OFFICIAL TRANSLATION OF

Fachspezifische Bestimmungen für den Studiengang „Data Science and Artificial Intelligence (M.Sc.)“

Vom 17. April 2024 und 26. Juni 2024

(Amtliche Bekanntmachung Nr. 56 vom 24. Juli 2024)

THIS TRANSLATION IS FOR INFORMATION ONLY – ONLY THE GERMAN VERSION SHALL BE LEGALLY VALID AND ENFORCEABLE!

Subject-Specific Provisions for the Master of Science in Data Science and Artificial Intelligence (MSc)

dated 17 April 2024 and 26 June2024

On 5 June 2024 and 16 June 2024 in accordance with Section 108 subsection 1 of the Hamburg higher education act (Hamburgisches Hochschulgesetz, HmbHG) the Executive University Board of the University of Hamburg ratified the Subject-Specific Provisions for the Master of Science in Data Science and Artificial Intelligence adopted on17 April 2024 and 26 June 2024 by the Faculty of Mathematics, Informatics and Natural Sciences in accordance with Section 91 subsection 2 no.1 HmbHG dated 18 July 2001 (HmbGVBl. p. 171) and amended 11 July 2023 (HmbGVBl. p. 250, 254).

Preamble

These Subject-Specific Provisions supplement the provisions of the Faculty of Mathematics, Informatics and Natural Sciences' Examination Regulations dated 20 October 2021 as amended governing Master of Science (MSc) degree programs and provide a description of the modules for the Data Science and Artificial Intelligence degree program.

I. Supplementary regulations

Section 1:
Program and examination objectives, academic degree, and implementation of the degree program

Section 1 subsection 1:

(1) The Master of Science in Data Science and Artificial Intelligence degree program is a consecutive and research-based degree program taught in English.

(2) The Master of Science in Data Science and Artificial Intelligence degree program follows the general program goals set out in Section 1 subsection 1 of the Master of Science examination regulations.

(3) The Master of Science in Data Science and Artificial Intelligence degree program consolidates students' abilities to independently apply computer science knowledge and skills in the field of data science and artificial intelligence. Graduates are able to act independently and apply scientific methods of computer science to their work, and act responsibly, especially with regard to the effects of technological change and social implications.

(4) Data Science and Artificial Intelligence degree program graduates acquire skills to collect, process, and analyze complex data using computer-aided methods. In particular, students are taught knowledge of data analysis, machine learning, artificial intelligence, and the handling and processing of large amounts of data.

(5) Graduates are able to analyze and process complex data in one or more fields of application, and can apply basic and advanced methods of artificial intelligence and adapt them to different challenges and areas of application. They are also able to develop new methods of artificial intelligence and machine learning which can be used in new areas of application.

(6) The Master of Science in Data Science and Artificial Intelligence degree program enhances students' abilities to conduct research-based scientific work. The Master's degree program prepares students for independent academic and research-oriented work and is a professional qualification for academic professions and doctoral studies.

Section 1 subsection 4:
This degree program is administered by the Faculty of Mathematics, Informatics and Natural Sciences.

Section 4
Program and examination structure
Modules and ECTS credits

Section 4 subsections 2 and 3:
(1) Detailed descriptions of all modules can be found in Appendix A to these Subject-Specific Provisions and in the module course catalog.

(2) The Data Science and Artificial Intelligence (M.Sc.) degree program consists of a required area (54 ECTS credits), a required elective area (24 ECTS credits), an advanced area (18 ECTS credits) and a domain area (24 ECTS credits).

(3) The required area Mandatory Modules in Data Science and Artificial Intelligence teaches mathematical and computer-aided principles for the analysis of data as well as the basics for legally compliant and ethically acceptable data use. The required area consists of the modules Foundations of Data Analytics (InfM-FDA, 6 ECTS credits), Epistemology, Ethics and Privacy (InfM-EEP, 6 ECTS credits), Seminar (InfM-Sem/DSAI, 3 ECTS credits), Project (InfM-Proj/DSAI, 9 ECTS credits) and the final module (30 ECTS credits) and thus has a scope of 54 ECTS credits.

(4) The required elective area Fundamentals of Data Science and Artificial Intelligence teaches basic knowledge in the areas of data analysis and processing as well as handling of large amounts of data and basic computer science knowledge in the areas of theoretical computer science and software engineering. The required elective area Fundamentals of Data Science and Artificial Intelligence comprises 24 ECTS credits. The required elective modules (Fundamentals) from which to choose are detailed in Appendix A to these Subject-Specific Provisions and in the module course catalog. An application to recognize other suitable modules for credit in addition to the required elective modules (Fundamentals) listed in Appendix A to these Subject-Specific Provisions and in the module course catalog may be submitted to the responsible examinations board.

(5) Advanced Topics in Data Science and Artificial Intelligence providing students with advanced knowledge in computer science-related subject areas from required and required elective areas. Advanced Topics in Data Science and Artificial Intelligence comprises 18 ECTS credits. The required elective modules (Fundamentals) from which to choose are detailed in Appendix A to these Subject-Specific Provisions and in the module course catalog. An application to recognize other suitable modules for credit in addition to the advanced modules listed in Appendix A to these Subject-Specific Provisions and in the module course catalog may be submitted to the responsible examinations board.

