

Please note that the English language version of the terms of study is merely intended for information purposes. Only the German version is legally binding.

Terms of Study
for the Master's Program in Data Science
at the Faculty of Statistics
in cooperation with the Faculties of Mathematics and Computer Science
at TU Dortmund University
September 23rd, 2020

TU Dortmund University has enacted the following terms of study. They are in accordance with article 2, paragraph 4 in conjunction with article 64, paragraph 1 of the Higher Education Act for the state of North Rhine-Westphalia from September 16th, 2014 (Law and Ordinance Gazette of North Rhine-Westphalia, p. 547), last amended by law by article 10 of the law concerning the consistent and solidarity-focused management of the COVID-19 pandemic in North Rhine-Westphalia and the adaptation of state law with regards to the effects of a pandemic from April 14th, 2020 (Law and Ordinance Gazette of North Rhine-Westphalia, p. 218b).

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I. General Terms of Study

§ 1

Scope of the Terms of Study

- (1) These terms of study apply to the Master's Program in Data Science at the Faculty of Statistics in cooperation with the Faculties of Mathematics and Computer Science at TU Dortmund University. They determine the structure of the Master's program in accordance with article 64 of the Higher Education Act for the state of North Rhine-Westphalia.
- (2) The individual elements of the study program, their contents and their educational goals are not part of these terms of study and can instead be found in the module descriptions in the handbook of study modules. They are determined by the boards of the departments responsible and presented to the board of the rector's office.

§ 2

Goals of Study

The goal of this research-oriented Master's Program is to train experts in Data Science. It provides a deeper understanding of the field's foundations and broadens proficiencies in its methods. The Master's Program offers its graduates the opportunity to focus or broaden their experiences gained during their Bachelor's Program through a variety of elective options in order to expand their skill sets to be able to, for example, lead a research project. The study program focuses on the ability to communicate its methods and applications in interdisciplinary situations, especially at the intersection of computer science, mathematics and practical applications. Its students will be proficient in advanced procedures of data analysis and are capable of implementing them efficiently. They will be able to evaluate established methods in regards to their potential for large data sets and will know new and specific procedures for dealing with large data sets. In addition, they will be able to adapt and further the development of established and new procedures of data analysis, data simulation and data optimization when it comes to their potential and their efficiency when dealing with large data sets. They will also be able to create new procedures to deal with specific problems. The study program will offer especially capable students the opportunity of earning a doctorate degree (PhD). It is an English-language study program and as such, it is especially well-suited to prepare students for international career paths. Another goal of the study program is to encourage personal growth in terms of independent thinking as well as social responsibility.

§ 3

Conditions for Admission

- (1) The conditions for admission into the Master's program in Data Science at TU University Dortmund are one of the following:
 - a) A Bachelor's degree in Data Science at TU University Dortmund
 - b) A Bachelor's degree in Data Analysis and Data Management at TU University Dortmund
 - c) Another degree in a study program which fulfils the following criteria. It must be a study program in statistics, computer science or mathematics with an empirical application. It must be at least a three-year (six semester) program. It must be at a state university or a university accredited by the state within or outside the purview of German Basic Law. In such a study program, the student must have earned at least 15 credit points in one of the fields of Statistics, Mathematics

or Computer Science. The student must also have earned a total of 15 credit points in the other two fields.

- (2) In addition to the conditions in paragraph 1, students applying for the Master's program must meet the following criteria:
 - a) The required degree was completed with a final grade of "good" (2.5) or, in case of a degree from another country, with a final grade that is equivalent to at least a 2.5.
 - b) The applying student must demonstrate an English language proficiency on at least the level of B2 according to the Common European Frame of Reference for Languages. The school diploma qualifying a student for university is generally sufficient as a certificate. If the school diploma does not document an English language proficiency, alternative documents of certification may be accepted, such as an internationally recognized language certificate, a diploma from an English-speaking school or a degree from an English-speaking university study program.
 - c) The applying student has to supply a C.V. detailing her previous academic career. The C.V. should not be longer than two pages.
- (3) The examining board is responsible for evaluating the conditions for admission. It determines whether the conditions in paragraph 1.c have been met by comparing the respective study program to the one from paragraph 1.a. The examining board will consider the contents, scope and requirements of the relevant courses, the degree earned and the study program itself. Depending on its evaluation, the examining board may admit a student under the condition of earning still missing qualifications, it may waive this condition, or it may decline to admit a student. Missing qualifications may consist of a maximum of 30 credit points and such conditions must be met at the start of the course "Case Studies" in module 4 ("Project Work"). The rules for repeating exams from § 10 apply to the exams required in the context of these conditions.
- (4) If the academic degree was earned in another country, the examining board must apply the following criteria. It has to evaluate the relevance of differences according to the equivalence agreements and and the agreements in the context of university partnerships put forth by the Conference of Ministers of Cultural Affairs and the German Rector's Conference. It must also follow the recommendations of the Central Office for Foreign Education (ZAB).
- (5) The examining board may admit a student into the chosen Master's program who is not yet in possession of her Bachelor's diploma. The applying student must provide documentation that she has completed all of the exams of a Bachelor's program according to the criteria of paragraph 1, and that she has earned a grade of at least "good" (2.5) as specified in paragraph 2.a.
- (6) An applying student may not be admitted into the Master's Program in Data Science if she has definitely failed the final attempt of an exam in a significantly similar study program in content, and thus has not fulfilled that program's terms of study (according to the Higher Education Act, article 50). The examining board decides if a study program is significantly similar in content.

