variables	7.5 hp	First cycle
SG1102	Mechanics, Smaller Course	6.0 hp	First cycle
SK1110	Electromagnetism and Waves	7.5 hp	First cycle

Year 2

Mandatory courses (60.0 Credits)

Code	Name	Credits	Edu.
------	------	---------	------

			level
AE1502	Environmental Systems Analysis for Energy and Environment	7.5 hp	First cycle
EI1120	Electrical Circuit Analysis for the Environment and Energy Program	7.5 hp	First cycle
KE1060	Material and Energy Balances	7.5 hp	First cycle
MJ1112	Applied Thermodynamics	9.0 hp	First cycle
MJ1145	Energy Systems	7.5 hp	First cycle
SF1519	Numerical Methods and Basic Programming	9.0 hp	First cycle
SF1633	Differential Equations I	6.0 hp	First cycle
SF1917	Probability Theory and Statistics	6.0 hp	First cycle

Master, Electrical Power Engineering (ELP)

Year 3

Mandatory courses (52.5 Credits)

Code	Name	Credits	Edu. level
AG1812	Environmental Economics	7.5 hp	First cycle
AK2207	Energy Systems in Society	7.5 hp	Second cycle
AL127X	Degree Project in Energy and Environment, First level	15.0 hp	First cycle
ED1110	Vector Analysis	4.5 hp	First cycle
EI1228	Electromagnetic Theory, Smaller Course	6.0 hp	First cycle
EJ1200	Electric Power Systems	6.0 hp	First cycle
EL1000	Automatic Control, General Course	6.0 hp	First cycle

Supplementary information

Elective Course 7,5 hp can be chosen

Master, Sustainable Urban Planning and Design (HSS)

Year 3

Mandatory courses (30.0 Credits)

Code	Name	Credits	Edu. level
AG1812	Environmental Economics	7.5 hp	First cycle
AK2207	Energy Systems in Society	7.5 hp	Second cycle
AL127X	Degree Project in Energy and Environment, First level	15.0 hp	First cycle

Conditionally elective courses

Code	Name	Credits	Edu. level
AE1106	Geoscience <i>Recommended Conditionally Elective Course for HSS</i>	6.0 hp	First cycle
AE1602	Hydrology	7.5 hp	First cycle
AE1603	Fluid Mechanics for Energy and Built Environment <i>Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	5.0 hp	First cycle
AE1801	Environmental Soil Chemistry	4.0 hp	First cycle
AF1601	Soil Mechanics and Foundation Engineering	7.5 hp	First cycle
AG1137	Planning and Governance of Urban and Regional Development <i>Recommended Conditionally Elective Course for HSS</i>	7.5 hp	First cycle
AI1525	Legal Framework of the Built Environment <i>Recommended Conditionally Elective Course for HSS</i>	7.5 hp	First cycle
AK1204	Environmental History	7.5 hp	First cycle
AK2202	Gender and Technology <i>Recommended Conditionally Elective Course for HSS</i>	7.5 hp	Second cycle
AL2113	Sustainable Development in theory and practise	6.0 hp	Second cycle
AL2195	Sustainable Development in Developing Countries	7.5 hp	Second cycle
ED1110	Vector Analysis	4.5 hp	First cycle
EI1228	Electromagnetic Theory, Smaller Course	6.0 hp	First cycle

EJ1200	Electric Power Systems	6.0 hp	First cycle
EL1000	Automatic Control, General Course	6.0 hp	First cycle
EP1100	Data Communications and Computer Networks	7.5 hp	First cycle
IS1200	Computer Hardware Engineering	7.5 hp	First cycle
KE1080	Chemical Engineering Principles	7.5 hp	First cycle
KE1090	Transport Processes in Chemical Systems <i>Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	7.5 hp	First cycle
MJ1150	Energy and Systems, Innovation and Entrepreneurship	10.5 hp	First cycle
MJ1401	Heat Transfer <i>Courses: MJ1401 can not be combined with KE1090</i>	6.0 hp	First cycle
MJ1501	States and Trends	7.5 hp	First cycle
MJ2381	Introduction to Energy Systems Analysis and Applications - Minor Course	6.0 hp	Second cycle
MJ2424	Computational Methods in Energy Technology <i>Courses: MJ2444 can not be combined with MJ2424</i>	6.0 hp	Second cycle
MJ2444	Theory and Practice of Computational Methods in Energy Technology <i>Courses: MJ2444 can not be combined with MJ2424</i>	7.5 hp	Second cycle
MJ2615	Introduction to Industrial Ecology, larger course <i>Recommended Conditionally Elective Course for HSS</i>	7.5 hp	Second cycle
MJ2627	Environmental Technology, Larger Course	9.0 hp	Second cycle
ML1501	Industrial Systems I	7.5 hp	First cycle
ML1502	Sustainability for Industry	7.5 hp	First cycle
ML1503	Industrial Systems II	6.0 hp	First cycle
ML1504	Logistics in Production	6.0 hp	First cycle
ML1506	Adaption course for Industrial Technology	3.0 hp	First cycle
ML1507	Communicating Engineer	3.0 hp	First cycle
SF1811	Optimization	6.0 hp	First cycle
SF1861	Optimization	6.0 hp	First cycle
SF1904	Markov Processes, Basic Course	3.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers <i>Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	6.0 hp	First cycle

