

# **Examination and Study Regulations for the International Bachelor of Information Engineering degree programme at the Department of Information and Electrical Engineering of the Faculty of Engineering and Computer Science at Hamburg University of Applied Sciences**

dated 22 November 2012

On 22 November 2012, the President of Hamburg University of Applied Sciences approved the following "Programme-Specific Examination and Study Regulations for the International Bachelor of Information Engineering Degree Programme", which were agreed by the Faculty Council of the Faculty of Engineering and Computer Science on 08 November 2012. This approval is based on Section 108 (1) sentence 3 of the "*Hamburgisches Hochschulgesetz*" [Hamburg Higher Education Act] - HmbHG - of 18 July 2001 (HmbGVBl. [Hamburg Law Gazette] p. 171), as amended on 20 December 2011 (HmbGVBl. p. 550). The agreement of the Faculty Council is based on Section 91 (2) 1 HmbHG.

## **Preamble**

Information Engineering is an international Bachelor degree programme. The course is designed to cater in particular for applicants from abroad. In order to make the course more attractive to this target group, classes and examinations are held in English. This approach particularly targets applicants with little or no knowledge of German, and enables Hamburg University of Applied Sciences to play a part in making study in Germany more attractive to students from abroad. International students are also to be encouraged to learn German as the consecutive Master degree programmes are taught in German. The curriculum therefore includes classes in German, mainly in non-technical subjects. For a number of classes, students also have a choice of either English or German.

The Information Engineering degree programme gives prospective engineers an excellent foundation for work in the fields of the future at the interface of electrical engineering and computer science. The programme teaches theory and practical skills in the fields of digital information technology, telecommunications and automation, and covers the key areas of computing required for the programming of modern devices and systems. Each field is then covered in more depth and detail and applied in the light of requirements in practice for specific professional specialisms. A large amount of project work, a placement, and the Bachelor thesis further strengthen this focus on practice.

The degree programme teaches students the theory, skills and methodology that they require, and in a way which enables them to work with a strong focus on practice whilst drawing on a firm scientific grounding. In particular, students learn systematic analytical and methodical problem-solving and teamwork skills. Specific course content and the overarching degree programme concept also promote responsible action in a free, democratic and social state governed by the rule of law.

Both the course content and the range of types of classes and teaching methods are aimed at achieving these learning outcomes. The types of class are as follows: taught seminars, exercises, lab work, projects, seminars, training in industry and an introduction to independent scientific and academic project work and writing, for example with the Bachelor thesis. Alongside taught seminars, there is a strong focus on problem- and project-based study and group work.

## **1 Scope**

These degree programme Examination and Study Regulations as detailed below apply in addition to the provisions of the "General Examination and Study Regulations for Bachelor and Master Degree Programmes at the Faculties of Engineering, Science and Life Sciences and Computer Science at Hamburg University of Applied Sciences (GESR-ESLC-BM)" as last amended.

## **2 Standard programme length and structure**

(1) The standard course duration is seven semesters (three and a half academic years / 210 credit points). The international Information Engineering degree programme is a Bachelor course with the consecutive Master courses in “*Mikroelektronische Systeme*” (Microelectronic Systems), “*Automatisierung*” (Automation) and “*Informations- und Kommunikationstechnik*” (Information and Communication Engineering).

(2) The degree programme consists of foundation courses in theory and practice (first academic year) and a reinforcement of the basics (advanced courses, second academic year), one semester in industry (industrial placement) in the fifth semester, and further specialisation in Information Engineering (final two semesters). A Bachelor thesis is also to be written in the seventh semester. Students complete the degree programme upon passing the Bachelor of Engineering examination.

(3) The department shall also offer a number of classes in the programme in German. Where the class is taken in German, the corresponding examinations shall also be offered in German (cf. Section 6 (7)).

(4) The department shall draw up a general course plan for the Bachelor of Engineering degree programme as a whole. This course plan shall set out in particular the scope, the class type and the point in the curriculum for each subject. The subject timetable in each academic year follows a clear teaching and learning rationale. With the exception of subjects in the advanced classes (sixth semester) and the compulsory electives in the seventh semester, students are advised to pursue their studies on the basis of this timetable. The department shall develop learning objectives and teaching content for each subject and publish these in the appropriate form. The course programme shall be approved by the Faculty Council and the most recently approved version shall apply.

