Non-binding English translation for information only. Only the official German documents are legally binding.

Study Regulations for the English-language consecutive degree programme Design and Test for Integrated Circuits leading to the award of Master of Science (M.Sc.) at Chemnitz University of Technology Dated 23 April 2024

On the basis of section 14 paragraph 4 in conjunction with section 37 paragraph 1 of the Act on Higher Education Institutions in the Free State of Saxony (Saxon Higher Education Act – SächsHSG) of 31 May 2023 (SächsGVBl. p. 329), last amended by Article 2 of the Act of 31 January 2024 (SächsGVBl. pp. 83, 87), the Faculty Board of the Faculty of Electrical Engineering and Information Technology of Chemnitz University of Technology has issued the following Study Regulations:

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For better readability, the generic masculine is normally used in the following. All personal designations naturally apply to all genders.

Part 1
General provisions

Section 1
Scope

These Study Regulations govern, on the basis of the Examination Regulations in force from time to time (section 9), the aims, content, structure, sequence and implementation of the degree programme Design and Test for Integrated Circuits leading to the award of Master of Science at the Faculty of Electrical Engineering and Information Technology of Chemnitz University of Technology.

Section 2
Start of studies and standard period of study

(1) Studies normally begin in the winter semester.
(2) The degree programme has a standard period of study of four semesters (two years). The studies comprise modules totalling 120 credits (Cr). This corresponds to an average workload of 3600 study hours.

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Section 3
Admission requirements

(1) The admission requirements for the Master's degree programme in Design and Test for Integrated Circuits are met by anyone who has obtained a professionally qualifying university degree at Chemnitz University of Technology in the Bachelor's degree programme in Electrical Engineering and Information Technology, or in a degree programme equivalent in content, and who provides evidence of a completed language level B2 in English in accordance with the Common European Framework of Reference for Languages (CEFR).
(2) The Examination Committee decides on equivalence and on the admission of other applicants.

Section 4
Teaching and learning methods

(1) Teaching and learning methods may be: the lecture (L), the seminar (S), the exercise class (EC), the project (PR), the colloquium (CQ), the tutorial (T), the practical training (PC/I), the business simulation game (BSG) or the excursion (EX). Students should prepare for the classes they attend and deepen their content through independent work. The knowledge and skills required for the successful completion of the studies are not acquired exclusively by attending classes; rather, additional independent study is required (self-study).
(2) E-learning methods may be used for all teaching and learning methods according to paragraph 1, provided that the character of the respective teaching and learning method is preserved.
(3) Classes are held in English. The module descriptions specify which classes are held in German.

Section 5
Aims of the degree programme

The aims of the degree programme are oriented towards the requirements of professional deployment of graduates. The students should be enabled to solve engineering tasks in the field of the design and test of integrated circuits. The Master's programme is aimed on the one hand at foreign English-speaking students and on the other hand at German students with corresponding English language skills. The core area of the knowledge to be imparted is divided into two module sections (core modules, specialisation modules). The third module section comprises the Master's thesis and is characterised in particular by the students' independent scientific contributions to problem solving. The core modules impart the necessary basic knowledge. This basic knowledge is complemented by additional special competences from the specialisation modules, which should lead on the one hand to further professional specialisation and on the other hand to an expansion of the knowledge base with regard to scientific and practical working methods. In the courses, analytical ways of thinking and an engineering approach to problem solving should be trained. In this way, graduates are enabled to become effective both in research and development and in the management sector.

Part 2
Structure and content of the studies

Section 6
Structure of the studies

(1) 120 Cr are earned in the studies, composed as follows:

1. Core modules: **Σ 37 Cr**

243031-055	Design of Digital Systems	5 Cr	Compulsory module
243031-075	Design of Heterogeneous Systems	5 Cr	Compulsory module
243031-085	Test of Digital and Mixed-Signal Circuits	5 Cr	Compulsory module
243031-125	Elements of Integrated Circuits	5 Cr	Compulsory module
244032-035	Technologies for Micro and Nano Systems	6 Cr	Compulsory module
244034-085	Integrated Circuit Design – Transistor Level	5 Cr	Compulsory module
244036-055	Reliability of Micro and Nano Systems	6 Cr	Compulsory module

2. Specialisation modules: **Σ 53 Cr**

From the specialisation modules 2.1 to 2.5 named below, modules with a total of 53 Cr are to be selected. To broaden the range of choice, modules with a total of up to 57 Cr may also be chosen. These additional credits are not credited towards the degree programme. From the area 2.4 Practice-oriented specialisation modules, modules with a total of at least 10 Cr and at most 38 Cr are to be selected.