§ 4

Academic Degree

Upon successfully completing the Master's exam, TU University Dortmund, represented by the Faculty of Statistics, will award a graduate with the academic degree of "Master of Science" ("M. Sc.").

§ 5

Credit Points

- (1) The study program is structured on the basis of a credit point system compatible with the European Credit Transfer System (ECTS).
- (2) Every module is assigned a number of credit points according to its required workload. One credit point is the equivalent of one ECTS point and it is awarded for a workload of approximately 30 hours. A student is expected to earn approximately 30 credit points in each semester.
- (3) Credit points are awarded for successfully completing a module. They are awarded at the end of a module.

§ 6

Standard Duration, Scope and Structure of Studies

- (1) The standard duration of the Master's program is four semesters (two years), including the time for completing the Master's thesis.
- (2) A student may enter the study program in either the winter semester or the summer semester.
- (3) The Master's program consists of a total of 120 credit points, which is the equivalent of 3600 hours of student workload. The credit point total includes both compulsory and elective areas of study.
- (4) The Master's program is structured into modules which each last two subsequent semesters. This is the case for both compulsory and elective modules. Every module is a compact and coherent study unit with a general workload of at least 5 credit points.
- (5) An overview of the Master's program's structure and its modules is included in the appendix of these terms of study. It lists both the required credit points and the form of examination for these modules (module exam or accumulated exams).
- (6) Every course is presented in English. Courses from elective areas of study may be presented in German at the lecturer's discretion. The lecturer's decision to present a course in German (including its exam) will be announced publicly no less than two weeks before the course starts.

§ 7

Admission to the Courses of a Module; Admission to Courses with Limited Numbers of Participants

- (1) Admission to the courses of a module may be restricted by specific conditions, especially by the successful completion of other modules. The individual conditions of admission follow the module descriptions in the handbook of study modules.
- (2) The courses of the Master's Program in Data Science may be limited to a given number of participants (for reasons according to the Higher Education Act, article 59, paragraph 2, first sentence).
- (3) The decision to limit the number of participants, as well as the maximum number of participants for a given course, is made by the board of the department which the course belongs to. Such decisions will be announced publicly.
- (4) If the number of applying students exceeds the capacity of a course, access to the course is decided on the basis on special considerations regarding the students. At the request of the lecturer,

this decision may be made by the dean of the department or by an appointed lecturer assisted by the Faculty Committee of Study and Lectures. Student access will be considered as follows, in a descending order:

1. Students who depend on completing the course in order to proceed in their chosen study program at that point in time. This includes students who the course is meant for according to the descriptions in the handbook of study modules, and according to their official study plan for the given semester. It also includes students who are in the last semester of their study program according to the standard duration of studies and who depend on the course in order to complete their study program within that time period or close to it.
 2. Students who do not depend on completing the course in order to proceed in their chosen study program at that point in time, or visiting students admitted to the course who depend on completing it for their chosen study program at that point in time (according to the Higher Education Act, article 52, paragraph 2).
 3. Other visiting students admitted to the course (according to the Higher Education Act, article 52, paragraph 1).
 4. Other students of TU University Dortmund who fulfill the requirements for participating in the course.
- (5) Student access within one of the above groups will be considered as follows, in a descending order:
1. Students with a lasting or permanent physical disability, chronic illness or with responsibilities towards their family (such as being the main raising parent of children who live with the student, or providing regular care for a spouse, a legal life partner or for an immediate relative who is legally in need of care).
 2. Students who are required to repeat a course within the respective module in order to complete it.
 3. Once all other criteria have been exhausted, access will be decided via a lottery system.
- (6) A student must request to be considered as part of the groups 4.1 or 4.2 when applying to a course. She must provide documentation justifying her request to dean of the department within the application deadlines.
- (7) The departments involved in the study program will minimize any disadvantages resulting from limited numbers of participants for students belonging to group 3.1. They will work to the best of their abilities to ensure that students from this group suffer no delay in their studies, or at most a delay of one semester.

§ 8

Exams

- (1) A module is generally concluded by a single exam. It is completed once a student passes the graded module exam. In some cases, a module may be completed through accumulated exams during the individual courses. The form of exams for each module (module exam or accumulated exams) are outlined in the appendix of these terms of study. The handbook of study modules provides additional details regarding individual exams in the module descriptions.
- (2) Module exams and accumulated exams take place outside of the courses, usually in the form of oral or written/digital exams, or as exams via digital communication (written exams, oral presentations, academic papers, written presentation, etc.). An examiner may decide on other appropriate kinds of exams not mentioned above in cooperation with the examining board.