(6) Domain Knowledge in Data Science and Artificial Intelligence teaches basic knowledge in the respective application domains. The domain area comprises 24 ECTS credits. In the domain area, modules from at least two application domains with at least 6 ECTS credits per domain must be selected. The assignment of modules to a specialization is described in Annex A of these subject-specific provisions and in the module handbook. An application to recognize other suitable modules for credit in addition to the domain area modules listed in Appendix A to these Subject-Specific Provisions and in the module course catalog may be submitted to the responsible examinations board. Students also have the opportunity to choose up to 6 ECTS credits from the University of Hamburg's range of free elective area courses as part of the 24 ECTS credits. However, you can also fill the entire 24 ECTS credits with application domains. The examinations board may make recommendations for domain areas.

(7) The examinations board decides on a case by case basis whether work from a previous bachelor's degree program or a comparable master's degree program will be allowed credit. This decision is based in particular on whether prior work can be adapted to the qualification objectives of the master's degree program and must ensure students are unable to complete modules with the same or essentially identical content in a bachelor's degree program and then again in a master's degree program.

First subject semester	Foundations of Data Analytics (6 ECTS credits)	Epistemology, Ethics and Privacy (6 ECTS credits)	Required elective DSAI (9 ECTS credits)		Domains (9 ECTS credits)
Second subject semester	Seminar DSAI (3 ECTS credits)	Required elective DSAI (15 ECTS credits)		Advanced module DSAI (6 ECTS credits)	Domains (6 ECTS credits)
Third subject semester	Project DSAI (9 ECTS credits)		Advanced module DSAI (12 ECTS credits)		Domains (9 ECTS credits)
Fourth subject semester	Final Module (30 ECTS credits)				

Fig.: Curriculum Data Science and Artificial Intelligence (M.Sc.)

Section 5
Course types

Section 5 sentence 2:

(1) All course types pursuant to Section 5 of the Examination Regulations for Master of Science Degree Programs may be implemented.

(2) Modules generally consist of combinations of lectures and one seminar or exercise, or exclusively of lectures or seminars. Lectures may also include integrated exercises.

Section 5 sentences 3 and 4:

Attendance is compulsory for the following types of courses:

a) seminars, as these are generally aimed at improving students' abilities to handle criticism and to hold discussions
b) internships, as these are intended to guide students and enable them to resolve practical problems
c) projects, as these also serve to develop social skills (e.g., the ability to work in a team).
d) exercises, if the qualification objectives of the associated module cannot normally be fully achieved without them.

Compulsory attendance does not apply to admission to repeat examinations.

Section 5 sentence 5:
Courses are held in English. Some individual modules in the required elective area, specialization area, or domain area, may also be held in German. The ability to complete the program completely in English is guaranteed.

Section 13
Completed coursework and module examinations

Section 13 subsection 4:
As a rule written examinations last 120 minutes. Oral examinations last between 20 and 30 minutes. More information is contained in Appendix A. Any changes will be announced before registration for the module.

Section 13 subsection 6:
The examination shall be in English. Any changes will be announced prior to module registration. If the examiner and the student agree, the examination may also be taken in a language that is different from the language of the module.

Section 14
Master's thesis

Students who have completed the required modules Foundations of Data Analytics (InfM-FDA), Epistemology, Ethics and Privacy (InfM-EEP) and a total of at least 75 ECTS credits, including at least 6 ECTS credits in an application domain, can be admitted to the final module. The chair of the examinations board decides exceptions to this rule. A mandatory component of the final module is a colloquium consisting of a presentation and an academic discussion about the subject matter of the thesis. The lecture and discussion will last between 30 and 60 minutes. The presentation is one tenth of the grade for the final module, which must receive a passing grade of at least 4.0. The colloquium must be held no later than six weeks after submission of the thesis.

Section 14 subsection 4 sentence 2:
The master's thesis must be written in English.

Section 14 subsection 5:
The work required in the final module, comprised of a master's thesis and an oral examination amounts to 30 ECTS credits. The master's thesis must be completed within six months.

Section 14 subsection 7 sentence 1:
At least one assessor should be an authority in the discipline of informatics.

Section 15
Evaluation of examinations

Section 15 subsection 3 sentence 5:
If a module examination is comprised of multiple testing components, then the (overall) grade for the module is calculated on the basis of the average grades for respective performance weighted according to the ECTS credits assigned to each part. This does not apply to the final module. Calculation of the final module grade is governed by Section 14.

Section 15 subsection 3 sentences 10 and 11:
The overall grade earned for the master's degree program is calculated on the basis of the average of the grades from the modules weighted according to the ECTS credits assigned to them plus the grade from the final module and excluding ECTS credits that have been earned in the domain and free elective area.

Section 15 subsection 4:
The overall grade "pass with distinction" is awarded if a grade of 1.0 is awarded for the final module, the average overall grade is less than or equal to 1.3, and none of the module grades for the required, required elective, or advanced modules is greater than 2.0.

II. Module descriptions

Descriptions of all of the modules can be found in Appendix A to these Subject-Specific Provisions and in the module course catalog.

Section 23
Effective date

These Subject-Specific Provisions become effective on the day following official publication by the University of Hamburg. They first apply to students commencing their studies in Winter Semester 2024/25.

Hamburg, 24 July 2024
University of Hamburg