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2.1 Specialisation modules Test and Reliability

212001-334	Modern microscopies	5 Cr	Compulsory elective module
243031-065	Verification of Digital Systems	5 Cr	Compulsory elective module
244036-065	Numerical Methods for Materials and Reliability of Micro and Nano Systems	5 Cr	Compulsory elective module
244036-075	Failure Analytical Methods for Micro and Nano Systems	5 Cr	Compulsory elective module
244038-035	Smart Sensor Systems	6 Cr	Compulsory elective module

2.2 Specialisation modules Design and Technology

212001-371	Semiconductor Physics – Nano Structures	5 Cr	Compulsory elective module
244032-055	Advanced Integrated Circuit Technology	5 Cr	Compulsory elective module
244033-115	Microsystems Design	6 Cr	Compulsory elective module
244034-045	Micro and Nano Devices	6 Cr	Compulsory elective module
244037-025	Flexible Electronics	5 Cr	Compulsory elective module

2.3 Specialisation modules Application of Integrated Circuits

243031-045	Digital Components and Architectures for Data Processing	5 Cr	Compulsory elective module
243032-055	Multisensorial Systems	5 Cr	Compulsory elective module
243033-045	Digital Signal Processing 1	5 Cr	Compulsory elective module
243033-095	Programming and Data Analysis	5 Cr	Compulsory elective module

2.4 Practice-oriented specialisation modules

240100-434	Research Internship	30 Cr	Compulsory elective module
240100-634	Research Project	10 Cr	Compulsory elective module
243031-095	Applied Circuit Design and Testing	8 Cr	Compulsory elective module
243031-135	Layout of ICs and PCBs	7 Cr	Compulsory elective module

2.5 Cross-cutting specialisation modules

220000-605	Optimierung in den Anwendungen	6 Cr	Compulsory elective module
243031-145	Advanced Methods for Integrated Circuits	5 Cr	Compulsory elective module

3. Master's thesis module:

240100-834	Master Thesis	30 Cr	Compulsory module

(2) The recommended sequence of studies in the Master's degree programme in Design and Test for Integrated Circuits at Chemnitz University of Technology within the standard period of study results from the chronological structure in the programme schedule (see Annex 1) and the modular structure of the degree programme.

Section 7
Content of the studies

(1) The Master's degree programme in Design and Test for Integrated Circuits comprises in its core modules the extended basic knowledge from the areas of reliability, technology and the design and test of integrated circuits. Specialisation modules offer the possibility of specialising further. Various offerings as an extension of the core modules as well as two cross-cutting offerings are available for selection. These courses are oriented towards the latest research work of the respective professorships, which directly reflects the international state of the work. From the catalogue of practice-oriented offerings, at least one module is to be selected in order to ensure the practical relevance of the education. For students with particularly high scientific interest, the module Research Project allows an insight into practical university research. The programme is concluded with the Master's thesis module. Within its scope, the students independently work on a scientific question in the fourth semester and present the results in written and oral form.

(2) Content, aims, teaching and learning methods, credits, examinations, as well as the frequency of offer and duration of the individual modules are laid down in the module descriptions (see Annex 2).

Part 3
Implementation of the studies

Section 8
Academic advice

(1) In addition to the central student advisory service at Chemnitz University of Technology, subject-specific academic advice is provided. The Faculty Board of the Faculty of Electrical Engineering and Information Technology appoints a member of the faculty to perform this advisory task.

(2) It is recommended to make use of academic advice in particular in the following cases:

1. before the start of the studies,
2. before a period of study abroad,
3. before an internship,
4. in the event of a change of degree programme or university,
5. after failed examinations.

Section 9
Examinations

The regulations on examinations are contained in the Examination Regulations for the English-language consecutive degree programme in Design and Test for Integrated Circuits leading to the award of Master of Science (M.Sc.) at Chemnitz University of Technology.

Section 10
Distance and part-time study

Distance study or part-time study is not provided for.

Part 4
Final provisions

Section 11
Entry into force and publication

These Study Regulations apply to students enrolled from the winter semester 2024/2025.

These Study Regulations enter into force on the day after their publication in the Official Announcements of Chemnitz University of Technology.

Issued on the basis of the resolution of the Faculty Board of the Faculty of Electrical Engineering and Information Technology of 26 March 2024 and the approval of the Rectorate of Chemnitz University of Technology of 10 April 2024 .

Chemnitz, 23 April 2024

The Rector
of Chemnitz University of Technology

Prof. Dr. Gerd Strohmeier