

## **Education and Examination Regulations 2021-2022 (EER)**

**Maastricht University, Faculty of Science and Engineering, Department of Data Science & Knowledge Engineering**

### **Bachelor Data Science and Artificial Intelligence**

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## **Section 1 General provisions**

<b>Article 1.1</b>	<b>Applicability of the regulations</b>
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These regulations apply to the education and exams and examinations of the bachelor's programme Data Science and Artificial Intelligence (hereinafter to be referred to as: 'the programme') and to all students who are registered for the programme.

The programme is provided by the Faculty of Science and Engineering, hereafter called the faculty.

The regulations were adopted by the faculty board after advice and consent from the Educational Programme Committee and after consent from or in consultation with the faculty council. The regulations will take effect on 1 September 2021 for the 2021-2022 academic year.

These regulations also apply to students from other programmes, faculties or institutions of higher education, insofar as they follow components of the programme to which these Education and Examination Regulations apply. However, these are not considered "students of the programme".

For components of the programme that students follow at another degree programme, faculty or institution of higher education, the Education and Examination Regulations for the other programme, faculty or institution apply to the component in question.

## **Article 1.2 Definitions**

In these regulations, the following definitions apply:

- a. The Act: the Higher Education and Scientific Research Act (*Wet op het hoger onderwijs en wetenschappelijk onderzoek*);
- b. Student: a person who is registered at the university for education and/or to take exams and the examination of the programme;
- c. Component: a study unit of the programme within the meaning of the Act;
- d. Course: a component of at most 4 ECTS, consisting of lectures and tutorials.
- e. Propaedeutic phase: the initial period for the programme with a study load of 60 credits, coinciding with course year 1;
- f. Course year: year 1, year 2 or year 3 of the programme;
- g. Academic year: the period from 1 September of a calendar year up to and including 31 August of the following calendar year;
- h. Programme: the bachelor's programme referred to in Article 1.1 of these regulations, consisting of a coherent whole of study units;
- i. Exam: a component of the examination as referred to in Article 7.10 of the Act;
- j. Practical / Skill: practical exercise as referred to in Article 7.13(2)(d) of the Act, in one of the following forms:
  - writing a thesis;
  - carrying out a (group) project;
  - performing a research assignment;
  - developing a software program;
  - writing a paper, creating a technological design or performing another written assignment;
  - participating in field work or a field trip;
  - completing an internship;
  - participating in project skill classes
  - participating in project meetings
- k. Examination: the final examination for the bachelor's programme;
- l. Written exam: a summative assessment, that constitutes or is part of an exam, consisting of MC or essay questions performed either on paper or in a digital format.
- m. Credit: a unit expressed in ECTS credits, with one credit equalling 28 hours of study;

- n. Board of Examiners: the board referred to in Article 7.12 of the Act;
- o. Educational Programme Committee: the representation and advisory body that carries out the duties described in Article 9.18 and 9.38c of the Act;
- p. Examiner: the person designated by the Board of Examiners to administer exams and to determine the results of such exams;
- q. Faculty Board: the faculty board of the Faculty of Science and Engineering, as referred to in Article 9.12 of the Act;
- r. Negative Binding Study Advice: the advice in accordance with Article 7.8b of the Act entailing that the student cannot continue in the programme;
- s. Semester: part of an academic year, either starting first of September and running for 20 educational weeks, or starting first of February running for 21 educational weeks;
- t. Block: part of a semester during which educational activities take place;
- u. DSAI: Data Science and Artificial Intelligence;
- v. DKE: Department of Data Science & Knowledge Engineering;
- w. UM: Maastricht University;
- x. BSA Committee: the committee that issues the (negative) Binding Study Advice on behalf of the Faculty Board;
- y. Study guide: the programme guide, which includes further details about programme-specific provisions and information.

The other terms have the meaning given to them by the Act.

## **Section 2      Admissions**

### **Article 2.1      Matching**

Participation in matching is an optional part of the admission procedure. The matching process starts with filling out an online questionnaire. A member of the academic staff and the study adviser will assess the answers and give their feedback via email. Based on the outcome, the prospective student may receive an invitation to come in for a personal meeting with a member of the academic staff and the study adviser.

