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Faculty of Mathematics and Computer Science:

Following the resolution of the Faculty Council of the Faculty of Mathematics and Computer Science dated 12.01.2022, the Presidential Board of the University of Göttingen approved the first amendment of the examination and study regulations for the consecutive Master's degree programme "Applied Data Science" on 12.04.2022 in the version published on 01.06.2021 (Official Announcements no. 26/2021 p. 509) (§ 44 section 1 sentence 2 NHG in the version published on 26.02.2007 (Nds. GVBl. p. 69), last amended by Article 1 of the Act 27.01.2022 (Nds. GVBl. p. 54); § 41 section 2 sentence 2 NHG; §§ 37 section 1 sentence 3 no. 5 b), 44 section 1 sentence 3 NHG).

Examination and study regulations for the consecutive Master's degree programme "Applied Data Science" of the University of Göttingen

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§ 1 Scope

(1) The "General examination regulations for Bachelor's and Master's degree programmes as well as other courses and degrees offered at the University of Göttingen" (APO) shall apply as amended to the consecutive Master's degree programme “Applied Data Science” at the University of Göttingen.

(2) This regulation specifies the further provisions for the completion of the course of studies in the consecutive Master's degree programme “Applied Data Science”.

§ 2 Objectives of the academic programme, purpose of the examination; academic degree

(1) The programme prepares students for independent scientific work as Data Scientists in companies, administration and research institutions:

- Acquisition of comprehensive knowledge of the mathematical, information technology-related and statistical methods that shape Data Science at the current state of research
- Ability to develop and implement new complex procedures in the field of Data Science in the chosen application area as well as the development of the necessary software tools for this purpose
- Ability to work independently on scientific questions using Data Science methods and to gain new insights from data
- Acquisition of competencies for reflective and ethical discussion of the data used as well as the consequences of extensive data collection, -analysis and automated, data-based decision-making.
- Acquisition of skills that are in high demand on the job market and in academia, such as project and time management, the ability to appropriately communicate recommendations for action and analysis results, and the ability to work in interdisciplinary, international teams.

(2) [1]Possible employers can be identified worldwide, in particular at Internet service providers, in banks, insurance and reinsurance companies, in the IT sector, in management consultancies, in public research institutes or development and research departments in companies, in colleges and universities and in the public health sector. [2]Graduates are qualified to take on independent work and manage projects. [3]They are also ideally positioned to found their own start-up companies (e.g. in the role of CTO). [4]A particularly successful degree also opens the door to an academic career (doctorate).

(3) [1]In the Master's degree programme, students learn to scientifically penetrate the subject and its applications and to further develop scientific methods and findings. [2]The degree programme also forms the basis for being accepted into a doctoral programme in the field of Data Science or the application areas.

(4) [1]The Master's programme is research-oriented. [2]Students are integrated into research projects; these must be in the field of Data Science.
(5) Examinations during the Master's programme determine whether the person to be examined has acquired the skills and methods of the subject as well as key competencies necessary for the study objectives.
(6) After passing the master's examination, the University of Göttingen awards the academic degree "Master of Science" (abbreviated "M. Sc.").

§ 3 Recommended prerequisites; Connector Courses

(1) [1]Sound knowledge of English and mathematics is recommended for a qualified Master's course of study. [2]Students whose knowledge of English or mathematics was not better than satisfactory in the course of their first studies are recommended to participate in continuous education courses accordingly before taking up the Master's programme.
(2) [1]If not stated as an admission requirement, "Connector Courses" can be taken as a voluntary additional offer. [2]The additional courses can be found in the module index.

§ 4 Mentoring model

[1]Students choose a mentor from among the authorised examiners within the study programme at the latest before registering for the first examination. [2]This mentor is the contact person for all matters concerning the studies (mentoring model). [3]As a rule, he or she shall later guide or supervise the master's thesis. [4]If a student is unable to find a mentor, a mentor shall be appointed by the Dean of Studies; students have the right to propose a mentor, which does not constitute a legal claim. [5]The mentor may be changed at the request of the student and only for good cause. [6]An important reason exists in particular if students change the field of application or if a disruption of the relationship of trust renders the continuation of the mentoring relationship unreasonable.

