-- unofficial translation --

Regulations of the University of Trier for the examination in the Master's program Data Science (1 subject)

from December 21, 2017

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modified on August 12, 2019
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On the basis of Section 7(2) case 2 and Section 86 (2) case 3 of the Higher Education Act as amended on 19 November 2010 (GVBl. p. 463), last amended by Article 1 of the Act of 2 March 2017 (GVBl. p. 17), the Faculty Council of Faculty IV of Trier University adopted the following examination regulations for the Master's program in Data Science (single subject) on 6 December 2017. The President approved these regulations in accordance with Section 7 (3) of the Higher Education Act of 20 December 2017. It is hereby published.

§1 Scope and academic degree

(1) These regulations govern the examination in the Master's program Data Science of Faculty IV of Trier University.
(2) After successfully completing the course of study and passing the examination, the responsible faculty awards the academic degree of "Master of Science". This degree may be added to the name of the graduate.

§2 Entrance requirements and recommended basic knowledge

In addition to the admission requirements regulated in § 2 of the General Examination Regulations for the Master's program, students of the Master's program Data Science must fulfil the following additional requirements:

1. Proof of a Bachelor's degree or equivalent degree
    a. in computer science, business informatics, mathematics, business mathematics, statistics or economics with a grade of 1.7 or better or
    b. in a related area with a grade of 1.4 or better. The examination committee decides whether a degree is related on a case-by-case basis.

    The decision on equivalence according to sentence 1 is made by the examination committee on a case-by-case basis. For a Bachelor's degree in computer science, business informatics, mathematics, business mathematics, statistics or economics with a grade between 1.8 and 2.2 and for a Bachelor's degree in a related area with a grade between 1.5 and 1.9, the examination committee decides about admission on a case-by-case basis based on regulations enacted and published by the examination committee.
2. Proof of knowledge of the English language in accordance with Section 4 (2) of the enrolment regulations of Trier University in the currently valid version.
3. Submission of a letter of motivation.

§3 Structure and profile of the program

(1) The Master's program Data Science is offered as an English 1-subject program.
(2) The Master's program Data Science is a research-oriented course of studies which provides in-depth knowledge in the fields of computer science, mathematics and statistics relevant to Data Science. This strong interdisciplinary orientation offers the opportunity to assess relevant changes as well as rapidly changing requirements in practice from different points of view by networking the individual sub-areas. In addition to imparting specialist and methodological competencies, students' social and personality competencies are strengthened.

§4 Range of studies, modules

(1) The total amount of time in semester hours per week (= SWS) of the courses required for the successful completion of studies (compulsory and elective courses) is listed in the module plan.
(2) The compulsory and elective courses associated with the respective modules are listed in the module handbook.

§5 Examination committee

(1) An examination committee is formed for the organization of the examinations and the tasks defined by these regulations. It consists of four members from the group of university teachers, one member each from the group of students, from the group of academic staff and from the group of non-scientific staff. The head of the university examination office or the head of the examination office of the faculty is an advisory member.
(2) The members of the examination committee, the chairperson and his/her deputy shall be elected by the corresponding faculty council. If the faculty council has not elected the chairperson and his/her deputy, the examination committee shall elect the chairperson and his/her deputy. The term of office of the members shall be three years and that of the student member one year. The re-election of a member is possible. If a member resigns prematurely, a successor is elected for the remaining term of office. The chairperson and his/her deputy must be university professors.
(3) The examination committee shall decide by a simple majority of the votes of the members present; in the event of a tie, the chairperson shall have the casting vote.
(4) The chairperson of the examination committee shall conduct the business of the examination committee.
(5) The student concerned shall be notified in writing without delay of any decisions of the examination committee which are detrimental to the student concerned. The decision shall be accompanied by a notice of appeal.

§6 Module examinations

(1) The type and duration of the module examinations of the individual modules are regulated in the Appendix.
(2) The type of formation of the grade for the module examinations of the individual modules is regulated in the Appendix.
(3) If several forms of examination are permissible, the examination form applied will be announced at the beginning of the first course to which the module examination relates.