### **Article 2.2      Pre-university education requirements**

A person will be granted admission to the programme if he/she has a pre-university education diploma referred to in Article 7.24 of the Act with the pre-university education profile having WI B; or if he/she has been exempted from this under the Act. Equivalent non-Dutch diplomas are referred in Appendix 2.

Persons who do not have a diploma with the pre-university education profile having WI B, which grants admission to the programme, but who have an equivalent diploma which grants admission to the programme under the Act, may register for the programme only after demonstrating that he or she has sufficient knowledge on the level of the final pre-university education examination of the following subject of the required pre-university education profile: Mathematics B.

### **Article 2.3      Language requirement with non-Dutch diplomas**

- a. Holders of a non-Dutch diploma can only register if they have met the minimum English language requirement corresponding to IELTS (international English Language Testing System) with a score of at least 6.0
- b. The requirement referred to under (a) is met if the person concerned has obtained one of the following diplomas or certificates:
  - o A secondary education diploma issued in an EU/EEA country where the person concerned has followed English up to and including the final year;
  - o A diploma issued in a non-EU/EEA country that is at least equivalent to a VWO diploma and where English is the official language of instruction in education;

- A completed bachelor's or master's study programme where the language of instruction is English;
- an International or European Baccalaureate, a US high school diploma or UK GCE A-levels, or
- Can demonstrate sufficient proficiency in English, for example through English taught courses, internships or work experience in an English environment, or
- can submit one of the following language test certificates.
  - IELTS (6.0 minimum)
  - TOEFL Paper-based test (550 minimum)
  - TOEFL Internet test (80 minimum)
  - TOEFL Computer test (213 minimum)
  - TOEIC (670 minimum) the modules 'listening and reading' and 'speaking and writing' must be completed successfully
  - Cambridge [First Certificate in English (FCE) Grade B, First Certificate in English (FCE) Grade C] or
  - similar accredited certification

#### **Article 2.4 Entrance examination (Colloquium Doctum)**

1. A person who does not meet the prerequisites referred to in Articles 2.1 and 2.2 can take part in an entrance examination (colloquium doctum), in accordance with Article 7.29 of the Act.
2. A person who wishes to sit the colloquium doctum must be aged twenty-one or over on the date the prospective program starts. This requirement may be waived if the person in question holds a diploma issued outside the Netherlands that grants admission in the country of origin to a programme at a higher education institution. The age requirement can also be waived if the person in question has refugee status and cannot present his/her diploma for this reason.
3. The entrance examination referred to in Article 7.29 of the Act concerns the following subjects at the level indicated:
  - Mathematics: Performing a number of exercises based on the subjects that are discussed in some chapters of a book to be specified later. These exercises are given in English.
4. The Board of Examiners may lay down further instructions in the Rules and Regulations.
5. The Board of Examiners is responsible for conducting this examination.

### **Section 3 Contents and Structure of the Programme**

#### **Article 3.1a Objectives of the programme**

The goals of the programme are as follows:

1. To educate students at an academic level in Data Science and Artificial Intelligence based upon Mathematics, Computer Science, and Artificial Intelligence.
2. To teach students how to analyse and to solve both Data Science and Artificial Intelligence problems in a variety of application domains.
3. To prepare students to work in teams by organizing the education in Data Science and Artificial Intelligence according to the Project-Centred Learning system.
4. To prepare students for continuing their studies, in particular the Master programmes in Artificial Intelligence, Data Science for Decision Making and Computer Science offered by the transnational

University Limburg (tUL), or for a career in the professional field (IT industry or IT-related application domains).

5. To stimulate students to acquire an international academic orientation.

### **Article 3.1b Qualifications of the programme**

The 27 qualifications of the programme are as follows:

#### **I. Knowledge and understanding**

The recipient of a Bachelor of Science degree in Data Science and Artificial Intelligence should have:

1. Basic understanding of key areas in Data Science;
2. Advanced knowledge of a specific area in Data Science up to a level that without further requirements grants access to a Master programme in this area;
3. Basic understanding of key areas in Artificial Intelligence;
4. Advanced knowledge of a specific area in Artificial Intelligence up to a level that without further requirements grants access to a Master programme in this area;
5. Basic understanding of key areas in Computer Science and in Applied Mathematics;
6. Advanced knowledge of a specific area in Computer Science and in Applied Mathematics up to a level that without further requirements grants access to a Master programme in this area.