- (3) The kind of exams, their form and their scope are determined by the module descriptions in the handbook of study modules. Otherwise, they will be made announced by the lecturer no later than two weeks after a course has started. The form of exams may deviate from the original module descriptions in the handbook of study modules, but only for a limited time period. This must be requested from the examination board with good reason.
- (4) A student may be admitted to a given module exam or perform accumulated exams only if she has completed the exams listed as prerequisites in the module descriptions in the handbook of study modules.
- (5) Admission to a course that is part of a module may depend on specific prerequisites, particularly the completion of previous modules. The individual prerequisites for access are determined by the module descriptions in the handbook of study modules.
- (6) Academic papers may consist of one or several parts. If it consists of several parts, they are evaluated with a single total grade.
- (7) Written presentations may consist of one single presentation or several presentations. A written presentation consisting of a several presentations is considered not passed if even one individual presentation is evaluated as not passed. A presentation consisting of several parts will be evaluated with a single total grade.
- (8) Written exams will be supervised and take place in closed sessions. If the examiner decides to allow the use of specific tools or materials during the exam, she will announce this no later than four weeks before the exam. Students must be informed of the results no later than eight weeks after the exam. Each student's privacy must be protected in regards to their examination results.
- (9) Written exams may consist of multiple-choice tests or include elements of such tests. With such tests, the examiner must take special care to ensure that the test fits the given course and module, its contents, and its required proficiencies, and that the test provides reliable evaluation results. The questions for such a test are chosen by a pair of examiners and they must determine ahead of time which answers are right.
- (10) Written module exams take at least 60 minutes and no more than 240 minutes. Oral module exams take at least 20 minutes and no more than 45 minutes for each student. In the case of accumulated exams, written exams should take no longer than 240 minutes, while oral exams should take between 15 and 30 minutes. Presentations are considered open to the academic public and should take between 30 and 60 minutes.
- (11) Examinations such as written exams, oral or written presentations are generally evaluated by a single examiner. The Master's thesis and any written or oral exams which conclude a study program are always evaluated by two examiners. If an exam is being repeated for the last time with the possibility that the student will be excluded from the study program without recourse, special rules for the examination apply. In such a case, at least two examiners must be present, or one examiner qualified according to § 14 of these terms of study. Oral exams may be taken by single students or groups of students and are always evaluated by several examiners, or by a single examiner and a qualified assistant. The qualified assistant must have a say in the evaluation.
- (12) If a single examiner and a qualified assistant are present during an oral exam, the qualified assistant must have a say in the evaluation before the grade is decided (according to § 19, paragraph 1). If two examiners are present, each of them decides on a grade separately (according to the same article). The final grade of the oral exam is then derived from the mean of these two grades decided (according to § 19, paragraph 7). If only one of the examiners decides on a grade of at least "sufficient" (4.0), the exam must be repeated, but does not count as a failed attempt. The examining board will then appoint a new examiner or two new examiners. The exam is passed only if the new examiner or both new examiners decide on a grade of at least "sufficient" (4.0) or "passed".

- (13) The relevant subjects and results of an oral exam must be filed on record. The student must be informed of the results immediately after the oral exam. Students who will be taking the same exam at a later point in time are allowed to sit in and observe an oral exam, if the location permits. The student taking the exam has the right to decline this. Observing an exam does not include the evaluation process following the exam or the presentation of its results. In case of disturbances or attempts to influence the exam, observers may be excluded by the examiner.
- (14) Modules which conclude with an exam may also require additional work as part of the individual courses. This may include written or oral presentations, academic papers, internships, exercises, written or oral tests, written records of a lecture, or portfolios. Such qualifications may be graded or evaluated as “passed” or “not passed” (§ 19, paragraph 4.b does not apply here). All work that was part of a course must be completed before a student is admitted to the module exam.
- (15) The requirements for such work are significantly lower than for a module exam or accumulated exams both in terms of form and scope. Any work required as part of a module that is not specified in the module descriptions in the handbook of study modules will be announced by the lecturer at the beginning of a course.
- (16) Any exam, as well as the Master’s thesis, may be completed in German if both the student and the examiner agree.
- (17) Courses may have attendance requirements if they depend on the active participation of students. Rulings concerning compulsory attendance must observe the constitutional principle of proportionality. Attendance requirements are determined on the basis of a vote of the advisory board or a two-thirds majority of the department board. Attendance requirements must be noted in the module descriptions of the handbook of study modules and will be announced publicly in due time by the examiners.

§ 9

Compensation for Disadvantages

- (1) Exams may be modified to accommodate students with a lasting or permanent physical disability or chronic illness if they can provide medical certification. If her medical condition prevents a student from taking an exam or parts of an exam within the designated deadline, the head of the examining board will determine another appropriate way of taking the exam, or another appropriate deadline. This also applies to prerequisite work for an exam. Furthermore, exceptions may be made regarding the use of tools or assistants, as well as the number of allowed attempts to repeat an exam or the conditions for doing so. Such exceptions should apply to the entirety of the study program for individuals with a disability or a chronic illness, assuming that their medical situation is not expected to change during the course of the study program. For any fringe cases, the office of the advocate for students with disabilities must be consulted (for example, the Department of Disability and Studies at the center for higher education at TU University Dortmund).
- (2) A student must apply for the compensation for disadvantages at the Central Examination Administration Office and applications will be granted on a case-by-case basis by the examining board. Every examination will accommodate maternal protection periods, as well as required down time due to being the main raising parent of children who live with the student, or providing regular care for a spouse, a legal life partner or for an immediate relative who is legally in need of care.