§7 Oral examinations

(1) Oral examinations are conducted as individual examinations.
(2) They last between 20 and 30 minutes per candidate.

§8 Written examinations

(1) The processing time for written examinations is regulated in the Appendix.
(2) A period of 5 weeks is available for the work on term papers.

§9 Master thesis

(1) The Master's thesis may also be carried out outside the University of Trier if it is supervised by an examiner from the relevant department of the University of Trier.
(2) A research assistant may be involved in the supervision of the Master's thesis.

§10 Certificate

The names of the supervisors of the Master's thesis are listed in the certificate.

§11 Entry into force

These regulations shall enter into force on the day following their publication in the promulgation gazette of Trier University - Official Announcement.

Trier, December 21, 2017

The Dean of Faculty IV of Trier University
Univ.-Prof. Dr. Stefan Näher

Appendix Master's program Data Science

Module plan

The program is divided into the following compulsory and elective modules

1 Compulsory Modules

No.	Module	Semester	SWS	LP	Examination requirements	Module exam If necessary Examination-relevant academic achievements
1	Elements of Mathematics	1	6	10		Written exam (120 minutes)
2	Elements of Computer Science	1	4	10		2 partial written exams (120 minutes (50%) and 90 minutes (50%))
3	Elements of Statistics	1	2	5		Written exam (120 minutes)
4	Statistical Programming with R	1	2	5		See FPO M.Sc. Applied Statistics
5	Numerical Optimization for Data Science	2	6	10		Oral exam or written exam (105 minutes)
6	Statistical Methods of Data Science	2	4	10		written exam (90 minutes)
7	Data and Web Mining	2	3	5		See FPO B.Sc. Business Informatics
8	Big Data Analytics	2	3	5		Written exam (90 minutes) or oral examination
9	Research Case Studies	3	2	10	Modules 1-4	Portfolio
10	Master's Thesis	4	2	30	Modules 1-4	Scientific work; Participation in the colloquium including lecture

2 Compulsory elective modules

Focus modules

Modules with a total of 20 LP must be selected. If the modules are selected according to the requirements defined in the respective focus, the focus is indicated on the certificate.

Focus on Simulation Studies:

Two of the three modules 1-3 as well as the modules 4 and 5 have to be completed

No.	Module	Semester	SWS	LP	Examination requirements	Module exam If necessary Examination-relevant academic achievements
1	Modeling and Simulation	2 or 4	3	5		s. FPO M.Sc. Business Informatics
2	Agent-based modeling	2 or 4	3	5		s. FPO B.Sc. Business Informatics
3	Distributed Artifical	3	3	5		s. FPO M.Sc. Business Informatics
4	Monte Carlo Simulation Methods	3	3	5		Poster presentation
5	Microsimulation Methods	3	3	5		Poster presentation

Focus on Data and Knowledge Systems:

Four of the modules are to be completed

No.	Module	Semester	SWS	LP	Examination requirements	Module exam If necessary Examination-relevant academic achievements
1	Agent-based modeling	2 or 4	3	5		s. FPO B.Sc. Business Informatics
2	Digital Libraries and Foundations of Information Retrieval	3	3	5		s. FPO M.Sc. Computer Science
3	Distributed Databases	3	3	5		s. FPO M.Sc. Computer Science
4	Experience-Based Systems	3	3	5		s. FPO M.Sc. Business Informatics
5	Semantic Technologies	3	3	5		s. FPO M.Sc. Business Informatics
6	Distributed Artifical Intelligence	3	3	5		s. FPO M.Sc. Business Informatics
7	Information Visualization	2 or 4	3	5		s. FPO M.Sc. Computer Science
8	Machine Learning	3	3	5		s. FPO M.Sc. Business Informatics

Focus on Algorithmic Optimization:

Modules 1 and 2 are mandatory

No.	Module	Semester	SWS	LP	Examination requirements	Module exam If necessary Examination-relevant academic achievements
1	Advanced Course in Algorithmic Optimization	3	6	10		Oral exam or written examination (105 minutes)
2	Special Topics in Algorithmic Optimization	3	6	10		Oral exam or written exam (105 minutes)

Focus on Applied Statistics:

Modules 1 and 4 are mandatory. In addition, one of the modules 2 or 3 must be completed.

