Special provisions of the examination regulations for the master's degree programme Electrical Systems Engineering in the Faculty of Computer Science, Electrical Engineering and Mathematics at Paderborn University

from 24 May 2024 (Official Notices 35.24)
as amended in the Official Notices 55.24 from 30 September 2024

(As of: 13 August 2024)

Paderborn University has issued the following regulations based on section 2 (4) and section 64 (1) of the "Gesetz über die Hochschulen des Landes Nordrhein-Westfalen (Hochschulgesetz - HG)" of 16 September 2014 (GV.NRW. p. 547), last amended by Article 2 of the Act of 5 December 2023 (GV. NRW. p. 1278):

This is a translation of the "Besondere Bestimmungen der Prüfungsordnung für den Masterstudiengang Electrical Systems Engineering der Fakultät für Elektrotechnik, Informatik und Mathematik an der Universität Paderborn".
Only the German original version of these special provisions shall be legally binding; the English translation serves convenience purposes only.

Contents

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Section 31
General and special provisions

These special provisions apply in conjunction with the version in force of the general provisions of the examination regulations for master's degree programmes of the Faculty of Computer Science, Electrical Engineering and Mathematics at Paderborn University (general provisions). A study plan is included in the appendix showing a proper structure for the programme. Detail of the modules can be found in the module descriptions, which form a part of these special provisions.

Section 32
Acquiring competencies and language regulations

(1) The master's degree programme Electrical Systems Engineering expands on the knowledge and skills acquired in the bachelor's degree programme Electrical Engineering or a comparable degree programme and provides an academically sound education focussing on the development of electrical engineering systems. It qualifies students both for positions of responsibility as leading engineers in industry, and for doctoral programmes and a further academic career in the electrical engineering.

(2) During the programme, graduates gain the following competencies in particular:

- Subject-specific competencies:

  After completing the programme, graduates have a sound, sufficiently broad and interconnected knowledge of the concepts and methods in fundamental areas of electrical engineering. They have both a secure and reliable command of sophisticated methods, and they have an in-depth understanding of electrical engineering problems and concepts for practical solutions. Within one of the two specializations

  1. Electronics & Devices
  2. Signal & Information Processing

  they have in-depth knowledge including of the current state of research and development. In addition, they are able to self-critically scrutinise, review and evaluate their own results in the context of alternative approaches.

- Functional and systemic competencies:

  Graduates are able to apply the knowledge they have acquired over the course of the degree programme to an activity from industrial practice and to independently find, argue and further develop appropriate solutions to problems. In doing so, they can apply the skills acquired during the degree programme, such as analytical thinking, a creative, structured and systematic approach to complex problems and precise working methods.

  Graduates are able to collect, evaluate and interpret relevant information and data from electrical engineering.

They can make scientifically sound judgements in these areas.

Thanks to their fundamental training, they are able to continually acquire new knowledge, methods and areas of application independently. They have learnt to form and work in teams, to divide up tasks and delegate them where necessary, and to take on responsibility. As they have completed their entire degree programme in an international teaching and learning environment, they have acquired intercultural skills that qualify them in particular for working in companies operating globally.

- Communicative competencies:

  Graduates are able to behave appropriately towards decision-makers, other experts and laypersons. They are able to express themselves precisely and comprehensibly both orally and in writing, even in difficult situations, using the correct technical terms and designations. They are able to develop logically coherent lines of argument, face objections, and accommodate constructive criticism.
  Conversely, they can understand and assess the contributions of other experts, understand their arguments, identify any weaknesses and formulate suggestions for improvement.

(3) The master's degree programme and master's examination take place in the English language. The languages of individual modules are given in the module descriptions.

Section 33
Start of studies

The programme can be started in either the winter or the summer semester.

