

Special Provisions to the Examination Regulations for the
course

**International Master of Science in Electrical Engineering and
Information Technology**

of the Faculty of Electrical Engineering and Information Tech-
nology
of the Hochschule Darmstadt – University of Applied Sciences

From 8th November 2011
modified on 23rd April 2013 as of 1st September 2013

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§ 1 General

- (1) These Special Provisions to the Examination Regulations (BBPO), together with the General Provisions for Examination Regulations (ABPO) of the Hochschule Darmstadt in the version of 13th July 2010, form the study and examination regulations for the International Master of Science in Electrical Engineering and Information Technology course. Unless regulated otherwise by these Special Provisions, the provisions of the ABPO apply.
- (2) The course is run by the Faculty of Electrical Engineering and Information Technology of Hochschule Darmstadt.

§ 2 Qualification goals and contents of the course

- (1) Having obtained initial professional qualifications, students on the International Master Course in Electrical Engineering and Information Technology acquire additional, further-going knowledge of the subject, both in matters of theory and in fields oriented to applications and systems. This is primarily taught in an area of specialisation to be selected by students at the start of the course, these areas covering automation technology, power engineering, communications or microelectronics, which also allow students to build upon their practical abilities. The Master's course enables students to apply scientific methods and knowledge to even difficult and complex problems in practical applications.
- (2) Graduates from the course are awarded a degree to international standards. This qualification enables them to take up academic or management functions, to study for a doctorate or to take up work with public sector employees.
- (3) Passing the Master's examination demonstrates that graduates from the Master course are qualified to take up demanding positions in research and development work or management functions in various disciplines of electrical engineering.

§ 3 Academic degree

After passing the Master's examination, the Hochschule Darmstadt - University of Applied Sciences – awards the academic degree "Master of Science", abbreviated to "M.Sc."

§ 4 Regular study time and start of the course

- (1) The regular study time is 4 semesters.
- (2) Students can only commence the Master's course in the Winter semester.

§ 5 Credit Points required for the degree

120 Credit Points (abbreviated below to CP) in accordance with the European Credit Transfer System (ECTS) are required to successfully complete the course.

§ 6 Admission requirements and admission procedure

- (1) Prerequisites for admission are a pertinent Bachelor degree (or at least an equivalent qualification) and evidence of an adequate command of English. Pertinent degrees are regarded as being those in electrical engineering, mechatronics or technical informatics, as well as related courses of study, providing that the electrical engineering part of such course is regarded as sufficient by a review of the case in question.
- (2) Applicants must demonstrate with their application documents that they are particularly well qualified for the Master's course. The Faculty decides upon admission according to the suitability, knowledge and abilities of the applicants.
- (3) Further details are regulated by the admission regulations for the course.

§ 7 Study programme

- (1) All modules are conceived as stand-alone modules, which do not require prior knowledge of other modules in this Master's study programme. The course consists of general compulsory modules for all students (total of 15 CP), compulsory specialisation modules (total of 30 CP from the specialist area chosen) and compulsory options modules (total of 15 CP). The practical work phase (total of 30 CP) is foreseen in the third semester. The fourth semester contains the Master's thesis with the Master's dissertation and a colloquium (total of 30 CP).
- (2) The study programme, the teaching content and the composition of the modules are laid down in Appendices 1, 2 and 5.

§ 8 Compulsory option modules

- (1) Compulsory option modules in engineering science are contained in each area of specialisation to a total of 15 CP (see Appendix 1).
- (2) Any of the specialist modules (automation, communication, embedded and microelectronics and power engineering), which are not already part of the compulsory module in the corresponding area of specialisation, can be selected as compulsory option modules, provided that these modules are offered at the time in question and that this is compatible with the timetable.

§ 9 Practical module (practical phase)

- (1) The Master's course contains practical work components (total of 30 CP). This practical part is composed of a practical work phase (PBB) and associated, accompanying studies. The practical work phase generally takes place in the 3rd semester.
- (2) Further details are regulated in the module description and the regulations for the practical work phase (OBPP), Appendices 5 and 4.

