Study Regulations
for the Master's Degree Programme in Computer Science
at Saarland University

2 July 2015

Note: This translation is provided for information purposes only. In the event of any discrepancy between the translation and the original German version published in the Official Bulletin (*Dienstblatt der Hochschulen des Saarlandes*), the provisions of the latter shall take precedence.

Pursuant to Section 54 of the Saarland University Act of 23 June 2004 (Official Gazette of Saarland, p. 1782) as amended by the Act of 14 October 2014 (Official Gazette, p. 406) and pursuant to the Joint Examination Regulations for the Bachelor's and Master's Degree Programmes of Faculty 6 (Natural Science and Technology Faculty I – Mathematics and Computer Science) of 2 July 2015 (Official Bulletin No. 72, p. 616) and with the consent of the University Senate at Saarland University, Faculty 6 (Natural Science and Technology Faculty I – Mathematics and Computer Science) at Saarland University hereby issues the following Study Regulations for the Master's Degree Programme in Computer Science.

Section 1
Scope

These study regulations, which govern the contents and structure of the Master's degree programme in Computer Science, are based on the Joint Examination Regulations for the Bachelor's and Master's degree programmes within the Faculty of Mathematics and Computer Science (Official Bulletin No. 72, p. 616) and the subject-specific annex pertaining to the Bachelor's and Master's degree programmes in Computer Science of 2 July 2015 (Official Bulletin No. 73, p. 642). The Faculty of Mathematics and Computer Science is responsible for organizing the teaching, study and examinations relating to these programmes.

Section 2
Objectives of the degree programme and career relevance

The objective of this consecutive, research-focused Master's degree programme is to expand on and deepen the knowledge acquired in the preceding Bachelor's degree programme and prepare graduates for challenging national and international research and development work in the field of computer science.

Section 3
Start and duration of programme

(1) Students can begin the programme at the beginning of the winter or summer semester of each year.

(2) The curriculum is organized such that the programme can be completed in four semesters (standard period of study).

Section 4
Types of academic instruction

The curriculum content is taught using the following types of academic instruction:

1. Lectures ('L', standard class size = 100): Lectures serve to introduce a particular subject area and also provide an overview of the relevant theoretical concepts and principles, methodologies and skills, technologies and practical implementations that are common to the subject. Lecture courses provide suggestions for further reading on a topic and open the way to acquiring a deeper understanding of an area through subsequent exercise classes, practical assignments and self-directed study.

2. Exercise and problem-solving classes ('E', standard class size = 20): Exercise and problem-solving classes are small-group sessions used primarily to supplement and reinforce what was learned in the lectures. Students work on representative problems as this provides an opportunity for them to apply and deepen the knowledge they acquired in the lectures, to assess their personal understanding of a specific area and to clarify any questions that they may have.

3. Seminars ('S', standard class size = 15):Seminars provide an opportunity for students to broaden the knowledge and skills that they have already acquired and to gain a deeper understanding of a particular field of research by participating in discussions, giving presentations or completing seminar assignments based on their study of the specialist literature and relevant academic sources. They also help students acquire the skills necessary for the effective oral and visual presentation of scientific and academic content and encourage students to engage in critical analysis and discussion of research results. A seminar may also include project-related work in areas of current scientific interest or debate. The deeper understanding of a particular field that students acquire through project-related work in the Master's seminar may provide the basis for their final-year Master's thesis.

4. Practical assignments and project work ('P', standard class size = 15; Master's thesis project, standard class size = 6): Practical assignments or projects offer a number of practical topics that introduce students to the specific approaches and methods used in a particular area of the subject. The relevant theoretical knowledge underlying a specific topic is acquired by attending lectures and studying the relevant scientific literature. An additional goal of the practical assignments is to provide students with the opportunity to gain practical experience with computer-aided methods. Projects tend to address interdisciplinary topics. Working on a topic offers students the opportunity to work in supervised groups to tackle specific assignments from the initial solution design concept through to its final practical implementation. Students learn about the relationships between theory and practice not only through their own independent study and research, but also through project-based teamwork. Participation in a particular practical assignment or project may be dependent on a student having first successfully completed a required course of lectures and exercise classes.