No.	Module	Semester	SWS	LP	Examination requirements	Module exam If necessary Examination-relevant academic achievements
1	Specialisation Module - Survey Statistics #1	3/4	2	5		s. FPO M.Sc. Applied Statistics
2	Specialisation Module - Survey Statistics #2	3/4	2	5		s. FPO M.Sc. Applied Statistics
3	Survey Sampling	3	3	5		s. FPO M.Sc. Applied Statistics
4	General Statistics #1	3/4	5	10		s. FPO M.Sc. Applied Statistics

Focus on Financial Economics:

Among the modules 1-9, modules with a total of 20 LP must be selected.

No.	Module	Semester	SWS	LP	Examination requirements	Module exam If necessary Examination-relevant academic achievements
1	Introduction to Monetary Policy and the EMU	2 or 3	2	5		s. PO M.Sc. Economics
2	Special Topics of Monetary Policy	2 or 3	2	5		s. PO M.Sc. Economics
3	International Macroeconomics	2 or 3	2	5		s. PO M.Sc. Economics
4	Special Topics in International Macroeconomics	2 or 3	2	5		s. PO M.Sc. Economics
5	Applied Financial Economics	2 or 3	2	5		s. PO M.Sc. Economics
6	Applied Macroeconomics	2 or 3	2	5		s. PO M.Sc. Economics
7	Applied Time Series Econometrics	2 or 3	2	5		s. PO M.Sc. Economics
8	Special Topics in Applied Econometrics	2 or 3	2	5		s. PO M.Sc. Economics
9	Quantitative Trading with R	2 or 3	4	10		s. PO M.Sc. Economics

Focus on Geoinformatics:

Modules 1 and 2 are mandatory, and 2 of the modules 3 to 5 are to be completed

No.	Module	Semester	SWS	LP	Examination requirements	Module exam If necessary Examination-relevant academic achievements
1	Fundamentals of Environmental Remote Sensing	3	4	5		s. PO M.Sc. Geoinformatics
2	Introduction to Geoinformatics	3	3	5		s. PO M.Sc. Environmental Sciences
3	Geostatistics	3	4	5		s. PO M.Sc. Geoinformatics
4	Advanced Remote Sensing Data Processing and Interpretation	4	4	5		s. PO M.Sc. Geoinformatics
5	Time series analysis	4	3	5		s. PO M.Sc. Geoinformatics

Focus on Natural Language Processing:

Modules 1 and 2 are mandatory

No.	Module	Semester	SWS	LP	Examination requirements	Module exam If necessary Examination-relevant academic achievements
1	Machine Learning for Natural Language Understanding	3	5	10		s. FPO M.Sc. Natural Language Processing
2	Natural Language Processing	3	5	10		s. FPO M.Sc. Natural Language Processing

Compulsory elective modules without focus assignment

No.	Module	Semester	SWS	LP	Examination requirements	Module exam If necessary Examination-relevant academic achievements
1	Advanced Course in Mathematics	3	6	10		Oral examination or written exam (120 minutes)
2	Special Topics in Mathematics	3	6	10		Oral examination or written exam (120 minutes)
3	Seminar Mathematics A	3	3	5		s. FPO M.Sc. Mathematics
4	Seminar Mathematics B	3	3	5		s. FPO M.Sc. Mathematics

The details of the modules can be found in the current module handbook of the program "Data Science".

In order to be admitted to the individual module examinations, you may have to provide proof of academic performance (academic achievements) in accordance with the module handbook.