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Study Regulations for the non-consecutive International Master Course Hydro Science and Engineering

of #date of issue #

Pursuant to Higher Education Act § 36 of Free State of Saxony (Sächsisches Hochschulgesetz - SächsHSG) of 10 December 2008 (SächsGVBl. p. 900), last amended by article 10 of the Act of 26 June 2009 (SächsGVBl. pp. 375, 377), Technische Universität Dresden enacts the following study regulations as a statute.

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§ 1 Scope

Based on the Higher Education Act of the Free State of Saxony and the examination regulations, these study regulations govern the aims, content, structure, and schedule of the non-consecutive International Master Course Hydro Science and Engineering at Technische Universität Dresden.

§ 2 Study Objectives

(1) Students gain a broad interdisciplinary competence in hydro sciences and its engineering based applications with a significant focus to address global water-related problems. Based on interdisciplinary skills (like: use of available water resources according to spatial and economic conditions; identification and evaluation of substances and transport processes in soils and water bodies; basic principles of planning and operation of technical systems for the recovery, storage, redistribution of water and the maintenance of hydraulic structures) students expand their own competence in communication with relevant stakeholders and through use of appropriate structures to manage land use for the protection of people, property and landscape.

(2) Due to the practice-oriented as well as scientific character of the master course graduates are enabled to deal with various and complex tasks. Students develop proficiency in the fields of: sustainable management of water resources in different climate zones including preservation of water as elementary food; ecologically sound treatment of wastewater; restoration of endangered and degraded sites.

Graduates acquire the skills to develop adequate solutions by project planning, implementation and monitoring of national and international hydrological projects in a globally changing world. Among the intended functions after an appropriate training period in professional practice are: executive positions in national and international authorities and organizations, participation in planning and consultancy offices, heading the management of water supply facilities, or functions in the solution of interdisciplinary research topics in Hydro Science.

§ 3 Admission Requirements

(1) Primary requirement for admission to the master course is the evidence of a university qualification recognized in Germany, in the field of natural sciences such as hydrology, meteorology, geography, geology, chemistry, and biology or in the field of engineering such as water management, civil engineering, waste management and contaminated site treatment, landscape architecture, forest sciences, agricultural engineering, and environmental engineering or similar degree programmes with a standard period of study of at least six semesters.

(2) Studies and examinations require proficiency in English language. In case, the applicant is not a native speaker sufficient command of English has to be demonstrated. The proof shall be based on the result of an international standard test: preferably IELTS result at least 6 points, TOEFL internet-based minimum 79 computer-based 213, and paper-based 550 points, or Uni-Cert III.

(3) Further admission requirement is evidence of particular eligibility, which is regulated in the Eligibility Regulations (Eignungsfeststellungsordnung) for the International Master Course Hydro Science and Engineering.

§ 4

Start and Duration of Study

- (1) The master course will start with each winter semester.
- (2) The standard period of studies is four semesters and includes class attendance, self study and master examination.

§ 5

Teaching Methods

(1) The curriculum follows a modular structure. The individual modules present, consolidate and deepen topics by means of lectures, tutorials, seminars, practical training, workshops, excursions, and self study. In modules which are obviously subject to several examination regulations use of synonyms is permitted for equivalent teaching methods.

(2) In lectures the subject matter of a module is presented and discussed. In tutorials the required methodical and technical knowledge is acquired. The contents of the lectures are deepened and complemented as well as further developed by exercises. Seminars allow students on the basis of literature and other study material to find information on a special field of interest, to present and discuss the elaborated topic within the group and to describe it in written form. Practical training like exercises in the lab and field trips are an integral part of the master course. They illustrate the theoretical knowledge and give information on specific process phenomena of water supply within spatial and temporal dimensions. Workshops are temporally blocked classes, where a particular issue is worked out in discussion and an exchange of experiences among participants takes place.

§ 6

Structure and Schedule of the Programme

(1) The master course is structured modularly. The curriculum is concentrated on the first three semesters. The fourth semester is available to prepare the individual master thesis and finally to defend within the colloquium.