§ 10

Maternal Protections

- (1) The legal maternal protection periods do apply, as well as the corresponding provisions of the maternal protection law (see article 64, paragraph 2, section 5 and paragraph 2a of the Higher Education Act for the state of North Rhine-Westphalia).

§ 11

Dates and Deadlines

- (1) Students must apply for every exam no later than two weeks before the date of the exam. The examiner may determine a different deadline for applications. She must inform the examinations office of the new date. The time period in which applications are accepted must be at least two weeks long. A student may cancel an application for an exam without stating a reason until up to one week before the exam date in case of an oral exam, or until up to one day before the exam date in case of a written exam. Within these deadlines, a student is treated as if she had not applied for the exam. For courses at the Faculty of Economics at TU Dortmund University, the starting time of an exam is determined by the legally binding declaration of taking the exam, given to the examiner.
- (2) The dates for written exams are decided by the head of the examining board and must be announced publicly as soon as possible, but no later than four weeks before the end of the lecture period. The time period for oral exams will be announced publicly no later than four weeks before the date of the first exam. Individual exam dates will be announced publicly one week before the exam.
- (3) In order to encourage international experiences, exceptions may be made for students who are planning to study abroad during the time of an exam. The examining board may grant an exception regarding the kind of exam, its location or its date if the following conditions are met. The student must request such an exception, his stay abroad must make attending the regular exam an unreasonable hardship, the examiner must consent, and due process of the exam procedure must be guaranteed. Such an application must be presented to the head of the examining board no later than four weeks before the date of the exam and it must be substantiated in writing.

§ 12

Repeating Exams, Passing the Master's Exam, Definite Failure to Pass

- (1) If a student does not pass a module exam or its accumulated exams, she is entitled to two attempts to repeat the exam. If a student does not pass one piece of partial work, only that piece of work has to be repeated. In order to be comparable and to guarantee just examinations, repeated exams must be taken as the same kind of exam as the first attempt. A student who passes an exam is not allowed not repeat it.
- (2) A module exam or a piece of partial work must be repeated within three semesters after the first failed attempt. After that, the student loses her rights to the examination unless she can present proof that missing the deadline was not in her responsibility. If the case fulfils the criteria according to article 64, paragraph 3a of the Higher Education act, the deadline is then extended by the time period specified by that law.
- (3) As an exception to paragraph 1, a student is only entitled to a single attempt to repeat a Master's thesis. It must be repeated in its entirety and a new topic must be chosen. A candidate may only decline a topic (according to § 18, paragraph 6) during a repeated attempt if she has not made use of that right during her first failed attempt.

- (4) A student has passed the Master's exam when she has earned all 120 credit points from the module exams and accumulated exams, as well as from the Master's thesis.
- (5) A candidate has definitely failed to pass the Master's exam, if one of the following conditions are met:
 - a) The Master's thesis is evaluated as not passed even in the repeated attempt or it is considered to be not passed.
 - b) A candidate is not longer able to earn the required amount of credit points.
 - c) A candidate has definitely failed to pass in one of the compulsory modules listed in the appendix.
- (6) If a candidate has definitely failed to pass the Master's exam or another exam, the head of the examining board will notify the candidate in writing. Such a notification must include information about a possible appeal procedure. A candidate may demand a certificate for the exams she has passed. Such a certificate includes a clause stating that it can not be used to continue the studies at another university.

§ 13

Examining Board

- (1) The Faculty of Statistics will establish an examining board which will be responsible for the administration of exams and for the matters assigned to it by the terms of study.
- (2) The examining board consists of five members and is composed as follows. Three board members must be faculty members, specifically one each from the three cooperating departments. One board member must be a research fellow from the Faculty of Statistics, and one board member must be a student in the Master's Program in Data Science. Faculty members are elected by the board of their respective department for a period of two years. Student members are elected by the board of the Faculty of Statistics of a period of one year. The examining board will elect a head of the board, as well as a vice head of the board, from the group of faculty members. The respective boards of the departments will elect a proxy for every board member with the exception of the head of the board and the vice head of the board. Reelections are allowed. The composition of the examining board will be announced by the dean. If an election of the examining board or of individual members of the board is declared void after they have been inaugurated, this does not change any previous decisions and official actions from being legally effective.
- (3) The examining board will ensure that the terms of study are followed and that proper examination procedures are guaranteed. It is responsible for dealing with any disputed decisions regarding examinations and it will mediate any issues concerning multiple departments. In addition, the examining board must report on the developments concerning exams and study durations to the departments once every year. The examining board will suggest reforms of the terms of study and study plans. The examining board may delegate the following tasks to the head of the board: admissions or conditional admissions, applications for compensation of disadvantages, assessments of study progress, decisions on attendance requirements (in accordance with § 8, paragraph 17), assigning examiners, and issuing Master's theses. Rulings on disputed decisions and duties of reporting to the board of the department may not be delegated to the head of the board.
- (4) The examining board has a quorate if the head of the board and one faculty member are present, together with one member with voting power from one of the other groups. Decisions are made by simple majority. The head of the board has the casting vote in case of a tied vote. Student members of the examining board will not take part in decisions concerning educational or scientific issues. This includes evaluations and the recognition of previous performances, determining exam topics, and the appointment of examiners or their qualified assistants.