§ 10 Areas of specialisation

- (1) "Automation", "Communications", "Embedded and Microelectronics" and "Power Engineering" are offered as specialist subjects. Among other things, these areas of specialisation cover the following:
 - Automation:
 - Advanced methods of control engineering
 - Service robotics and tele-robotics
 - Communications:
 - Description of complex processes of modulation and coding
 - Digital processing and filtering of signals
 - Transmitting information by radio waves, copper cables or fiber-optic cables
 - Structure and functioning of modern mobile communications systems
 - Microwave components and systems,
 - Embedded and microelectronics:
 - Design and development of embedded and microelectronic systems, based on highly integrated, configurable hardware (FPGA) or application-specific (ASIC) hardware
 - Design and development of software for highly integrated systems
 - Power engineering:
 - Systems and components for energy efficiency and environmental friendliness
 - Conversion, transformation, generation and distribution of electricity
- (2) Students must choose and register for their area of specialisation in the first semester. The date and form of registration will be announced by the Examination Board on notice boards or via the Internet.
- (3) It is possible to change the area of specialisation once, in accordance with § 6 Para. 3 ABPO, within the first two semesters. A written application must be made to the Examination Board, thereby stating the reasons for the desired change.
- (4) The practical work phase, the Master's thesis and the project of module MB02 generally involve subjects related to the specialist area concerned.

§ 11 Registration for and admission to the examinations

- (1) As a matter of principle, students must register for pre-exam work and examinations. Registration to resit examinations is automatic. No separate notification is given. The dates and procedures for registration and the dates of examinations depend upon the nature of the course matter and are announced by the Examination Board on notice boards or via the Internet.
- (2) It is not possible to register for examinations without having selected a specialist subject (§ 10).
- (3) It is possible to de-register from pre-exam work or examinations by 24:00 hrs of the day before the examination, unless the Examination Regulations stipulate the exam date as binding (deadlines to be observed). De-registrations are generally made using the current technology supporting examination matters or in writing to the examiner.

§ 12 Concluding module

- (1) The concluding module, in the sense of § 21 ABPO of the Hochschule Darmstadt, is called the Master's thesis in the course schedule. It consists of a Master's dissertation and a colloquium and is foreseen for the 4th semester.
- (2) The Master's dissertation should demonstrate that the candidate is able to independently process a problem drawn from the field of electrical engineering and information technology, using scientific methods, within a set deadline.
- (3) The Master's dissertation and the colloquium must both be passed in accordance with §23 ABPO. They are weighted at the ratio of 3:1.
- (4) The Master's dissertation shall be written in English or in German. The Master's dissertation features a summary in English.
- (5) 6 months are allowed to write the Master's dissertation. The regulations of § 22 Para. 5 and Para. 7 ABPO apply.
- (6) Notification must be given before starting the Master's dissertation. This is generally made immediately after the practical work phase has been concluded.

- (7) Admission to the Master's dissertation is made by written application by the Examination Board, if the following requirements are fulfilled:
 - a. A total of 75 CP have been obtained.
 - b. The practical work phase (BPP) has been passed.
- (8) The Master's dissertation must be submitted in duplicate, in printed and bound form and, in addition, in electronic form as a PDF document without document restrictions on a CD-ROM or DVD. It must be handed in to the secretary's office of the Faculty of Electrical Engineering and Information Technology by 12 a.m. midday of the date stipulated by the Examination Board.
- (9) As an alternative to the sequence of Master's dissertation and colloquium described in § 21 Para. 2 ABPO, the colloquium can be performed before the Master's dissertation is assessed, if the supervisor agrees to this and it enables the course of studies to be concluded in the current semester. In such a case, the colloquium may be held at the earliest four weeks before the period to process the Master's dissertation ends. The assessment of the colloquium will be notified to the candidate immediately after the examiners have completed their deliberations on the colloquium and will be justified verbally.