Section 5
Structure and content of the programme

(1) To graduate from the programme, students shall earn a total of 120 credits (often referred to in Germany as 'credit points' or 'CPs') as defined by the European Credit Transfer System (ECTS). Of these, at least 103 credits and at most 107 credits shall be from graded assignments. As a rule, students are required to earn 30 credits per semester.

(2) The degree programme covers modules associated with the different sections listed below. Appendix A provides details of the modules and module elements offered in the different sections of the programme, the type of academic instruction used, the number of credit hours per week and the ECTS credits earned, the module frequency, the type of academic assessment and whether the module is graded.

1. 27 graded ECTS credits (CP) from the core lecture courses in computer science (each worth 9 CP; mandatory elective)

2. At least 27 CP and at most 31 CP from the core lecture courses in computer science (each worth 9 CP), from the advanced lecture courses in computer science (number of CPs awarded varies) or from the seminars covering topics in computer science (each worth 7 CP) (mandatory elective): of which only one further seminar may be included (cf. Section 5(2)(3)).

3. 7 graded credits from the seminars offered (each worth 7 CP; mandatory elective)

4. 12 graded credits from the Master's seminar (12 CP)

5. At least 17 ungraded credits (17 CP) from elective modules in the areas (mandatory elective):
   a. Master's level practical assignments or projects (each worth 6 CP)
   b. Elective modules from the core lecture courses, advanced lecture courses or seminars in computer science
   c. Tutoring and supervising undergraduate students in problem-solving classes (usually 4 CP). Tutoring several groups of students is permitted, provided that the exercise or problem-solving classes are from different modules.
   d. Language courses (maximum of 6 CP; modern languages only and not the student's native language)
   e. Soft skills seminar
   f. Practical assignments or work placements in industry (maximum of 6 CP) for which an application has been submitted to and approved by the Examination Board
   g. Modules for which an application has been submitted to and approved by the Examination Board. Students have, for example, the option of submitting an application to the Examination Board requesting recognition of certain student activities (particularly assistance with university-related administrative services) or of courses teaching world-of-work or other key skills (maximum of 3 CP).

(3) Students can select either entire modules or individual module elements from the mandatory electives offered. Academic credits that were used to obtain the preceding Bachelor's degree cannot also be used to meet the degree requirements in the Master's programme. However, any academic credits that were earned during the Bachelor's degree period but that were not used to meet the total credit requirements of the Bachelor's programme can be transferred to the Master's programme provided that they do not exceed a total of 30 ECTS credits.

(4) Students shall accumulate a total of 42 CP in the compulsory part of the curriculum (of which 30 CP are from the 'Master's thesis' module and 12 CP are from the 'Master's seminar') and at least 78 CP from the mandatory electives offered.

(5) The number of places available on practical assignments and seminars and in the mandatory elective modules 'Tutoring', 'Soft Skills Seminar' and 'Language Courses' are limited. Admission to these modules will be managed by the module coordinator.

(6) Academic credits are either graded or ungraded. A graded academic assessment or examination cannot be split into ungraded and graded credits.

(7)[1] A student who received academic credits for successfully completing a course or module as per Sec. 5(2)(1) and 5(2)(2) or a core lecture course is permitted to retake the assessment or examination on one further occasion within the same examination period and during the standard period of study in order to improve the mark awarded (cf. Sec. 13(4) of the Examination Regulations). A student who has received academic credits for successfully completing an advanced lecture course is permitted to retake the assessment or examination on one further occasion within the same examination period in order to improve the mark awarded, provided that the lecturer gave notice at the beginning of the course that the final examination or assessment may be repeated for this purpose. The student will receive the higher of the two grades. In all other cases, students will not be permitted to repeat an assessment or examination for which they have already achieved at least the minimum pass grade.

(8) The core lecture courses (mandatory electives) are offered at least once every two years. Introductory seminars, seminars and advanced lecture courses will not necessarily be repeated. The Dean of Studies will ensure that a sufficient number of courses and modules are offered each year.

(9) The language of instruction is usually English and will be announced at the beginning of each course or module.

(10) The range of modules offered as mandatory electives may be broadened for one or more semesters by adding other modules or module elements that have been previously approved by the Examination Board. These additional modules or module elements, their weighting in ECTS credits and their classification within the curriculum will be announced before the semester begins.