- (5) Members of the examining board have the right to observe examinations.
- (6) Sessions of the examining board are not open to the public. Members of the board are bound by official secrecy, as are their proxies, the examiners, as well as their qualified assistants. Any one of the above not in a position of public service must be sworn to official secrecy by the head of the examining board.
- (7) When performing its duties, the examining board may rely on the administrative assistance of the Central Examination Administration Office at TU University Dortmund.

§ 14

Examiners and Qualified Assistants

- (1) The examining board will appoint examiners and qualified assistants in accordance with the legal requirements. It may delegate this to the head of the examining board. An examiner must be a faculty member at TU Dortmund University, or another person authorized to take exams (according to article 65, paragraph 1 of the Higher Education Act) who is or has been in a teaching position in the Bachelor's or Master's Program in Data Science, or in a similar program. Assistants must have at least completed the degree that the exam leads to, or an equivalent qualification (qualified assistant).
- (2) Examiners act independently in their examination duties. They are responsible for preparing exam topics and carrying out the examinations. They decide on the allowed use of specific tools or materials during an exam and will announce their decisions.
- (3) A candidate may suggest an examiner for their Master's thesis. The candidate's suggestion should be accommodated if possible. However, there is no legal claim to such a suggestion.

§ 15

Recognition of Previous Academic Work, Qualifying for Advanced Semesters

A student's previously completed academic work and her possible qualification for an advanced semester will be assessed according to the current and effective general regulations regarding the assessment of exam performances for all Bachelor's and Master's programs at TU Dortmund University.

§ 16

Defaulting, Withdrawing, Cheating and Breaches of Regulation

- (1) A candidate's performance is considered to be evaluated as "not sufficient" (5.0) if she defaults on the exam by missing for the exam without substantiated reasons or if she withdraws during the exam without substantiated reasons. This also applies if a candidate does not hand in her work in time during a written exam.
- (2) A candidate must state the substantiated reasons for defaulting or withdrawing in writing to the examining board immediately. In case of a candidate's illness or an illness of a child of whom the candidate is the main raising parent, she must provide medical certification in German. In case of a candidate's illness, the medical certification must assert her incapability to take part in the examination. A medical certification substantiating a withdrawal from an examination must assert that the candidate's incapability at the time of the exam was not apparent to the candidate herself for medical reasons and that she had no reason to doubt her capability at the time of the exam. If the examining board does not recognize the reasons for defaulting or withdrawing as substantiated, it will notify the candidate in writing.

- (3) If an exam performance is influenced by cheating (such as using tools or materials that were not allowed, copying parts of a text without marking it as a quotation, copying from other candidates, etc.), it is considered to be evaluated as “not sufficient” (5.0) or “not passed”. This is also the case for mere attempts of cheating. If a supervisor notices such an act or attempt during an examination, she will record this in writing. The individual examiner then decides whether it constitutes cheating or an attempt of cheating, in which case the exam must be evaluated as “not sufficient” (5.0) or “not passed”. A candidate who disturbs the proper examination process may be excluded from continuing the exam by the supervisor or the examiner after being issued a fair warning. If a student is excluded, her exam is also considered to be evaluated as “not sufficient” (5.0) or “not passed”. The specific reasons for such decisions must be filed on record. In cases of severe cheating or disturbances, the examining board may exclude a candidate from all further exams.
- (4) The examining board may require candidates to sign a statement of diligence regarding module exams or accumulated exams. In such a statement, a candidate must declare that she is the sole author of the paper, that she has used no tools or materials except those listed therein, and that all citations and references have been marked as such. In case of group work, such a statement applies to the part marked as that candidate’s contribution. § 20, paragraph 8 remains unaffected.
- (5) A candidate may demand the examining board to review decisions pertaining to paragraph 3. She must do so no later than 14 days after the initial decision has been made. If the final decision made is not in favor of the candidate, she must immediately be notified. Such a notification must be in writing and it must include information about a possible appeal procedure. Before a final decision is made, a candidate must be given the opportunity of a legal hearing regarding the matter.

II. Master's Exam

§ 17

Admission to the Master's Exam

- (1) Students enrolled in the Master’s Program in Data Science or enrolled as visiting students according to article 52, paragraph 2 of the Higher Education Act are admitted to the exams of the study program, unless their enrollment or admission must be denied according to paragraph 2. In the case of students on a leave of absence, article 48, paragraph 5 of the Higher Education Act must be observed.
- (2) The enrollment or admission must be denied if any of the following conditions are met:
 1. The candidate has failed to pass the final attempt of an exam in a compulsory module according to the terms of study. This applies to both the Master’s Program in Data Science at TU Dortmund University, as well as to other Master’s programs significantly similar in content.
 2. The candidate is still in the process of appealing against the notification of having failed to pass the final attempt in one of the study programs mentioned above, and she cannot present a final ruling at that point in time.
 3. The candidate has lost her rights to the examination (according to § 12, paragraph 2) for an exam required for the Master’s Program in Data Science at TU Dortmund University by these terms of study.

§ 18

Scope of the Master's Exam

- (1) The Master's Exam consists of exams taken over the course of the study program, in which a student must earn a total of 120 credit points. 75 of these credit points must be earned in compulsory modules. The remaining 45 credit points must be earned in elective modules.
- (2) The form of exams (module exam or accumulated exams) and the amount of credit points to be earned in each case is outlined in the appendix of these terms of study.