§ 13 Regulations specific to the course

- (1) The language of teaching is English. Exceptions are not possible unless all those involved agree.
- (2) Examinations are generally held in English.
- (3) The Master's award and the Master's certificate are made out in both English and German.

§ 14 Transitional provisions

- (1) Students who started the Master's course at the Faculty of Electrical Engineering and Information Technology of the Hochschule Darmstadt before these Examination Regulations enter force can be examined under the examination provisions previously applicable to them for a period of two years after these BBPO enter force. In justified cases, the transition time can be extended upon application to the Examination Board.
- (2) Upon application, students as per Para. 1 can be examined under these Examination Regulations. Applications should be submitted to the Examination Board in writing. The decision to transfer to these Examination Regulations cannot be retracted. The transfer is made at the start of the semester following the decision. Unsuccessful attempts from equivalent examinations under the previous Examination Regulations will be taken over in accordance with § 17 Para. 3 ABPO. The Examination Board decides upon equivalency. § 19 ABPO applies to past work being taken into account.

§ 15 Entry into force

These Special Provisions enter force with effect from 1 September 2012.

Darmstadt, 23rd of April 2013

Prof. Dr. Manfred Loch
Dean of the Faculty of Electrical Engineering and Information Technology

Appendix 1: Study programme, course time schedule

Appendix 2: Compulsory options catalogue(s) - not applicable -

Appendix 3: Master's award and degree certificates

Appendix 4: Regulations for the practical work phase

Appendix 5: Module manual

Structure of the International Master of Science in Electrical Engineering and Information technology

The following diagram illustrates the structure of the international master program. Every student has to pass the compulsory modules for all majors as well as the compulsory modules of the chosen major. In addition, every student has to choose two additional elective modules which may be selected out of the complete pool of all major modules. The international master program starts in the winter semester only.

	Semester 1	Semester 2	Semester 3	Semester 4		
All majors	System Design (M01 - compulsory)	Technical Management (M02 - compulsory)	Industrial Project (M03 - compulsory / 30CP)	Master Thesis (M04 - compulsory / 30CP)		
Major Automation	Advanced Automation (MA01 - compulsory)	Advanced Feedback Control (MA03 - compulsory)				
	Advanced Information Technology (MA02 - compulsory)	Advanced Robotics (MA04 - compulsory)				
	Autonomous Systems (MA05 - elective)	Information and simulation systems in industrial development and automation (MA06 - elective)				
Major Communication	Advanced Modulation and Coding (MC01 - compulsory)	Digital Signal Processing (MC03 - compulsory)				
	Information Networks (MC02 - compulsory)	Microwave Components and Systems (MC04 - compulsory)				
	Mobile and Satellite Communications (MC05 - elective)	Optical Communications (MC06 - elective)				
Major Embedded and Microelectronics	Complex Digital Architectures (MM01 - compulsory)	Microelectronic Systems (MM03 - compulsory)				
	Advanced Embedded Systems (MM02 - compulsory)	Design and Test of Microelectronic Systems (MM04 - compulsory)				
	Signal Processing Hardware (MM05 - elective)	CMOS analog circuits (MM06 - elective)				
Major Power	Advanced High Voltage Technology and Theory of Electrical Fields (ME01 - compulsory)	Control of electrical Drives & E-Mobility (ME03 - compulsory)				
	Power Systems and Control Technology (ME02 - compulsory)	Power- Electronics & Switching Power Supply (ME04 - compulsory)				
	Renewable Energy Systems (ME05 - elective)	Smart-Grids (ME06 - elective)				
	*unless otherwise noted, all modules have 7.5 CP					

Zeugnis – Stg. Electrical Engineering and Information Technology (MSc) - international

Herr / Mr.

geboren am / born on **21. März 1979**
in **Jakarta / Indonesien**

hat im Fachbereich / Faculty **Elektrotechnik und Informationstechnik /
Electrical Engineering and Information Technology**
im Studiengang / programme **Electrical Engineering and Information Technology**
mit dem Vertiefungsschwerpunkt / major **Automation**

die Masterprüfung abgelegt und dabei die folgenden Bewertungen erhalten sowie Punkte (CP = Credit Points) nach dem European Credit Transfer System (ECTS) erworben: passed the final degree and achieved the following results and credit points (CP) to the European Credit Transfer System.