Supplementary information

22,5 hp Conditionally Elective courses must be chosen from this list:

AE1106, AE1602, AE1603, AE1801, AF1601, AG1137, AI1525, AK1204, AK2202, AL2113, AL2195, ED1110, EI1228, EJ1200, EL1000, EP1100, IS1200, KE1080, KE1090, MJ1150, MJ1401, MJ1501, MJ2381, MJ2444, MJ2424, MJ2627, MJ2615, ML1501, ML1502, ML1503, ML1504, ML1506, ML1507, SF1811, SF1861, SF1904, SG1220

Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined

Courses: MJ1401 can not be combined with KE1090

Courses: MJ2444 can not be combined with MJ2424

7,5 hp Elective courses

Master, Sustainable Production Development (ITH)

Year 3

Mandatory courses (42.0 Credits)

Code	Name	Credits	Edu. level
AG1812	Environmental Economics	7.5 hp	First cycle
AK2207	Energy Systems in Society	7.5 hp	Second cycle
AL127X	Degree Project in Energy and Environment, First level	15.0 hp	First cycle
ML1503	Industrial Systems II	6.0 hp	First cycle
SF1811	Optimization	6.0 hp	First cycle

Conditionally elective courses

Code	Name	Credits	Edu. level
AE1106	Geoscience	6.0 hp	First cycle

AE1602	Hydrology	7.5 hp	First cycle
AE1603	Fluid Mechanics for Energy and Built Environment <i>Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	5.0 hp	First cycle
AE1801	Environmental Soil Chemistry	4.0 hp	First cycle
AF1601	Soil Mechanics and Foundation Engineering	7.5 hp	First cycle
AG1137	Planning and Governance of Urban and Regional Development	7.5 hp	First cycle
AI1525	Legal Framework of the Built Environment	7.5 hp	First cycle
AK1204	Environmental History	7.5 hp	First cycle
AK2202	Gender and Technology	7.5 hp	Second cycle
AL2113	Sustainable Development in theory and practise	6.0 hp	Second cycle
AL2195	Sustainable Development in Developing Countries	7.5 hp	Second cycle
ED1110	Vector Analysis	4.5 hp	First cycle
EI1228	Electromagnetic Theory, Smaller Course	6.0 hp	First cycle
EJ1200	Electric Power Systems	6.0 hp	First cycle
EL1000	Automatic Control, General Course	6.0 hp	First cycle
EP1100	Data Communications and Computer Networks	7.5 hp	First cycle
IS1200	Computer Hardware Engineering	7.5 hp	First cycle
KE1080	Chemical Engineering Principles	7.5 hp	First cycle
KE1090	Transport Processes in Chemical Systems <i>Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	7.5 hp	First cycle
MJ1150	Energy and Systems, Innovation and Entrepreneurship	10.5 hp	First cycle
MJ1401	Heat Transfer <i>Courses: MJ1401 can not be combined with KE1090</i>	6.0 hp	First cycle
MJ1501	States and Trends	7.5 hp	First cycle
MJ2381	Introduction to Energy Systems Analysis and Applications - Minor Course	6.0 hp	Second cycle
MJ2424	Computational Methods in Energy Technology <i>Courses: MJ2444 can not be combined with MJ2424</i>	6.0 hp	Second cycle
MJ2444	Theory and Practice of Computational Methods in Energy Technology <i>Courses: MJ2444 can not be combined with MJ2424</i>	7.5 hp	Second cycle
MJ2615	Introduction to Industrial Ecology, larger course	7.5 hp	Second cycle
MJ2627	Environmental Technology, Larger Course	9.0 hp	Second cycle
ML1501	Industrial Systems I	7.5 hp	First cycle

	<i>Recommended Conditionally Elective Course for ITH</i>		
ML1502	Sustainability for Industry <i>Recommended Conditionally Elective Course for ITH</i>	7.5 hp	First cycle
ML1504	Logistics in Production <i>Recommended Conditionally Elective Course for ITH</i>	6.0 hp	First cycle
ML1506	Adaption course for Industrial Technology <i>Recommended Conditionally Elective Course for ITH</i>	3.0 hp	First cycle
ML1507	Communicating Engineer <i>Recommended Conditionally Elective Course for ITH</i>	3.0 hp	First cycle
SF1904	Markov Processes, Basic Course	3.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers <i>Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	6.0 hp	First cycle

Supplementary information

10,5 hp Conditionally Elective courses must be chosen from this list:

AE1106, AE1602, AE1603, AE1801, AF1601, AG1137, AI1525, AK1204, AK2202, AL2113, AL2195, ED1110, EI1228, EJ1200, EL1000, EP1100, IS1200, KE1080, KE1090, MJ1401, MJ1150, MJ1501, MJ2381, MJ2444, MJ2424, MJ2627, MJ2615, ML1501, ML1502, ML1504, ML1506, ML1507, SF1861, SF1904, SG1220

Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined

Courses: MJ1401 can not be combined with KE1090

Courses: MJ2444 can not be combined with MJ2424

7,5 hp Elective courses

Master, Chemical Science and Engineering (KEM)