Section 34
Admission requirements

(1) In accordance with section 5 of the general provisions, the degree programme requires study components in at least the following areas, comprising at least the credits listed:

- Higher mathematics - at least 24 CP
- Signal theory - at least 4 CP
- System theory - at least 4 CP
- Field theory - at least 5 CP

(2) The degree must have been achieved with a final grade of 2.5 or better in the German grading system (range: 1.0 – 5.0; best grade: 1.0; minimum passing grade: 4.0).

(3) The following admission requirements apply alongside the requirements listed in section 5 of the general provisions: The applicant has sufficient English language skills. Proof of sufficient command of English must be provided as follows:

a. a bachelor's degree taken in an English speaking country or in an English-language accredited institution in Germany;[1]
b. a Test of English as Foreign Language (TOEFL) as an 'Internet-based' Test (iBT) with a score of at least 87 points;
c. a TOEFL as a 'paper-based' Test (PBT) with a score of at least 585 points;
d. an IELTS test with a score of 6.0 or better;
e. Cambridge English: First (FCE); or

via another test at an equivalent level. Notwithstanding section 5 paragraph 1 No. 3 of the general provisions, proof of sufficient German language skills is not required.

(4) A foreign applicant who is not treated as German by or on the basis of international treaties must prove their ability to study by providing the results of a GRE Revised General Test. As a general rule, at least 157 points in the "Quantitative Reasoning" part and at least 4.0 points in the "Analytical Writing" part of the GRE Revised General Test are required. If a candidate has a very good final grade for their degree, in accordance with No. 2, the certification of a GRE Revised General Test is not necessary. Applicants with a German higher education entrance qualification are not required to provide proof of eligibility to study.

Section 35
Structure, course content, and modules

(1) The master's examination is taken in one of the two specialisations "Signal & Information Processing" or "Electronics & Devices". At the start of the first semester, the candidate selects a specialisation.

(2) To change specialisation, a candidate must make a written application to the Examination Committee. As far as possible, examination assessments that have been passed will be credited.

(3) The following modules are to be completed during the master's degree programme:
a. compulsory module "Advanced System Theory" from the module group "Introduction to Electrical Systems Engineering" for 6 credit points,
b. compulsory module "Modeling & Simulation" from the module group "Introduction to Electrical Systems Engineering" for 6 credit points,
c. if the specialisation "Signal & Information Processing" is chosen:
   i. compulsory module "Signal Processing" from the module group "Introduction to Signal & Information Processing" for 6 credit points,
   ii. compulsory module "Statistical and Machine Learning" from the module group "Introduction to Signal & Information Processing" for 9 credit points,

   or

   if the specialisation "Electronics & Devices" is chosen:
   iii. compulsory module "Electromagnetic Waves and Waveguides" from the module group "Introduction to Electronics & Devices" for 9 credit points,

[1] Countries in which English is the official language and the medium of instruction of the relevant degree programme are deemed to be English-speaking within the framework of these regulations.

iv. compulsory module “Analysis and Design of Electronic Circuits” from the module group “Introduction to Electronics & Devices“ for 6 credit points,

d. compulsory module “Management of Technical Projects” from the module group “Management and Applikation“ for 3 credit points,
e. compulsory module “Systems Engineering” from the module group “Management and Applikation“ for 3 credit points,
f. 1 compulsory elective module from the module group “Fundamentals of Electrical Systems Engineering” for 6 credit points,
g. if the specialisation “Signal & Information Processing” is chosen:
2 compulsory elective modules from the module group “Signal & Information Processing”,
or
if the specialisation “Electronics & Devices” is chosen:
2 compulsory elective modules from the module group “Electronics & Devices”, each for 6 credit points,
h. 2 compulsory elective module from the module group “Electrical Systems Engineering” for 6 credit points, insofar as they are not credited for another module,
i. 1 module “General Education (Studium Generale)” for 9 credit points:
Courses in accordance with section 35 paragraph 5,
j. 1 compulsory elective module “Projects” for 18 credit points for a project lasting a full year, or 2 compulsory elective module “Projects” for 9 credit points each for projects lasting a half year,
k. Master’s Thesis for 30 credit points.

