



Programme syllabus

Master's Programme, Electric Power Engineering, 120 credits

Masterprogram, elkraftteknik

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

Knowledge and understanding

For the Master's Degree, the student should:§ have a thorough understanding of and high competence in electrical engineering principles, electrical energy systems, electrical machines and power electronics, electro-technical design and power system control and operation§ have knowledge and understanding of current theories and developments in electrical power engineering§ have a thorough knowledge and understanding of the concepts in the philosophy and methodology of science to analyse, criticise and report on scientific information from published sources.

Skills and abilities

For the Master's Degree, the student should be able to:§ independently apply mathematics and natural science to the electric power engineering§ to employ a range of techniques and modern electric power engineering tools to identify, analyse and solve the electric power engineering problems in professional and research environments§ effectively communicate and function in a team.

Ability to make judgements and adopt a standpoint

For the Master's Degree, the student should:§ show insight into the role of electric power engineering in society, economy and environment§ show awareness of ethical aspects in research and development work§ show independent learning ability for continuing professional development. Information on the degree requirements can be found in the local degree policy of KTH at: <http://www.kth.se/info/kth-handboken/II/19/1bilagaengelska.html>

Extent and content of the programme

The programme lasts for two academic years (120 higher education credits) on the advanced level (second cycle). The language of instruction throughout the programme is English.

Eligibility and selection

Basic admission requirements Basic eligibility to be accepted to the master's programme requires a completed Bachelor's degree, corresponding to a Swedish Bachelor's degree (180 higher education credits), or equivalent academic qualifications from an internationally recognised university. The university has to be listed in the latest edition of the International Handbook of Universities. Students should have in addition, good knowledge in English, oral and written, is required. Applicants must provide proof of their proficiency in English. **Specific admission requirements** Specific eligibility to the programme requires:

- electrical engineering equivalent to 60 higher education credits
- mathematics (calculus, numerical methods, algebra, probability theory) equivalent to at least 30 higher education credits.

The specific eligibility requirements can be assessed as not-fulfilled if:

1. the CGPA is less than 75% of the highest grade
2. the degree awarding institution is not considered to meet acceptable quality standards by the authorities of the country in which the institution is located
3. the degree does not qualify for admission to equivalent Master level in the country where the degree is awarded.

Selection process The selection process for Electric Power Engineering is based on a total evaluation of the following selection criteria: University, CGPA, motivation letter, working experiences relevant to the programme and references. Information on the eligibility requirements can be found in the local admission policy of KTH at <http://www.kth.se/studies/master/admission?l=en>

Implementation of the education

Structure of the education

The programme lasts for two academic years. At KTH, the academic year is divided into two terms. The autumn term starts in late August and runs until the middle of January. The spring term begins in the middle of January and runs until the end of May/the beginning of June. The Christmas break is two weeks and the Easter break one week. Specific dates may be found at <http://www.kth.se/studies/calendar?l=en>. Each term consists of two study periods. Each study period comprises seven weeks of scheduled tuition such as lectures, laboratory lessons, etc., followed by one week of examinations free from scheduled tuition. There are also re-examination periods in January, June and in August. The programme offers five compulsory courses (37,5 higher education credits), four of which will be given in the first year, and the remaining one in the second year. The conditional elective and elective courses may be selected in both first and second year.

Courses

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

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The number of credits of conditional elective and elective courses must be at least 52,5 higher education credits. Only the conditional elective courses from the list in appendix 1 can be selected

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.

All courses are graded on a scale from A to F. A-E are passing grades, A is the highest grade.

Conditions for participation in the programme

For promotion to study year two, the student must have received at least 45 higher education credits from the first year. No later than November 15 and May 15 each academic year, respectively, the students are required to select the conditional elective and elective courses. The conditional elective and elective courses given in Term 1 must be selected no later than October 1, Term 2 must be selected no later than November 15, and Term 3 must be selected no later than May 15.

Recognition of previous academic studies

Under certain circumstances, and in agreement with the programme director, credits for previous studies can be received according to the local policy of KTH, see <http://www.kth.se/info/kth-handboken/II/13/3.html>

Degree project

The final degree project is worth 30 higher education credits, and corresponds to five months of full-time study. It may be carried out either at KTH or in industry. The project is summarised in a written report, and finally presented at a seminar. The project work can begin if:

- the student has an agreement with an examiner,
- the student has obtained 67,5 higher education credits at least 30 of which are from completed compulsory courses, and at least 22,5 higher education credits from completed conditional elective courses (1),
- the student has completed the courses relevant to the project subject.

