

Course-Specific Course and Examination Regulations for the Master of Science degree course in Renewable Energy Systems: Environmental and Process Engineering at HAW Hamburg

6 June 2019

This is an English translation of the original German text of this Amendment to these Regulations. It is provided for informational purposes only and has no force independent of the original German text. The original German version as issued on the above date shall be authoritative and definitive in all cases of dispute.

In the interests of non-discriminatory use of language, this English translation uses alternating feminine and masculine pronouns.

On 6 June 2019, acting pursuant to Section 108 subsection 1 sentence 3 of the Hamburg Higher Education Act (HmbHG) issued on 18 July 2001 (HmbGVBl., p. 171), last amended 29 May 2018 (HmbGVBl. p. 200), the Executive Board of HAW Hamburg confirmed the following [German] text of the *Studiengangsspezifische Prüfungs- und Studienordnung für den Masterstudiengang Renewable Energy Systems - Environmental and Process Engineering (M.Sc.) an der Hochschule für Angewandte Wissenschaften Hamburg (Hamburg University of Applied Sciences)*, proposed by the Departmental Council of the Department of Environmental Engineering on 7 May 2019 and the Departmental Council of the Department of Process Engineering on 8 May 2019 in accordance with Section 16 subsection 4 no. 2, 14 subsection 3 no. 2 of the Basic Regulations (*Grundordnung*) of HAW Hamburg alongside Section 92 subsection 1 sentence 2 no. 2 and subsection 5 HmbHG, and adopted by the Faculty Council of the Faculty of Life Sciences on 16 May 2019 in accordance with Section 91 subsection 2 no. 1 HmbHG:

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1. General provisions

These Course and Examination Regulations govern the conduction and completion of the Master of Science degree course in Renewable Energy Systems: Environmental and Process Engineering at HAW Hamburg. They are supplemented by the General Course and Examination Regulations for Bachelor's and Master's degree courses in engineering, the sciences and health sciences, and computer science/information technology (*Allgemeine Prüfungs- und Studienordnung für Bachelor- und Masterstudiengänge der Ingenieur-, Natur- und Gesundheitswissenschaften sowie der Informatik an der Hochschule für Angewandte Wissenschaften Hamburg (APSO-INGI)*), of which the currently valid German version shall be authoritative.

2. Academic degree awarded upon completion; credit point value of course (Section 3 APSO-INGI)

- (1) HAW Hamburg shall award the academic degree of Master of Science (M.Sc.) upon successful completion of the degree course.
- (2) The degree shall be awarded to candidates demonstrating successful attainment of a total of 300 ECTS credit points (CP), comprising a prior degree course and the content of this Master of Science degree course.

3. Standard duration, credit point (CP) award and structure of course (Sections 2, 9 APSO-INGI)

- (1) This Master of Science degree course is worth 90 CP and its standard duration is one and a half years of study (3 semesters). One CP corresponds to a workload of 30 hours.
- (2) The modules that comprise the course are each worth 5 CP, with the exception of the Master thesis, which students undertake during their third semester and which is worth 30 CP.

4. Course content (Sections 8, 10 APSO-INGI)

- (1) The content of the course shall be taught via seminar-style classes, laboratory practicals/lab work, project work and the completion of a Master thesis. Adequate emphasis shall be placed on the acquisition and development of key skills within this schedule. For further information, students shall refer to the Module Handbook in the currently valid edition as published on the HAW Hamburg website in the '*Satzungen und Ordnungen in Studium und Lehre*' section (currently in German only). and/or on the website of the Master's degree course.
- (2) During the first year of the course, students shall undertake courses and classes worth a total of 60 CP.
- (3) The course schedule at Appendix 1 outlines the structure of modules in the course. The modules numbered 1, 2, 3, 4, 14 and 15 are required modules. Students must additionally select at least one module on solar energy (module 5 or 6). From the remaining modules, numbered 5 to 13, students shall choose further modules to a total of 60 CP to be taken in the first year of the course.
- (4) Where the course schedule lists differing forms of assessment for individual modules, the member of academic staff responsible for examining the module shall make a final and binding decision on the form of assessment to be used at the beginning of the course.
- (5) Where a student takes a greater number of modules than the requisite five required elective modules (worth 5 CP each), the additional modules may be listed as such in his Certificate of Examinations. Any grades achieved in these additional modules shall not form part of the overall final grade for the degree course (refer to Section 8 below).
- (6) Students may choose up to three modules, worth up to 15 CP in total, from the group of extended-choice elective modules (refer to Appendix 2), from HAW Hamburg's range of Master's degree

courses, or from content offered by another institution in or outside Germany, instead of modules from the course schedule. The modules thus chosen must be related to the subject of the degree course. The basis for this regulation is that Module 12 (Electives, 5 CP) permits a choice of courses worth a total of 5 CP and that the course allows students to change the composition of two further modules from the elective part of the schedule (module 5 – 13) worth a total of 10 CP in accordance with their own interests. The student must secure the agreement of his academic advisor to his choice and subsequently seek approval from the Examinations Committee. Once made, this choice may only be changed a maximum of once; such a change likewise requires the approval of the Examinations Committee.

