Curriculum of the study programme
'Bachelor in Computer Science'

at the Faculty of Computer Science
Dresden University of Technology

1 Preface

This text collects the essentials of the study programme 'Bachelor in Computer Science', semester 1 - 6, at the Faculty of Computer Science, Dresden University of Technology (for short: C.S. DUT). The information herein are **not formally approved**.

2 General structure

The requirement for entering the study programme 'Bachelor in Computer Science' at the C.S. DUT is the successful final examination of the secondary school.

The curriculum of this study programme takes 6 academic semesters (i.e., 3 years). It starts in the october term. It is divided into

- Part 1 of the study programme (Semester 1-4),
- Part 2 of the study programme (Semester 5-6), and
- a foreign language course.

In **Part 1** the basic knowledge of computer science is provided (cf. Section 4); most of the courses are finished with an examination (cf. Section 6). In **Part 2** there is some freedom in choice of directions (cf. Section 5).

3 Measurement of lectures and exercises

The durations of lectures, exercises, and practical work vary from topic to topic. Usually, at C.S. DUT the unit of lectures, exercises, practical work is the so-called 'weekly semester hour' (for short: SWS = Semester-Wochenstunde). The number of SWS is the number of academic hours (i.e., 45 minutes) per week; usually, the lecture period of a semester consists of 14 weeks.

In order to be compatible with anglosaxonian standards of measurement, we have translated the number of SWS into ECTS credit points (for short: cr), where 1.5 cr is equal to 1 SWS. Due to this translation it is possible that a lecture, exercise, practical work is assigned with a non-natural number of cr (like 3 SWS = 4.5 cr).

We note that the ECTS does not lead to a situation in which it is possible to balance a failure in one compulsory course by a good mark in another course. In other words, the examination of every compulsory course has to be passed.

4 Part 1 of the study programme 'Bachelor in Computer Science'

Part 1 of the curriculum ranges over the Semesters 1-4. The subjects are divided into

nology, the fundamentals of analysis, linear algebra, discrete mathematics, stochastic, probability theory, and numerical mathematics are taught,

- **Technical Computer Science, Practical Computer Science, and Theoretical Computer Science** offered by the Faculty of Computer Science, Dresden University of Technology; here all the core computer science topics are taught in a thourough, but condensed way; and
- a **minor subject** to be chosen from a list of topics; the topics are offered by various faculties of the university and are meant to bridge the gap between the scientific area (computer science) and its fields of application.

courses	semester (quantity is given in ceredit points; lectures/tutorials) 1	2	3	4	sum
Mathematics	6/3 (L)	4.5/3 (TP)	3/3	4.5/3 (TP)	**30**
Technical Computer Science					**22.5**
Foundations of Technical C.S.	6/3 (P)				
Computer architecture		3/1.5 (TP)	3/1.5 (TP)		
Systemoriented C.S.		3/1.5 (P)			
Practical Computer Science					**37.5**
Algorithms and data structures	3/3 (TP)				
Programming		3/3 (TP)			
Software technology			3/3 (P)		
Operating systems			4.5/3 (TP)		
Databases				3/3 (TP)	
Networks of computers				3/3 (TP)	
Theoretical Computer Science					**22.5**
Logic	3/3	1.5/1.5 (P)			
Foundations of Theoretical C.S.		3/1.5	3/1.5 (P)		
Information and coding theory		3/1.5 (P)			
Additional examinations:					**18**
Practical exercises Programming	1.5	1.5			
Hardware practical work			3	3 (L)	
Practical Execise Software Technology				6 (L)	
Proseminar				3 (L)	
Minor subject			4.5	4.5	**9**
Sum:	**31.5**	**36**	**36**	**36**	**139.5**

Table 1. Part 1 of the study programme 'Bachelor in Computer Science'
(Computer Science is abbreviated by C.S.; the two numbers x/y mean: x cr lectures and y cr exercises;
(TP) = part of examination
(P) = examination
(L) = certificate).

5 Part 2 of the study programme 'Bachelor in Computer Science'

Part 2 ranges from the 5th to the 6th semester and it is divided into

- **Study directions and supplement area (30 cr)**,
- **Complex practical work (6 cr)**,

- **Academic and social competences (6 cr)**, and
- **Foreign language competence (6 cr)**

5.1 Study directions and supplement area

The C.S. DUT offers the following six study directions:

- Architecture of distributed systems
- Intelligent systems
- Softwaretechnique
- Systemoriented Computer Science
- Technical Computer Science
- Theory of Programming

Usually, for every study direction there are some compulsory lectures; additional lectures are offered with changing topics. Every student has to choose from the given six study directions

- two study directions (with 12 cr for each of the chosen study direction) and
- one additional study direction as a supplementory area (with 6 cr).

5.2 Complex practical work

The complex practical work (6 cr) can be chosen from any topic, preferably this practical work should strengthen the competence in one of the chosen study directions. Typically, the complex practical work consists of writing a larger piece of software, but it can also be a theoretical work.

5.3 Bachelor Thesis

The Bachelor Thesis can be chosen from any topic of C.S.. It is supervised by a professor of the faculty and it has to be defended. The date and the topic of the Bachelor Thesis are formally approved. Once the subject has been fixed it can only be changed within the first 6 weeks; this can be done at most once. Within four months the bachelor thesis should be finished. If the quality of the Bachelor Thesis is evaluated to be non sufficient, then it can be repeated once. The subject can only be changed, if this possibility has not been used before.

5.4 Academic and social competences

In this part (6 cr) the student can improve his knowledge about techniques in rethoric, in writing scientific articles and in presenting talks.

5.5 Foreign language competence

Here the student should gain competence in a foreign language (6 cr). There is an examination about his success.

Every of the two mentioned parts of the study programme (cf. Sections 4 and 5) is finished by a complex examination.

The **complex examination for Part 1 ('Vordiplom')** consists of examinations in

- Mathematics
- Foundations of Technical C.S.
- Computer architecture
- Systemoriented C.S.
- Algorithms, data structures, and Programming
- Software technology
- Practical C.C. (Operating Systems, Databases, Networks of Computers)
- Logic
- Foundations of Theoretical C.S.
- Information and coding theory
- Minor Subject

where every of these examininations ranges over the lectures of the corresponding areas as shown in Table 1. Usually, there are written examinations.

The **complex examination of Part 2 (Bachelor-examination')** consists of

- one examinations in each of the two chosen study directions and
- the Bachelor-thesis and its defense.

Only if the complex examination of Part 1 is passed, a student can inscribe for the complex examination of Part 2.

An examination may consist of several parts (indicated by (TP) in Table 1) or it is a monolithic examination (idicated by (P) in Table 1). A complex examination is passed iff all its parts have been passed successfully. Every (part of an) examination can be repeated after failure once. For at most one (part of an) examinations of of Part 1 and for at most one (part of an) examination of Part 2, the examination can be repeated twice. If the student fails after these repetitions, he cannot finish the Diploma in C.S. throughout Germany.

7 Awarded degree

By virtue of successful performance in the complex examination of Part 2, the C.S. DUT awards the degree of 'Bachelor in Computer Science' (in german)