More information on the KTH policy on the degree project can be found at <http://www.kth.se/info/kth-handboken/II/15/5.html>

Degree

To graduate with a master's degree, a master's degree student must obtain 120 higher education credits and meet the following degree requirements:

- § all compulsory courses (37,5 higher education credits) have been successfully completed,
- § conditional elective courses (1) corresponding to at least 30 higher education credits have been successfully completed,
- § conditional elective courses (2) corresponding to at least 7,5 higher education credits have been successfully completed,
- § the final degree project (30 higher education credits) has been successfully completed.

In addition to the requirements stated above, a master's degree student must submit

- § the original certificate from previous education (Bachelor's or similar),
- § a proof that all financial obligations (student union fee) to KTH have been met.

Degree names Students who have successfully completed a two-year Master's programme (120 higher education credits) will be awarded a "Teknologie masterexamen", translated into English as "Degree of Master of Science (two years)". More information on the degree requirements can be found in the local admission policy of KTH at <http://www.kth.se/info/kth-handboken/II/19/1x.html>

[Appendix 1 - Course list](#)

[Appendix 2 - Programme syllabus descriptions](#)



Appendix 1: Course list

Programme syllabus for studies starting in autumn 2009, Master's Programme, Electric Power Engineering, 120 credits (TELPM)

General courses

Year 1

Mandatory courses (30.0 Credits)

Code	Name	Credits	Edu. level
EG2020	Power Systems, Basic Course	7.5 hp	Second cycle
EI2433	Electrotechnical Modelling	7.5 hp	Second cycle
EJ2200	Electrical Machines and Drives	7.5 hp	Second cycle
EJ2300	Power Electronics	7.5 hp	Second cycle

Optional courses

Code	Name	Credits	Edu. level
EG2040	Wind Power Systems	7.5 hp	Second cycle
EL2620	Nonlinear Control	7.5 hp	Second cycle

Conditionally elective courses

Code	Name	Credits	Edu. level
EG2030	Power Systems, Advanced Course	7.5 hp	Second cycle
EG2050	System Planning	7.5 hp	Second cycle
EG2060	Electricity Market Analysis	7.5 hp	Second cycle
EH2710	Power System Control and Operation	7.5 hp	Second cycle
EI2430	High-voltage Engineering	7.5 hp	Second cycle
EI2440	Electrotechnical Design	7.5 hp	Second cycle
EJ2210	Analysis of Electrical Machines	7.5 hp	Second cycle
EJ2311	Modulation of Power Electronic Converters	6.0 hp	Second cycle
EJ2420	Seminars in Electrical Machines and Power Electronics	1.5 hp	Second cycle

Supplementary information

Elective courses;

All courses at KTH

We recommend the following elective courses

EG2040

EL2620

Year 2

Mandatory courses (7.5 Credits)

Code	Name	Credits	Edu. level
AK2036	Theory and Methodology of Science with Applications (Natural and Technological Science)	7.5 hp	Second cycle

Optional courses

Code	Name	Credits	Edu. level
EG2080	Monte Carlo Methods in Engineering	6.0 hp	Second cycle

Conditionally elective courses

Code	Name	Credits	Edu. level
EG2070	FACTS and HVDC in Electric Power Systems	7.5 hp	Second cycle
EH2020	Industrial Control and Information Systems	7.5 hp	Second cycle
EH2720	Management of Projects	7.5 hp	Second cycle
EH2730	Requirements Engineering	7.5 hp	Second cycle
EJ2221	Design of Permanent Magnet Synchronous Machines	7.5 hp	Second cycle
ME1000	Industrial Management	6.0 hp	First cycle

Supplementary information

Conditional elective courses given in first and second year;

EG2030 Power system advanced course

EJ2311 Modulation of power electronic converters

EJ2420 Seminars in electrical machines and power

EI2204 Global Entrepreneurial Leadership

Elective course given in first and second year;



Appendix 2: Specialisations

Programme syllabus for studies starting in autumn 2009, Master's Programme, Electric Power Engineering, 120 credits (TELPM)

This programme has no specialisations.