The studies are divided into a one-semester basic course and a three-semester advanced course. The basic course consists of 6 compulsory modules. The advanced course includes one compulsory module and optional modules in total of 50 credits, offering a choice of emphasis for each student, and finally the preparation of the individual master thesis and the colloquium.

(3) Contents and qualification aims, module character, prerequisites of attendance, applicability, frequency, work load, and duration of each module can be found in the module description (Appendix 1).

(4) Courses are taught in English.

(5) For appropriate distribution of the modules in each semester to allow completion of studies within standard period of study, for information on nature and extent of classes and the number and schedule of necessary documentations and examinations refer to the attached Study Schedule (Appendix 2)

(6) On proposal of the academic committee the catalogue of optional modules as well as the study schedule can be modified by the faculty council. The valid catalogue of optional modules has to be announced according to faculty custom at the beginning of the semester. The modified study schedule applies to students starting in the respective year. On request the examination board may decide on exceptions to paragraph 3.

7) The implementation of an optional module may depend on a minimum number of participants up to 10 persons. The respective number will be announced according to faculty custom by the professor responsible for the module. A subsequent reduction of the number of initial participants after the start of the module has no effect on the continuation of the module.

(8) If participation in an optional module is limited by the number of available places and lab capacity, the selection of the students is based on the order of registration. Students will be informed about mode and deadline of the registration according to faculty custom.

§ 7

Contents of the Programme

(1) The concept of the International Master Course Hydro Science and Engineering puts emphasize on research. Teaching contents as well as scientific topics of individual master theses contribute to that orientation.

(2) Basic course modules are designed to provide fundamentals of hydro sciences as well as to enlarge existing knowledge in preparation for studies in the advanced courses. Students with an educational background in natural sciences need to attend courses in hydro-mechanics and hydraulic engineering. Students with a degree in engineering need to attend courses in ecology and hydrochemistry.

(3) During the advanced course (2nd and 3rd semester) students learn individually and as a team to work on multidisciplinary research tasks and find solutions in hydro sciences, climate research, and global change. Choosing modules individually students improve their knowledge gained in previous education or professional experience on management, development, and protection of water resources in different climate zones as well as on construction and operation of water supply facilities.

(4) Visiting the advanced course optional modules, students acquire profound knowledge following their individual interests and requirements of aspired professional fields. Based on recent research results teaching contents are frequently updated. The expertise refers to interaction and feedback of high and low water level, evaluation of quantity and quality of natural resources, conflicts between ecology and economy, and sensitive zones of local and global water issues in various temporal and spatial scales.

(5) During the module "Study Project" students will work under guidance on a scientific topic in the computer pool, in the field or in the lab, respectively. Given topics may include restoration of water supply for an urban area, design of a water management structure (dam, barrage), calculation of a river catchment water balance, e.g. After the Study Project students should be enabled to implement their knowledge in engineering and natural sciences in application-oriented solutions. Scientific creativity as well as awareness of necessities for multidisciplinary interaction is encouraged in order to contribute to the study project with ideas and solutions. The complex application of acquired knowledge is exercised.

(6) During master thesis the student has to prove ability to work independently on a scientific topic in the frame of Hydro Science and Engineering, to structure, develop and document a complete project planning. With preparation of the master thesis the student

will prove command of gained profound knowledge in natural science and engineering and ability to implement that knowledge. Master thesis results are to be presented and discussed in the situation of a public colloquium in presence of reviewers and examination board.

§ 8 Credit Points

(1) ECTS credit points document students' average work load as well as individual progress. One credit point is equivalent to a work load of 30 hours. Usually, 60 credit points are awarded per academic year, i.e. 30 points per semester. Taking into account the courses, study work, examinations, self study, and master thesis with colloquium a total of 120 credit points may be obtained.

(2) Each module description (Appendix 1) contains achievable credit points for the particular module. Credits are achieved as soon as the module examination was passed successfully. Examination regulations § 28 remain untouched.

§ 9 Study Counsel

(1) General studies advisory is provided by Technische Universität Dresden Central Student Information and Counseling Services concerning study opportunities, enrolment modalities and other students' issues. Specific studies advisory is offered by Department of Hydrosociences concerning questions on design of individual studies.

(2) Students, not being able to provide performance records or examination results until start of the second year have to participate in a separate study counsel.

