

## **Implementation Terms of the course of studies Master of Science Distributed Software Systems of 30-06-2011 further to the General Examination Terms of the Technical University Darmstadt (GET)**

### **Re. § 2**

The Technical University Darmstadt awards the academic decree „Master of Science“ (M.Sc.). To students who successfully passed final examination in the course of studies Master of Science Distributed Software Systems.

### **Re. § 3 Section 4**

Students are advised to take examinations immediately after having enrolled for the related module.

### **Re. § 5 Section 2:**

All modular examinations of the master examination take place in parallel to studies

### **Re. § 5 Section 3**

According to the plan of studies and examinations (Appendix I), the master examination is to be taken in modules. The master examination comprises the modular examinations in the field of mandatory choice including the final paper (Master Thesis).

### **Re. § 5 Section 4**

The modular examinations will be held in writing and/or orally according to the information in the plan of studies and examinations (Appendix I).

### **Re. § 5 Section 5**

Examinations may be held in writing and/or orally. If not defined in the plan of studies and examinations (Appendix I), the examiners will announce the form of examination no later than at the date of registration.

### **Re. § 5 Section 7**

The examination requirements for the different modules are defined and limited in the modular manual for the course of studies Master of Science Distributed Software Systems. Modifications are permissible upon resolution of the council of the faculty, and will be announced from semester to semester.

### **Re. § 5 Section 8**

The number of credit points to be achieved per field of mandatory choice is defined in the plan of studies and examinations (Appendix I).

### **Re. § 11 Section 5:**

The course of studies is set-up as an English-spoken course of studies oriented towards foreign countries. Enrolment requires a language certificate on UNICert-level III in English or equivalent, for instance TOEFL test (paper 570, cb 230, iBT 88), IELTS 6,5 or CAE (Grade C1).

### **Re. § 17a Section 1**

(1) Admission to the M.Sc. course of studies is subject to having acquired a B.Sc. degree in the faculty of Information Science at TU Darmstadt or from comparable courses of studies. If this requirement is not fulfilled, the student has to pass an admission test to be admitted.

(2) The council of the faculty defines minimum limits for basic lectures and lectures on core information sciences. The chairman of the examination board when reviewing the application assesses the individual case, and if necessary in case of section 1 line 2 decides about the type and extent of an admission test. For more details please see Appendix II.

(3) The competent examination board appoints the date for the admission test, and appoints one or several examiner(s). The admission test will be held as an oral examination.

(4) The examiners decide whether the candidate has the necessary knowledge as required for the M.Sc. course of studies. The decision may be tied to restrictions that shall enable the candidate to add any knowledge he lacks from the B.Sc. course of studies in a defined period of time while studying at the Technical University of Darmstadt.

(5) If the candidate fails to fulfil the restrictions, the decision tied to them will have to be revoked.

### **Re. § 20 Section 1**

In order to acquire the Master of Science in the course of studies Distributed Software Systems students have to take graded examinations and deliver graded achievements in the modules of the field of mandatory choice as defined in the plan of studies and examinations (Appendix I) and they have to acquire 120 credit points.

### **Re. § 22 Section 2**

The duration of the oral modular examinations is defined in the plan of studies and examinations (Appendix I).

### **Re. § 22 Section 5**

The duration of the written modular examinations is defined in the plan of studies and examinations (Appendix I).

### **Re. § 23 Section 5**

The final paper (Master-Thesis) has to be written in a period of 6 months (900 hours).

The final paper will be closed with a colloquium.

### **Re. § 31 Section 1**

In case of written examinations, the second repeater examination may also be taken orally upon agreement between examiners and candidate.

### **Re. § 32 Section 1**

Under the conditions of § 68 section 3 Hessisches Hochschulgesetz (=the law on universities of the German state of Hessen) in the version as published on July 31, 2000 (GVBl. I, p.374) the competent examination board may set a time-limit for the examination.

### **Re. § 35 Section 1**

The certificate of the passed Master examination lists the examinations with the grades achieved in the modules as well as the acquired credit points.

Darmstadt, dated 30-06-2011

Prof. Dr. Oskar von Stryk

The Dean of the Faculty of Information Science  
Of the Technical University of Darmstadt

Appendix I: Plan of studies and examinations

Appendix II: Criteria according to § 17a Section 1

## Appendix I: Plan of studies and examinations

### Master of Science course of studies Distributed Software Systems

CP = credit points

Type of examination: w = written; o = oral

f = facultative (Type of exam will be announced by the date of registration, normally written exams will take 60-120 min. and oral exams will take 30 min.)

Studies achievements: g = graded; u = ungraded

	Recommended semester				Achievement	Type of exam
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>		
	WS	SS	WS	SS		
	CP	CP	CP	CP		
<b>Area of mandatory choice A: Distributed Systems</b>						
Exam results in lectures and drills or integrated courses	minimum 18					f
<b>Area of mandatory choice B: Networking and Systems Software</b>						
Exam results in lectures and drills or integrated courses	minimum 18					f
<b>Area of mandatory choice C: Formal Methods, Programming Languages and Software Engineering</b>						
Exam results in lectures and drills or integrated courses	minimum 18					f
<b>Area of mandatory choice D: Achievements in parallel to studies</b>						
Achievements in seminars, internships, project internships, internships in teaching, projects or theses. The student has to cover at least two of the forms seminar, internship, project internship, project or thesis, unless the student opts for a project with min. 12 CP.	12-15				B	
<b>Master-Thesis</b>				30		
<b>Total (120)</b>						

The fields of mandatory choice are specified on the Websites of the faculty of information sciences. They will be updated from semester to semester.

