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HOCHSCHULE DARMSTADT
UNIVERSITY OF APPLIED SCIENCES

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FACHBEREICH ELEKTROTECHNIK
UND INFORMATIONSTECHNIK

Special Examination Regulations (BBPO)

Electrical Engineering and Information Technology - International

Master of Science

of the Faculty of Electrical Engineering and Information Technology

of the Hochschule Darmstadt University of Applied Sciences

dated 08/05/2018
last change on 14/01/2020
Changes effective from 01/07/2020

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§ 1 General information

(1) These Special Examination Regulations (BBPO) form, together with the General Examination Regulations of the Hochschule Darmstadt University of Applied Sciences (ABPO), in the version dated 30.01.2018, the study and examination regulations of the Master's Course in Electrical Engineering and Information Technology.
Providing no other provisions have been made in these special regulations, the regulations of the ABPO shall apply.

(2) The course is run by the Faculty of Electrical Engineering and Information Technology of the Darmstadt University of Applied Sciences.

§ 2 Qualification goals of the programme

(1) The student of the degree programme shall acquire a qualification in line with international standards, which allows him/her to perform scientific activities, management activities, postdoctoral studies and hold important positions in the civil service/public sector.

(2) Passing the Master's examination proves that the graduates of the Master's course are qualified to take on demanding research, development and management tasks concerning electrical engineering and information technology.

(3) After the initial professional qualification, the students will acquire more in-depth specialist knowledge and competencies both in theory and in practice, and in a system-orientated way. They are able to perform technical management activities and conceptional work in areas such as application-orientated research, product pre-development and development as well as consultation in a wide range of sectors.

(4) By choosing a major at the start of the course, students will learn specialist information in one area of electrical engineering and information technology. Whether in automation engineering, energy technology, communication or embedded systems / microelectronics, students acquire in-depth theoretical and practical knowledge and competencies, and are able to apply scientific methods and know-how in difficult and complex practical problems and work conceptionally on the basis of them. Students obtain extensive experience of independent engineering work and/or of engineering science research activities due to the project work integrated into the course, as well as their cooperation at companies and scientific institutions during the practical phase and final thesis.

(5) Students are prepared for the international market by intensive interaction with other students from various countries and cultures, which is achieved by learning and working together on this international degree programme. In particular, this increases the intercultural skills of students. The students are prepared for management and leadership activities by courses which aim to develop key qualifications in project management. Courses with legal and ethical topics will strengthen their abilities to meet their responsibility as leadership personalities.

(6) Students who are not native speakers of English, will improve their English skills above B2 language level due to the fact that all the courses are held in English. In addition, they will be able to write English texts of a scientific standard. International students acquire extra language skills due to the mandatory German course (at least A2 level) and are therefore prepared for everyday business life in Germany.

(7) The students acquire specialist communication skills at scientific level, in particular within the scope of laboratory events, projects, the practical phase and the thesis by compiling and presenting scientific papers as well as technical reports and documentation about complex issues.

§ 3 Academic title

By passing the master's degree, the Hochschule Darmstadt - University of Applied Sciences awards the academic title of "Master of Science", with the abbreviation "M. Sc.".

§ 4 Standard period of study and start of studies

(1) The standard period of study is three semesters for students who meet the admission requirements as per Section 6, paragraph 1, and have been admitted to the 3-semester degree programme as per Section 6, paragraph 3. Hereinaf-

ter, this form of degree programme is called the "3-semester degree programme". The 3-semester degree programme can be started in the summer or winter semester.

(2) For all other students, the standard period of study is 4 semesters. Hereinafter, this form of degree programme is called the "4-semester degree programme". The 4-semester degree programme can only be started in the winter semester.

§ 5 Credit points required for graduation

(1) To successfully graduate from the 3-semester degree programme, 90 credit points are required (hereinafter referred to as CP) in accordance with the European Credit Transfer System (ECTS). One CP normally corresponds to 30 hours of student output.

(2) To successfully graduate from the 4-semester degree programme, 120 credit points are required (hereinafter referred to as CP) in accordance with the European Credit Transfer System (ECTS). One CP normally corresponds to 30 hours of student output.

§ 6 Admission requirements and process

(1) The admission requirement for the 3-semester degree programme is a relevant and completed Bachelor's degree programme in electrical engineering and information technology, or a related area, amounting to at least 210 CP – of which at least 15 CP come from practical work as per Section 7, paragraph 1 ABPO – as well as evidence of sufficient knowledge of English. Graduation from the Bachelor's degree programme in "Electrical Engineering and Informational Technology" of the Darmstadt University of Applied Sciences, or a comparable degree, is deemed to be relevant.

(2) The admission requirement for the 4-semester degree programme is a relevant and completed Bachelor's degree programme in electrical engineering and information technology, or a related area, amounting to at least 180 CP, as well as evidence of sufficient knowledge of English.

(3) All applicants must undergo an aptitude assessment. In your application documents, you have to prove that you are specially qualified for the Master's degree programme. The admission commission of the degree programme shall decide about admission, based on the aptitude assessment.

(4) Further details are provided in the admission regulations of the Master's degree programme.

§ 7 Standard study programme

(1) The courses of the four majors (Section 8) are held in the first and second semester. The standard study program of both semesters contains modules amounting to 60 CP. They are split into general compulsory modules (10 CP), major-specific compulsory modules (35 CP) and required elective modules (15 CP, Section 9). All modules are independent, which means that you do not need any prior knowledge from other modules of this Master's degree program. The degree program ends with the Master module (30 CP, Section 12), which is held in the 3rd semester (for the 3-semester programme) or the 4th semester (for the 4-semester programme).