§ 5 Structure of the academic programme; standard period of study; application areas

(1) The academic programme begins in the summer and winter semester.
(2) The standard period of study is four semesters.
(3) The academic programme is suitable for part-time study.
(4) [1]The course of study comprises 120 credits (ECTS credits, abbreviated: C), which are distributed as follows:
a) to the subject-specific studies 49 C,
b) to the professionalisation area 41 C, including key competencies amounting to at least 18 C,
c) to the master's degree module 30 C.
[2]The module index, which also contains the module overview in the sense of § 4 section 1 sentence 1 APO, is published separately; it is an integral part of these Examination and Study Regulations. [3]A

recommendation for the appropriate structure of the study programme can be found in the sample curricula attached in the appendix.

(5) [1]In the subject-specific studies, students acquire in-depth knowledge in Data Science, which forms the scientific basis for acquiring the ability to apply and further develop the specialised methods of the subject in the professionalisation. [2]It is recommended to orient the subject-specific studies with regard to the intended application area.

(6) [1]The professionalisation area serves the students' profiling by focusing on an application area. [2]In this way, the professionalisation area offers students the opportunity to profile themselves according to individual and subject-specific inclinations and career aspirations and to acquire key competencies specific to their profession and across subjects.

(7) [1]If an examination-related achievement can be taken into account in the context of several module examinations, the examination registration must indicate for which module examination the examination-related achievement is being taken. [2]The same examination-related achievement cannot be taken into account in the context of another module examination.

(8) Modules and examination-related achievements that have been completed for the subject-specific studies cannot be taken into account in the professionalisation area, and vice versa.

§ 6 Examination board

[1]The examination board consists of five voting members, namely the Dean of Studies as well as two members of the professors' group [Hochschullehrergruppe], one member of the academic staff group [Mitarbeitergruppe] and one member of the students group [Studierendengruppe], who are appointed by the respective group representatives in the Faculty Council of the Faculty of Mathematics and Computer Science. [2]At the same time, at least one deputy shall be appointed for each member.

§ 7 Representatives for application areas

(1) [1]For each area of application, the Dean of Studies shall appoint a representative from among the teaching staff involved in the area of application. [2]This appointee shall be responsible for ensuring the courses offered in his or her area of application, without prejudice to the responsibility of the Dean of Studies.

(2) Representatives for an area of application shall be heard before a decision is made on the crediting of study periods, course- and examination-related achievements in their area of application.

(3) [1]Application area representatives are responsible for assigning courses to modules in their application area. [2]This includes passing on this information to the Dean of Studies. [3]Representatives for an application area also coordinate the examination periods for their application area.

§ 8 Admission to courses with limited number of seats

(1) For admission to courses (e.g. modules, lectures and seminars) with a limited number of seats, in the event that there are more applications than seats available and no identical parallel courses can be offered, applications will be considered according to ranking groups in the following order:

a. Registration of students for whom the course is a compulsive or elective compulsive course;
b. Registration of students for whom the course is an elective course;
c. Registration of students in other programmes who are entitled to attend the course as part of the area of professionalisation;
d. Registration of students who wish to take the course as an additional course;
e. Other registrations of students.

(2) [1]Students who are about to complete their academic studies or who are in the respective semester for which the course is offered will be given precedence within the individual ranking groups according to section 1; students, who for reasons not attributable to themselves, were unable to receive a seat in the previous semester will be given the same precedence. [2]In the event of ranking parity, precedence will be given to students for whom the enrollment to the course is a requirement for attendance in another course in their degree programme or the module package. [3]The date of registration and then a lottery will be decisive in cases of rank parity.

(3) [1]If not all students of the ranking groups according to section 1 letters a. to c. can be considered for the course in one semester, the Faculty of Mathematics and Computer Science shall determine a sufficiently higher number of seats for the next semester within the scope of the personnel and material possibilities. [2]This shall not apply in the event that the expected number of participants will most probably permit consideration of the students assigned to ranking groups as specified in section 1 letters a. to c.

§ 9 Repeatability of examinations to improve grades

[1]In the Master's degree programme "Applied Data Science", module examinations passed within the first three semesters may each be repeated once for the purpose of improving the grade. [2]A repeated examination for the purpose of improving the grade must be taken within the standard period of study or in the first semester after the end of the standard period of study; the grade cannot be lowered as a result of the repetition.

§ 10 Subject-specific forms of examination

(1) In addition to the forms of examination permitted under the provisions of the APO, the following subject-specific forms of examination may be scheduled: Internship report.