Module / Modules	Deutsche Modulnote	
System Design	gut (2,0)	(7,5 CP)
Technical Management	gut (2,0)	(7,5 CP)
Advanced Automation Technology	gut (2,3)	(7,5 CP)
Advanced Automation	gut (1,7)	(7,5 CP)
Advanced Robotics	gut (1,7)	(7,5 CP)
Advanced Feedback Control	gut (2,3)	(7,5 CP)
Autonomous Systems	befriedigend (3,0)	(7,5 CP)
Information and simulation systems in industrial development and automation	gut (1,7)	(7,5 CP)
German language (Level A2)	gut (2,0)	(5 CP)
The industrial placement semester was performed and has been acknowledged	Das berufspraktische Semester wurde durchgeführt und anerkannt	(25 CP)
Masterarbeit mit Kolloquium über das Thema/ Master Thesis with colloquium with the title	Development of a Model-Based Testing Environment Using MATLAB/SIMULINK for a Vehicle Control Unit	
Bewertung / Grade	sehr gut (1,4)	(30 CP)
Insgesamt erworbene Punkte nach ECTS / total Credit Points		120 CP
Gesamtbewertung / Overall Result	gut bestanden (1,8)	
Datum des Studienabschlusses / Date of the Award	17. Januar 2012	

Der Vorsitzende des Prüfungsausschusses /
Chairperson of the Examination Board

Der Leiter des Prüfungsamtes /
Head of the Examination Office

Urkunde – Stg. Electrical Engineering and Information Technology (MSc)

Die Hochschule Darmstadt verleiht
The University of Applied Sciences Darmstadt
herewith awards to **Herrn/Mr**

geboren am / born on **21. März 1979**
in **Jakarta / Indonesien**

nach der bestandenen Abschlussprüfung am /
after successful completion of the
final examination dated on **17. Januar 2012**
im Fachbereich / faculty **Elektrotechnik und Informationstechnik /
Electrical Engineering and Information Technology**
im Studiengang / programme **Electrical Engineering and Information Technology**

den akademischen Grad /
the academic degree **Master of Science**

Kurzform / Abbreviation **M.Sc.**

Darmstadt, den **17. Januar 2012**

Der Präsident / The President

Der Dekan / Dean of the Department

Appendix 4

BBPO-Master, Regulations for the Practical Work Phase (OBPP) Master of Science in Electrical Engineering

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Appendix 1: Specimen training contract for the BPP

§ 1 General

- (1) § 10 BBPO requires a Practical Work Phase (BPP). This is prepared, overseen and followed-up by the university.
- (2) Students are responsible for obtaining their own placements with suitable companies and institutions (referred to below as training providers). The Faculty offers assistance in finding training providers.
- (3) A BPP is regulated in a training contract between the student and the training provider (a specimen contract is shown in Appendix 1 to the OBPP).

§ 2 Objectives

The objectives of the practical work phase are as follows:

- Create a linkage between the studies and the world of work
- Orientation in the profession strived for
- Get to know technical and organisational contexts
- Involvement in the process of work
- Practical training in the engineering trade in one or several projects

§ 3 Duration of the Practical Work Phase (BPP)

- (1) The BPP consists of the practical training itself and preparatory lectures.
- (2) The practical training part lasts 19 weeks.

§ 4 Admission and timing

- (1) The admission is depicted in the module description in the module manual.
- (2) The practical work phase generally takes place in the third semester of the Master's course.