Year 3

Mandatory courses (45.0 Credits)

Code	Name	Credits	Edu. level
AG1812	Environmental Economics	7.5 hp	First cycle
AK2207	Energy Systems in Society	7.5 hp	Second cycle
AL127X	Degree Project in Energy and Environment, First level	15.0 hp	First cycle
KE1080	Chemical Engineering Principles	7.5 hp	First cycle
KE1090	Transport Processes in Chemical Systems	7.5 hp	First cycle

Conditionally elective courses

Code	Name	Credits	Edu. level
AE1106	Geoscience	6.0 hp	First cycle
AE1602	Hydrology	7.5 hp	First cycle
AE1603	Fluid Mechanics for Energy and Built Environment <i>Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	5.0 hp	First cycle
AE1801	Environmental Soil Chemistry	4.0 hp	First cycle
AF1601	Soil Mechanics and Foundation Engineering	7.5 hp	First cycle
AG1137	Planning and Governance of Urban and Regional Development	7.5 hp	First cycle
AI1525	Legal Framework of the Built Environment	7.5 hp	First cycle
AK1204	Environmental History	7.5 hp	First cycle
AK2202	Gender and Technology	7.5 hp	Second cycle
AL2113	Sustainable Development in theory and practise	6.0 hp	Second cycle
AL2195	Sustainable Development in Developing Countries	7.5 hp	Second cycle
ED1110	Vector Analysis	4.5 hp	First cycle
EI1228	Electromagnetic Theory, Smaller Course	6.0 hp	First cycle

EJ1200	Electric Power Systems	6.0 hp	First cycle
EL1000	Automatic Control, General Course	6.0 hp	First cycle
EP1100	Data Communications and Computer Networks	7.5 hp	First cycle
IS1200	Computer Hardware Engineering	7.5 hp	First cycle
MJ1150	Energy and Systems, Innovation and Entrepreneurship	10.5 hp	First cycle
MJ1401	Heat Transfer <i>Courses: MJ1401 can not be combined with KE1090</i>	6.0 hp	First cycle
MJ1501	States and Trends	7.5 hp	First cycle
MJ2381	Introduction to Energy Systems Analysis and Applications - Minor Course	6.0 hp	Second cycle
MJ2424	Computational Methods in Energy Technology <i>Courses: MJ2444 can not be combined with MJ2424</i>	6.0 hp	Second cycle
MJ2444	Theory and Practice of Computational Methods in Energy Technology <i>Courses: MJ2444 can not be combined with MJ2424</i>	7.5 hp	Second cycle
MJ2615	Introduction to Industrial Ecology, larger course	7.5 hp	Second cycle
MJ2627	Environmental Technology, Larger Course <i>Recommended Conditionally Elective Course for KEM, can not be combined with KH1341</i>	9.0 hp	Second cycle
ML1501	Industrial Systems I	7.5 hp	First cycle
ML1502	Sustainability for Industry	7.5 hp	First cycle
ML1503	Industrial Systems II	6.0 hp	First cycle
ML1504	Logistics in Production	6.0 hp	First cycle
ML1506	Adaption course for Industrial Technology	3.0 hp	First cycle
ML1507	Communicating Engineer	3.0 hp	First cycle
SF1811	Optimization	6.0 hp	First cycle
SF1861	Optimization	6.0 hp	First cycle
SF1904	Markov Processes, Basic Course	3.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers <i>Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	6.0 hp	First cycle

Supplementary information

7,5 hp Conditionally Elective courses must be chosen from this list:

AE1106, AE1602, AE1603, AE1801, AF1601, AG1137, AI1525, AK1204, AK2202, AL2113, AL2195, ED1110, EI1228, EJ1200, EL1000, EP1100 IS1200 MJ1150, MJ1401, MJ1501, MJ2381, MJ2444, MJ2424, MJ2627, MJ2615 ML1501, ML1502, ML1503, ML1504, ML1506, ML1507, SF1811, SF1861, SF1904, SG1220

Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined

Courses: MJ1401 can not be combined with KE1090

Courses: MJ2444 can not be combined with MJ2424

7,5 hp Elective courses

Master, Environmental Pathways for Sustainable Energy Systems (MES)

Year 3

Mandatory courses (42.0 Credits)

Code	Name	Credits	Edu. level
AG1812	Environmental Economics	7.5 hp	First cycle
AK2207	Energy Systems in Society	7.5 hp	Second cycle
AL127X	Degree Project in Energy and Environment, First level	15.0 hp	First cycle
MJ1401	Heat Transfer	6.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers <i>Can be replaced by SG1217. Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	6.0 hp	First cycle

Conditionally elective courses

Code	Name	Credits	Edu. level
AE1106	Geoscience	6.0 hp	First cycle
AE1602	Hydrology	7.5 hp	First cycle
AE1603	Fluid Mechanics for Energy and Built Environment <i>Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	5.0 hp	First cycle