(2) In the 3rd semester of the 4-semester degree programme, a practical module of 30 CP is intended (Section 10).

(3) The standard study programme is attached in Annex 1. A detailed description of the module is provided in Annex 5 (module handbook).

§ 8 Majors

(1) Majors are offered in the following subjects: "Automation", "Communications", "Embedded and Microelectronics" and "Power Engineering"

(2) In all majors, students acquire in-depth and research-relevant theoretical and practical skills, specific to their particular area, regarding modern scientific methods as well as complex concepts and technology.
The content of the major "Automation" comprises, in particular, sophisticated methods of automation and control

engineering with a focus on industrial automation and robotics.
In the major "Communication", students acquire the competencies mentioned in data communication, both with wireless and wired media, e.g. the management of modern networks, complex processes in modulation, coding and digital signal processing, as well as the theory, construction and functioning of modern communication systems.
In the major "Embedded Systems and Microelectronics" the competencies mentioned in the drafting and development of embedded and microelectronic systems (hardware and software) are acquired, which are based on highly integrated, configurable (FPGA) or application-specific (ASIC) hardware. Furthermore, the circuit design and the development of embedded software architecture are looked at, taking into account safety and security requirements.
In the major "Power Engineering" the existing competencies are expanded to include complex systems for the development of the efficient, secure and environmentally-friendly generation, transfer, storage and usage of electrical energy. Furthermore, students are also able to transfer the know-how they have acquired into innovative energy concepts.

(3) The desired major is to be stated when applying for a place. Admission is only granted for the selected major. It is not possible to change the major.

(4) The Master's thesis and the project of module M02, as well as the practical phase (only the 4-semester degree programme), are normally chosen so that the topic suits the respective major.

(5) General regulations about the majors are stated in Section 6 of ABPO.

§ 9 Elective modules

(1) The engineering science elective modules in each major comprise 15 CP (Annex 1). The partial modules must be selected from the catalogue of the selected major (Annex 2). The general regulations about the elective modules are stated in Sections 5 and 9 of ABPO.

§ 10 Practical module

(1) The standard study program of the 4-semester course contains a practical module (internship) in the 3rd semester with a practical working phase (Berufspraktische Phase, BPP) of 26 weeks, as well as preparatory courses.

(2) The admission to the practical module is done upon receipt of a written application of the student, with the following requirements being met:

1. At least 30 CP have been acquired from the first two semesters of the Masters course.
2. At least one German course has been successfully passed with a completed language level of at least A1. The preparation seminar has been attended.
3. The consent of the person supervising the practical working phase has been provided (Annex 4, Section 4, paragraph 4, OPM).
4. The consent of the internship provider has been provided (Annex 4, Section 6 paragraph 1, OPM).

(3) The practical working phase should be completed at a company or organisation outside of the Darmstadt University of Applied Sciences.

(4) The practical module is finished off with a practical working phase report. The practical module is not graded. It is deemed to be successfully completed, if the following requirements have been met:

1. The certificate of the internship provider as per Section 6 (2 .c OPM) exists.
2. The practical working phase report has been certified.

(5) Organisational matters are regulated in the internship regulations (OPM, Annex 4). Details about the content, goals and examinations can be found in the description of the practical module (Annex 5). General regulations are stated in Section 7 ABPO.

§ 11 Registration and admission to examinations

(1) Prerequisite elements and assessment elements can only be achieved in accordance with Section 14, paragraph 2, ABPO, after prior registration. The registration periods and process as well as the examination dates are dependent on the type of course and are notified by the examination board in suitable form (by print-out or online).

(2) Provided nothing else is defined in the module description (Annex 5), admission to the assessment element of a module examination is also possible, if not all the prerequisite elements have been assessed yet, although preferably if the completion of the respective prerequisite elements is done after the registration deadline for the associated assessment element. In this case, the admission to the assessment element is granted conditionally. The module examination is only passed once all the assessments for the module have been completed.

(3) Registration for the re-sitting of an assessment element which was not passed is done automatically. There is no separate notification for this.

(4) The de-registration from a prerequisite element or assessment element is possible, if the examination deadline is non-binding based on the examination regulations (deadlines to be met, automatic registration as per paragraph 3). It has to be done at the latest two calendar days before the examination date, normally using the technology supported by the examination system.

(5) If an illness occurs after the deregistration deadline has passed, which makes the student unable to sit the examination, a doctor's certificate is to be obtained immediately, stating the expected duration of the inability to sit exams, and is to be submitted to the examination board (Section 16, paragraph 2, ABPO). If the illness occurs repeatedly and affects the same examination, a medical officer's certificate must be submitted. If an examination is started during the period of inability to sit exams, the certificate no longer has any effect in accordance with the examination regulations, i.e. the student is no longer unable to sit exams.

(6) The general regulations on the registration and admission to examinations are stated in Section 14, ABPO.

§ 12 Final module

(1) The final module in accordance with Section 21, ABPO of the Darmstadt University of Applied Sciences is called the Master Module in the study plan. It consists of the Master's thesis and an oral defence and is intended for the 3rd semester (3-semester course) or the 4th semester (4-semester course).

(2) The master's thesis should show that the candidate is able to work on a problem from electrical engineering and information technology within a pre-defined period of time, independently and in accordance with scientific methods.