(2) The internship report contains a presentation of the background of the problem worked on and the methodology used as well as a presentation and discussion of the results achieved in a maximum of 3000 words.

§ 11 Language of examination

The language of examination is German or English, depending on the language in which the courses of the module have been held.

§ 12 Admission to the master's thesis

(1) As a precondition for admission to the master's thesis, students must successfully complete modules totaling at least 48 C, including at least 24 C each from the subject-specific studies and the professionalisation area.

(2) [1]A written application for admission to the master's thesis must be submitted to the examination board responsible. [2]In this, following documents must be enclosed:

a) The proposal of topic for the master's thesis,
b) a proposal for the first academic advisor (usually the mentor) and the second academic advisor,
c) a written confirmation of the first academic advisor and the second academic advisor,
d) a declaration specifying that the master examination has not been failed definitively or registered as definitively failed in the same or a comparable master's degree programme at a domestic or foreign university,
e) Evidence of fulfilment of the prerequisites in accordance with section 1, insofar as achievements are not stored in the examination administration system.

[3]The proposals under letters a), b) and c) are unnecessary if the student provides assurance that he or she has been unable to find an academic advisor. [4]In the event that the student is unable to find an academic advisor, the examination board will assign an academic advisor and a topic. [5]The candidate's view must be considered in choosing the topic.

(3) [1]The examination board decides on the admission. [2]This should be rejected if the qualifications for entry are not fulfilled or the master examination in the same or similar master's degree programme at a domestic or foreign university has been definitively failed or regarded as definitive failing.

§ 13 Master's thesis; Master's degree module

(1) In the master's thesis, the candidate is expected to prove that he or she is capable of working on a problem from the field of Data Science, of using scientific methods of the subject and within the specified time frame, of developing an independent scientifically based judgment, arriving at scientifically substantiated results and presenting the results in a formally as well as linguistically appropriate manner.

(2) [1]The provisional topic of the master's thesis is to be agreed upon with the proposed first supervisor and submitted to the responsible examination board with a confirmation of the proposed second supervisor. [2]If the candidate does not find a supervisor, the supervisor and a topic shall be determined by the responsible examination board. [3]The candidate shall be heard in the selection of

the topic. [4]The right to propose a topic does not constitute a legal claim. [5]The topic of the master's thesis shall be issued by the Examination Office. [6]The time of issue must be recorded.

(3) [1]The time to complete the thesis is 6 months. [2]Upon application by the candidate, the examination board can extend the deadline for submitting the thesis by a maximum of four weeks in the event of an important reason that cannot be attributed to the candidate. [3]An important reason normally exists in the case of an illness that is to be given notice of immediately and demonstrated by producing a medical certificate.

(4) [1]The topic can be returned only once and only within the first 2 weeks of the time allotted for completing the thesis. [2]A new topic must be agreed on without delay, at the latest within 6 weeks. [3]In the event that the master's thesis is repeated, the topic may be returned only in accordance with sentence 1 if the examinee has not resorted to this option in the first submission of the master's thesis.

(5) [1]The master's thesis must be submitted to the responsible examination office in due time and exclusively in PDF/A format according to ISO 19005-1:2005; data supplementing the master's thesis (e.g. programme code, measured values) are to be submitted compressed as one file in ZIP format. [2]Students who credibly demonstrate that this is not reasonable for them will be supported by the university. [3]The time of submission should be recorded. [4]Upon submission, the candidate should declare that he or she has independently compiled the work and has not used any sources and tools other than those specified.

(6) [1]The Examination Office shall forward the master's thesis to the first supervisor and second supervisor as reviewers. [2]Each reviewer will award a grade. [3]The duration of the assessment procedure should not exceed 6 weeks.

(7) The master's thesis is integrated into a Master's degree module, which includes the module part "Scientific Writing".

§ 14 Overall result; peremptory failure

(1) The master examination is passed if at least 120 credits have been acquired and all of the required module examinations as well as the master's thesis have been passed.

(2) In addition to the cases specified in the APO, the right to take examinations is definitively extinguished if

a. at least 60 C have not been acquired from modules of this degree programme by the end of the 6th semester, or
b. not all credits required to pass the master's examination have been acquired by the end of the 10th semester;

In this case, the stipulations according to § 15 section 3 sentence 4 are binding.