AE1801	Environmental Soil Chemistry	4.0 hp	First cycle
AF1601	Soil Mechanics and Foundation Engineering	7.5 hp	First cycle
AG1137	Planning and Governance of Urban and Regional Development	7.5 hp	First cycle
AI1525	Legal Framework of the Built Environment	7.5 hp	First cycle
AK1204	Environmental History	7.5 hp	First cycle
AK2202	Gender and Technology	7.5 hp	Second cycle
AL2113	Sustainable Development in theory and practise	6.0 hp	Second cycle
AL2195	Sustainable Development in Developing Countries	7.5 hp	Second cycle
ED1110	Vector Analysis	4.5 hp	First cycle
EI1228	Electromagnetic Theory, Smaller Course	6.0 hp	First cycle
EJ1200	Electric Power Systems	6.0 hp	First cycle
EL1000	Automatic Control, General Course	6.0 hp	First cycle
EP1100	Data Communications and Computer Networks	7.5 hp	First cycle
IS1200	Computer Hardware Engineering	7.5 hp	First cycle
KE1080	Chemical Engineering Principles	7.5 hp	First cycle
KE1090	Transport Processes in Chemical Systems <i>Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	7.5 hp	First cycle
MJ1150	Energy and Systems, Innovation and Entrepreneurship <i>Recommended Conditionally Elective Course for MES</i>	10.5 hp	First cycle
MJ1501	States and Trends	7.5 hp	First cycle
MJ2381	Introduction to Energy Systems Analysis and Applications - Minor Course <i>Recommended Conditionally Elective Course for MES</i>	6.0 hp	Second cycle
MJ2424	Computational Methods in Energy Technology <i>Recommended Conditionally Elective course for MES. Courses: MJ2444 can not be combined with MJ2424</i>	6.0 hp	Second cycle
MJ2444	Theory and Practice of Computational Methods in Energy Technology <i>Recommended Conditionally Elective course for MES. Courses: MJ2444 can not be combined with MJ2424</i>	7.5 hp	Second cycle
MJ2615	Introduction to Industrial Ecology, larger course	7.5 hp	Second cycle
MJ2627	Environmental Technology, Larger Course	9.0 hp	Second cycle
ML1501	Industrial Systems I	7.5 hp	First cycle
ML1502	Sustainabillity for Industry	7.5 hp	First cycle
ML1503	Industrial Systems II	6.0 hp	First cycle

ML1504	Logistics in Production	6.0 hp	First cycle
ML1506	Adaption course for Industrial Technology	3.0 hp	First cycle
ML1507	Communicating Engineer	3.0 hp	First cycle
SF1811	Optimization	6.0 hp	First cycle
SF1861	Optimization	6.0 hp	First cycle
SF1904	Markov Processes, Basic Course	3.0 hp	First cycle

Supplementary information

10,5 hp Conditionally Elective courses must be chosen from this list:

AE1106, AE1602, AE1603, AE1801, AF1601, AG1137, AI1525, AK1204, AK2202, AL2113, AL2195, ED1110, EI1228, EJ1200, EL1000, EP1100 IS1200 KE1080, KE1090 MJ1150, MJ1501, MJ2381, MJ2444, MJ2424, MJ2627, MJ2615 ML1501, ML1502, ML1503, ML1504, ML1506, ML1507, SF1811, SF1861, SF1904,

Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined

Courses: MJ1401 can not be combined with KE1090

Courses: MJ2444 can not be combined with MJ2424

7,5 hp Elective courses

Master, Environmental Engineering and Sustainable Infrastru. (MHI)

Year 3

Mandatory courses (48.5 Credits)

Code	Name	Credits	Edu. level
AE1106	Geoscience	6.0 hp	First cycle
AE1602	Hydrology	7.5 hp	First cycle
AE1603	Fluid Mechanics for Energy and Built Environment	5.0 hp	First cycle
AG1812	Environmental Economics	7.5 hp	First cycle

AK2207	Energy Systems in Society	7.5 hp	Second cycle
AL127X	Degree Project in Energy and Environment, First level	15.0 hp	First cycle

Conditionally elective courses

Code	Name	Credits	Edu. level
AE1801	Environmental Soil Chemistry <i>Recommended Conditionally Elective Course for MHI</i>	4.0 hp	First cycle
AF1601	Soil Mechanics and Foundation Engineering <i>Recommended Conditionally Elective Course for MHI</i>	7.5 hp	First cycle
AG1137	Planning and Governance of Urban and Regional Development	7.5 hp	First cycle
AI1525	Legal Framework of the Built Environment	7.5 hp	First cycle
AK1204	Environmental History	7.5 hp	First cycle
AK2202	Gender and Technology	7.5 hp	Second cycle
AL2113	Sustainable Development in theory and practise	6.0 hp	Second cycle
AL2195	Sustainable Development in Developing Countries	7.5 hp	Second cycle
ED1110	Vector Analysis	4.5 hp	First cycle
EI1228	Electromagnetic Theory, Smaller Course	6.0 hp	First cycle
EJ1200	Electric Power Systems	6.0 hp	First cycle
EL1000	Automatic Control, General Course	6.0 hp	First cycle
EP1100	Data Communications and Computer Networks	7.5 hp	First cycle
IS1200	Computer Hardware Engineering	7.5 hp	First cycle
KE1080	Chemical Engineering Principles	7.5 hp	First cycle
KE1090	Transport Processes in Chemical Systems <i>Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	7.5 hp	First cycle
MJ1150	Energy and Systems, Innovation and Entrepreneurship	10.5 hp	First cycle
MJ1401	Heat Transfer <i>Courses: MJ1401 can not be combined with KE1090</i>	6.0 hp	First cycle
MJ1501	States and Trends	7.5 hp	First cycle
MJ2381	Introduction to Energy Systems Analysis and Applications - Minor Course	6.0 hp	Second cycle
MJ2424	Computational Methods in Energy Technology <i>Courses: MJ2444 can not be combined with MJ2424</i>	6.0 hp	Second cycle
MJ2444	Theory and Practice of Computational Methods in Energy Technology	7.5 hp	Second cycle