(3) Admission to the Master module is done by the examination board upon receipt of a written application, providing the following conditions have been met:

- 3-semester degree programme: At least 50 CP have been acquired. Contrary to this, students in the second semester can be granted consent if they have acquired at least 25 CP in the first semester.
- 4-semester degree programme: In total, at least 80 CP have been acquired. The practical module has been completed as per Section 10. A second German course has been successfully passed with a completed language level of at least A2.

(4) The Master's thesis is to be written in English or German. The Master's thesis contains a summary in English. The maximum processing time is 6 months. The regulations of Section 22, paragraph 5 to 7 ABPO apply.

(5) The submission of the Master's thesis is done in duplicate, in printed and bound form, and also in electronic form as a PDF document, without document restrictions, by the deadline set by the examination board, during the normal working hours of the office of the Faculty of Electrical Engineering and Information Technology. In the event that the thesis is sent by post, the date of the post stamp is applicable. The risk of accidental loss (e.g. lost by post) is to be borne by the student. The time of delivery is to be recorded.

(6) Once the Master's thesis has been passed, the results are presented and discussed in an oral defence at a date set by the supervisor. The assessment process should not exceed four weeks (Section 23, paragraph 1, ABPO). The oral defence begins with a presentation by the candidate of at least 20 minutes. The total duration of the oral defence is max. 60 minutes. The oral defence is published according to Section 11, paragraph 4, ABPO, provided there is no non-disclosure obligation.

(7) Alternatively to the schedule of the Master's thesis and oral defence described in Section 21, paragraph 2, ABPO, the oral defence can also be held before the evaluation of the Master's thesis with the consent of the supervisor, if the completion of the degree programme is still possible in the current semester as a result. In this case, the oral defence is allowed to be held at the earliest four weeks before the end of the submission period of the Master's thesis.

The candidate will be notified of the assessment of the oral defence directly after the consultation, and verbal justification will be provided.

(8) The Master's thesis and the oral defence must both be passed in accordance with Section 23, ABPO, and are weighted at a ratio of 3:1.

(9) General regulations about the final module are stated in Sections 21 to 23, ABPO.

§ 13 Degree programme-specific regulations

(1) Courses are held in English. If all the participants of a module are fluent in German, the module can also be taught in German.

(2) The examinations are normally held in English. If all the exam participants are fluent in German, the examination can also be held in German.

(3) In modules with a graded prerequisite element, the module grade is calculated from the grade of the assessment element, and the grade of the prerequisite element in accordance with the weighting specified in the module description. Further details are specified by Section 15, paragraph 3, ABPO.

(4) Assessment elements in mandatory modules which are not passed can be repeated twice. Prerequisite elements which are not passed can be repeated without limit. Further details are specified by Section 17, ABPO.

(5) The topic of the Team Project (M02) can be returned once within two weeks of the topic assignment. The non-appearance or any further return of the topic shall lead to a fail.

(6) If the assessment of the second repetition of a written examination means that it is not passed, a verbal additional examination is to be performed in accordance with Section 17, paragraph 6, ABPO. Every student is allowed max. two additional oral examinations in this degree programme.

(7) Students who have not achieved at least 30 CP at the end of the 2nd semester, may be invited to a consultation by the examination board as per Section 8, paragraph 2, ABPO.

(8) The Master's certificate and the Master's transcript are issued in English and German.

§ 14 Transition provisions

(1) Students who started their Master's degree programme at the Darmstadt University of Applied Sciences before these special conditions came into effect, can still be assessed according to the examination regulations previously applicable to them, up to and including the winter semester of 2021/22. Assessment elements according to the previously applicable examination regulations are still offered during this transition phase for four semesters after the last regular examination date, i.e. the assessment elements of the 1st semester are offered until the summer semester 2021, and those of the 2nd semester until the winter semester 2021/22.

(2) Students as per paragraph 1 can switch to these examination regulations upon request. The application is to be sent in writing to the examination board. The decision about the transition to these examination regulations can be made retrospective. The transition is done at the start of the semester following the decision. Fails of equivalent assessment elements from the previous examination regulations are transferred in accordance with Section 17, paragraph 3 ABPO. The examination board shall decide whether they are equivalent. For the crediting of assessments already completed, Section 19, ABPO shall apply.

(3) After the expiry of the transition period, all students are transferred to these examination regulations as per paragraph 1.

§ 15 Commencement

These examination regulations come into effect on 05.12.2018.

Darmstadt, 14.01.2020

Place, date of the decision of the Faculty Commission

Name, role (in block capitals)

Signature

1.1 Major: Automation (AUT)

	Vorl.	Übung	Lab.	Sem.	Vorl.	Übung	Lab.	Sem.	Vorl.	Übung	Lab.	Sem.	Vorl.	Übung	Lab.	Sem.	Vorl.	Übung	Lab.	Sem.	Vorl.	Übung	Prakt.	Sem.	Σ
1. Semester WS	M01				MA01				MA02				MA03				MA04				MAWP01				
	Technical Management				Safety in Industrial Automation				Adaptive Control, Modeling and Identification				Computer Vision				Advanced Programming Techniques				Elective 1				
SWS	4				3		0,5 (1)		3		0,5 (1)		3		0,5 (1)		2		2		4				24
ECTS	5				5				5				5				5				5				30
2. Semester SS	M02				MA05				MA06				MA07				MAWP02				MAWP03				
	Team Project				Industry 4.0/IIoT and the Digital Factory				Industrial Robotics				State Space Control Design				Elective 2				Elective 3				
SWS		4			3		0,5 (1)		3		0,5 (1)		3		0,5 (1)		4				4				24
ECTS	5				5				5				5				5				5				30
3. Semester	M03																								
	Internship (4-semester course only)																								
SWS																									
ECTS	30																								30
4. Semester	M04																								
	Master Module (Masterthesis and Colloquium)																								
SWS																									
ECTS	30																								120