5. Forms of assessment (Section 14 APSO-INGI)

- (1) Where formal graded assessment is by written paper (refer to Section 14 subsection 3 APSO-INGI), the member of academic staff responsible for examining the module or class may additionally require students to take part in a related colloquium after submitting the paper (one month after submission at the latest). In this case, the written paper shall be worth two-thirds of the overall grade for the class and the student's performance in the colloquium shall account for the remaining one-third.
- (2) A portfolio examination (refer to course schedule below) is a formal, graded assessment consisting of up to three different components, each of which shall be assessed in a different form; one example might be a written examination, coursework/exercises to be completed during the semester, and an oral examination. The member of academic staff responsible for examining the module/class shall select the components of the portfolio examination from the list of forms of assessment given in Section 14 APSO-INGI, with the addition of coursework/exercises to be completed during the semester. The overall workload associated with the portfolio examination, and its level of difficulty, shall not exceed those associated with other forms of assessment. The member of academic staff responsible for delivering the class/module shall determine the weighting of each component for the calculation of an overall grade for the portfolio examination. If the course schedule gives 'portfolio examination' as an assessment option for a course, class or module, the member of academic staff responsible for delivering it shall determine, at the beginning of the course or class, whether this method is to be used for the following examination and, if so, which types of assessment shall be used for the components and how they shall be weighted.

6. Language of instruction (Section 10 APSO-INGI)

The course shall be taught and examinations and assessments held in English.

7. Master thesis (Section 16 APSO-INGI)

- (1) General regulations governing Master theses are set out in Section 16 of APSO-INGI.
- (2) Students shall have a period of six months in which to produce and submit their Master thesis.
- (3) Students may not commence work on their Master thesis before having attained 30 CP pertaining to the first year of the degree course. Exceptions shall be permitted at the Examinations Committee's discretion.

8. Extent of Master's examination and assessment of student performance (Section 21 APSO-INGI)

- (1) The degree shall be assessed, and the overall final grade awarded, on the basis of examinations and assessments (*Prüfungs- und Studienleistungen*) completed during the first year of the course and of the student's Master thesis. The grade average of the module grades, weighted by CP value, shall count for 65% of the overall final grade and the Master thesis shall count for the remaining 35%.
- (2) Where several examinations or graded formal assessments (*Prüfungsleistungen*) take place within one module, the grade for that module shall be calculated from the grades attained in each *Prüfungsleistung*, weighted by number of CP pertaining to each. Where a module consists of a *Prüfungsleistung* and a *Studienleistung*, only the *Prüfungsleistung* shall count towards the module grade. This type of module shall be considered a 5 CP module assessed by *Prüfungsleistung*.
- (3) Students who have altered the composition of modules as set out in Section 4 subsection 6 above should note that at least 40 CP of the total required 60 CP from course modules (this total excludes the Master thesis, which is worth a further 30 CP) shall be assessed by *Prüfungsleistung*. This includes modules consisting entirely of a course or class assessed by *Prüfungsleistung*.

9. Course completion and Certificate of Examinations (Section 30 APSO-INGI)

The student may apply to the chair of the Examinations Committee for issuance of her Certificate of Examinations after having completed the degree course.

10. Effective date

- (1) These Regulations shall become effective on the date of their publication in the HAW Hamburg official gazette (*Hochschulanzeiger*) and shall apply from winter semester 2019/20 onward.
- (2) The Course-Specific Course and Examination Regulations for the Master of Science degree course in Renewable Energy Systems: Environmental and Process Engineering at HAW Hamburg issued on 26 September 2014 shall cease to apply on the date specified in subsection (1) above. This notwithstanding, they shall continue to apply to all students who commenced their degree course prior to winter semester 2019/20, until the end of summer semester 2021.
- (3) It is not permissible for students to whom the expiring Regulations apply to complete their degrees under the new Regulations.