(3) [1]Exceeding the deadlines specified in section 2 is permissible if the student is not responsible for exceeding the deadline. [2]The examination board shall decide on this upon application by the student.
(4) Graded modules in the elective area of interdisciplinary key competencies will not be included in the calculation of the grade point average of the master examination.
(5) The grade point average "with distinction" will be awarded if the master's thesis is graded 1.0 and the grade point average of the master examination is at least 1.2.

§ 15 Study advisory service; compulsory study advisory

(1) [1]General advising for students is provided by the Central Office of Student Affairs of the University of Göttingen. [2]It covers questions regarding the eligibility and admissions for a course, study opportunities as well as the structure of studies.
(2) [1]The study advisory service for Data Science of the Department of Computer Science is responsible for general subject advising. [2]It supports the students in particular in questions of study design, study techniques and the choice of an application area as well as in overcoming study difficulties.
(3) [1]The selection of a mentor requires the participation in a compulsory study advisory session. [2]Study advising by the mentor serves to agree on an individual curriculum based on the choices regulated in the module overview. [3]Optionally, the study advising can also take place with the representative of the chosen application area. [4]The individualised curriculum should ensure that the course of studies can be completed within the standard period of study and that a coherent competence profile is acquired with regard to the objectives of the course of study. [5]The individual curriculum is binding for the course of studies and requires the approval of the Dean of Studies for Computer Science. [6]Sentences 1 to 5 shall apply accordingly to the amendment of an individual curriculum.

§ 16 Entry into force

This regulation enters into force following publication in the Official Announcements of the Georg-August-Universität Göttingen as per 01/10/2021.

Appendix: Sample Curricula

a. Course of studies starting in the winter semester, full time study

Undergraduate programme: Bachelor of Applied Computer Science (Opt-Out: B.Inf.1231, B.Inf.1236)
Application area: Computational Neuroscience

Sem. Σ C	Core curriculum (37 C) and master's thesis (30 C)		Elective area (12 C)	Application area (22 C)			Key competencies (19 C)
1. WiSe Σ 30 C	*M.MED.0001* *9 C* Linear Models and their Mathematical Foundations	*M.WIWI-QMW.0002* *6 C* Advanced Statistical Inference (Likelihood & Bayes)	*M.WIWI-QMW.0012* *6 C* Multivariate Time Series Analysis	*B.Phy.5605:* *3 C* Computational Neuroscience: Basics	*M.Inf.2501* *3 C* Challenges and Perspectives in Neural Data Science		*SK.IKG-ISZ.53a* *3 C* Journalistic Writing
2. SuSe Σ 31 C	*M.WIWI-QMW.0001* *6 C* Generalized Regression	*B.Inf.1244* *5 C* Data Management for Data Science	*B.Inf.1240* *6 C* Visualization	*B.Phy.5601* *3 C* Theoretical and Computational Neuroscience II	*SK.Bio-NF.7001* *3 C* Neurobiology	*M.Phy.5601* *4 C* Seminar Computational Neuroscience	*SK.IKG-IKK.01* *4 C* Introduction to Intercultural Competence
3. WiSe Σ 29 C	*B.Inf.1237* *6 C* Deep Learning	*M.Inf.2101* *5 C* Best Practice Methods of Privacy and Ethics in Data Science		*M.Psy.901* *6 C* From Vision to Action (Lecture+Seminar)			*M.Inf.2801* *12 C* Lab Rotation
4. SuSe Σ 30 C	*M.Inf.2901* *30 C* Master's degree module (30 C)						

b. Course of studies starting in the summer semester, full time study

Undergraduate programme: Bachelor of Applied Data Science (Opt-Out: B.Inf.1231, B.Inf.1236, B.Inf.1237, M.WIWI-QMW.0002)
Application area: Medical Data Science