	CP = Credit Points
Legende	SWS = Semesterwochenstunden
Modul für alle Vertiefungen	SS = Sommersemester
vertiefungsspezifisches Modul	WS = Wintersemester
Wahlpflichtmodul	

1.2 Major Communications (COM)

	Vorl.	Übung	Lab.	Sem.	Vorl.	Übung	Lab.	Sem.	Vorl.	Übung	Lab.	Sem.	Vorl.	Übung	Lab.	Sem.	Vorl.	Übung	Lab.	Sem.	Vorl.	Übung	Prakt.	Sem.	Σ
1. Semester WS	M01				MC01				MC03				MC04				MCWP01				MCWP02				
	Technical Management				Advanced Digital Signal Processing				Microwave Components and Systems				Advanced Software Design and Development				Elective 1				Elective 2				
SWS	4				3		0,5 (1)		3		0,5 (1)		2		2		4				4				25
ECTS	5				5				5				5				5				5				30
2. Semester SS	M02				MC05 (COM/EMIC)				MC06				MC07				MC02				MCWP03				
	Team Project				System-Driven Hardware Design				Fields, Waves and Antennas				Information Networks				Advanced Modulation				Elective 3				
SWS		4			2		2		3		0,5 (1)		3		0,5 (1)		3		0,5 (1)		4				23
ECTS	5				5				5				5				5				5				30
3. Semester	M03																								
	Internship (4-semester course only)																								
SWS																									
ECTS	30																								30
4. Semester	M04																								
	Master Module (Masterthesis and Colloquium)																								
SWS																									
ECTS	30																								120

	CP = Credit Points
Legende	SWS = Semesterwochenstunden
Modul für alle Vertiefungen	SS = Sommersemester
Wahlpflichtmodul	WS = Wintersemester
vertiefungsspezifisches Modul	

1.3 Major Embedded and Microelectronics (EMIC)

	Vorl.	Übung	Lab.	Sem.	Vorl.	Übung	Lab.	Sem.	Vorl.	Übung	Lab.	Sem.	Vorl.	Übung	Lab.	Sem.	Vorl.	Übung	Lab.	Sem.	Vorl.	Übung	Prakt.	Sem.	Σ
1. Semester WS	M01				MM01				MM02				MM03				MM04				MMWP01				
	Technical Management				Advaced Programming Techniques				VLSI Design and Testing				Advanced Microcontroller Systems and Embedded OS				FPGA-based System on Chip Design				Elective 1				
SWS	4				2		2		3		0,5 (1)		3		0,5 (1)		3		0,5 (1)		4				24
ECTS	5				5				5				5				5				5				30
2. Semester SS	M02				MM05				MM06				MM07				MMWP02				MMWP03				
	Team Project				Embedded Architectures and Applications				System Driven Hardware Design				Embedded Signal Processing Systems				Elective 2				Elective 3				
SWS		4			3		0,5 (1)		2		2		3		0,5 (1)		4				4				24
ECTS	5				5				5				5				5				5				30
3. Semester	M03																								
	Internship (4-semester course only)																								
SWS																									
ECTS	30																								30
4. Semester	M04																								
	Master Module (Masterthesis and Colloquium)																								
SWS																									
ECTS	30																								120

CP = Credit Points
SWS = Semesterwochenstunden
SS = Sommersemester
WS = Wintersemester

Legende

- Modul für alle Vertiefungen
- vertiefungsspezifisches Modul
- Wahlpflichtmodul

1.4 Major Power Engineering (POW)

	Vorl.	Übung	Lab.	Sem.	Vorl.	Übung	Lab.	Sem.	Vorl.	Übung	Lab.	Sem.	Vorl.	Übung	Lab.	Sem.	Vorl.	Übung	Lab.	Sem.	Vorl.	Übung	Prakt.	Sem.	Σ
1. Semester WS	M01				MP01				MP02				MP03				MP04				MPWP01				
	Technical Management				Advanced High Voltage Technology				Power System Operation				Renewable Energy Systems				Embedded Programming & Design of Real-Time Control Systems				Elective 1				
SWS	4				3		0,5 (1)		3		0,5 (1)		4				2		2		2		2		25
ECTS	5				5				5				5				5				5				30
2. Semester SS	M02				MP05				MP06				MP07				MPWP02				MPWP03				
	Team Project				Power Electronics for Drives and Energy Systems				Advanced Control of Electrical Drives				Model-Based Design HiL & PiL Systems				Elective 2				Elective 3				
SWS		4			4				4				3		0,5 (1)		4				4				23
ECTS	5				5				5				5				5				5				30
3. Semester	M03																								
	Internship (4-semester course only)																								
SWS																									
ECTS	30																								30
4. Semester	M04																								
	Master Module (Masterthesis and Colloquium)																								
SWS																									
ECTS	30																								120

	CP = Credit Points
Legende	SWS = Semesterwochenstunden
Modul für alle Vertiefungen	SS = Sommersemester
vertiefungsspezifisches Modul	WS = Wintersemester
Wahlpflichtmodul	

Annex 2 Catalogue of elective modules

The faculty commission can change the catalogue of elective modules if necessary. The faculty is not obliged to offer the whole catalogue (Section 5, paragraph 5, ABPO). The current selection of elective modules available is notified at the start of each semester in electronic form (e.g. internet, examination system).