§ 19

Evaluating Exams, Earning Credit Points, Grading

- (1) The grades for individual exam performances are decided by the individual examiners. They will use the following grades when evaluating an exam performance:

1	=	very good	=	an exceptional performance
2	=	good	=	a performance significantly exceeding the average expectations
3	=	satisfying	=	a performance that meets the average expectations
4	=	sufficient	=	a performance that meets the expectations despite its flaws
5	=	not sufficient	=	a performance that does not meet the expectations because of significant flaws

In order to better distinguish between exam performances, grades may be raised or lowered in increments of 0.3. However, grades of 0.7, 4.3, 4.7 and 5.3 are not possible.

- (2) Exams with grades which have no bearing on the total grade of the Master's exam may either be evaluated according to paragraph 1, or according to a simplified scale. The examining board must be consulted for such a decision. The simplified scale is as follows:

passed	=	a performance that at least meets the expectations
not passed	=	a performance that does not meet the expectations because of significant flaws

- (3) A student has earned the number of credit points associated with a given module if all the required exams (module exams or accumulated exams) have been evaluated as at least "sufficient" (4.0) or "passed".
- (4) A written exam consisting exclusively of a multiple-choice test is considered passed if one of the following criteria has been met:
 - a) The candidate has achieved 60% of the total possible number of points.
 - b) The candidate has achieved a number of points no more than 22% below the average of all candidates who took part in the exam.
- (5) If a candidate has passed an exam by achieving the minimum number of points according to paragraph 4, her grade is determined by the amount of points by which her performance exceeds the minimum. The following scale is used:

1	=	very good	if it exceeds the minimum by at least 75%
2	=	good	if it exceeds the minimum by at least 50%, but less than 75%
3	=	satisfying	if it exceeds the minimum by at least 25%, but less than 50%
4	=	sufficient	if it does not exceed the minimum by more than 25%, or not at all

- (6) If a written exam only partially consists of a multiple-choice test, the work from the multiple-choice test will be evaluated according to paragraphs 4 and 5. The remaining work will be evaluated in the regular manner. Both grades will be combined to determine the total grade of the written exam, while considering the proportions of total possible points awarded by each part. Paragraph 7 applies here. Paragraphs 4 to 6 do not apply if the exam is evaluated by examiners specified by § 14.
- (7) If a module is completed with a module exam, the grade for the exam counts as the grade for the entire module. In case of accumulated exams, the grade for the entire module is derived from the mean of the grades of the accumulated exams. The grades must be weighted in terms of their worth in credit points and they must not be rounded to the nearest integer before determining the mean. The mean of the grades results in the following final grades:

up to 1.5	=	very good
above 1.5 and up to 2.5	=	good
above 2.5 and up to 3.5	=	satisfying
above 3.5 and up to 4.0	=	sufficient
above 4.0	=	not sufficient

When determining the grade for a module, only one decimal place will be used. All further decimal places will be discarded without rounding.

- (8) The final grade of the Master's exam will be derived from the mean of all module grades according to paragraph 7. Each module grade will be weighted in terms of its worth in credit points. A single grade for all of the elective modules will be weighted according to their 45 credit points. It will be determined by the mean of the grades for the elective modules, each weighted by their credit points. Paragraph 7 applies here.
- (9) Instead of a grade of "very good" (1.0), a graduate will be awarded the distinction "with honors" if she has earned a total grade of 1.0.
- (10) The total grade will also be expressed as a grade according to the European Credit Transfer System (ECTS). ECTS grades may also be used for all graded exams, pending a ruling by the examining board. ECTS grades are based on brackets among all students who passed:
- | | | |
|---|---|--|
| A | = | approximately the best 10% of all passing students |
| B | = | approximately the next 25% of all passing students |
| C | = | approximately the next 30% of all passing students |
| D | = | approximately the next 25% of all passing students |
| E | = | approximately the next 10% of all passing students |
- (11) As a rule, ECTS grades are determined by comparing the cohorts of students from the previous six semesters. If such a reference group is smaller than 50 persons, the cohorts from the last ten semesters will be used. The current semester will not be considered when determining ECTS grades. No ECTS Grades will be given as long as the statistical data necessary for its relative evaluations is not available. The examining board may decline to give ECTS grades if the legal requirements for evaluations cannot be guaranteed. Further details can be found in the final document. Members of a reference group must be separated by academic degree and by study program. Reference groups may also be determined by different kinds compositions if the examining boards decides that it is objectively justified in a given case.

