(including the changes of October 2007 and November 2008)

Examination and Study Regulations for the Bachelor of Engineering degree programme Information Engineering

at the Department of Information and Electrical Engineering of the Faculty of Engineering and Computer Science at Hamburg University of Applied Sciences

of 16th November 2006

On 16th November 2006 the President of the Hamburg University of Applied Sciences approved the Examination and Study Regulations for the Information Engineering Bachelor degree programme which were agreed by the Faculty Council of the Faculty of Engineering and Computer Science of the Hamburg University of Applied Sciences on 6th July 2006. This approval is based on Section 108 (1, 3) of the "Hamburgisches Hochschulgesetz" – HmbHG – of 18th July 2001 (Hmb GVBl. p. 171), last change on 4th September 2006 (Hmb GVBl. p. 494). The agreement of the Faculty Council is based on Section 16 (3, 1) of the "Grundordnung der Hochschule für Angewandte Wissenschaften Hamburg" of 1st September 2004 (Amtl.Anz. 2004 p. 2086), last change on 30th June 2006 (Amtl. Anz. 2006 p.1550).

Preamble

The Department of Information and Electrical Engineering offers the following two Bachelor of Engineering degree programmes (Bachelor of Engineering (B Eng)):

- "Informations- und Elektrotechnik" (German language)
- International course "Information Engineering" (English language)

In addition to the Bachelor Study degree programmes three consecutive Master study programmes exist:

- Master study programme "Automatisierung(Automation)" (Master of Engineering (M Eng))
- Master study programme "Informations- und Kommunikationstechnik (Information and Communication Engineering)" (Master of Engineering (M Eng))
- Master study course "Mikroelektronische Systeme (Microelectronic Systems)" in cooperation with the University of Applied Sciences West-coast Heide (Master of Science (M Sc))

All three Masters are German study degree programmes (study language German).

The degree programmes are international and are specifically directed towards international student applicants. In order to make the programmes more attractive for this target group the classes and examinations are held in English. In this way, foreign student applicants with little or no knowledge of German are targeted and thus the Hamburg University of Applied Sciences can play a part in increasing the attractiveness of studying in Germany for foreigners. In addition the international students should be encouraged to learn the German language because the consecutive Master degree programme is held in the German language. Therefore the curriculum includes lessons in the German language especially in the field of non-technical subjects. For specific lessons of the curriculum the students can choose between lessons held in English or German language.

A degree programme in the field of Information Engineering provides an excellent foundation for an engineer in the fields of the future in Electrical Engineering and Computer Science. The programme conveys knowledge in the area of digital information technology, telecommunications and automation as well as the important areas of computing for the programming of modern systems.

The necessary knowledge, ability and methods are conveyed in such a way that the students are able to work in a practice-oriented way with a scientific foundation, in particular being able to analyse problems systematically as well as having a methodical approach to problem-solving and a teamwork approach to working. During the degree programme the students are given the opportunity to gather knowledge and experience internationally, in particular through the practical training in industry outside of Germany.

Contents

1 Scope

The following rules of the course specific examination and study regulation for the Bachelor of Engineering programme in Information Engineering complements the General Examination and Study Regulation for Bachelor and Master Study Course Programmes of the Faculty of Engineering and Computer Science (GESR-ECS-BM).

2 *Degree programme structure and length*

(1) The study course programme Information Engineering is a Bachelor of Engineering study course with additional consecutive Master study courses in “Mikroelektronische Systeme (Microelectronic Systems)”, “Automatisierung (Automation)” and “Informations- und Kommunikationstechnik” (Information and Communications Engineering).

(2) The standard course length for the Bachelor of Engineering qualification is three and a half academic years (seven semesters). The first academic study year includes the basic theoretical and application foundation courses and the second year the reinforcement of the basics. A one semester period of training in industry is integrated into the fifth semester while the last two semesters improve the qualification in Information Engineering. During the seventh semester a Bachelor thesis has to be written.

(3) In addition some of the lessons are offered in the German language by the Department of Information and Electrical Engineering. If the lessons are selected in the German language the examination is also in the German language.

(4) The department develops a general course plan for the Bachelor of Engineering degree programme which shows in particular the scope, class type and place in the curriculum for each subject. In each academic year the subject timetable is founded on teaching methodology. With the exception of the compulsory electives of the seventh semester the students are advised to pursue their studies according to this recommended course programme. The department develops learning objectives and teaching content for each subject and these are published in German and English in the appropriate form. The course programme is approved by the Faculty of Engineering and Computer Science Council and applies according to its last approved form.