Regulations about the elective modules can be found in Section 9, BBPO.

2.1 Major: Automation (MAWP)

This catalogue for the elective module Elective 1 to 3 comprises the following partial modules:

	Course	CP
MGwp01	Research Project	2,5
MGwp02	Selected Research Topics	2,5
MGwp03	Engineering Ethics	2,5
MAwp01	Model-based Real-time Simulation of Mechatronic Systems	5
MAwp02	High Level Language Frameworks	5
MAwp03	Human Machine Interfaces (HMI)	2,5
MAwp04	Autonomous Mobile Robots	5
MAwp05	Advanced Graphical Programming of Control Systems	2,5
MAwp06	Advanced Sensors for the Internet of Things	2,5
MCwp01	Digital Signal Processing Applications	2,5
MCwp02	Wireless Systems (Technologies)	2,5
MCwp03	Network Security	2,5
MCwp04	Mobile Communications	2,5
MCwp05	Optical Communications	2,5
MCwp06	(I)IoT and Cloud Networking	2,5
MCwp08	Image and Video Processing	2,5
MMwp02	Safety in Embedded Control Systems	2,5
MMwp04	Advanced Software Design Techniques	5
MMwp05	Security in Connected Embedded Systems	2,5
MPwp02	Automotive Electrical Power Train	2,5
MPwp03	Stationary & Mobile Energy Storage Systems	5
MPwp05	Switch Gear	2,5
MPwp06	Power Systems Planning	2,5
MPwp09	Hydrogen Technique and Fuel Cells	2,5

2.2 Major: Communications (MCWP)

This catalogue for the elective module Elective 1 to 3 comprises the following partial modules:

	Course	CP
MGwp01	Research Project	2,5
MGwp02	Selected Research Topics	2,5
MGwp03	Engineering Ethics	2,5
MCwp01	Digital Signal Processing Applications	2,5
MCwp02	Wireless Systems (Technologies)	2,5
MCwp03	Network Security	2,5
MCwp04	Mobile Communications	2,5
MCwp05	Optical Communications	2,5
MCwp06	(I)IoT and Cloud Networking	2,5
MCwp07	Smart Home	2,5
MCwp08	Image and Video Processing	2,5
MAwp03	Human Machine Interfaces (HMI)	2,5
MAwp06	Advanced Sensors for the Internet of Things	2,5
MMwp02	Safety in Embedded Control Systems	2,5
MMwp05	Security in Connected Embedded Systems	2,5
MPwp01	Lab Module on Power Electronics	2,5
MPwp02	Automotive Electrical Power Train	2,5
MPwp03	Stationary & Mobile Energy Storage Systems	5
MPwp05	Switch Gear	2,5
MPwp06	Power Systems Planning	2,5
MPwp08	Applied Programming	5
MPwp09	Hydrogen Technique and Fuel Cells	2,5

2.3 Major: Embedded and Microelectronics (MMWP)

This catalogue for the elective module Elective 1 to 3 comprises the following partial modules:

	Course	CP
MGwp01	Research Project	2,5
MGwp02	Selected Research Topics	2,5
MGwp03	Engineering Ethics	2,5
MMwp01	CMOS Analog Circuits	5
MMwp02	Safety in Embedded Control Systems	2,5
MMwp03	Digital System Design	5
MMwp04	Advanced Software Design Techniques	5
MMwp05	Security in Connected Embedded Systems	2,5
MAwp01	Model-based Real-time Simulation of Mechatronic Systems	5
MAwp02	High Level Language Frameworks	5
MAwp03	Human Machine Interfaces (HMI)	2,5
MAwp05	Advanced Graphical Programming of Control Systems	2,5
MAwp06	Advanced Sensors for the Internet of Things	2,5
MCwp01	Digital Signal Processing Applications	2,5
MCwp02	Wireless Systems (Technologies)	2,5
MCwp03	Network Security	2,5
MCwp04	Mobile Communications	2,5
MCwp05	Optical Communications	2,5
MCwp06	(I)IoT and Cloud Networking	2,5
MCwp07	Smart Home	2,5
MCwp08	Image and Video Processing	2,5
MPwp01	Lab Module on Power Electronics	2,5
MPwp02	Automotive Electrical Power Train	2,5
MPwp03	Stationary & Mobile Energy Storage Systems	5
MPwp05	Switch Gear	2,5
MPwp06	Power Systems Planning	2,5
MPwp09	Hydrogen Technique and Fuel Cells	2,5

2.4 Major: Power Engineering (MPWP)

This catalogue for the elective module Elective 1 to 3 comprises the following partial modules:

	Course	CP
MGwp01	Research Project	2,5
MGwp02	Selected Research Topics	2,5
MGwp03	Engineering Ethics	2,5
MPwp01	Lab Module on Power Electronics	2,5
MPwp02	Automotive Electrical Power Train	2,5
MPwp03	Stationary & Mobile Energy Storage Systems	5
MPwp04	Lab Module on Electric Drives	2,5
MPwp05	Switch Gear	2,5
MPwp06	Power Systems Planning	2,5
MPwp07	Smart Grids	5
MPwp08	Applied Programming	5
MPwp09	Hydrogen Technique and Fuel Cells	2,5
MAwp01	Model-based Real-time Simulation of Mechatronic Systems	5
MAwp04	Autonomous Mobile Robots	5
MAwp05	Advanced Graphical Programming of Control Systems	2,5
MAwp06	Advanced Sensors for the Internet of Things	2,5
MCwp01	Digital Signal Processing Applications	2,5
MCwp02	Wireless Systems (Technologies)	2,5
MCwp03	Network Security	2,5
MCwp04	Mobile Communications	2,5
MCwp05	Optical Communications	2,5
MCwp06	(I)IoT and Cloud Networking	2,5
MCwp07	Smart Home	2,5
MCwp08	Image and Video Processing	2,5
MMwp02	Safety in Embedded Control Systems	2,5
MMwp04	Advanced Software Design Techniques	5
MMwp05	Security in Connected Embedded Systems	2,5

Annex 3 Master's certificate and Master's transcript

3.1 Master's certificate for the 3-semester degree programme

Frau / Mrs. / Herr / Mr.	**First name Surname**
geboren am / born on	**DD. Month YYYY**
in	**Place of birth**
hat im Fachbereich/ Faculty	**Elektrotechnik und Informationstechnik**
im Studiengang / programme	**Electrical Engineering and Information Technology - international**
mit der Vertiefungsrichtung / major	**Major**
die Masterprüfung abgelegt	passed the Master's examination
und dabei die folgenden Bewertungen erhalten	and achieved the following results
sowie Punkte (CP = Credit Points) nach dem	and credit points (CP)
European Credit Transfer System (ECTS)	according to the
erworben:	European Credit Transfer System.

Module / Modules	**Deutsche Modulnote / German grade**	
Technical Management	**Grade (X,X)**	(5 CP)
Team Project	**Grade (X,X)**	(5 CP)
Module text	**Grade (X,X)**	(5 CP)
Module text	**Grade (X,X)**	(5 CP)
Module text	**Grade (X,X)**	(5 CP)
Module text	**Grade (X,X)**	(5 CP)
Module text	**Grade (X,X)**	(5 CP)
Module text	**Grade (X,X)**	(5 CP)
Module text	**Grade (X,X)**	(5 CP)
Elective 1, bestehend aus / consisting of:	**Grade (X,X)**	(5 CP)
Module text	Grade (X,X)	
Module text	Grade (X,X)	
Elective 2, bestehend aus / consisting of:	**Grade (X,X)**	(5 CP)
Module text	Grade (X,X)	
Module text	Grade (X,X)	
Elective 3, bestehend aus / consisting of:	**Grade (X,X)**	(5 CP)
Module text	Grade (X,X)	
Module text	Grade (X,X)	

Masterarbeit mit Kolloquium über das Thema / Master Thesis with oral defence entitled	**Title 1** **2** **3**
Bewertung / Grade	**Grade (X,X)** (30 CP)

Master -Zeugnis / Master's transcript
First name Surname

Insgesamt erworbene Punkte nach ECTS / Total ECTS credit points		90 CP
Gesamtbewertung / Overall result	**Grade (X,X)**	
Darmstadt	**DD. Month YYYY**	
Der Vorsitzende des Prüfungsausschusses Chairperson of the Examination Board	. . . . .	
Der Leiter des Prüfungsamtes Head of the Examination Office	. . . . .	

3.2 Master's certificate for the 4-semester degree programme

Frau / Mrs. / Herr / Mr.	**First name Surname**
geboren am / born on	**DD. Month YYYY**
in	**Place of birth**
hat im Fachbereich/ Faculty	**Elektrotechnik und Informationstechnik**
im Studiengang / programme	**Electrical Engineering and Information Technology – international**
mit der Vertiefungsrichtung / major	**Major**
die Masterprüfung abgelegt	passed the Master's examination
und dabei die folgenden Bewertungen erhalten	and achieved the following results
sowie Punkte (CP = Credit Points) nach dem	and credit points (CP)
European Credit Transfer System (ECTS)	according to the
erworben:	European Credit Transfer System.

Module / Modules	**Deutsche Modulnote / German Grade**	
Technical Management	**Grade (X,X)**	(5 CP)
Team Project	**Grade (X,X)**	(5 CP)
Module text	**Grade (X,X)**	(5 CP)
Module text	**Grade (X,X)**	(5 CP)
Module text	**Grade (X,X)**	(5 CP)
Module text	**Grade (X,X)**	(5 CP)
Module text	**Grade (X,X)**	(5 CP)
Module text	**Grade (X,X)**	(5 CP)
Module text	**Grade (X,X)**	(5 CP)
Elective 1, bestehend aus / consisting of:	**Grade (X,X)**	(5 CP)
Module text	Grade (X,X)	
Module text	Grade (X,X)	
Elective 2, bestehend aus / consisting of:	**Grade (X,X)**	(5 CP)
Module text	Grade (X,X)	
Module text	Grade (X,X)	
Elective 3, bestehend aus / consisting of:	**Grade (X,X)**	(5 CP)
Module text	Grade (X,X)	
Module text	Grade (X,X)	
German Class	**Grade (X,X)**	(5 CP)
Level XX (e.g. A2)	Grade (X,X)	
Level XX (e.g. B1)	Grade (X,X)	
Internship	mit Erfolg teilgenommen/ successfully passed	(25 CP)