	<i>Courses: MJ2444 can not be combined with MJ2424</i>		
MJ2615	Introduction to Industrial Ecology, larger course	7.5 hp	Second cycle
MJ2627	Environmental Technology, Larger Course	9.0 hp	Second cycle
ML1501	Industrial Systems I	7.5 hp	First cycle
ML1502	Sustainabillity for Industry	7.5 hp	First cycle
ML1503	Industrial Systems II	6.0 hp	First cycle
ML1504	Logistics in Production	6.0 hp	First cycle
ML1506	Adaption course for Industrial Technology	3.0 hp	First cycle
ML1507	Communicating Engineer	3.0 hp	First cycle
SF1811	Optimization	6.0 hp	First cycle
SF1861	Optimization	6.0 hp	First cycle
SF1904	Markov Processes, Basic Course	3.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers <i>Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	6.0 hp	First cycle

Supplementary information

4 hp Conditionally Elective courses must be chosen from this list:

**AE1801, AF1601, AG1137, AI1525, AK1204, AK2202, AL2113, AL2195, ED1110, EI1228, EJ1200, EL1000, EP1100
IS1200
KE1080, KE1090
MJ1150, MJ1401, MJ1501, MJ2381, MJ2444, MJ2424, MJ2627, MJ2615
ML1501, ML1502, ML1503, ML1504, ML1506, ML1507,
SF1811, SF1861, SF1904, SG1220**

Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined

Courses: MJ1401 can not be combined with KE1090

Courses: MJ2444 can not be combined with MJ2424

7,5 hp Elective courses

Master, Renewable Energy (RENE)

Year 3

Mandatory courses (42.0 Credits)

Code	Name	Credits	Edu. level
AG1812	Environmental Economics	7.5 hp	First cycle
AK2207	Energy Systems in Society	7.5 hp	Second cycle
AL127X	Degree Project in Energy and Environment, First level	15.0 hp	First cycle
MJ1401	Heat Transfer	6.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers <i>Can be replaced by SG1217. Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	6.0 hp	First cycle

Conditionally elective courses

Code	Name	Credits	Edu. level
AE1106	Geoscience	6.0 hp	First cycle
AE1602	Hydrology	7.5 hp	First cycle
AE1603	Fluid Mechanics for Energy and Built Environment <i>Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	5.0 hp	First cycle
AE1801	Environmental Soil Chemistry	4.0 hp	First cycle
AF1601	Soil Mechanics and Foundation Engineering	7.5 hp	First cycle
AG1137	Planning and Governance of Urban and Regional Development	7.5 hp	First cycle
AI1525	Legal Framework of the Built Environment	7.5 hp	First cycle
AK1204	Environmental History	7.5 hp	First cycle
AK2202	Gender and Technology	7.5 hp	Second cycle
AL2113	Sustainable Development in theory and practise	6.0 hp	Second cycle
AL2195	Sustainable Development in Developing Countries	7.5 hp	Second cycle
ED1110	Vector Analysis	4.5 hp	First cycle
EI1228	Electromagnetic Theory, Smaller Course	6.0 hp	First cycle
EJ1200	Electric Power Systems	6.0 hp	First cycle

EL1000	Automatic Control, General Course	6.0 hp	First cycle
EP1100	Data Communications and Computer Networks	7.5 hp	First cycle
IS1200	Computer Hardware Engineering	7.5 hp	First cycle
KE1080	Chemical Engineering Principles	7.5 hp	First cycle
KE1090	Transport Processes in Chemical Systems <i>Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	7.5 hp	First cycle
MJ1150	Energy and Systems, Innovation and Entrepreneurship <i>Recommended Conditionally Elective Course for RENE</i>	10.5 hp	First cycle
MJ1501	States and Trends	7.5 hp	First cycle
MJ2381	Introduction to Energy Systems Analysis and Applications - Minor Course <i>Recommended Conditionally Elective Course for RENE</i>	6.0 hp	Second cycle
MJ2424	Computational Methods in Energy Technology <i>Recommended Conditionally Elective course for RENE. Courses: MJ2444 can not be combined with MJ2424</i>	6.0 hp	Second cycle
MJ2444	Theory and Practice of Computational Methods in Energy Technology <i>Recommended Conditionally Elective course for RENE. Courses: MJ2444 can not be combined with MJ2424</i>	7.5 hp	Second cycle
MJ2615	Introduction to Industrial Ecology, larger course	7.5 hp	Second cycle
MJ2627	Environmental Technology, Larger Course	9.0 hp	Second cycle
ML1501	Industrial Systems I	7.5 hp	First cycle
ML1502	Sustainabillity for Industry	7.5 hp	First cycle
ML1503	Industrial Systems II	6.0 hp	First cycle
ML1504	Logistics in Production	6.0 hp	First cycle
ML1506	Adaption course for Industrial Technology	3.0 hp	First cycle
ML1507	Communicating Engineer	3.0 hp	First cycle
SF1811	Optimization	6.0 hp	First cycle
SF1861	Optimization	6.0 hp	First cycle
SF1904	Markov Processes, Basic Course	3.0 hp	First cycle