The classes in the fields of mandatory choice are specified in more detail in the modular manual for the Master of Science course of studies Distributed Software Systems.

## Appendix II: Criteria according to § 17a Section 1

### 1. Competences required for the Master of Science courses of studies in the faculty of Information Sciences at TU Darmstadt

The competences listed below are not the only competences students acquired in the Bachelor of Science course of studies information sciences at TU Darmstadt but they are characteristic for the level of requirements in the course of studies and they are also essential conditions for continuing studies in one of the master studies based thereon. Every graduate of this course of studies has gathered following experiences further to having acquired other competences:

1. Graduates are intensively and comprehensively skilled in mainly self-reliant handling of tasks in all the contents of the obligatory courses in the course of studies. In this respect, following terms have following meanings:
  - *intensively and comprehensively* means these experiences have been acquired not only from time to time (for instance in classes set-up extra for this purpose) but have been acquired throughout the entire course of studies, even if not necessarily in the same measure in all classes.
  - *self-reliant* means the offered tutoring is given mainly to clarify the task at hand to get things started, but beyond that, the students have to complete the task – depending on default – self-reliantly one by one or in a team.

Normally the tasks will be in the form of transfer exercises, and require creativity and abstraction to solve them. The level can be specified more precisely as follows:

- *Mathematics*: the ability to understand typical evidence from evidence-oriented mathematical studies, and to give such evidence correctly in cases in analogy to the lectures.
- *Theoretical information sciences*: the ability to use mathematical notations and methods to found concepts of information sciences, in particular for formal modelling and verification of software systems.
- *Practical information science*: the ability
  - to compile the different components of a language as will be introduced in lectures one by one self-reliantly and without analogue example in a programming task to find a full solution.
  - to solve programming tasks in different languages that follow different paradigms, have different ranges of application, and are accommodated over the entire bandwidth of abstraction levels.
- *Technical information sciences*: the ability

- to compile the different design principles as introduced in lectures one by one self-reliantly without an analogous example for a hardware design to find a full solution.
  - to solve design tasks on different levels of abstraction and from different ranges of application through structured design methods in different descriptive languages and under application of different design tools.
  - to self-reliantly develop design tools on a smaller scale.
2. Having had to organize their own studies, graduates are skilled in self-reliant organization of work in tight settings under different timelines (up to a scope covering several semesters).

## **2. Criteria for the entrance test admitting students to the Master of Science course of studies Distributed Software Systems**

All the aforementioned experiences are essential for successfully passing the Master of Science courses of studies *Autonomous Systems, Distributed Software Systems, Human Computer Systems, Information Sciences, Internet and Web based Systems, IT Security and Visual Computing*. It is of the essence that these experiences are acquired in relation to the contents of the basic classes and those canonical prep courses on which the selected Master course of studies is based.

The following defines in detail the requirements as mandatory without limitations in order to successfully complete the Master of Science course of studies *Distributed Software Systems*:

1. Students have to prove the aforementioned experiences for classes in the field of core information sciences with at least 60 CP. The main contents of the classes *Basics of Information Sciences I-III* have to be covered. In the field of Theoretical Information Sciences the student has to prove these experiences for classes with at least 5 CP.
2. Canonical prep-courses<sup>1</sup>, the main contents of which have to be covered are listed below:

*Introduction to DKE, Introduction to NCS and Introduction to SE.*

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<sup>1</sup> Canonical fields/Introductions: CE = Computational Engineering, CMS = Computer Microsystems, DKE = Data and Knowledge Engineering, FoC = Foundations of Computing, HCS = Human-Computer Systems, NCS = Net-Centric Systems, SE = Software Engineering, TS = Trusted Systems.

3. The following applies subject to the condition specified in section 1: If the candidate's bachelor studies generally taught experiences in the aforementioned form, but didn't cover all essential contents of canonical prep courses required for the Master of Science course of studies *Distributed Software Systems* a favourable prognosis of success can be given, and to secure successful studies admission normally can be granted only if both the final grade and the mean value weighed with CPs of the individual grades of lectures/drills and comparable forms of teaching in the core area of Information Sciences is not below 3.0, and every individual grade in this field is higher than 4.0. In which case the successful passing of the exams in these canonical prep courses in the first year of studies will be the restriction for granting the final admission.
4. In case of Bachelor studies that do not fulfil the aforementioned requirements for type of task and self-reliance of handling but with examination results better than average in the field of core information sciences it might be assumed that this deficiency can be compensated by the candidate's personal skills. In which case a favourable prognosis for success may be given and admission may be granted only if both the final grade and the mean value weighed with CPS of the individual marks of lectures/drills and comparable forms of teaching in the core area information sciences is „Good“ (2.0) or higher, and none of the individual grades in the core area information sciences is worse than „Satisfactory“ (3.0). The rules of section 3 apply mutatis mutandis to any restrictions.

Experiences gathered elsewhere, (for instance through professional work or from qualification courses) will be considered in full extent in the determination of the qualification to be admitted to the Master of Science course of studies *Distributed Software Systems* provided they correspond in contents and level with the tasks and self-reliant handling, and further provided these competences have been acquired and rated under the generally applied quality assurance standards of universities.