## **3 Academic qualifications**

Hamburg University of Applied Sciences shall award the degree of Bachelor of Science (BSc) to students who have passed all assessments required for the Bachelor. The Bachelor certificate shall state that the degree is for completion of the international Information Engineering programme.

## **4 Language**

(1) Teaching and examinations shall be in English. Some of the modules can also be taken in German (cf. Section 7 (6)).

(2) The examination and study regulations shall be drawn up in both German and English.

## **5 Training in industry**

(1) An engineering placement in industry is integrated into the third academic year of the Bachelor of Engineering degree programme as the fifth semester (20 weeks). Students may only commence their industrial placement after passing all of their first year examinations. Exceptions to this rule may be approved by the department representative for the training period in industry in cases where its application would result in undue hardship, in particular in an increase in the time required for programme completion which would be unreasonable on social or family grounds, and where such an exception does not stand in the way of logical progression in the student's studies. The student must submit his or her grades certificate for the first academic year to the representative for the training period in industry before commencement of the industrial placement.

(2) Students must submit proof of successful completion of their industrial placement to the department representative for the training period in industry. At the beginning of the semester following the industrial placement, students must give a presentation on their industrial placement at an event organised by the representative for the training period in industry; further details are set down in the Training Guidelines for Industrial Placements (*Ausbildungsrichtlinien für das Praxissemester*) issued by the Department of Information and Electrical Engineering. The representative for the training period in industry shall issue a certificate of completion of the industrial placement for presentation to the Examination Committee. Twenty credit points shall be awarded for successful completion of the industrial placement.

(3) Students must complete a paper (Section 14 (3) no. 10 (GESR-ESLC-BM) relating to their time in industry, and this shall be assessed by their supervisor. Papers shall be assessed in accordance with Section 21(11) (GESR-ESLC-BM). Five credit points shall be awarded for successful completion of the paper.

## 6 Modules and credit points

(1) All assessment for the Bachelor is completed during the degree programme. This assessment comprises the compulsory modules and compulsory elective modules and corresponding study, pre-examination and examination credits, the industrial placement and placement paper (Section 5 (3)), and the Bachelor thesis (Section 8). All classes for the degree programme as a whole are set out in the tables below. The exact course content can be found in the module handbook, which is available from the Department of Information and Electrical Engineering Department and online.

(2) The following abbreviations are used below in the tables of core modules for each academic year:

CP = Credit points  
H = Hours per week

Class types (CT):

TgS = Taught seminar  
Sem = Seminar  
Pro = Project  
Lab = Lab work  
Ex = Exercise

Forms of assessment:

HP = Home project  
WE = Written examination  
CO = Colloquium  
LC = Lab work completion  
LE = Lab work examination  
OE = Oral examination  
Pro = Project  
Pap = Paper  
EAC = Exercise attendance certificate

Types of assessment:

PEC = Pre-examination credit  
EC = Examination credit  
SC = Study credit

(3) The first academic year comprises the following modules:

Module no.	Module	Abbreviation	Class type	Semester	Class size	Credit weighting	Hours per week (H)	Credit points	Weighting	Form (type) of assessment	CNW % <sup>1</sup>
1	Mathematics 1	MA1	TgS	1	39	1.0	5	8	8	WE (EC)	0.1282
		MAE 1	Ex	1	19.5	1.0	1			EC (PEC)	0.0513
2	Mathematics 2	MA2	TgS	2	39	1.0	5	8	8	WE (EC)	0.1282

<sup>1</sup> Index value used by German HE institutions relating to the staff-student ratio

		MAE 2	Ex	2	19.5	1.0	1			EC (PEC)	0.0513
3	<b>Electrical Engineering 1</b>	EE1	TgS	1	39	1.0	3	6	6	WE (EC)	0.0769
		EEL1	Lab	1	13	1.0	1			LC (PEC)	0.0769
4	<b>Electrical Engineering 2</b>	EE2	TgS	2	39	1.0	3	6	6	WE (EC)	0.0769
		EEL2	Lab	2	13	1.0	1			LC (PEC)	0.0769
5	<b>Electronics 1</b>	EL1	TgS	2	39	1.0	3	6	6	WE (EC)	0.0769
		ELL1	Lab	2	13	1.0	1			LC (PEC)	0.0769
6	<b>Software Construction 1</b>	SO1	TgS	1	39	1.0	4	7	7	LE (EC)	0.1026
		SOL 1	Lab	1	13	1.0	1.5				0.1154
7	<b>Software Construction 2</b>	SO2	TgS	2	39	1.0	3	6	6	LE (EC)	0.0769
		SOL 2	Lab	2	13	1.0	1				0.0769
8	<b>German</b>	GE	Sem	1	19.5	1.0	2	4	4	WE/OE/Pap (EC)	0.1026
9	<b>Intercultural Competences</b>	IC	Ex	2	19.5	1.0	2	3	-	Pap (SC)	0.1053
10	<b>Learning and Study Methods</b>	LSE1	Ex	1	19.5	1.0	2	4	-	Pap (SC)	0.1026
		LSL1	Lab	1	13	1.0	1.5				0.1154
		LSL2	Lab	2	13	1.0	1.5				2

