Technische Universität Dresden
Faculty of Computer Science

Study Regulations
for the Consecutive Master's Degree in Computer Science

of

In accordance with Section 36 Paragraph 1 of the Law on the Autonomy of Higher Education Institutions in the Free State of Saxony (Saxon Higher Education Autonomy Act – SächsHSFG), as published on page 3 of the Saxon Gazette of Laws and Ordinances (SächsGVBl) on 15 January 2013 and last amended through Article 11 on 29 April 2015 (SächsGVBl p. 349, 354), the Technische Universität Dresden hereby decrees the following Study Regulations.

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§ 1
Scope of Application

These Study Regulations establish the objectives, contents, structure and course of the Consecutive Master's Degree in Computer Science at the Technische Universität Dresden on the basis of the Saxon Higher Education Autonomy Act and the University's Examination Regulations.

§ 2
Objectives of the Degree Programme

(1) Upon completion of their studies, students will have in-depth knowledge of several areas and their practical relevance, such as automation, artificial intelligence, software and web engineering, hardware and software architecture, machinery, logics, and graphic data processing. This degree programme will also enable students to independently solve problems related to the development, use and application of IT systems. Furthermore, they will be able to use their wide-ranging specialist knowledge and expertise in several of the aforementioned areas to complete complex tasks in a specialist field of theoretical, technical, practical or applied computer science in a targeted and responsible manner. They will be able to complete tasks in abstract contexts to find hardware and software solutions with practical applications.

(2) Graduates will have the expertise required to launch an academic career or carry out challenging, research-oriented work in the industry. Graduates will work together in specialist teams, getting the opportunity to lead these and show responsibility towards third parties. They will be able to use scientific methods to acquire knowledge in various application areas of computer science, structure this knowledge across multiple domains and develop their skills.

§ 3
Admission Requirements

The requirement for starting this programme is a recognised university degree obtained in Germany, or a diploma from a state-run or state-recognised vocational college (*Berufsakademie*) in the field of computer science. Specialist knowledge in the fields of practical, theoretical, technical and applied computer science is also required. A further requirement is B2 English proficiency, measured according to the Common European Framework of Reference for Languages. The University will use its regulated aptitude testing procedure to determine candidates' suitability for the course.

§ 4
Start and Duration of the Degree Programme

(1) The degree programme may be commenced in the winter or summer semester.

(2) The standard period of study runs over 4 semesters, comprising contact hours, private study and the master's examination.

§ 5
Teaching and Learning Methods

(1) The curriculum is structured in modules. The course content will be taught, consolidated and deepened in each module through lectures, exercises, seminars, tutorials, internships, practical courses, project work, language courses, field trips and private study.

(2) Lectures are used to introduce the contents of each module. Exercises allow students to apply their knowledge to exemplary fields. In seminars, students use specialist literature and other resources to acquire knowledge about a selected field before presenting their work, discussing it with the group and/or describing it in writing. Tutorials are designed to help students – especially first-year students – acquire knowledge and develop transferable skills. Internships allow students to apply and consolidate what they have learned while acquiring practical skills in potential professions. In practical courses, students are expected to work effectively in groups to organise their own work on a coherent and comprehensive task. Project work gives students the opportunity to work on different topics in a team, but individual projects may also be used for the individual execution of a task. Language courses let students acquire, practise and perfect a foreign language. Students will develop communicative and intercultural skills in academic, professional and everyday settings. Field trips are designed to teach students about selected practical fields in a clear and direct way. Students can consolidate and develop what they have learned during private study.

§ 6
Structure and Course of the Degree Programme

(1) The degree programme is structured in modules. The teaching plan is spread over 3 semesters. The fourth semester is spent writing and defending a master's thesis.

(2) The degree programme comprises 2 core modules and 6 optional modules, allowing students to focus on specific areas of their choosing. The choice of optional modules is binding. Students may change their optional modules by submitting a written request to the Examination Office (*Prüfungsamt*), stating the module they would like to replace and the newly selected module.

(3) Module descriptions (Annex 1) outline the contents and qualification objectives of each module, the teaching and learning methods used (including any combination restrictions, requirements and practical applications), and their frequency, expected workload and duration.