Supplementary information

10,5 hp Conditionally Elective courses must be chosen from this list:

AE1106, AE1602, AE1603, AE1801, AF1601, AG1137, AI1525, AK1204, AK2202, AL2113, AL2195, ED1110, EI1228, EJ1200, EL1000, EP1100 IS1200 KE1080, KE1090 MJ1150, MJ1501, MJ2381, MJ2444, MJ2424, MJ2627, MJ2615 ML1501, ML1502, ML1503, ML1504, ML1506, ML1507, SF1811, SF1861, SF1904,

Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined

Courses: MJ1401 can not be combined with KE1090

Courses: MJ2444 can not be combined with MJ2424

7,5 hp Elective courses

Master, Smart Electrical Networks and System (SENS)

Year 3

Mandatory courses (52.5 Credits)

Code	Name	Credits	Edu. level
AG1812	Environmental Economics	7.5 hp	First cycle
AK2207	Energy Systems in Society	7.5 hp	Second cycle
AL127X	Degree Project in Energy and Environment, First level	15.0 hp	First cycle
ED1110	Vector Analysis	4.5 hp	First cycle
EI1228	Electromagnetic Theory, Smaller Course	6.0 hp	First cycle
EJ1200	Electric Power Systems	6.0 hp	First cycle
EL1000	Automatic Control, General Course	6.0 hp	First cycle

Supplementary information

Elective Course 7,5 hp can be chosen

Master, Smart Cities (SMCS)

Year 3

Mandatory courses (36.0 Credits)

Code	Name	Credits	Edu. level
AG1812	Environmental Economics	7.5 hp	First cycle
AK2207	Energy Systems in Society	7.5 hp	Second cycle
AL127X	Degree Project in Energy and Environment, First level	15.0 hp	First cycle
AL2113	Sustainable Development in theory and practise	6.0 hp	Second cycle

Conditionally elective courses

Code	Name	Credits	Edu. level
AE1106	Geoscience	6.0 hp	First cycle
AE1602	Hydrology	7.5 hp	First cycle
AE1603	Fluid Mechanics for Energy and Built Environment <i>Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	5.0 hp	First cycle
AE1801	Environmental Soil Chemistry	4.0 hp	First cycle
AF1601	Soil Mechanics and Foundation Engineering	7.5 hp	First cycle
AG1137	Planning and Governance of Urban and Regional Development	7.5 hp	First cycle
AI1525	Legal Framework of the Built Environment	7.5 hp	First cycle
AK1204	Environmental History	7.5 hp	First cycle
AK2202	Gender and Technology	7.5 hp	Second cycle
AL2195	Sustainable Development in Developing Countries <i>Recommended Conditionally Elective Course for SMCS</i>	7.5 hp	Second cycle
ED1110	Vector Analysis	4.5 hp	First cycle
EI1228	Electromagnetic Theory, Smaller Course	6.0 hp	First cycle
EJ1200	Electric Power Systems	6.0 hp	First cycle
EL1000	Automatic Control, General Course	6.0 hp	First cycle
EP1100	Data Communications and Computer Networks	7.5 hp	First cycle

IS1200	Computer Hardware Engineering	7.5 hp	First cycle
KE1080	Chemical Engineering Principles	7.5 hp	First cycle
KE1090	Transport Processes in Chemical Systems <i>Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	7.5 hp	First cycle
MJ1150	Energy and Systems, Innovation and Entrepreneurship	10.5 hp	First cycle
MJ1401	Heat Transfer <i>Courses: MJ1401 can not be combined with KE1090</i>	6.0 hp	First cycle
MJ1501	States and Trends <i>Recommended Conditionally Elective Course for SMCS</i>	7.5 hp	First cycle
MJ2381	Introduction to Energy Systems Analysis and Applications - Minor Course	6.0 hp	Second cycle
MJ2424	Computational Methods in Energy Technology <i>Courses: MJ2444 can not be combined with MJ2424</i>	6.0 hp	Second cycle
MJ2444	Theory and Practice of Computational Methods in Energy Technology <i>Courses: MJ2444 can not be combined with MJ2424</i>	7.5 hp	Second cycle
MJ2627	Environmental Technology, Larger Course <i>Recommended Conditionally Elective Course for SMCS</i>	9.0 hp	Second cycle
ML1501	Industrial Systems I	7.5 hp	First cycle
ML1502	Sustainability for Industry	7.5 hp	First cycle
ML1503	Industrial Systems II	6.0 hp	First cycle
ML1504	Logistics in Production	6.0 hp	First cycle
ML1506	Adaption course for Industrial Technology	3.0 hp	First cycle
ML1507	Communicating Engineer	3.0 hp	First cycle
SF1811	Optimization	6.0 hp	First cycle
SF1861	Optimization	6.0 hp	First cycle
SF1904	Markov Processes, Basic Course	3.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers <i>Can be replaced by SG1217. Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	6.0 hp	First cycle

