TECHNISCHE UNIVERSITÄT DRESDEN

Faculty of Electrical and Computer Engineering

Study regulations for the consecutive Master programme Nanoelectronic Systems

as of 11th July, 2017

Pursuant to § 36 sec. 1 of the Law Governing the Universities in the Free State of Saxony (Sächsisches Hochschulfreiheitsgesetz - SächsHSFG) of 15 January 2013 (SächsGVBl. p. 3), last amended by article 11 of the Act of 29 April 2015 (SächsGVBl. pp. 349, 354), the Technische Universität Dresden enacts the following Study Regulations as a statute.

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Please note: This is an English translation of the German original.
Only the German version is legally binding.

§ 1

Area of applicability

These Study Regulations define the objective, the contents, the structure and the order of events during studies for the consecutive Master programme Nanoelectronic Systems at the Technische Universität Dresden on the basis of the provisions of the applicable Law on Higher Education in the Free State of Saxony (*Sächsisches Hochschulfreiheitsgesetz*) and the Examination Regulations.

§ 2

Aims of the programme

(1) The graduates of the Master programme Nanoelectronic Systems acquire methods, techniques and tools for the design and the manufacture of nanoelectronic systems and also for the application of these systems in selected applications areas and can reliably deploy this knowledge. Students will be enabled to analyse tasks in these areas and thence to develop effective solutions. They identify the interactions and interdependencies between these key issues and can take account of them when finding solutions. Graduates are familiar with the latest research and developments in these areas and are positively involved in the process.

(2) Thanks to their broad technical knowledge and their familiarity with the international research communities in the areas design, manufacture and application of nanoelectronic systems, which they acquired during their studies with an international orientation, graduates are fit to solve a variety of complex tasks in the design, manufacture and application of nanoelectronic systems in accordance with the chosen specialisation and after an adequate settling-in period in the industry. The students can work, in particular, in the information and semiconductors technology area.

§ 3

Admission requirements

(1) To be admitted to the programme, students must have earned a first job-qualifying university degree or a degree at a state-run or officially recognised university of cooperative education in Electrical Engineering, Information Systems Engineering, Computer Science, Physics or equivalent areas; it is mandatory that the degree is acknowledged in Germany.

(2) Moreover, students are expected to have particular technical knowledge in the fields of mathematics, electrical engineering and computer science.

(3) Fluency in English at level C1 of the Common European Framework of Reference for Languages (CEFR) is also a prerequisite. If English is not the native language of the applicant, s/he must proof his/her English proficiency by providing an internationally offered test (preferably IELTS: 6.5, TOEFL iBT:110 points).

§ 4
Beginning and duration of studies

(1) Students can commence studies in the winter semester.

(2) The standard period of study is 4 semesters during which students are required to accomplish face-to-face studies, self-study and the Master examination.

§ 5
Types of teaching and learning

(1) The academic material is organised in a modular structure. In the individual modules, the academic contents is communicated, consolidated and deepened in lectures, seminars, tutorials, lab courses, language classes, projects and also in self-study. In modules that are subject to several examination regulations synonyms are possible for assessments that are identical in content.

(2) Lectures introduce the subject area of the module.

(3) Exercises allow the application of the teaching content in selected sub-areas.

(4) Seminars allow students to gather information about a chosen topic under supervision based on technical literature or other material, to present and discuss in a group what they worked out and to present it in writing.

(5) Lab courses serve to apply theoretical knowledge and to acquire practical skills in potential professional fields. They serve to illustrate in experimentation the facts students have learned theoretically thus allowing them to make their own experience and practice their skills when handling devices, facilities and measuring instruments.

(6) Especially in the first two semesters of the study course, tutorials support students to learn solving subject-related and methodological problems independently.

(7) Excursions allow students to get an insight into different production and research facilities and to get to know subject-specific industry solutions and potential application areas.

(8) Language courses provide theoretical and practical knowledge and skills in one or more foreign languages. They develop communication skills and intercultural competence in an academic and professional context also in everyday situations.

(9) Students work on research projects in which they develop the capacity to work in a team and to work out their own solutions and implement them within a given time frame. Stu- dents also develop and exercise the ability to document the results obtained in an adequate form and to present them correctly using appropriate language.

(10) Through self-study students can work on, repeat and deepen the subject matter as they see it.

§ 6
Structure and organisation of the programme

(1) The programme has a modular structure. The courses are offered in three semesters. During the fourth semester, students work on their Master thesis and defend it. Part-time study is possible on the basis of the regulation on part-time study of the Technische Universität Dresden.