3 Academic qualifications

On passing the Bachelor of Engineering examination the Hamburg University of Applied Sciences awards the academic qualification Bachelor of Engineering (BEng). The Bachelor certificate includes the name of the study course programme “Information Engineering”.

4 Study language

(1) The lecture and examination language is English. Some of the module examinations can be taken in the German language. (see Section 7 (6)).

(2) The examination and study regulations are drawn up in German and English.

5 Training in industry

(1) A training period in industry appropriate for engineers is integrated into the third academic year of the Bachelor of Engineering degree programme and lasts nearly the whole fifth semester (20 weeks). The training period in industry can only be started when all examinations of the first study year have been successfully passed. Exceptions can be agreed upon by the department representative for the training period in industry if the regulation causes an unnecessary hardship, in particular socially or for private reasons, leading to an extension of the degree programme which cannot be justified and the deviation does not stand in the way of a sensible organisation of the degree programme. The student must hand in the grades certificate of the first academic year to the representative for the training period in industry before starting the practice in industry.

(2) The students must prove the successful completion of the training period in industry to the depart-

ment representative for the training period in industry. At the beginning of the semester after the training in industry takes place the student must complete an oral presentation about his/her time in industry organized by the representative for the training period in industry.

(3) The student must complete a paper (see Section 15 (4.3) GESR-ECS-BM) about his/her time in industry which is assessed by the professor responsible for counselling the student. Assessment takes place in accordance with Section 9 (GESR-ECS-BM Section 18 Clause 4). 5 credit points are awarded for the successful completion of the paper.

6 Types of classes and attendance

The types of classes are described in Section 11 of the General Examination and Study Regulations for Bachelor and Master Study Course Programmes (GESR-ECS-BM). For all types of classes including compulsory attendance the attendance is fulfilled when the student has attended all the class hours determined for the class form. In addition to the General Examination and Study Regulations for Bachelor and Master Study Course Programmes (GESR-ECS-BM) attendance at the event project is compulsory.

7 Modules and credit points

(1) The Bachelor examination is an examination completed during the degree programme. It is made up of the modules and elective modules together with the study, pre-examination and examination credits, the training period in industry (Section 5) the additional presentation (Section 5 (2)) and the Bachelor thesis (Section 8). All lessons of the whole study programme during the different semesters can be found in the following tables. The contents description of the lessons can be seen in the module handbook which is published by the Department of Information and Electrical Engineering and agreed by the Faculty of Engineering and Computer Science. The tables include the following abbreviations:

CP	=	Credit Points	Pro	=	Project
W	=	Weighting for the total grade	PEC	=	Pre-Examination Credit
WE	=	Written Examination	Pap	=	Paper
LC	=	Lab work Completion	S	=	Semester
LE	=	Lab work Examination	Sem	=	Seminar
CT	=	Class Type	TgS	=	Taught Seminar
OE	=	Oral Examination	SEC	=	Study Examination Credit
EC	=	Examination Credit	H	=	Hours per week
Lab	=	Lab work	Ex	=	Exercise

(2) The first academic year is made up of the following four modules which are to be completed in the form of the following examination credits and their respective pre-examination credits:

	CT	S	H	PEC/SEC	EC	W	CP
Module : Algebra							
Algebra (AL)	TgS	1	4	--	WE	5.0	5
Module : Calculus							
Calculus 1 (CA1)	TgS	1	4	--	WE	5.0	5
Calculus 2 (CA2)	TgS	2	6	--	WE	8.0	8
Module : Introduction to Electrical Engineering							
Introduction Electrical Engineering – Lab Work 1 (EEL1)	Lab	1	1	LC(PEC)	--	--	--
Introduction Electrical Engineering 1 (EE1)	TgS	1	5	--	WE	8.0	8
Introduction Electrical Engineering – Lab Work 2 (EEL2)	Lab	2	1	LC(PEC)	--	--	--
Introduction Electrical Engineering 2 (EE2)	TgS	2	1	--	WE	3.0	3
Module : Introduction to Electronics							
Electronics – Lab Work 1 (ETL1)	Lab	2	1	LC(PEC)	--	--	--