§ 5 Organisation

- (1) The Dean, in agreement with the Faculty Council, appoints a professor as supervisor for the BPP and further consultants to assist in the BPP.
- (2) The BPP supervisor, in agreement with the student, nominates a professor to
 - a. review the suitability of the training provider
 - b. provide support during the BPP
 - c. check on how the training is progressing (as a rule, students should be visited once a week at their training providers)
 - d. appraise and assess the student's concluding report
- (3) A consultant's remit is to support the BPP supervisor, e. g. by:
 - a. organising and performing the lectures to accompany the internship
 - b. establish and maintain contacts with the training providers
 - c. review the training contracts

§ 6 Training providers, contracts

- (1) The BPP is performed at the training provider in close collaboration with the university. Students conclude individual contracts with training providers before starting their internships (see the specimen contract attached in Appendix 1 to this OBPP). Approval must be obtained from the consultant before the contract is concluded.
- (2) The contract regulates the following matters in particular:
 - a. The training provider's obligations:
 - i. to deploy the student in the type of work stated in § 7 for the duration of the placement
 - ii. to enable the student to take part in important examinations
 - iii. to prepare a reference for the student stating the timescale, any periods of absence, the nature of the practical work and the success of the training
 - iv. to nominate a qualified sponsor for the student
 - b. The student's obligations:

- i. to take advantage of the training opportunities on offer and to perform the delegated work carefully
- ii. to follow the instructions issued by the training provider and the sponsor
- iii. to observe the regulations applicable to the training provider, in particular works regulations, accident prevention regulations and provisions on the duty to maintain confidentiality
- iv. to prepare a technical report (written documentation) within the set time as required by the supervising professor
- v. to inform the training provider immediately in case of absence

§ 7 Practical activities

In accordance with § 2, practical training could involve one of the following areas:

- a) Research and development work
- b) Project planning and design
- c) Manufacturing, preparation of work
- d) Assembly
- e) Test bed, quality control
- f) Operational organisation

§ 8 Preparatory lectures and placement report

- (1) The Faculty arranges preparatory lectures before the BPP placement. It is obligatory to participate in the preparatory events, this being a prerequisite for recognition of the BPP.
- (2) At the end of the BPP, students must prepare a report on their practical work with the training provider. These reports are assessed and evaluated by the sponsors and should be handed to the sponsor at the latest 2 weeks after the work has ended (and otherwise at the latest before the concluding work starts) and submitted to the BPP consultant in electronic form.

§ 9 The student's status vis-à-vis the training provider

- (1) Students are still matriculated at Hochschule Darmstadt during the BPP (this being a component of the course) and retain all the rights and obligations of a regular student.
- (2) Students are not trainees in the sense of the German Vocational Education Act and are subject neither to the Works Constitution Act nor the Employee Representation Act during their internship with the training provider. On the other hand, students are bound by instructions issued by their training providers. A claim to a training grant is accrued under the German Training Promotion Act, the provisions of this act regarding income limits are to be observed.

§ 10 Recognition

- (1) Proper completion of the BPP by the student is recognised, provided that the following prerequisites are fulfilled:
 - (1) Presentation of the training provider's certification as per § 6 Para. 2,
 - (2) Recognition of the student's concluding report by the sponsor
 - (3) Proof of performance in the BPP preparatory lectures
- (2) The university issue certification of the successfully completed BPP.

§ 11 Taking account of practical work

In exceptional cases, pertinent practical experience in work associated with engineering can be counted towards the BPP. The BPP head decides upon whether such work can be taken into account on the merits of each case.

§ 12 Liability

- (1) Students are insured against accidents during the practical work phase in Germany (SGB VII). In case of insurance claims, the training provider sends a copy of the accident notice to the university.
- (2) At the request of the training provider, students must conclude an indemnity insurance policy adapted to the duration and content of the training contract and present evidence of this to the training provider at the start of their deployment. This proof is not required if the liability risk is already covered by the training provider's operational liability insurance.
- (3) If students perform the practical semester abroad, they themselves are responsible for arranging adequate insurance to cover health, accidents and general indemnity.
- (4) Students on practice-oriented (dual) courses are not obliged to pay contributions towards unemployment, health, nursing or pension insurance.