Masterarbeit mit Kolloquium über das Thema / Master Thesis with oral defence entitled

Title 1
2
3

Master -Zeugnis / Master's transcript
First name Surname

Bewertung / Grade	**Grade (X,X)**	(30 CP)
Insgesamt erworbene Punkte nach ECTS / total ECTS credit points		120 CP
Gesamtbewertung / Overall Result	**Grade (X,X)**	

Darmstadt **DD. Month YYYY**

Der Vorsitzende des Prüfungsausschusses . . . . . .
Chairperson of the Examination Board

Der Leiter des Prüfungsamtes . . . . . .
Head of the Examination Office

3.3 Master's transcript

Die Hochschule Darmstadt verleiht The University of Applied Sciences Darmstadt herewith awards to	**Frau / Mrs. / Herrn / Mr. First name surname**
geboren am / born on	**DD. Month YYYY**
in	**Date of birth**
aufgrund der bestandenen Masterprüfung / after successful completion of the final examination	
am / dated on	**DD. Month YYYY**
im Fachbereich / faculty	**Elektrotechnik und Informationstechnik** **Electrical Engineering and Information Technology**
im Studiengang / program	**Electrical Engineering and Information Technology – international**
den akademischen Grad / the academic degree	**Master of Science**
Kurzform / Abbreviation	**M.Sc.**

Darmstadt	**DD. Month YYYY**
Der Präsident / The President	. . . . .
Der Dekan / Dean of Department	. . . . .

Annex 4 Regulations for the practical module (OPM)

§ 1 General information

(1) According to Section 10, BBPO, a practical module is to be passed, which consists of the practical working phase and the preparational courses. The practical module is prepared, supported and followed up by the Faculty of Electrical Engineering and Information Technology of the Darmstadt University of Applied Sciences.

(2) It is the student's obligation to arrange internships with appropriate companies and institutions (hereinafter called the "internship provider"). The faculty will assist the students with finding internship providers where possible.

(3) The practical working phase is governed by a training agreement between the student and the internship provider (for a sample see the Annex of OPM). The conclusion of a contract is the responsibility of the student.

§ 2 Content, targets and practical activities

The student should learn the practical work of electrical engineers by performing their own, practical, engineering activities, and apply the knowledge and abilities they have acquired so far during their degree programme. The contents, targets and practical activities of the practical working phase are shown in detail in the module description of the practical module (Annex 5).

§ 3 Time schedule and progress

(1) The practical module is intended for the 3rd semester of the standard degree program of the 4-semester programme (see Annex 1, and Annex 5 BBPO).

(2) The practical working phase comprises 26 weeks of full-time work. Full time work is taken to mean the working hours specified at the company/institution as the standard weekly working hours. Holiday entitlement and absences are not counted against the duration of the practical working phase.

(3) The practical working phase is to be documented by a report (Section 10, paragraph 4 BBPO).

§ 4 Organisation

(1) The dean appoints the BPP management for the degree programs of the Faculty of Electrical Engineering and Information Technology, with the consent of the Faculty Council.

(2) The BPP management has the following responsibilities:

- The organisation and performance of the practical working phase proseminar within the scope of the practical working phase preparatory course module.
- The consultation of students,
- The support of the student with the search for a suitable internship provider as well as a Professor to be their practical working phase (BPP) supervisor.

(3) The student is looking for a Professor as a supervisor for the practical working phase. The BPP supervisor has the following responsibilities.

- The testing and approval of the intended practical activities and the internship, as well as the duration of the practical working phases agreed in the contract, and the consent for the practical working phase. The support of the Student during the practical working phase and monitoring its progress,
- The evaluation of the practical working phase report,
- Checking the certification of the internship and the subsequent acknowledgement of the practical working phase.

§ 5 Admission

(1) The admission to the practical module is specified in Section 10, paragraph 2, BBPO. It is normally provided at the end of the second semester.

(2) The admission to the practical working phase is done by the BBP supervisor. Before a contract is concluded with the internship provider, the consent of the BBP supervisor is to be obtained.

§ 6 Internship providers and contracts

(1) The practical working phase is performed in close cooperation between the Faculty of Electrical Engineering and Information Technology of the Darmstadt University of Applied Sciences and the internship providers. The student shall conclude an individual training agreement with the internship provider before the start of the practical working phase (see the sample contract in Annex 1 of these Practical Module regulations).

(2) The contract governs, in particular:

1. The internship provider is obliged to:

a) employ the student for the duration of the practical working phase in accordance with the areas of responsibility mentioned in the module description of the practical module (Annex 5, BBPO).

b) allow the student to take part in all important examinations,

c) issue the student a certificate, which comprises details about the amount of time worked, absences, and the content of practical activities, as well as their success,

d) appoint a qualified supervisor for the student.

2. The student is obliged to:

a) make use of the offered training opportunities and to perform the assigned tasks carefully,

b) comply with the instructions of the internship provider and the supervisor,

c) observe the regulations applicable for the internship provider, in particular the working regulations and accident prevention regulations, as well as confidentiality obligations,

d) create a report about the practical work experience (written technical documentation) according to the module description of the practical module (Annex 5, BBPO).

e) notify the internship provider immediately about an absence.

§ 7 Completion of the practical module

(1) The practical working phase report and the certification of the internship provider are to be submitted at the latest two weeks after the end of the practical working phase and before the start of the thesis to the BPP supervisor. The practical work experience report is submitted in electronic form. More details about the content of the practical working phase report can be found in the module description of the practical module (Annex 5, BBPO).