Electronics 1 (ET1)	TgS	2	3	--	WE	5.0	5
Module : Digital Circuits							
Digital Circuits - Lab Work (DIL)	Lab	2	1	LC(PEC)	--	--	--
Digital Circuits (DI)	TgS	2	3	--	WE	5.0	5
Module : Software Construction							
Software Construction - Lab Work 1 (SOL1)	Lab	1	1	LE(PEC)	--	--	--
Software Construction 1 (SO1)	TgS	1	3	--	WE	5.0	5
Software Construction - Lab Work 2 (SOL2)	Lab	2	1	LE(PEC)	--	--	--
Software Construction 2 (SO2)	TgS	2	3	--	WE	5.0	5
Module : Non-technical Module							
German (GE)	TgS/Pro	1	2	--	Pap	2.0	2
Technical English (TE)	TgS/Pro	1	2	--	Pap	2.0	2
Learning and Studying Methods (LS)	TgS/Pro	1	2	--	Pap	2.0	2
Communication and Presentation (CR)	TgS/Pro	2	4	--	Pap	5	5
Total			48	6	13	60.0	60

(3) The second academic year is made up of the following four modules which are to be completed in the form of the following examination credits and their respective pre-examination credits:

	CT	S	H	PEC/SEC	EC	W	CP
Module : Signals and Systems							
Signals and Systems I (SS1)	TgS	3	4	--	WE	10.0	5
Signals and Systems - Lab Work II (SSL2)	Lab	4	1	LC(PEC)	--	--	--
Signals and Systems II (SS2)	TgS	4	3	--	WE	10.0	5
Module : Electrical Engineering							
Electronics - Lab Work II (ETL2)	Lab	3	1	LC(PEC)	--	--	--
Electronics II (ET2)	TgS	3	3	--	WE	10.0	5
Electronics - Lab Work III (ETL3)	Lab	3	1	LC(PEC)	--	--	--
Electronics III (ET3)	TgS	3	3	--	WE	10.0	5
Module : Computer Architecture							
Computer Architecture - Lab Work (COL)	Lab	3	1	LC(PEC)	--	--	--
Computer Architecture (CO)	TgS	3	3	--	WE	10.0	5
Module : Digital Systems							
Digital Systems - Lab Work (DSL)	Lab	4	1	LC(PEC)	--	--	--
Digital Systems (DS)	TgS	4	3	--	WE	10.0	5
Module : Microcontroller							
Microcontroller - Lab Work (MCL)	Lab	4	1	LC(PEC)	--	--	--
Microcontroller (MC)	TgS	4	3	--	WE	10.0	5
Module : Software Development							
Software Construction - Lab Work 3 (SOL3)	Lab	3	1	LC(PEC)	--	--	--
Software Construction 3 (SO3)	TgS	3	3	--	WE	10.0	5
Module : Software Engineering							
Software Engineering - Lab Work I (SEL1)	Lab	4	1	LC(PEC)	--	--	--
Software Engineering I (SE1)	TgS	4	3	--	WE	10.0	5
Module : Databases							
Databases - Lab Work (DBL)	Lab	4	1	LC(PEC)	--	--	--
Databases (DB)	TgS	4	3	--	WE	10.0	5

Module : Algorithms and Data Structures							
Algorithms and Data Structures - Lab Work (ADL)	Lab	4	1	LC(PEC)	--	--	--
Algorithms and Data Structures (AD)	TgS	4	3	--	WE	10.0	5
Module : Project Management							
Project Management (BS)	TgS	3	4	--	WE	10.0	5
Total			48	10	12	120.0	60

(4) The fifth academic semester is made up of the practice in industry and the following study examination credits:

	CT	S	H	PEC/SEC	EC	W	CP
Module : Practice in Industry							
Industrial Placement (IP)		5		--	--	--	20
Industrial Placement Presentation (IPP)		5		Pap(SEC)	--	--	5
Module : Scientific Methods							
Scientific Methods (SM)	TgS/Ex	5	4	Pap	--	--	5
Total			4	2	0	--	30

(5) The sixth and seventh academic semester is made up of the following six modules which are to be completed in the form of the following examination credits and their respective pre-examination credits and the Bachelor thesis (Section 8):