(4) The second academic year comprises the following modules:

Module no.	Module	Abbreviation	Class type	Semester	Class size	Credit weighting	Hours per week (H)	Credit points	Weighting	Form (type) of assessment	CNW %
11	<b>Signals and Systems 1</b>	SS1	TgS	3	39	1.0	3	6	12	WE (EC)	0.0769
		SSL1	Lab	3	13	1.0	1			LC (PEC)	0.0769
12	<b>Signals and Systems 2</b>	SS2	TgS	4	39	1.0	3	6	12	WE (EC)	0.0769
		SSL2	Lab	4	13	1.0	1			LC (PEC)	0.0769
13	<b>Electronics 2</b>	EL2	TgS	3	39	1.0	4	7	14	WE (EC)	0.1026
		ELL2	Lab	3	13	1.0	1.5			LC (PEC)	0.1154
14	<b>Digital Circuits</b>	DI	TgS	3	39	1.0	3	6	12	WE (EC)	0.0769
		DIL	Lab	3	13	1.0	1			LC	0.076

										(PEC)	9
15	<b>Digital Systems</b>	DS	TgS	4	39	1.0	3	6	12	WE (EC)	0.0769
		DSL	Lab	4	13	1.0	1			LC (PEC)	0.0769
16	<b>Microcontrollers</b>	MC	TgS	4	39	1.0	4	7	14	WE (EC)	0.1026
		MCL	Lab	4	13	1.0	1.5			LC (PEC)	0.1154
17	<b>Algorithms and Data Structures</b>	AD	TgS	3	39	1.0	3	6	12	WE (EC)	0.0769
		ADL	Lab	3	13	1.0	1			LC (PEC)	0.0769
18	<b>Software Engineering</b>	SE	TgS	4	39	1.0	3	6	12	WE (EC)	0.0769
		SEL	Lab	4	13	1.0	1			LC (PEC)	0.0769
19	<b>Databases</b>	DB	TgS	4	39	1.0	3	6	12	WE (EC)	0.0769
		DBL	Lab	4	13	1.0	1			LC (PEC)	0.0769
20	<b>Economics and Management</b>	EM	TgS	3	39	1.0	3	6	12	WE (EC)	0.0769
		EME	Ex	3	19.5	1.0	1			Pap (PEC)	0.0513

(5) The third academic year comprises the following modules:

Module no.	Module	Abbreviation	Class type (CT)	Semester	Class size	Credit weighting	Hours per week (H)	Credit points	Weighting	Form (type) of assessment	CNW %
21	<b>Scientific and Project Work</b>	SP	TgS	5	39	1.0	2	4	9	Pap (EC)	0.0513
22	<b>Industrial Placement</b>	IP	--	5	-	-	-	20	-	CO	-
		IPP	Pro	5	9.75	1.0	2	5	-	(SC)	0.2000
23	<b>Bus Systems and Sensors</b>	BU	TgS	6	39	1.0	3	6	12	WE (EC)	0.0769
		BUL	Lab	6	13	1.0	1			LC (PEC)	0.0769
24	<b>Operating Systems</b>	OS	TgS	6	39	1.0	3	6	12	WE (EC)	0.0769
		OSL	Lab	6	13	1.0	1			LC (PEC)	0.0769
25	<b>Digital Signal Processing</b>	DP	TgS	6	39	1.0	3	6	12	WE (EC)	0.0769
		DPL	Lab	6	13	1.0	1			LC (PEC)	0.0769
26	<b>Digital</b>	DC	TgS	6	39	1.0	3	6	12	WE (EC)	0.0769

	<b>Communication Systems</b>	DCL	Lab	6	13	1.0	1			LC (PEC)	0.0769
27	<b>Elective Project 1</b>	CJ1	Pro	6	13	1.0	3	5	10	Pro (EC)	0.2308