(2) The practical working phase is evaluated by the BBP Supervisor as per Section 10, paragraph 4, BBPO.

§ 8 Status of the student at the internship provider

(1) During the practical working phase, which is a component of the degree programme, the student remains enrolled at the Darmstadt University of Applied Sciences with all the rights and obligation or a regular student.

(2) The students are not placement students/trainees in accordance with the Vocational Training Act (*Berufsbildungsgesetz*) and are not subject to the Works Council Constitution Act (*Betriebsverfassungsgesetz*) or Personnel Representation Act (*Personalvertretungsgesetz*) at the internship provider. On the other hand, the students are bound to the regulations of the internship provider. They are entitled to a claim for an educational grant according to the specifications of the Federal Training Assistance Act (*Bundesausbildungsförderungsgesetz*). The remuneration of the internship shall be offset against the payments of the Federal Training Assistance Act.

§ 9 Liability

(1) The student is insured domestically against accidents during the practical working phase (SGB VII). In the event of an insurance claim, the internship provider shall send the Darmstadt University of Applied Sciences a print-out of the accident report.

(2) At the request of the internship provider, the student has to conclude liability insurance suitable for the duration and the content of the training agreement and submit proof of this to the internship provider at the start of the practical working phase. This proof is not required, is the liability risk is already covered by liability insurance of the internship.

(3) If the practical working phase takes place abroad, the student himself/herself is obliged to ensure/bear the costs of sufficient health, accident and liability insurance coverage.

Annex of the OPM Sample training agreement

Training agreement for the practical working phase (BPP)

The following agreement is concluded for the practical working phase:

between

_____
(Company – Authority - Institution)

_____
(Address, telephone, email)

hereinafter referred to as the internship provider

and

Ms / Mrs / Mr

_____ _____
(Surname, first name) (Student registration no.)

Date of birth: _____

_____
(Address, telephone, email)

The student of the Darmstadt University of Applied Sciences (h_da)

On the degree programme
_____

Of the Faculty _____

§ 1 General information

This contract is based on the operational regulations of the internship provider and the examination regulations (BBPO) as well as the regulations for the practical module (OPM) of the degree program of the Darmstadt University of Applied Sciences.

§ 2 Term of the contractual relationship

(1) The student shall perform a practical working phase (BPP) from _____ to _____ at the internship provider.

(2) There is no holiday entitlement during the practical working phase.

§ 3 Obligations of the internship provider

The internship provider is obliged to:

1. employ the student for the duration of the practical working phase in specific project related to engineering activities (see Section 2, POM and the module description of the practical module, Annex 5, BBPO);
2. appoint a qualified person who will offer the student technical support and work with the University in all questions concerning the practical working phase;
3. allow the student to take part in all important examinations at the Darmstadt University of Applies Sciences;
4. issue the student a certificate which contains details about the duration and the content of the practical activities, as well as the success of the training and any absences.

§ 4 Obligations of the student

The student is obliged to:

1. make use of the offered training opportunities and to perform the assigned tasks carefully;
2. comply with the regulations/instructions of the internship provider;
3. observe the regulations applicable at the internship provider, in particular the health and safety and accident regulations; protect the interests of the internship and observe the confidentiality regulations about business processes;
4. to safeguard the interests of the internship provider and to comply with the rules on secrecy regarding operations;
5. issue a written final report about his/her activities at the internship provider, which has been approved by the internship provider;
6. notify the internship provider immediately in the event of an absence, and in the event of an inability to work due to illness, to submit a doctor's certificate at the latest on the third day.

§ 5 Obligations of the Darmstadt University of Applied Sciences

The University is obliged to:

1. support the student at the internship provider,
2. mediate between the internship provider and the student in the event of disputes.

§ 6 Remuneration

The student is granted remuneration of _____ Euros gross, per month.

§ 7 Insurance coverage

(1) The student remains enrolled at the Darmstadt University of Applied Sciences during the practical working phase and has mandatory insurance coverage for this period of time according to the provisions of the student health insurance fund.

(2) The student is released from making pension and unemployment contributions during the practical working phase.

(3) According to Section 539 (1) RVO, the student is insured against accidents at the internship provider.

(4) The internship provider shall include the student in its group insurance policy to cover the risk of liability. If this is not possible, it shall expressly point this out to the student and recommend that he/she concludes an individual insurance policy.

§ 8 Termination of agreement

(1) The agreement can be terminated by the internship provider, after consulting with the University, on important groups with a period of notice of 2 weeks.

(2) If the objective of the placement ceases to exist or in the event of personal reasons, the student can terminate the agreement with a period of notice of 2 weeks.

§ 9 Copies of the agreement

(1) This contract is issued in three identical copies, and is signed by the internship provider, the student and the University. Each partner and the Darmstadt University of Applied Sciences receive one copy.

(2) The agreement comes into effect once it has been signed.

§ 10 Further agreements

(1) The internship provider appoints Ms / Mr

_____

as the supervisor of the student

_____

(Address, telephone, email)

(2) The student is supervised by Prof. _____

_____

(Address, telephone, email)

at the University.

For the internship provider:

....

(Place, date) (Signature)

The student:

....

(Place, date) (Signature)

Anlage 4.x Bewertung von Abschlussarbeiten

This section should be supplemented as for the Bachelor's degree programme

Annex 5 Module handbook

See separate document