(5) Appendix 1 - specimen training contract
OBPP of the Master of Science in Electrical Engineering
course of Hochschule Darmstadt

**Training contract for the
Practical Work Phase (BPP)**

The following contract for the Practical Work Phase is concluded to perform the training

between

(company – official body - institution)

(address, telephone, e-mail)

referred to below as the training provider

and

Ms / Mr _____

(surname, first name) (matriculation No.)

born on: _____

(address, telephone)

student¹⁾ at Hochschule Darmstadt (h_da) on the course

_____ at the Faculty _____

¹⁾referred to below as the student.

§ 1 General

This contract is based on the training provider's works regulations, on the course and examination regulations and the regulations for the Practical Work Phase (OBPP) of the competent faculty of Hochschule Darmstadt.

§ 2 Duration of the contractual relationship

- (1) The student shall perform a Practical Work Phase (BPP) with the training provider in the period from _____ to _____ .
- (2) No holiday entitlement is accrued during the BPP.

§ 3 Obligations of the training provider

The training provider is obliged to:

- (1) deploy the student for the duration of the BPP in tangible projects associated with the engineering trade (see §§ 2 and 7 of the OBPP);
- (2) nominate a qualified representative (sponsor) to oversee the student in matters of work and to work together with the university in all questions concerning the BPP;
- (3) allow the student to take part in important examinations at Hochschule Darmstadt;
- (4) provide a reference for the student stating the duration and content of the practical work, the success of the training and any times of absence.

§ 4 Obligations of the student

The student is obliged to:

- (1) take advantage of the training opportunities on offer and to perform the work delegated with care;
- (2) follow instructions issued by the training provider;
- (3) observe the regulations applicable to the training provider, in particular safety and accident prevention regulations;
- (4) safeguard the interests of the training provider and observe the duty of maintaining silence concerning operating processes;
- (5) prepare a written report approved by the training provider at the conclusion of the placement concerning his/her work with the training provider;
- (6) inform the training provider without delay in case of absence and, if unable to work due to illness, to present a doctor's note by the third day of illness at the latest.

§ 5 Obligations of Hochschule Darmstadt

The university is obliged to:

- (1) attend to the student during his/her placement with the training provider;
- (2) prepare certification of the successfully concluded BPP;
- (3) liaise between the training provider and the student in case of disputes.

§ 6 Remuneration

The student is granted gross remuneration of _____ Euro per month.

§ 7 Insurance cover

- (1) During the BPP, the student remains matriculated at Hochschule Darmstadt as a regular student and is obligatorily insured during this period under the provisions of the student health insurance scheme.
- (2) The student is exempted from contributions to pension and unemployment insurance during the BPP.
- (3) § 539 (1) RVO regulates that the student is insured against accidents caused at the training provider's premises.
- (4) The training provider shall include the student in its corporate insurance policies to cover the indemnity risk. If this is not possible, it shall expressly inform the student of this and recommend that the student concludes his/her own insurance policy.

§ 8 Termination of the contract

- (1) After consulting the university, the training provider can terminate the contract - if there is an important reason to do so - by serving notice of 2 weeks.
- (2) The student can terminate the contract - if the objective of the placement no longer exists or in case of personal reasons - by serving notice of 2 weeks.

§ 9 Copies of the contract

- (1) Three identical copies of this contract have been prepared and are to be signed by the training provider, the student and the university. Each of the three parties receives one copy.
- (2) The contract enters force upon its signature.

§ 10 Further agreements

- (1) The training provider nominates Ms / Mr _____ as the student's sponsor.
 - (2) The student is supervised by the university through Prof. _____
- _____