(6) The seventh semester comprises the following three modules and the Bachelor thesis (see Section 8):

Module no.	Module	Abbreviation	Class type	Semester	Class size	Credit weighting	Hours per week (H)	Credit points	Weighting	Form (type) of assessment	CNW %
28	<b>Elective Course 1</b>	CM1	Sem	7	19.5	1.0	3	5	10	WE/OE/Pap (EC)	0.1538
		CML1	Lab	7	9.75	1.0	1			LC/Pap (PEC)	0.1026
29	<b>Elective Course 2</b>	CM2	Sem	7	19.5	1.0	3	5	10	WE/OE/Pap (EC)	0.1538
		CML2	Lab	7	9.75	1.0	1			LC/Pap (PEC)	0.1026
30	<b>Elective Project 2</b>	CJ2	Pro	7	9.75	1.0	4	5	10	Pro (EC)	0.4103
31	<b>Bachelor Thesis (12 CP) and Colloquium (3 CP)</b>	BT	--	7	1	0.3	-	15	70	HP (EC)	0.300

The compulsory elective modules 1 and 2 in paragraph (6) comprise a range of class types and may have a mathematical/science, technical, business and/or general focus. A compulsory elective module must include a paper (Pap), an oral examination (OE) or a written examination (WE) as the assessment, and require either lab work completion (LC) or a paper (Pap) as pre-examination credit; the type of examination and class type shall be announced together with the compulsory elective modules. Compulsory elective modules can be chosen from the list of modules offered by the department which have been designated as compulsory electives by the chair of the Examination Committee. A notice informing students of these compulsory elective modules will be displayed. Students may also choose compulsory elective modules in subjects offered by other departments at Hamburg University of Applied Sciences, subject to the written approval of the chair of the Examination Committee and provided that the other departments have spaces on the relevant courses and for the corresponding examinations. Students wishing to take compulsory electives in other departments must submit an application to the chair of the Examination Committee before the start of the semester in which such electives are to be taken. Applications may only be rejected if the other department in question refuses to accept the student on the grounds outlined above, or if the subject does not have the required number of credit points and/or meet the content requirements of sentences 1 and 2 above.

(7) Students shall be able to choose between at least two modules for each compulsory elective (a notice announcing the available modules is to be displayed).

(8) All classes and examinations shall be offered in English. Certain classes, as indicated on notices displayed by the department, can also be taken in German. Such classes are part of the German-language programme run by the Department of Information and Electrical Engineering or by other departments of the Faculty of Engineering and Computer Science. For classes taken in German, the teaching and examination language is German. Students may take up to 40 credit points in German-language classes. Any examinations credits taken in German will be marked as such on the final certificate.

## **7 Classes and attendance**

For those classes where attendance is compulsory, students shall be deemed to have met the attendance requirements if they have attended for the set number of class hours (periods) required for the specific class. Over and above the requirements set out in the General Examination and Study Regulations (GESR-ESLC-BM), project attendance is also compulsory.

## **8 Bachelor thesis**

(1) The Bachelor thesis is a theoretical, programming, empirical and/or experimental final project which the student conducts and writes up. In their Bachelor theses, students should demonstrate that they are able to approach problems from the scientific, applied or vocational fields covered in the degree programme; that they are able to do so independently by applying scientific methods and findings, and that they are able to define such problems within an interdisciplinary context.

(2) Students may register their Bachelor projects once they have passed at least all but three of their module assessments. The total credit points outstanding for any study, pre-examination and examination credits yet to be obtained must not exceed 15.

(3) Students have three months to work on their Bachelor projects from the date of registration.

(4) Twelve credit points are awarded for passing the Bachelor thesis and three for the corresponding colloquium. The colloquium grade is included in the Bachelor thesis grade. For the overall Bachelor thesis grade, the grade awarded by each examiner is multiplied by 35.0.

## **9 Participation in examinations**

Pursuant to Section 23 (6) GESR-ESLC-BM, all study, pre-examination and examination credits for the first academic year of the programme (see Section 5 (3)) are to be completed within five semesters (two and a half years). If such credits are not completed within this period, the student concerned shall be deregistered from the course. In such cases, the Bachelor shall be deemed to have been failed.

## **10 Assessment and grading**

(1) Examinations shall be assessed and graded in accordance with Section 21 (3) GESR-ESLC-BM.