		CT	S	H	PEC/SEC	EC	W	CP
Module :	**Computer Science**							
	Software Engineering Project II (SEJ2)	Pro	6	2	--	Pap	10.0	5
	Software Engineering II (SE2)	TgS	6	2	--	--	--	--
Module :	**Operating Systems**							
	Operating Systems - Lab Work (OSL)	Lab	6	1	LC(PEC)	--	--	--
	Operating Systems (OS)	TgS	6	3	--	WE	10.0	5
Module :	**Digital Systems Project**							
	Digital Systems Project (DSJ)	Pro	6	4	--	Pap	10.0	5
Module :	**Bus Systems and Sensors**							
	Bus Systems and Sensors – Lab Work (BUP)	Lab	6	1	LC(PEC)	--	--	--
	Bus Systems and Sensors (BU)	TgS	6	3	--	WE	10.0	5
Module :	**Digital Signal Processing**							
	Digital Signal Processing – Lab Work (DVP)	Lab	6	1	LC(PEC)	--	--	--
	Digital Signal Processing (DV)	TgS	6	3	--	WE	10.0	5
Module :	**Digital Communication Systems**							
	Digital Communication Systems – Lab Work (DKP)	Lab	6	1	LC(PEC)	--	--	--
	Digital Communication Systems (DK)	TgS	6	3	--	WE	10.0	5
Module :	**Compulsory Module I**							
	Compulsory Module – Lab Work 1 (CML1)	Lab/ Pro	7	1	LC/Pap (PEC)			
	Compulsory Module 1 (CM1)	TgS/ Pro	7	3	--	WR/Pap	10.0	5

Module :	**Compulsory Module II**							
	Compulsory Module - Lab Work 2 (CML2) Compulsory Module 2 (CM2)	Lab/ Pro TgS/ Pro	7 7	1 3	LC/Pap (PEC) --	WR/Pap	10.0	5
Module :	**Compulsory Project**							
	Compulsory Project (CJ)	Pro	7	4	--	Ref	10.0	5
Module :	**Bachelor Thesis**							
	Bachelor Thesis (BC) and Colloquium		7				70.0	15
Total				36	6	9	160.0	60

The compulsory elective module is made up of various class types and can contain mathematical, natural science, technical, business and/or general science focuses. As a pre-examination credit (PEC) the compulsory elective module must include either a paper (Pap) or a lab work completion (LC) and as an examination credit (EC) the compulsory elective module must include a paper (Pap) or a written examination (WR). The respective examination type and the class type are made known when the compulsory elective module is announced. The compulsory elective module can be chosen from the modules offered by the Department, which are defined as “compulsory elective modules” by the Chair of the Examination Committee. These “compulsory elective modules” are made known to the students through a notice. The student can also choose as compulsory elective modules subjects offered by other departments of the Hamburg University of Applied Sciences. This requires written approval by the Chair of the Examination Committee. The student must make an official application to the Chair of the Examination Committee before the start of the semester in which he/she wishes to take the credit. The approval can be refused only if the other Departments do not agree the attendance for the lesson because of loss of student capacity for this lesson or if the lesson is not equivalent in terms of the hours per week, the credit points or the contents of the lesson as described in sentences 1 and 2.
The students must be offered at least three modules as “compulsory elective modules” each semester through a notice.

(6) The lessons and examinations are offered in the English language. Some specific lessons can be taken in the German language and are made known to the students through a notice. These lessons are part of the German “Informations- und Elektrotechnik” study course programme. The lessons and examinations of this course programme are offered in the German language. The students can select up to 40 credit points taken in the German language. Examinations taken in the German language will be marked on the Bachelor certificate.

8 Thesis

(1) The Bachelor thesis is a theoretical, programming, empirical and/or experimental final project with a written part which is completed as part of a project during the degree programme. Students should show in the Bachelor project that they are able to work on a problem from the scientific, applied or vocational fields of work of this degree programme and at the same time define them within the interdisciplinary contexts.

(2) Students can apply for their Bachelor thesis if all examinations are passed. The number of non-passed examinations must be less than or equal to 15 credit points.

The processing time for the Bachelor thesis is three months.

(3) A passed Bachelor thesis awards twelve credit points while the accomplished colloquium awards three credit points. The grade of the colloquium is included in the grading of the Bachelor thesis grade. To calculate the overall grade the graduate points of the individual grading of the Bachelor thesis are each multiplied by 35.0.

9 Examination participation

Study, pre-examination and examination credits from the second academic year of the Bachelor of Engineering degree programme can be acquired before all examinations of the first study year have been passed only if the respective student has all but a maximum of three study, pre-examination or examination credits needed to pass all examinations of the first study year.