Supplementary information

16,5 hp Conditionally Elective courses must be chosen from this list:

AE1106, AE1602, AE1603, AE1801, AF1601, AG1137, AI1525, AK1204, AK2202, AL2195, ED1110, EI1228, EJ1200, EL1000, EP1100

IS1200

KE1080, KE1090

MJ1150, MJ1401, MJ1501, MJ2381, MJ2444, MJ2424, MJ2627,

ML1501, ML1502, ML1503, ML1504, ML1506, ML1507,

SF1811, SF1861, SF1904, SG1220

Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined

Courses: MJ1401 can not be combined with KE1090

Courses: MJ2444 can not be combined with MJ2424

7,5 hp Elective courses

Master, Sustainable Energy Engineering (SUE)

Year 3

Mandatory courses (42.0 Credits)

Code	Name	Credits	Edu. level
AG1812	Environmental Economics	7.5 hp	First cycle
AK2207	Energy Systems in Society	7.5 hp	Second cycle
AL127X	Degree Project in Energy and Environment, First level	15.0 hp	First cycle
MJ1401	Heat Transfer	6.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers <i>Can be replaced by SG1217. Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	6.0 hp	First cycle

Conditionally elective courses

Code	Name	Credits	Edu. level
AE1106	Geoscience	6.0 hp	First cycle
AE1602	Hydrology	7.5 hp	First cycle
AE1603	Fluid Mechanics for Energy and Built Environment <i>Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	5.0 hp	First cycle
AE1801	Environmental Soil Chemistry	4.0 hp	First cycle
AF1601	Soil Mechanics and Foundation Engineering	7.5 hp	First cycle
AG1137	Planning and Governance of Urban and Regional Development	7.5 hp	First cycle

AI1525	Legal Framework of the Built Environment	7.5 hp	First cycle
AK1204	Environmental History	7.5 hp	First cycle
AK2202	Gender and Technology	7.5 hp	Second cycle
AL2113	Sustainable Development in theory and practise	6.0 hp	Second cycle
AL2195	Sustainable Development in Developing Countries	7.5 hp	Second cycle
ED1110	Vector Analysis	4.5 hp	First cycle
EI1228	Electromagnetic Theory, Smaller Course	6.0 hp	First cycle
EJ1200	Electric Power Systems	6.0 hp	First cycle
EL1000	Automatic Control, General Course	6.0 hp	First cycle
EP1100	Data Communications and Computer Networks	7.5 hp	First cycle
IS1200	Computer Hardware Engineering	7.5 hp	First cycle
KE1080	Chemical Engineering Principles	7.5 hp	First cycle
KE1090	Transport Processes in Chemical Systems <i>Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	7.5 hp	First cycle
MJ1150	Energy and Systems, Innovation and Entrepreneurship <i>Recommended Conditionally Elective Course for SUE</i>	10.5 hp	First cycle
MJ1501	States and Trends	7.5 hp	First cycle
MJ2381	Introduction to Energy Systems Analysis and Applications - Minor Course <i>Recommended Conditionally Elective Course for SUE</i>	6.0 hp	Second cycle
MJ2424	Computational Methods in Energy Technology <i>Courses: MJ2444 can not be combined with MJ2424</i>	6.0 hp	Second cycle
MJ2444	Theory and Practice of Computational Methods in Energy Technology <i>Recommended Conditionally Elective course for SUE. Courses: MJ2444 can not be combined with MJ2424</i>	7.5 hp	Second cycle
MJ2615	Introduction to Industrial Ecology, larger course	7.5 hp	Second cycle
MJ2627	Environmental Technology, Larger Course	9.0 hp	Second cycle
ML1501	Industrial Systems I	7.5 hp	First cycle
ML1502	Sustainabillity for Industry	7.5 hp	First cycle
ML1503	Industrial Systems II	6.0 hp	First cycle
ML1504	Logistics in Production	6.0 hp	First cycle
ML1506	Adaption course for Industrial Technology	3.0 hp	First cycle
ML1507	Communicating Engineer	3.0 hp	First cycle
SF1811	Optimization	6.0 hp	First cycle

SF1861	Optimization	6.0 hp	First cycle
SF1904	Markov Processes, Basic Course	3.0 hp	First cycle

Supplementary information

10,5 hp Conditionally Elective courses must be chosen from this list:

AE1106, AE1602, AE1603, AE1801, AF1601, AG1137, AI1525, AK1204, AK2202, AL2113, AL2195, ED1110, EI1228, EJ1200, EL1000, EP1100, IS1200, KE1080, KE1090, MJ1150, MJ1501, MJ2381, MJ2444, MJ2424, MJ2627, MJ2615, ML1501, ML1502, ML1503, ML1504, ML1506, ML1507, SF1811, SF1861, SF1904,

Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined

Courses: MJ1401 can not be combined with KE1090

Courses: MJ2444 can not be combined with MJ2424

7,5 hp Elective courses

Master, Sustainable Technology (SUT)

Year 3

Mandatory courses (36.0 Credits)

Code	Name	Credits	Edu. level
AG1812	Environmental Economics	7.5 hp	First cycle
AK2207	Energy Systems in Society	7.5 hp	Second cycle
AL127X	Degree Project in Energy and Environment, First level	15.0 hp	First cycle
AL2113	Sustainable Development in theory and practise	6.0 hp	Second cycle

Conditionally elective courses

Code	Name	Credits	Edu. level
AE1106	Geoscience	6.0 hp	First cycle
AE1602	Hydrology	7.5 hp	First cycle

AE1603	Fluid Mechanics for Energy and Built Environment <i>Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	5.0 hp	First cycle
AE1801	Environmental Soil Chemistry	4.0 hp	First cycle
AF1601	Soil Mechanics and Foundation Engineering	7.5 hp	First cycle
AG1137	Planning and Governance of Urban and Regional Development	7.5 hp	First cycle
AI1525	Legal Framework of the Built Environment	7.5 hp	First cycle
AK1204	Environmental History <i>Recommended Conditionally Elective Course for SUT</i>	7.5 hp	First cycle
AK2202	Gender and Technology	7.5 hp	Second cycle
AL2195	Sustainable Development in Developing Countries <i>Recommended Conditionally Elective Course for SUT</i>	7.5 hp	Second cycle
ED1110	Vector Analysis	4.5 hp	First cycle
EI1228	Electromagnetic Theory, Smaller Course	6.0 hp	First cycle
EJ1200	Electric Power Systems	6.0 hp	First cycle
EL1000	Automatic Control, General Course	6.0 hp	First cycle
EP1100	Data Communications and Computer Networks	7.5 hp	First cycle
IS1200	Computer Hardware Engineering	7.5 hp	First cycle
KE1080	Chemical Engineering Principles	7.5 hp	First cycle
KE1090	Transport Processes in Chemical Systems <i>Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	7.5 hp	First cycle
MJ1150	Energy and Systems, Innovation and Entrepreneurship	10.5 hp	First cycle
MJ1401	Heat Transfer <i>Courses: MJ1401 can not be combined with KE1090</i>	6.0 hp	First cycle
MJ1501	States and Trends <i>Recommended Conditionally Elective Course for SUT</i>	7.5 hp	First cycle
MJ2381	Introduction to Energy Systems Analysis and Applications - Minor Course	6.0 hp	Second cycle
MJ2424	Computational Methods in Energy Technology <i>Courses: MJ2444 can not be combined with MJ2424</i>	6.0 hp	Second cycle
MJ2444	Theory and Practice of Computational Methods in Energy Technology <i>Courses: MJ2444 can not be combined with MJ2424</i>	7.5 hp	Second cycle
MJ2627	Environmental Technology, Larger Course <i>Recommended Conditionally Elective Course for SUT</i>	9.0 hp	Second cycle
ML1501	Industrial Systems I	7.5 hp	First cycle

ML1502	Sustainability for Industry	7.5 hp	First cycle
ML1503	Industrial Systems II	6.0 hp	First cycle
ML1504	Logistics in Production	6.0 hp	First cycle
ML1506	Adaption course for Industrial Technology	3.0 hp	First cycle
ML1507	Communicating Engineer	3.0 hp	First cycle
SF1811	Optimization	6.0 hp	First cycle
SF1861	Optimization	6.0 hp	First cycle
SF1904	Markov Processes, Basic Course	3.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers <i>Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined</i>	6.0 hp	First cycle

Supplementary information

16,5 hp Conditionally Elective courses must be chosen from this list:

AE1106, AE1602, AE1603, AE1801, AF1601, AG1137, AI1525, AK1204, AK2202, AL2195, ED1110, EI1228, EJ1200, EL1000, EP1100

IS1200

KE1080, KE1090

MJ1150, MJ1401, MJ1501, MJ2381, MJ2444, MJ2424, MJ2627,

ML1501, ML1502, ML1503, ML1504, ML1506, ML1507,

SF1811, SF1861, SF1904, SG1220

Courses: AE1603, SG1220, (SG1217), KE1090 can not be combined

Courses: MJ1401 can not be combined with KE1090

Courses: MJ2444 can not be combined with MJ2424

7,5 hp Elective courses



Appendix 2: Specialisations

Degree Programme in Energy and Environment
(CENMI)

Master, Electrical Power Engineering (ELP)

No information entered.

Master, Sustainable Urban Planning and Design
(HSS)

No information entered.

Master, Sustainable Production Development
(ITH)

No information entered.

Master, Chemical Science and Engineering
(KEM)

No information entered.

Master, Environmental Pathways for Sustainable Energy Systems (MES)

No information entered.

Master, Environmental Engineering and Sustainable Infrastru. (MHI)

No information entered.

Master, Renewable Energy (RENE)

No information entered.

Master, Smart Electrical Networks and System (SENS)

No information entered.

Master, Smart Cities (SMCS)

No information entered.

Master, Sustainable Energy Engineering (SUE)

No information entered.

Master, Sustainable Technology (SUT)

No information entered.