Master's Thesis

- (1) With their Master's thesis (27 credit points), candidates should demonstrate that they are able to apply scientific methods and to adapt them to a problem in the field of Data Science by themselves and within a given period of time. In order to prepare for the written thesis, the candidates will present the results and discoveries of their chosen topic as an oral presentation (3 credit points), followed by a discussion.
- (2) A Master's thesis may be issued and supervised by a university lecturer or a habilitated member of the departments cooperating in the study program. That person must be or must have been in a teaching position in the Bachelor's or Master's Program in Data Science, or in a similar program. Other scientists may issue and supervise a Master's thesis if they fulfil the conditions according to article 65, paragraph 1 of the Higher Education Act, pending approval by the examining board.
- (3) The Master's thesis is issued by the examining board at a candidate's request. Before it may be issued, a candidate must have completed Module 1 ("Advanced Statistical Learning") and Module 4 ("Project Work"). In her request, a candidate must enclose documentation showing that she has fulfilled these prerequisites. In case of students who have spent a semester abroad, the examining board may waive these prerequisites. The date of issuing a Master's thesis must be filed on record.
- (4) The candidate may make suggestions regarding the choice of supervisor as well as the topic of the Master's thesis. However, such suggestions are not based on a legal claim. A suggested topic must be approved by the supervisor. If a candidate cannot name a supervisor or if she waives her rights to make a suggestion, the head of the examining board will supply a topic and/or a supervisor for the Master's thesis.
- (5) The time period for working on the Master's thesis is six months. The topic and the given tasks must be defined in such a way that the Master's thesis can be completed within this time period. At a candidate's request, the deadline may be extended once by a grace period of six weeks, if both the examining board and the supervisor accept the candidate's justified reasons. Such a request must be filed to the examining board no later than 14 days before the deadline. In case of illness, the deadline may be extended by a time period equal to that of the illness, up to a maximum of half of the exam time. The candidate must provide a medical certification. If the illness lasts longer than half of the exam time, the candidate will be issued a new topic without the previous one counting as an attempted exam.
- (6) A candidate may decline the topic for a Master's thesis only once and no later than 14 days after the date it was issued. In such a case, work on the Master's thesis is considered not to have started.
- (7) A Master's thesis must always be exclusively the work of a single person. However, a Master's thesis may be part of a collaborative work. In such a case, it must be ensured that the individual contribution counting as that candidate's exam performance can be clearly and objectively evaluated as the exclusive work of the candidate and that it fulfills the requirements of paragraph 1.
- (8) When handing in the Master's thesis, a candidate must sign an affidavit stating that she is the sole author of the paper, that she has used no tools or materials except those listed therein, and that all citations and references have been marked as such. The works cited must include unpublished sources. The general template of the Central Examination Administration Office must be used for the affidavit and it must be signed by the candidate and included into the Master's thesis in a fixed manner.

Submission and Evaluation of the Master's Thesis

- (1) The submission of a Master's thesis is subject to the provisions of the official terms for the submission of thesis work (Bachelor's and Master's) at TU Dortmund University in its current form. If there are justifiable reasons why the Master's thesis or parts of the Master's thesis cannot be submitted by digital upload, the previous procedures according to paragraph 2 apply. Such reasons may be related to material of a kind not possible to transfer digitally and/or material tied to contractual obligations towards third parties.
- (2) In non-digital cases, the Master's thesis must be submitted in quadruple to the dean's office within the deadline. It must additionally include a version in a digital format compatible with plagiarism detection software. The specific format must be approved by the supervisor. The date of submission must be filed on record. In case of submission by mail, the date of the post mark applies. A Master's thesis that is not submitted within the deadline is considered to be evaluated as "not sufficient" (5.0).
- (3) The Master's thesis must be reviewed and evaluated by two examiners. One of the examiners must be the supervisor of the Master's thesis (primary reviewer). The second examiner (secondary reviewer) will be appointed by the head of the examining board.
- (4) The Master's thesis will be evaluated according to § 19, paragraph 1 and the grades must be substantiated in writing. The grade of a Master's thesis will be derived from the mean of both examiners' grades, as long as the difference between the two grades is no larger than 2.0. If the difference is larger, or if only one of the examiners has evaluated the Master's thesis as at least "sufficient" (4.0), the examining board will appoint a third examiner. In such a case, the grade of the Master's thesis will be derived from the mean of the two most favorable grades. However, the final grade of a Master's thesis may only be "sufficient" (4.0) or better if at least two of the grades are at least "sufficient" (4.0) or better. § 19, paragraph 7 applies.
- (5) A candidate must be informed of the evaluation results of the Master's thesis no later than three months after it has been submitted.

§ 22

Additional Qualifications

- (1) Students may take exams in more than the required number of modules up until they complete or definitely fail the Master's exam. They may not earn credit points by taking additional exams.
- (2) Additional qualifications are not used when determining the final grade. A candidate may request the evaluations of their exam performances to be included in her transcript of records.

§ 23

Diploma, Certificates for Studying at other Universities

- (1) A candidate will be issued a diploma certifying the successful Master's exam within four weeks after the evaluation of the last exam. The date on the diploma is that of the day when the final exam was passed. The diploma must include the final grade of the Master's exam, possibly also expressed as an ECTS grade (according to § 19, paragraph 10), the topic and the grade of the Master's thesis, the module grades, as well as the number of credit points earned in the individual modules.
- (2) The diploma will include a supplement describing the contents of the study program the diploma has been earned in, the structure of the study program, the proficiencies the degree certifies, as well as

the university that issued the diploma. Furthermore, an overview of the qualifications earned by the student (transcript of records) will be included with the diploma.