(4) On application and in individual cases, the Examination Committee may allow taking a course from a compulsory elective module in another compulsory elective module if the content of the course matches the subject of the compulsory elective module.

(5) The master's programme provides for a general education programme of 9 CP. For this module, students choose courses from the Paderborn University course catalogue. The courses chosen for this module should not be from the Electrical Systems Engineering programme. Students with insufficient German language proficiency are recommended to take two German language courses as part of the General Education module.

Section 35a
Compulsory counselling

If half of the standard period of study has expired, at the earliest three months after the end of the second semester, and a student has completed examination assessments amounting to less than one third of the credit points to be achieved at the time of invitation, at the request of the university, students are obliged to participate in a study counselling session. Otherwise, section 58a paragraph 3 sentence 2 of the “Gesetz über die Hochschulen des Landes Nordrhein-Westfalen” applies.

Section 36
Transfer of credits

Section 8 paragraph 7 of the general provisions does not apply for the master's degree programme Electrical Systems Engineering.

Section 37
Examination committee and examiners

The regulations of the general provisions apply.

Section 38
Admission requirements, registration and cancellation of registration

(1) Module admission requirements in accordance with section 7 paragraph 2 of the general provisions are given in the module descriptions.

(2) Students can only be admitted to the Master's Thesis if they have achieved at least 60 credit points. This is to contain the following compulsory modules for 27 credit points:
   a. Advanced System Theory and Modeling & Simulation
   b. Electromagnetic Waves and Waveguides, and Analysis and Design of Electronic Circuits (specialisation E&D)
   c. Statistical Signal Processing and Statistical and Machine Learning (specialisation I&S)

   Admission to the master's thesis can only be granted to students who were granted enrolment with conditions in accordance with section 5 paragraph 1 No. 2b) of the general provisions, if they have provided proof that they have passed the associated examinations.

(3) Further requirements for participation in examinations in accordance with section 12 paragraph 2 of the general provisions, such as any attendance regulations, are given in the module descriptions.

(4) A compulsory elective module is selected if the student has registered for the module examination and it is no longer possible to withdraw from the examination.

Section 39
Module assessments

(1) All assessments of the modules must be completed in accordance with the module descriptions.

(2) Examination assessments are taken in accordance with section 15 of the general provisions. The following other form is envisaged in particular:

Project work

In a project, students work alone or in a group on a topic specified by the members of the teaching staff. Project work generally includes documenting and presenting the work done, this latter in a talk of 30 to 45 minutes.

(3) Qualified participation is established in accordance with section 15 of the general provisions. The following other forms, in particular, are provided for:

Programming tasks

(4) The examinations usually take place twice per academic year.

Section 40
Master's thesis and final presentation

(1) The master's thesis should not exceed 120 DIN A4 pages. The time allowed for the master's thesis is six months. If the thesis takes less than five months to complete, the supervisor must justify this in written form to the Examination Committee.

(2) The module Master's Project consists of the thesis plan (qualified participation, workload 150 hours, determined by the first examiner) and the master's thesis including an interim presentation and a final presentation (workload 750 hours).

(3) As a rule, four weeks after the announcement of the topic, the candidate presents the procedure and plan for the master's thesis in an interim presentation (approx. 30-45 minutes). As a rule, the topic and the results of the master's thesis must be presented in a final oral presentation (approx. 45-60 minutes) four weeks after submission of the master's thesis. The final presentation is counted as part of the master's thesis for the purpose of its evaluation.

(4) In contrast to section 17 paragraph 7 of the general provisions, the Examination Committee may, in individual cases, extend the completion time by up to six weeks upon justified request. The request must be submitted to the Examination Committee at least one week before the submission deadline. The request is to give reasons for the proposed extension which are related to the topic of the thesis. Furthermore, the supervisor responsible must approve.

(5) Contrary to section 17 paragraph 9 of the general provisions, the master's thesis is to be formulated in English.