(11) Detailed information about the content of the individual modules and module elements is provided in the module catalogue that will be made available in suitable form. Any changes or amendments to the information in the module catalogue not covered in these regulations shall be reported to the Dean of Studies and documented in the appropriate form.

(12) Course attendance may be compulsory for certain introductory seminars, seminars and practical assignments. Students will be notified of this by the course coordinator at the beginning of the course.

Section 6
Study plan

The Dean of Studies will compile a study plan based on these study regulations that includes details of the types and scope of the module elements offered (Appendix A) with recommendations of how students can organize and structure their studies efficiently (Appendix B). This will be made available in suitable form. The range of modules offered in a particular semester will be published in the Saarland University course catalogue for that semester.

Section 7
Study counselling

(1) The Central Student Advisory Service (*Zentrale Studienberatung*) at Saarland University provides counselling and guidance to prospective students and enrolled students concerning

[1] Footnote to the English translation: Section 5(7) has been amended. See Ordinance to Amend the Study Regulations for the Master's Degree Programme in Computer Science at Saarland University of 2 June 2016.

the content, structure and requirements of academic study at Saarland University. It also can advise and assist students with respect to their study options as well as with planning and organizing their studies.

(2) Questions concerning curricular demands, learning objectives, admission requirements and study planning and organization can be addressed to the departmental academic adviser for computer science.

(3) Questions specific to individual modules can be addressed to the respective module coordinators.

Section 8
Studying abroad

Students have the opportunity to spend part of the programme studying abroad. Students interested in studying abroad should obtain information and advice from a relevant source, take preparatory language courses as needed and should clarify credit transfer arrangements in accordance with the relevant examination regulations by completing a study abroad learning agreement. Information on study abroad opportunities, exchange programmes, scholarships and administrative formalities is available from Saarland University International Office or from the relevant departmental representative. As foreign host universities and scholarship-awarding bodies often have early application deadlines and long application processing times, study abroad applications should generally be submitted to the Examinations Office one year before the planned start date.

Section 9
Master's thesis and Master's seminar

(1) By completing a Master's thesis, students demonstrate that they are able to work independently on tackling problems in computer science or in related fields. The completion period for the Master's thesis is six months. Students are awarded 30 CP for completing their Master's thesis.

(2) Before finishing their Master's thesis, each student shall have successfully completed a Master's seminar in an area with direct relevance to the topic being addressed in the thesis. Students attending a Master's seminar shall give an oral presentation on the problem they propose to tackle in their thesis and submit a written description of the issues to be addressed in the Master's thesis.

(3) Students shall register their thesis project with the Examinations Office no later than one semester after successfully completing the Master's seminar. Students who fail to meet this deadline will be required to successfully complete another Master's seminar.

Section 10
Specialist subject areas

(1) If a student on the Master's programme in Computer Science has obtained at least 70 credits from the Master's thesis, the Master's seminar and other modules all of which are classified as lying within the same specialist subject area, the student can apply to have this specialist subject area included on the degree certificate.

(2) The list of specialist subject areas and the modules associated with them and the classification of Master's theses and seminars will be determined by the Examination Board and published in suitable form.

Section 11
Entry into force

(1) These Regulations shall come into force on 1 October 2016.

(2) Students who began studying for the Master's programme in Computer Science at Faculty 6 (Natural Science and Technology Faculty I – Mathematics and Computer Science) before these regulations entered into force may continue to study under the study regulations applicable at the time they began the Master's programme but are required to complete their studies including the final academic assessment and examination phase by the end of summer semester 2019.