(2) The overall Bachelor grade is the sum of the weighted points awarded for completion of examination credits and the weighted points awarded for the Bachelor thesis. The weightings for examination credits can be found in the tables in Section 6 for each academic year/semester. A student's best compulsory elective module grades will be used in the calculation of the overall grade, unless the student applies to the Examination Committee before registering his or her Bachelor thesis to have different compulsory electives included in the overall grade. If other compulsory elective modules have also been taken, the three compulsory elective modules with the next best grades will also be included on the certificate as supplementary modules, but will not be factored into the total grade. Students may apply to have different supplementary modules included. Section 21 (16) sentence 2 GESR-ESLC-BM shall not apply.

(3) A student shall be deemed to have passed the Bachelor if he or she has passed all module examinations, the industrial placement and corresponding paper, and the Bachelor thesis. For a student to pass the module examinations, he or she must obtain all corresponding study, pre-examination and examination credits. The overall grade and the final grade for a successful Bachelor of Engineering examination are as follows:

Total grade					Final grade
more than or exactly			4959	points	very good (with distinction)
less than	4959	to	4275	points	very good
less than	4275	to	3249	points	good
less than	3249	to	2223	points	satisfactory
less than	2223	to	1710	points	pass

(4) The grading of tests pursuant to Section 14 (3) no. 11 GESR-ESLC-BM can count for up to 20% of the grade for written examinations (WE) in accordance with Section 14 (3) no. 3 GESR-ESLC-BM.

## 11 Bachelor certificate

(1) Students can apply for a written confirmation (grade summary) of the module examinations (including the corresponding study, pre-examination and examination credits) of the first year if study; this confirmation is issued when the following requirements have been fulfilled:

1. A certificate permitting the student to study at Hamburg University of Applied Sciences on the international Information Engineering degree programme;
2. Enrolment in the international Bachelor of Information Engineering degree programme;
3. Successful completion of all pre-examination credits and examination credits for the first year of study (Section 6 (3));
4. Confirmation according to Section 17 (3) GESR-ESLC-BM.

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

1. A certificate permitting the student to study at Hamburg University of Applied Sciences on the international Information Engineering degree programme;
2. Enrolment in the international Bachelor of Information Engineering degree programme;
3. Successful completion of all the examination credits, and the corresponding pre-examination credits and study credits for the individual modules (Section 6);
4. Successful completion of the Bachelor thesis (Section 8);
5. Confirmation according to Section 17 (3) GESR-ESLC-BM;
6. Confirmation of completion of the industrial placement and the corresponding study credit (Section 5 (3)).

(3) Where examination credits have been taken in German, this will be indicated on the certificate.

## 12 Closing provisions and entry into force

(1) These Examination and Study Regulations shall become effective on the day of their publication in the Hamburg University of Applied Sciences Gazette (*Hochschulanzeiger*). They shall apply with effect from the 2013/2014 winter semester for all students commencing their studies on the international Information Engineering degree programme in the 2013/2014 winter semester or thereafter.

(2) The "Examination and Study Regulations for the International Bachelor of Information Engineering Degree Programme at the Department of Information and Electrical Engineering of the Faculty of Engineering and Computer Science at Hamburg University of Applied Sciences" of 16 November 2006 (Official Gazette [*Amtlicher Anzeiger*] No. 12 of 6 February 2007 page 455) shall cease to be effective as of the date given in the first sentence of paragraph (1) above.

(3) Examination and study credits obtained in a student's foundation and main degree pursuant to the Examination and Study Regulations in paragraph (2) above shall be recognised where equivalent.

(4) Students on the international Bachelor of Information Engineering degree programme who commenced their studies before the 2013/2014 winter semester under the Examination and Study



Regulations specified in paragraph (2) above shall be entitled to apply to sit all assessments for their Bachelor degree in accordance with those Examination and Study Regulations, provided the degree is completed by the end of the 2018 summer semester.

(5) The transition from the Examination and Study Regulations specified in paragraph (2) above to these Examination and Study Regulations shall be made on the basis of equivalent study plans, which are to be approved by the Faculty Council and announced in an appropriate form. Such equivalent study plans shall also contain tables of equivalence specifying which examination and study credits pursuant to these Examination and Study Regulations are equivalent to those defined in the Examination and Study Regulations specified in paragraph (2) above.

**Hamburg University of Applied Sciences  
Hamburg, 22 November 2012**