Section 41
Additional modules

Students can partake in additional achievements for up to 24 additional credits in accordance with section 20 of the general provisions in modules that do not have a participant limit. This upper limit also includes failed examinations.

Section 42
Final grade

The grade “passed with distinction” is awarded if the final grade determined in accordance with section 21 paragraph 2 of the general provisions is 1.1 or better.

Section 43
Repeating examinations and compensation

(1) The number of examination attempts, in accordance with section 22 paragraph 1 of the general provisions, is limited to three. Deviating from this, a failed examination in the General Education module can be repeated or replaced by an examination in another course. The number of replacements and the number of retakes are not limited in the General Education module.

(2) Contrary to section 22 paragraph 2 of the general provisions, the final attempt at a written exam is taken as an oral exam of between 30 and 45 minutes. Section 15 paragraph 1 No. 2 of the general provisions applies similarly. In individual cases, students may apply to the Examination Committee to take the examination as a written examination in accordance with section 22 paragraph 2 of the general provisions.

(3) A candidate who has passed a module examination in a compulsory elective area that is recorded as an additional achievement in accordance with section 41 can request that it is exchanged for an examination of a module from the same compulsory elective area, whether passed, not yet passed, or definitively failed (compensation). Compensation is possible in the specialisation chosen for two compulsory elective modules within this specialisation, and in the remaining compulsory elective area for any two modules.

(4) It is possible to deregister from a compulsory elective module four times and choose another elective module in accordance with the requirements of section 35. This regulation also applies if the relevant compulsory elective module has been finally failed. The deregistration must be requested in written form at the Central Examination Office.

Section 44
Transitional provisions

(1) These special provisions apply to all students who are enrolled for the first time in the master's degree program in Electrical Systems Engineering at the Faculty of Computer Science, Electrical Engineering and Mathematics from the winter semester 2024/25 onwards.

(2) Students who were already enrolled before the winter semester 2024/25 will take their master's examination, including repeat examinations, in accordance with the examination regulations in the version dated 31 March 2022 (AM.Uni.Pb. 12.22). Students can apply to the Central Examination Office to be transferred to these special provisions. The application is irrevocable. Students who do not switch to these special provisions can take their master's examination, including repeat examinations, for the last time in the summer semester 2027 in accordance with the examination regulations in the version dated 31 March 2022 (AM.Uni.Pb. 12.22). The master's examination, including repeat examinations, is thereafter taken in accordance with these special provisions.

(3) The examinations including repeat examinations for the modules “Fields and Waves” and “Statistical and Machine Learning” (6 credit points) can be taken for the last time in the winter semester 2025/26 in accordance with the examination regulations for the master's degree program in Electrical Systems Engineering at the Faculty of Electrical Engineering, Computer Science and Mathematics at Paderborn University dated 31 March 2022 (AM.Uni.Pb. 22.22).

(4) Registering for the module “Projektarbeit” can be done for the last time in the summer semester 2024 in accordance with the examination regulations for the master's degree program in Electrical Engineering at the Faculty of Electrical Engineering, Computer Science and Mathematics at Paderborn University dated 31 March 2022 (AM.Uni.Pb. 11.22). Any registration for the module from the winter semester 2024/25 on is governed by these special provisions.

Section 45
Enactment and publication

(1) These special provisions come into legal effect on 1 October 2024. At the same time, the regulations for the master's degree program Electrical Systems Engineering from 31 March 2022 (AM.Uni.Pb. 11.22) shall expire. Section 44 remains unaffected.

(2) These special provisions are published in the Official Notices of Paderborn University (AM.Uni.Pb.).

(3) Pursuant to section 12 paragraph 5 HG, a violation of procedural or formal provisions of HG or the university's regulatory or other autonomous law can no longer be asserted against these regulations after the expiry of one year since the publication of these regulations, unless

1. the regulations have not been duly published,
2. the Executive Board has previously objected to the resolution of the body adopting the regulations,
3. the formal or procedural defect has been notified to the university in advance, specifying the legal provision violated and the fact that reveals the defect, or

4. the legal consequence of the exclusion of objection was not pointed out in the public announcement of the regulations.