(2) The Master programme Nanoelectronic Systems offers the branch of study Nanoelectronics as well as the branch of study Nanosciene and Nanotechnology. Students have to choose one of the branches of study when applying. The student can choose a branch of study Nanoscience and Nanotechnology only when admitted to the Erasmus Mundus programme.

The programme in the branch of study Nanoelectronics comprises eight required modules and required elective modules totalling 39 credits, which allow the student to focus on areas of particular interest.

The programme in the branch of study Nanoscience and Nanotechnology includes – in the first year – a compulsory year abroad at the KU Leuven (Belgium) within the frame of a joint studies programme, whose details are clarified in an agreement. The academic achievements that have to be acquired correspond to the achievements that have to be acquired within the Master programme Nanosciene and Nanotechnology of the KU Leuven (Belgium). In the second year, the programme comprises two required modules and required elective modules totalling 16 credits, which allow the student to focus on areas of particular interest.

(3) The module descriptions contain contents and qualification aims, the types of teaching and learning used, pre-exam achievements, usability, frequency, amount of work involved and duration of the various modules (Appendix 1).

(4) Classes are held in English.

(5) The appropriate distribution of the modules across the semesters, the observance of which allows the completion of studies within the standard period of study, the types and numbers of hours of the courses and also the number and fixed times of assessments and examinations are listed in the curriculum plan attached (Appendix 2) or in an individual curriculum plan that is confirmed by the faculty.

(6) The required elective modules offered and the curriculum plan can be modified by the Faculty Council on suggestion of the Academic Committee. The currently offered required elective modules shall be communicated by the faculty in the known manner as the semester starts. The modified curriculum plan is binding on those students to whom the faculty communicates it in the known manner as soon as studies begin. On application, the Examination Committee may decide on exceptions to sentence 3.

§ 7

Course contents

(1) The major focus of the Master programme Nanoelectronic Systems is on research.

(2) The programme comprises the topics semiconductor technology, circuit and system design.

(3) The topics covered by the required elective modules include materials and technologies for nanoelectronic systems, in particular storage technology, nanotechnology, optoelectronics and molecular electronics, design methods and techniques for the realisation of nanoelectronic systems, e.g. characterisation and modelling of electron devices, extended integrated circuit and system design and computer arithmetic, application fields for embedded nanoelectronic systems, in particular design, construction and use of software systems, modelling and simulation methods, business and economics issues, and also the German language and culture.

§ 8

Credit points

(1) ECTS credits document the average student workload and individual progress. One credit is equivalent to a workload of 30 hours. As a rule, students can earn 60 credit points per academic year, i.e. 30 credits per semester. The total workload of the programme is 120 credits and comprises the types of teaching and learning, the academic achievements and assessments and also the Master thesis and the defence the type and scope of which are all defined in the module descriptions (Appendix 1).

(2) The module descriptions (Appendix 1) indicate how many credits students can earn in one module. Students can earn credit points after having passed the module exam. § 26 of the examination regulations remains unaffected.

§ 9

Student advisory service

(1) The general student advisory service is the responsibility of the Central student advisory service of TU Dresden and answers all questions regarding programmes offered, terms of enrolment and general student affairs. The subject-related advisory service throughout studies is the responsibility of the Faculty of Electrical and Computer Engineering. This subject-related advisory service helps students, in particular, tailor and plan their studies.

(2) As the third semester starts, students who have not yet earned an attestation by that time, are obliged to seek advisory service.

§ 10

Adaptation of module descriptions

(1) A simplified procedure is used to adapt module descriptions to changed conditions to ensure the organisational conditions for the programme. The fields „module name", „con- tents and qualification goals", „types of teaching", „pre-exam achievements for earning credit points" and also „credit points/ and grades" cannot be modified.

(2) In the simplified procedure, the Faculty Council on suggestion of the Academic Commit- tee decides upon the modification of the module description. The modifications shall be communicated by the Faculty in the known manner.

§ 11

Coming into force, public notice and transitional provisions

(1) These study regulations become effective as of 01 October 2014 and are publicly announced in the Official Notices of Technische Universität Dresden.

(2) They are valid for all students that are enrolled in the Master programme Nanoelectronic Systems from the winter semester 2014/15 on.

(3) For students enrolled before the winter semester 2014/15, the study regulations that were valid before these study regulations became effective continue being valid.

(4) These study regulations are valid for all students that are enrolled in the Master programme Nanoelectronic Systems from the winter semester 2018/2019 on.

Issued on the basis of the decision of the faculty council of the Faculty of Electrical and Computer Engineering made on 17 September 2014 and the approval of the rectorial board of 1 December 2015.

Dresden, 11 July 2017

The Rector
of Technische Universität Dresden

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