(4) Courses will generally be held in German or, if indicated in the corresponding module description, in English.

(5) The attached Study Schedule (Annex 2) indicates how to appropriately spread modules across each semester, allowing students to complete the degree programme within the standard period of study; it also outlines the nature and scope of each course, as well as the number of credits and examinations and when these should be taken.

(6) The Faculty Board (*Fakultätsrat*) may change the selection of optional modules and the Study Schedule on the recommendation of the Study Commission (*Studienkommission*). The current selection of optional modules will be announced at the beginning of each semester through the Faculty's usual channels. Changes to study schedules will apply to all students who are notified through the Faculty's usual channels at the beginning of the semester. The Examination Board (*Prüfungsausschuss*) may grant exceptions to Sentence 3 upon request.

§ 7
Contents of the Degree Programme

(1) The Master's Degree in Computer Science is research-oriented.

(2) The Master's Degree in Computer Science covers the following subject areas:

1. Applied Computer Science: Methods for the comprehensive design and control of application systems, from requirement analysis, designing and testing to their commissioning, operation, maintenance and reconstruction;
2. Artificial Intelligence: Theories and methods for the conception, construction and programming of intelligent systems, particularly pattern recognition, computational logic, machine learning, decision theory and autonomous systems;
3. Software and Multimedia Technology: Design, testing and maintenance of complex distributed multimedia software systems, particularly software engineering, collaborative web systems, user interfaces, 3D models, educational media and information visualisation;
4. System Architecture: Basics of operating systems and microkernel systems, virtualisation, structure of distributed information systems, programming and administration of databases, data security and anonymisation technology, structure and characteristics of computer networks, mobile communication technology and systems engineering;
5. Computer Engineering: Structure, design and efficient use of technical implementations of computer systems, from embedded systems, normal workstations and servers to parallel and high-performance computers;
6. Theoretical Computer Science: Possibilities for formal modelling and analysis in computer science and the algorithmic handling of resulting models;
7. Students may choose to take foundational courses in fields outside computer science, such as acoustics, business administration, biomedical engineering, photogrammetry and psychology.

§ 8
Credits

(1) ECTS credits document students' average workload and individual academic progress. One credit equates to 30 hours of work. An academic year is usually made up of 60 credits, i.e. 30 per semester. The degree programme has an overall workload of 120 credits, comprising the teaching and learning methods specified in the module descriptions (Annex 1), as well as the required coursework, examinations, master's thesis and defence.

(2) The module descriptions (Annex 1) indicate how many credits can be obtained through each module. Credits are awarded once a pass has been obtained in a module examination.

The provisions set forth in § 28 of the Examination Regulations remain unaffected.

§ 9
Academic Counselling

(1) General academic counselling is provided by the Central Academic Advice Service at the Technische Universität Dresden, covering issues linked to study options, enrolment procedures and general student affairs. Course-related specialist counselling is provided by the Academic Advice Service at the Faculty of Computer Science. This specialist academic counselling is especially designed to help students organise their studies.

(2) Any students who do not submit evidence of their academic achievements by the start of the third semester must attend specialist academic counselling.

§ 10
Adjustment of Module Descriptions

(1) In order to optimise the organisation of the degree programme and adapt it to changing conditions, module descriptions may be adjusted in a simplified procedure; however, no changes will be made to the fields "Module Name", "Contents and Qualification Objectives", "Teaching and Learning Methods", "Requirements for the Awarding of Credits", or "Credits and Grades".

(2) In this simplified procedure, the Faculty Board may approve changes to module descriptions suggested by the Study Commission. Such changes must be announced through the Faculty's usual channels.

§ 11
Entry into Force and Publication

These Study Regulations will enter into force on 1 October 2010 and will be published in the Official Bulletin of the Technische Universität Dresden.

These Study Regulations have been issued on the basis of the Resolution of the Faculty Board of Computer Science of 27 September 2010 and the Approval of the Rectorate of 25 November 2014.

Dresden,

The Rector
of the Technische Universität Dresden

Prof. Dr.-Ing. habil. DEng/Auckland Hans Müller-Steinhagen