(4) The first amendment to these provision comes into force on 1 October 2024.

This is a special version made easier to read by including the amendments (see the cover page for the amendment numbers). This special version is not an official notice and is thus not the basis for any legal claims.

Attachment

Appendix I: Exemplary study plan

The following diagrams show a typical study plan for the specialisations

- Electronics & Devices and
- Signal & Information Processing

of the master's degree program Electric Systems Engineering, giving the modules and their credit points (CP). The modules or module groups are listed with the semester load (weekly hours) and the credits. The total weekly hours and credits to be obtained are given for the semester.

MS Electrical Systems Engineering Specialisation: Signal & Information Processing			
1st semester 20 SWS, 30 CP	2nd semester 20 SWS, 30 CP	3rd semester 20 SWS, 30 CP	4th semester 30 CP
Introduction to ESE *Compulsory subject* **Advanced System Theory** (4 SWS, 6 CP)	Intro. to Signal & Info. Processing *Compulsory subject S&IP* **Statistical and Machine Learning** (6 SWS, 9 CP)	Signal & Information Processing *Compulsory elective* (4 SWS, 6 CP)	**Master Thesis**
Introduction to ESE *Compulsory subject* **Modeling & Simulation** (4 SWS, 6 CP)	Signal & Information Processing *Compulsory elective* (4 SWS, 6 CP)	Electrical Systems Engineering *Elective* (4 SWS, 6 CP)	
Intro. to Signal & Info. Processing *Compulsory subject S&IP* **Statistical Signal Processing** (4 SWS, 6 CP)		Electrical Systems Engineering *Elective* (4 SWS, 6 CP)	
Fundamentals of ESE *Compulsory elective* (4 SWS, 6 CP)			
Management and Application *Compulsory subject* **Management of Technical Projects** (2 SWS, 3 CP)	Projects *Elective* (6 SWS, 9 CP) (2 x 6 SWS, 18 CP)	Projects *Elective* (6 SWS, 9 CP)	
General Education *Elective* **Language Course German or Other** (2 SWS, 3 CP)	General Education *Elective* **Language Course German or Other** (2 SWS, 6 CP)	Management and Application *Compulsory seminar* **Topics in Systems Engineering** (2 SWS, 3 CP)	(30 CP)
Abbreviations:	SWS: Hours per week CP: ECTS credits		

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MS Electrical Systems Engineering Specialisation: Electronics & Devices			
1st semester 20 SWS, 30 CP	2nd semester 20 SWS, 30 CP	3rd semester 20 SWS, 30 CP	4th semester 30 CP
Introduction to ESE *Compulsory subject* **Advanced System Theory** (4 SWS, 6 CP)	Intro. to Electronics & Devices *Compulsory subject E&D* **Electromagnetic Waves and Waveguides** (6 SWS, 9 CP)	Electronics & Devices *Compulsory elective* (4 SWS, 6 CP)	**Master Thesis** (30 CP)
Introduction to ESE *Compulsory subject* **Modeling & Simulation** (4 SWS, 6 CP)	Electronics & Devices *Compulsory elective* (4 SWS, 6 CP)	Electrical Systems Engineering *Elective* (4 SWS, 6 CP)	
Intro. to Electronics & Devices *Compulsory subject E&D* **Analysis and Design of Electronic Circuits** (4 SWS, 6 CP)		Electrical Systems Engineering *Elective* (4 SWS, 6 CP)	
Fundamentals of ESE *Compulsory elective* (4 SWS, 6 CP)			
Management and Application *Compulsory subject* **Management of Technical Projects** (2 SWS, 3 CP)	Projects *Elective* (6 SWS, 9 CP) (2 x 6 SWS, 18 CP)	Projects *Elective* (6 SWS, 9 CP)	
General Education *Elective* **Language Course German or Other** (2 SWS, 3 CP)	General Education *Elective* **Language Course German or Other** (2 SWS, 6 CP)	Management and Application *Compulsory seminar* **Topics in Systems Engineering** (2 SWS, 3 CP)	
Abbreviations:	SWS: Hours per week CP: ECTS credits		