Saarbrücken, 30 September 2015

President of Saarland University
Univ.-Prof. Dr. Volker Linneweber

Appendix A. Modules, assessments and examinations Master's degree programme 'Computer Science'

Master's degree programme (M.Sc.) 'Computer Science'												
Module description	**Type of examination**		**CP (ECTS)**		**Winter semester**		**Summer semester**		**Winter semester**		**Summer semester**	
					Semester							
					1		**2**		**3**		**4**	
		Grading	ungraded	graded	L/E/P credit hrs/wk	CP	L/E/P credit hrs/wk	CP	L/E/P credit hrs/wk	CP	L/E/P credit hrs/wk	CP
Core lecture courses (see list below) 9 CP per course)	written exam, preliminary assessment	graded	0	27	4 / 2 / 0	1S	4 / 2 / 0	B				
Seminars (7 CP per seminar), core lectures (9 CP per course, see below) or advanced lectures (variable credits, see below)	written exam, preliminary assessment	graded	0	27–31	0/0/B	7	2 / 2 / 0	S	2 / 2 / 0	6		
							4 / 2 / 0					
Seminars	oral, written	graded	O	7					0 / 0 / 3	7		
Mandatory electives (see below)		ungraded	at least 17		2 / 2 / 0	4	2 / 2 / 0	S	2 / 2 / 0	6		
Master's seminar	oral, written	ungraded		12						12		
Master's thesis	written thesis	graded	O	3O								30
SUM						29		30		31		30

Core lecture courses				
Algorithms and Data Structures	written exam(s), preliminary assessment	graded	0	9
Artificial Intelligence	written exam(s), preliminary assessment	graded	0	9
Automated Reasoning	written exam(s), preliminary assessment	graded	0	9
Compiler Construction	written exam(s), preliminary assessment	graded	0	9
Complexity Theory	written exam(s), preliminary assessment	graded	0	9
Computer Algebra	written exam(s), preliminary assessment	graded	0	9
Computer Architecture	written exam(s), preliminary assessment	graded	0	9
Computer Graphics	written exam(s), preliminary assessment	graded	0	9
Cryptography	written exam(s), preliminary assessment	graded	0	9
Data Base Systems	written exam(s), preliminary assessment	graded	0	9
Data Networks	written exam(s), preliminary assessment	graded	0	9
Distributed Systems	written exam(s), preliminary assessment	graded	0	9
Embedded Systems	written exam(s), preliminary assessment	graded	0	9
Geometric Modeling	written exam(s), preliminary assessment	graded	0	9
Image Processing and Computer Vision	written exam(s), preliminary assessment	graded	0	9
Information Retrieval and Data Mining	written exam(s), preliminary assessment	graded	0	9
Introduction to Computational Logic	written exam(s), preliminary assessment	graded	0	9
Machine Learning	written exam(s), preliminary assessment	graded	0	9
Operating Systems	written exam(s), preliminary assessment	graded	0	9
Optimization	written exam(s), preliminary assessment	graded	0	9
Security	written exam(s), preliminary assessment	graded	0	9
Semantics	written exam(s), preliminary assessment	graded	0	9
Software Engineering	written exam(s), preliminary assessment	graded	0	9
Telecommunication 1	written exam(s), preliminary assessment	graded	0	9
Verification	written exam(s), preliminary assessment	graded	0	9
The Examination Board may add other module elements to this list				

Advanced lecture courses				
Range of advanced lectures offered changes every semester	graded	O	variable	
The Examination Board may add other module elements to this list				

Mandatory electives				
Tutoring (4 CP per module)	tutoring activity	ungraded	4	0
Soft-skills seminar	oral, written	ungraded	variable	0
Language courses (max. 6 CP)	oral, written	ungraded	6	0
Industrial training / work placements (max. 6 CP)		ungraded	6	0
Master's level practical assignments (each worth 6 CP)		ungraded	6	0
Other lecture courses from the Department of Computer Science				
The Examination Board may add other module elements to this list				

Key: L = Lecture, E = Exercise or problem-solving class, P = Project or practical training, PA = Preliminary assessment, CP = ECTS credits, credit hrs/wk = no. of class or supervised hours per week during the semeste

Appendix B.

Example study plan – M.Sc. Computer Science

1	Core lecture (9 CP)	Core lecture (9 CP)	Seminar (7 CP)	Tutoring (4 CP)	29
2	Core lecture (9 CP)	Core lecture (9 CP)	Advanced lecture (6 CP)	Advanced lecture (6 CP)	30
3	Advanced lecture (6 CP)	Advanced lecture (6 CP)	Seminar (7 CP)	Master’s seminar (12 CP)	31
4	Master’s thesis (30 CP)				30