Sem. Σ C	Core curriculum (25 C) and master's thesis (30 C)		Elective area (23 C)		Application area (24 C)		Key competencies (18 C)
1. SuSe Σ 31 C	*M.Inf.1139* *5 C* Privacy-Enhancing Technologies		*M.WIWI-QMW.0001* *6 C* *Generalized Regression*	*B.Inf.1246* *5 C* Software Engineering for Data Science	*M.MED.0006* *6 C* Genetic Epidemiology	*M.MED.0003* *6 C* Time Series Analysis	*SK.IKG-ISZ.21* *3 C* Popular Science Writing
2. WiSe Σ 29 C	*M.MED.0001* *9 C* Linear Models and their Mathematical Foundations	*M.Inf.2101* *5 C* Best Practice Methods of Privacy and Ethics in Data Science		*M.Inf.1236* *6 C* High-Performance Data Analytics	*M.Inf.1307* *6 C* Current Topics in Medical Informatics		*SK.Bio.7002* *3 C* Basic virology
3. SuSe Σ 30 C		*M.MED.0021* *6 C* Experimental Design and Causal Inference		*M.Inf.1303* *6 C* Visualization	*M.Inf.356-1* *3 C* Personalised medicine	*M.Inf.1308* *3 C* Journal Club	*M.Inf.2801* *12 C* Lab Rotation
4. WiSe Σ 31 C	*M.Inf.2901* *30 C* Master's degree module (30 C)						

c. Course of studies starting in the winter semester, part-time study

Undergraduate programme: Bachelor of Mathematics (Opt-Out M.MED.0001)
Application area: Bioinformatics

Sem. Σ C	Core curriculum (29 C) and master's thesis (30 C)		Elective area (22 C)		Application area (21 C)		Key competencies (18 C)
1. WiSe Σ 15 C	*B.Inf.1231* 6 C Infrastructures of Data Science	*M.WIWI-QMW.0002* 6 C Advanced Statistical Inference (Likelihood & Bayes)			*M.Bio.141* 3 C General and applied microbiology		
2. SuSe Σ 15 C	*B.Inf.1236* 6 C Machine Learning				*M.Bio.144* 3 C Cellular and molecular biology of plant-microbe interactions	*M.Inf.1504* 6 C Algorithms in Bioinformatics II	
3. WiSe Σ 16 C	*B.Inf.1237* 6 C Deep Learning	*M.Inf.2101* 5 C Best Practice Methods of Privacy and Ethics in Data Science	*M.Inf.1185* 5 C Sensor Data Fusion				
4. SuSe Σ 14 C			M.Inf.1188 5 C Mobile Robotics		*M.Inf.1501* 6 C Data Mining in Bioinformatics		*SK.IKG-ISZ.21* 3 C Popular Science Writing
5. WiSe Σ 18 C			*M.Inf.2102* 6 C Advanced Statistical Learning for Data Science	*M.Inf.1236* 6 C High-Performance Data Analytics	*M.Bio.142* 3 C Molecular genetics and microbial cell biology		*B.Slav.108-3* 3 C Eastern European competence
6. SuSe Σ 12 C							*M.Inf.2802* 12 C Industry internship

7. **WiSe** **Σ 30 C**	*M.Inf.2901* 30 C Master's degree module						

d. Course of studies starting in the summer semester, part-time study

Undergraduate programme: Business Information Systems (no Opt-Out)
Application area: Digital Humanities

Sem. Σ C	Core curriculum (38 C) and master's thesis (30 C)		Elective area(16 C)		Application area (18 C)	Key competencies (18 C)	
1. SuSe **Σ 16 C**	*B.Inf.1236* 6 C Machine Learning		*B.Inf.1246* 5 C Software Engineering for Data Science	*B.Inf.1240* 5 C Visualization			
2. WiSe **Σ 15 C**	*M.MED.0001* 9 C Linear Models and their mathematical Foundations	*M.WIWI-QMW.0002* 6 C Advanced Statistical Inference (Likelihood & Bayes)					
3. SuSe **Σ 15 C**			*M.WIWI-QMW.0001* 6 C Generalized Regression		*M.DH.12* 9 C Theories and Research Questions in Digital Literature Analysis		
4. WiSe **Σ 15 C**	*B.Inf.1237* 6 C Deep Learning				*M.DH.11* 9 C Theories and Research Questions in Digital Text Analysis		
5. SuSe **Σ 15 C**						*M.Inf.2801* 12 C Research Lab Rotation	*B.Ska.465* 3 C Scandinavian Culture

6. WiSe **Σ 14 C**	*B.Inf.1231* 6 C Infrastructures of Data Science	*M.Inf.2101* 5 C Best Practice Methods of Privacy and Ethics in Data Science					*SK.DH.18* 3 C Digital Publishing
7. SuSe **Σ 30 C**	*M.Inf.2901* 30 C Master's degree module						