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Appendix II: Module list

As a result of the ongoing development of research and teaching of the Institutes of Electrical Engineering and Information Technology, a small number of modules from the following list may be omitted from the elective area or replaced or supplemented by a small number of modules that belong to the same subject area. Such changes are announced in the module handbook. The regulations on study achievements, scope and admission requirements remain unaffected by this.

Module group Module	**Module group CP** Module CP	**Number and type of exams**	**Notes**
Module group *Introduction to Electrical Systems Engineering*	***12***	2 oral exams, written exams or papers with academic talks	2 compulsory modules
Advanced System Theory Modeling & Simulation	6 6		
Module group *Introduction to Electronics & Devices*	***15***	2 oral exams, written exams or papers with academic talks	2 compulsory modules for the specialisation *Electronics & Devices*
Analysis and Design of Electronic Circuits Electromagnetic Waves and Waveguides	6 9		To be able to complete the module "Electromagnetic Waves and Waveguides" and gain the credit points, qualified participation must be shown for the course "Electromagnetic Waves and Waveguides – Practical Exercise".
Module group *Introduction to Signal & Information Processing*	***15***	2 oral exams, written exams or papers with academic talks	2 compulsory modules from the specialisation "Signal & Information Processing"
Statistical Signal Processing Statistical and Machine Learning	6 9		To be able to complete the module "Statistical and Machine Learning" and gain the credit points, qualified participation must be shown for the course "Statistical and Machine Learning – Practical Exercise".
Module group *Fundamentals of Electrical Systems Engineering*	***6***	1 oral exam, written exam or paper with academic talk	Selection of 1 compulsory elective module
Advanced Control Data-Driven Engineering Data-Driven Innovation Model-Based Systems Engineering			

Module group Module	**Module group CP** Module CP	**Number and type of exams**	**Notes**
Introduction to Algorithms Digital Speech Signal Processing High-Frequency Engineering			
Module group Management and Application	***6***	2 oral exams, written exams or papers with academic talks	2 compulsory modules
Management of Technical Projects Topics in Systems Engineering	3 3		
Module group *Electronics & Devices*	***12*** 6 each	2 oral exams, written exams or papers with academic talks	2 compulsory elective modules for the specialisation Electronics & Devices
Module group Signal & Information Processing	***12*** 6 each	2 oral exams, written exams or papers with academic talks	2 compulsory elective modules for the specialisation Signal & Information Processing
Module group Electrical Systems Engineering	***12*** 6 each	2 oral exams, written exams or papers with academic talks	2 compulsory elective modules
Project Group	***18***	Project work	1 compulsory elective module 18 CP or 2 compulsory elective modules for 9 CP each The study achievement must be passed in accordance with section 15 paragraph 2 to participate in the final module examination. The specific form of assessment can be found in the module handbook.
Abschlussarbeit	***30***		Compulsory module. To be able to complete the module and gain the credit points, qualified participation must be shown by completing the thesis plan.
Thesis plan			
Master's thesis			

Module group Signal & Information Processing

- Advanced Control
- Advanced Topics in Robotics
- Algorithms and Tools for Test and Diagnosis of Systems on a Chip
- Cognitive Systems Engineering - Special Topics
- Digital Image Processing I

- Digital Image Processing II
- Numerical Simulations with the Discontinuous Galerkin Time Domain Method
- Optical Waveguide Theory
- Optimal and Adaptive Filters
- Reinforcement Learning
- Robotics
- Topics in Pattern Recognition and Machine Learning
- Topics in Signal Processing
- Wireless Communications