10 Grading examination and study credits

(1) The total grade number is made up of the total of graduate points for the examination credits of all examinations of all study semesters multiplied by their weighting according to Section 7 and the graduate points of the individual grading of the Bachelor thesis multiplied by their weighting according to Section 8 (3). If students have acquired additional examination credits according to Section 18 (15) GESR-ECS-BM, these graduate points are multiplied by 5.0 and added to the total grade number.

(2) The Bachelor examination is passed if all module examinations, the practice in industry and the accompanying paper and the Bachelor thesis are passed. To pass the module examinations all accompanying study, pre-examinations and examinations need to be passed. The total grade number and the total grade of a passed Bachelor of Engineering examination are as follows:

	Total grade number				Total grade
more than or exactly	4930			points	excellent
less than	4930	and up to	4250	points	very good
less than	4250	and up to	3230	points	good
less than	3230	and up to	2210	points	satisfactory
less than	2210	and up to	1700	points	pass

(2) The proceedings described in Section 18 (10) GESR-ECS-BM for re-examining written examinations is used only for examinations starting with the second academic year only if no request for a second examiner is applied and carried out. The proceedings described in Section 18 (11) GESR-ECS-BM are totally excluded.

(3) The proceedings described in Section 18 (10) GESR-ECS-BM are allowed. The grade of the additional paper will be multiplied by 5.0 and added to the total grade number.

11 Certificate

(1) Students can apply for a written confirmation of the passed study, pre-examinations and examinations of the first study year which is issued when the following requirements have been fulfilled:

1. Certificate that allows permission to study at the Hamburg University of Applied Sciences in the Information Engineering degree programme
2. Enrolment in the Information Engineering degree programme
3. Successful completion of all pre-examination credits and examination credits of the first study year (Section 7 (1)),
4. Confirmation according to Section 17 (3) GESR-ECS-BM.

(1) The Bachelor certificate is issued when the following requirements have been fulfilled:

1. Certificate that allows permission to study at the Hamburg University of Applied Sciences in the Information Engineering degree programme
2. Enrolment in the Information Engineering degree programme
3. Successful completion of all the examination credits, pre-examination credits and study examination credits accompanying the degree programme (Section 7)
4. Successful completion of the Bachelor thesis (Section 8)
5. Confirmation according to Section 17 (3) GESR-ECS-BM
6. Confirmation of the completion of the training in industry and the accompanying study examination credit (Section 5 (3))

(2) The chosen compulsory elective modules are outlined in the Bachelor certificate. Examinations taken in the German language are marked on the certificate.

2 Final remark and coming into effect

(1) These Examination and Study Regulations are effective from the day after they have been made known in the Hamburg Law and Regulations Paper. They apply from the winter semester 2006/2007.

(2) The part of the "Examination and Study Regulations for the Bachelor of Engineering and Master of Engineering degree programme at Hamburg University of Applied Sciences" - abbreviated Examination and Study regulations 1999 - of 4 May 1999 (Hamburg Law and regulations Paper page 2578), last changed 1 July 2003 (Hamburg Law and Regulations Paper page 4579), related to the Bachelor study degree programme Information Engineering, especially Section 21 up to Section 27, repeals from winter semester 2006/07 after the Examination and Study Regulations of part 1 is made known. The repeal is described in part 3.

(3) Students of the Bachelor study degree programme Information Engineering starting their studies before winter semester 2006/07 within the Examination and Study Regulations 1999 (see part 2) can apply to take the Bachelor intermediate examination of the Examination and Study Regulations 1999 (Section 19 Examination and Study Regulations 1999) until the end of the summer semester 2008. Students passing the Bachelor intermediate examination of the Bachelor study degree programme Information Engineering (Section 19 Examination and Study Regulations 1999) latest until end of summer semester 2007 can apply to take the Bachelor examination of the Examination and Study Regulations 1999 (Section 21 Examination and Study Regulations 1999) latest until end of summer semester 2010.

(4) Equivalence study plans exist to change from the Examination and Study Regulation 1999 (see part 2) to the actual Examination and Study Regulations. The equivalence study plans are approved by the Faculty Council and made known by the Department. The equivalence study plans include equivalences between the study, pre-examination and examination credits between this actual Examination and Study Regulation and the one listed in part 2. Study, pre-examination and examination credits of the Examination and Study Regulation 1999 are recognized if they are equivalent to study, pre-examination and examination credits of this Examination and Study Regulation.

Hamburg University of Applied Sciences

Hamburg, 16th November 2006