- (3) The transcript of records will also include the additional qualifications which were not used when determining the final grade, upon a student's request. In addition, it may include voluntary internships completed as part of the study program if these were approved by the examining board and if they were relevant to the chosen study program. Upon a student's request and in agreement with the examining board, a candidate will receive an English language translation of the transcript of records.
- (4) Upon a student's request, she may also receive certificates of all passed exams ahead of completing the Master's exam (certificate of grades). Such a list will include all successfully completed modules, the credit points earned, the exams passed in each module, and their individual grades (according to § 19, paragraph 1).
- (5) The diploma will be signed by the head of the examining board and will receive the seal of the Faculty of Statistics.
- (6) The diploma and the certificates will also be issued in English upon a student's request and in agreement with the examining board.

§ 24

Master's Degree Certificate

- (1) A graduate will receive a Master's Degree Certificate including the date of the diploma in German, as well as translated in English. The Master's Degree Certificate certifies that the student has been awarded a Master's degree according to § 4. The graduate's study program must be included in the Master's Degree Certificate.
- (2) The Master's Degree Certificate will be signed by the dean of the Faculty of Statistics and the head of the examining board of the Master's Program in Data Science and will receive the seal of the Faculty of Statistics.

III. Final Provisions

§ 25

Invalid Exam Performances and Revoking a Master's Degree

- (1) If a candidate has cheated on an exam, the examining board may reevaluate the performance even after a diploma or certificate has been issued. The examining board may retroactively correct the grades for the exam the candidate cheated on and declare the exam to be not passed, or not passed in parts.
- (2) If it turns out after an exam that a candidate did not fulfill the conditions of admission, but there was no intent to deceive on her part, this issue is considered void if the exam was passed. If the candidate has intentionally presented false information in order to be admitted to an exam, the examining board will decide on the legal consequences according to the Administrative Procedure Act of the State of North Rhine-Westphalia.

- (3) Before a decision is made according to paragraphs 1 and 2, the affected person must be given the opportunity of an oral or written hearing.
- (4) In case of a decision according to paragraph 1 or the second sentence of paragraph 2, the incorrect exam certificate must be seized and a new certificate must be issued if applicable. After a period of five years after an exam certificate has been issued, decisions according to paragraph 1 or the second sentence of paragraph 2 are no longer possible.
- (5) The Master's degree will be revoked and the Master's Degree Certificate will be seized if it is found after the fact that it was achieved through means of deception or if essential conditions for awarding the degree had been assumed in error. Decisions on revoking a degree lie with the board of the Faculty of Statistics.

§ 26

Access to Exam Documentation

- (1) After a student has been informed of the results of a written exam, she will be granted access to the evaluated exam. While accessing the documents, she may make copies or other duplicates of her own exam. Time and place of this access will be decided by the examiner and will be announced publicly by the time when the results of the exam are announced. Access to the results of other written exams will be made available to students upon request. Such requests must be made to the head of the examining board within four weeks.
- (2) On request, a student may gain access to additional written exams, the corresponding evaluations, as well as the written records of oral exams. Such a request must be made to the head of the examining board within one month of when the results of the exam were announced. The head of the examining board decides on a time and place for accessing the materials.

§ 27

Area of Application, Entry into Force, Publication

- (1) These terms of study will be published in the Official Announcements of TU Dortmund University and enter into force on October 1st, 2019.
- (2) It applies to all students of the Master's Program in Data Science at TU Dortmund University who are first enrolled into the study program in the winter semester of 2019 / 2020.

These terms of study were drafted according to the decisions of the boards of the Faculties of Statistics and Mathematics dated from July 15th, 2020, and of the board of the Faculty of Computer Science dated from August 19th, 2020, as well as the decision of the rector's office of TU Dortmund University dated from July 7th, 2020.

Note

According to article 12, paragraph 5 of the Higher Education Act for the state of North Rhine-Westphalia, any violations of formal or procedural requirements of the university's regulatory or other autonomous laws may not be asserted after one year from when this declaration was made, unless:

1. The terms of study were not made public properly,
2. The rector has previously issued a complaint against the decision of the body responsibly for the terms of study,
3. There has been a complaint about the formal or procedural violation to the university which pointed out the violated legal requirements and the issue resulting in the violation, or

4. The publication of the terms of study have failed to note the legal consequences of the complaint exclusion.

Dortmund, September 23rd, 2020

The rector of TU Dortmund University

University Professor Dr. Manfred Bayer

Appendix A: Study Structure

(1) Students earn 75 credit points in the compulsory area of study, which are divided among the modules as follows:

No.	Module	Semester	Credit Points	Form of Exam	Prerequisites
	Compulsory Area		75		
1	Advanced Statistical Learning	1	9	module exam	
2	Statistical Theory	1	9	module exam	
3	Data Science in Practice	1 and 2	6	accumulated exams	
4	Project Work	2 and 3	12	accumulated exams	
5	Big Data	2	9	module exam	
	Elective Area*		45**		
	Methods***		at least 24		
	Applications***		at least 16		
	Master Thesis		30		
6	Master Thesis	4	30	module exam	modules 1 and 4

* Modules in the individual elective area of study, as well as the exams that need to be completed are determined by the respective elective sections and the handbooks of study module they are based on.

** The total of 45 credit points is both the lower and upper limit of what will be counted for the Master's exam.

*** Other modules than those mentioned in the respective module descriptions of the handbook of study modules may be approved as elective modules. The decision is made by the head of the examining board upon students' requests.