Hochschule für Angewandte Wissenschaften
Hamburg, 6 June 2019

Appendix 1: Course schedule

1	2	3	4	5	6	7	8	9	10
No.	Module	ECTS credit points	Semester	Course title	Type of course	SWS	Assessment	Assessment type	Class size
1	Mathematics	5	1	Numerical Mathematics	SeU	2	PL	K,M,PF	25
			1	Numerical Mathematics, Practical Work	SeU	2			25
2	Data Acquisition	5	1	Data Acquisition and Processing	SeU	2	PL	K, M,PF	25
			1	Data Acquisition and Processing, Practical Work	SeU	2			25
3	Wind Energy	5	1	Wind Energy 1	SeU	2	PL	K,M,PF	25
			2	Wind Energy 2	SeU	2	PL	K,M,PF	25
4	Bioenergy - Biofuels	5	2	Biofuels	SeU	4	PL	K,M,PF	25
5	Solar Energy - PV Systems	5	1	PV System Engineering	SeU	4	PL	K,M,PF	16,7
6	Solar Energy - Converter	5	1	Solar Thermal Systems	SeU	2	PL	K,M,PF	16,7
			2	Solar Cells	SeU	2			16,7
7	Energy Conversion and Distribution	5	2	Fuel Cells and Batteries	SeU	2	PL	K,M,PF	16,7
			2	Smart Grids	SeU	2			16,7
8	Electrical Engineering	5	1	Advanced Electrical Engineering	SeU	2	PL	K,M,R,H,PF	16,7
			2	Power Electronics and Grids	SeU	2			16,7
9	Numerical Simulation for Renewable Energy Systems	5	1	Computational Simulation Techniques	SeU	2	PL	K,M,FS,KO,PF	16,7
			1	Wind Turbine Design with CFD - or - System Cases Studies with CFD	SeU & Prak	2	PVL	LA,K	16,7
10	Advanced Control Systems	5	2	Advanced Control Systems Methods	SeU	2	PL	K,M,Pj,FS,PF	16,7
			2	Advanced Control Systems Tools, Practical Work	SeU & Prak	2			16,7
11	Plant Engineering and Project Management	5	1	Plant Engineering	SeU	2	PL	K,M,R,H,PF	16,7
			1	Project Management	SeU	2	PL	K,M,R,H,PF	16,7
12	Electives	5	1 / 2	Elective 1	SeU	2	SL/PL	K,M,R,H,FS,Pj,PF	16,7
			1 / 2	Elective 2	SeU	2	SL/PL	K,M,R,H,FS,Pj,PF	16,7
13	Project Work	5	1 / 2	Project Work	KGP	2	SL	Pj	5
14	Energy Practice	5	2	Energy Practice Lab	Prak	3	SL	LA	12,5
15	Energy Policy and Finance	5	2	Project Finance	SeU	2	SL	K,M,R,Pj,PF	25
			2	International Energy Policy	SeU	2			25
Total 1		35		Required modules					
Total 2		25		Required elective modules					
16	Master Thesis	30	3	Master Thesis			PL	MT	1

Required modules: 1, 2, 3, 4, 14, 15, 16

Required electives: Module 5 or Module 6 or both modules

Electives: to be chosen from modules 7 – 13, up to the required total CP value

Key to abbreviations:

SeU: Seminar-style teaching Prak: Lab practical KGP: Small-group project S: Seminar

SL: *Studienleistung* (no grade awarded) PL: *Prüfungsleistung* (grade awarded), PVL: *Prüfungsvorleistung* (required to proceed to examination of module)

K: Written examination M: Oral examination R: Presentation H: Written paper Pj: Project LA: Lab assessment KO: Colloquium FS: Case study PF: Portfolio examination

MT: Master thesis

Information on class size relates to calculation of curricular value (CW). CP = ECTS credit points)

Appendix 2: Extended-choice elective modules

The relevant Departmental councils will decide on courses to be offered as extended-choice electives each semester, in accordance with available teaching capacity and staff, and announce them in the HAW Hamburg course guide. Students may choose up to two courses for Module 12 (Elective), totalling a maximum of 5 CP. Alternatively, students may complete Module 12 by taking one course worth 5 CP. Students may additionally compile free-choice modules as detailed in Section 4 subsection 4 of the Course and Examination Regulations. The table below serves as an example.

Course	SWS	CP	Type of course	Assessment	Assessment type
Assessment of Wind Energy Projects	2	2.5	SeU	SL	K, M, R, FS, PF
Biogas Engineering	2	2.5	SeU	PL	K, M, R, PF