Module group *Electronics & Devices*

- Advanced VLSI Design
- Analog CMOS ICs
- Controlled AC Drives
- Design of Transformation Scenarios
- Energy Transition
- Fast Integrated Circuits for Wireline Communications
- High-Frequency Electronics
- Integrated Circuits for Wireless Communications
- Numerical Simulations with the Discontinuous Galerkin Time Domain Method
- Optical Communication A
- Optical Communication B
- Optical Communication C
- Optical Communication D
- Optical Waveguide Theory
- Power Electronics
- Radio Frequency Power Amplifiers
- Solar Electric Energy Systems
- VLSI Testing

Module group Electrical Systems Engineering

Compulsory elective modules from

- Module group Signal & Information Processing
- Module group *Electronics & Devices*
- Compulsory module group from the other specialisation

Appendix III: Courses in the general education area

As part of the General Education module, students must choose courses from the range of courses offered at Paderborn University, which are listed in the course catalogue. The courses chosen for this module should not be from the Electrical Systems Engineering programme. Students with insufficient German language proficiency are recommended to take two German courses as part of the general education section.

Appendix IV: Objectives matrix for the master's degree programme Electrical Systems Engineering

Higher level programme objectives	**Goals for capabilities as learning outcomes**	**Corresponding module**
Specialised academic qualifications	Graduates have an in-depth knowledge of electrical engineering beyond the level of the bachelor's degree programme, in particular in advanced system theory. They are able to give detailed mathematical descriptions of electrical systems.	Compulsory module Advanced System Theory
	They have in-depth knowledge of the modelling and simulation of technical systems (discrete simulations, numerical methods for ordinary and partial differential equations). They can describe, analyse and manipulate modelling processes.	Compulsory module Modeling & Simulation
	They have deepened their methodological knowledge and extended it to new areas. They are able to model and analyse systems, and design them methodologically in accordance with the chosen specialisation.	Compulsory elective modules
	They can recognise, formulate and structure, methodically analyse and solve complex tasks on the basis of subject-specific knowledge.	Compulsory elective modules Projektmodul Master's thesis
	They can apply and develop interdisciplinary knowledge with the methods and tools of engineering science in a problem-oriented manner. They can analyse technological requirements and further develop scientific methods.	Compulsory elective modules Projektmodul Master's thesis
Professional qualification	They have acquired in-depth knowledge in specific areas of electrical engineering in accordance with	Compulsory elective modules

	their chosen specialisation and their personal inclinations and abilities. They are capable of analysing, modelling, designing and testing electrical systems in accordance with the chosen fields.	
	Those that have no German language skills at the beginning of their studies, have now acquired appropriate skills at levels A2 to B1 according to the Common European Framework of Reference for Languages. All other students have furthered their knowledge in the interface between electrical engineering and neighbouring sciences. They can recognise, formulate and describe problems in an interdisciplinary environment.	Projektmodul General Education
	They able to apply the specialised knowledge they have acquired to a specific task in accordance with the state of the art and are prepared to enter the professional or scientific working environment.	Projektmodul Master's thesis
Key personal skills	They can organise and carry out small projects	Projektmodul Master's thesis
	They can familiarise themselves independently with future developments in the subject. They have acquired a basic approach towards scientific research that enables them to engage in lifelong learning.	Compulsory elective modules Projektmodul Master's thesis
	They can maintain and communicate specialised knowledge and present ideas and concepts clearly, logically and convincingly in oral and written form to suit the target group.	Compulsory elective modules Projektmodul Master's thesis
	They understand team processes and can perform as part of a team.	Projektmodul
Aptitude for social responsibility and participation	They can think and act in a problem-orientated, interdisciplinary and comprehensive networked way.	General Education Projektmodul Master's thesis
	They can assess everywhere the social and ethical significance of the subject. They can derive sound judgements that take into account social and scientific findings - particularly with regard to the effects of technological change.	General Education Projektmodul Master's thesis

Appendix V: Module descriptions

The current module handbooks can be found here:

https://ei.uni-paderborn.de/studium/formalitaeten/ordnungen