§ 10 Modification of Module Descriptions

(1) With respect to changed conditions it is possible to have module descriptions modified in order to achieve an optimal organization of studies. Excluded from modification are the criteria "module name", "contents and qualification aims", "module character", "prerequisite to achieve credit points", and "credit points and grades".

(2) On academic committee proposal the faculty council decides on modification of module descriptions. The modification has to be announced according to faculty custom.

§ 11 Enactment and Publication

(1) These study regulations come into effect on #date# and are published in the official publications (Amtliche Bekanntmachungen) of the Technische Universität Dresden.

(2) Students who started their studies in Hydro Science and Engineering at Technische Universität Dresden before these regulations came into effect shall complete their studies according to the study regulations issued 20/08/2007.

These study regulations are issued according to the decision of the Faculty Council of the Faculty of Forest, Geo and Hydrosociences on 26/09/2011 and the approval of the Rector on xxxxx.

Dresden, #date#

Rector of the Technische Universität Dresden

Prof. Dr. Dr.-Ing. Hans Müller-Steinhagen

Appendix 2

Study Schedule for the International Master Course Hydro Science and Engineering

Including character and extent of the courses (SWS) and number of examinations

Module	Module Name	Semester				C R
		1.	2.	3.	4.	
		L/T/S/P/E/W PR/EX				
Compulsory Modules – Basics						
MHSE 01	Statistics	2/1/0/0/0/0 0/1				5
MHSE 02	Climatology and Hydrology	4/0/0/0/0/0 0/2				5
MHSE 03	Geodesy	2/1/0/0/0/0 0/1				5
MHSE 04	Soils	2/0/0/1/0/0 0/1				5
Compulsory Modules for Natural Scientists						
MHSE 05	Hydromechanics	2/1/0/0/0/0 0/1				5
MHSE 06	Hydraulic Engineering	2/1/0/1/0/0 1/1				5
Compulsory Modules for Engineers						
MHSE 07	Ecology	2/1/0/1/0/0 0/2*				5
MHSE 08	Hydrochemistry	2/0/0/1/0/0 1/1				5
Compulsory Modules – Advanced						
MHSE 09	Study Project IWRM			1/1/0/4/0/0 0/3		10
Optional Modules						
MWW16	Integriertes Wasser- ressourcenmanagement (IWRM)		3/0/0/1/0/0 0/2			5
MHSE 10	International Water Issues		0/0/3/0/0/0 0/2			5
MHSE 11	Circular Economy		2/1/0/0/0/0 0/2			5
MHSE 12	Watershed Management I		2/1/0/0/0/0 0/1			5
MHSE 13	Urban Water I		2/2/0/0/0/0 0/1			5
MHSE 14	Flood Risk Management I		2/3/0/0/4,2/0 0/3			10
MHSE 15	Biotechnology		4/0/0/0/0/0 0/1			5
MHSE 16	Aquatic Ecology and Ecotoxicology		0/0/0/1/0/0 0/0	3/0/0/0/0/0 0/2		5
MHSE 17	Climate Change		2/0/2/0/0/0 0/2			5
MHSE 18	Soil Water			2/1/0/1/0/0 0/2		5
MHSE 19	Ground Water			2/1/0/1/0/0 0/1		5
MHSE 20	Hydrodynamics			1/1/0/2/0/0 0/1		5
MHSE 21	Watershed Management II			1/0/0/2/0/0 0/1		5
MHSE 22	Urban Water II			2/1/1/0/0/0,5 0/1		5
MHSE 23	Flood Risk Management II			2/0/0/0/0/6 0/3		10
MHSE 24	Water Quality and Water Treatment			2/0/0/2/0/0 1/1		5
MHSE 25	Drinking Water Supply			3/1/0/0/0/0,5 0/1		5
					Master Thesis	30

					and Colloquium	
	CR	30	30	30	30	120

Study Schedule Legend

L/T/S/P/E/W **L**ecture/**T**utorial/**S**eminar/**P**ractical training/**E**xcursion/**W**orkshop

CR Credit Points

EX Number of Examinations

PR Number of preparatory requirements to the exam

* Option to choose alternative examination types