#### **II. Applying knowledge and understanding**

The recipient of a Bachelor of Science degree in Data Science and Artificial Intelligence should have at least the following thirteen abilities:

7. The ability to understand, apply, formulate, and validate models from the domains of Data Science and Artificial Intelligence;
8. The ability to extract information from data, to interpret results and to convey them;
9. The ability to apply knowledge from the key areas of Artificial Intelligence;
10. The ability to apply the support modules for Artificial Intelligence;
11. The ability to apply ideas, methods and tools from the field of Data Science;
12. The ability for constructing and evaluating mathematical and computational methods for a range of application domains;
13. The ability to solve problems and designs analytically, to comprehend (design) problems and abstract their essentials, to construct and develop logical arguments with clear identification of assumptions and conclusions;
14. The ability to submit an argument in the exact sciences to critical appraisal;
15. The ability to think analytically and critically, and to apply logical reasoning;
16. The ability to cooperate (interdisciplinary and internationally) and to participate effectively as an academic professional;
17. The ability to create an effective project plan for solving a Data Science and/or Artificial Intelligence problem in a supervised context;
18. Manage one's own learning and development, including time management and organizational skills;
19. The ability to transpose academic knowledge and expertise into (inter)national societal, professional and business contexts;;
20. Readiness to address new problems in new areas, emerging from scientific and professional fields.

#### **III. Making judgments**

The recipient of a Bachelor of Science degree in Data Science and Artificial Intelligence should have:

21. The ability to review critically (a) results, (b) arguments, and (c) problem statements from accepted perspectives in the field of Data Science and Artificial Intelligence;
22. Initial competence in searching and critical processing of professional literature in Data Science and Artificial Intelligence;
23. Acquaintance with the standards of academic criticism;
24. An awareness of, and responsibility for ethical, normative and societal consequences of developments in science and technology, particularly resulting from Data Science and Artificial Intelligence.

#### IV. Communication

The recipient of a Bachelor of Science degree in Data Science and Artificial Intelligence should have:

25. Academically and internationally appropriate communicative skills, i.e., the ability to (a) communicate ideas effectively in written form and through the use of Information and Communication Technology, (b) give effective oral presentations, both formally and informally, and (c) understand and offer constructive criticism on the presentations of others;

#### V. Learning skills

The recipient of a Bachelor of Science degree in Data Science and Artificial Intelligence should be able to:

26. Reflect on (a) one's own style of thought, (b) one's own working methods, and (c) one's own readiness to take the necessary corrective action;
27. Recognize the need for continued learning throughout a professional career;

### **Article 3.2 Form of the programme**

This is a full-time programme. The programme commences once a year in September.

### **Article 3.3 Language of instruction**

1. The programme is given in English (accountability for this language of instruction is given in Appendix 4). Components of the programme may be in Dutch or in another common language in the EU.
2. Dutch, English, French and/or German texts may be used in the education and exams in the programme.

### **Article 3.4 Communications and announcement of decisions**

1. The Faculty Board, the Board of Examiners, the Director of Studies and the examiners may use the Student Portal/the digital learning environment and email via the UM account for communications relating to the education and examinations.
2. The Faculty Board, the Board of Examiners, the Director of Studies and the examiners may use Student Portal/the digital learning environment and e-mail via the UM account to announce decisions.
3. The student must regularly check his/her university e-mail box, the DKE website, the Student Portal, and the digital learning environment. Information disseminated via e-mail, the digital learning environment or the website will be assumed to be known.

### **Article 3.5 Study load**

The programme has a study load of 180 credits (ECTS), with one credit equalling 28 hours of study.

### **Article 3.6 Content of the programme**

1. The programme includes the following components with the stated study load:

Course year 1:

BLOCK 1.1	COURSE	ECTS
	Introduction to Data Science & Artificial Intelligence	4
	Introduction to Computer Science 1	4
	Discrete Mathematics	4
	Project 1-1	

BLOCK 1.2	COURSE	ECTS
	Computational and Cognitive Neuroscience	4
	Introduction to Computer Science 2	4
	Calculus	4
	Project 1-1	

BLOCK 1.3	COURSE	ECTS
	Project 1-1	6

BLOCK 1.4	COURSE	ECTS
	Linear Algebra	4
	Data Structures and Algorithms	4
	ICT and Knowledge Management	4
	Project 1-2	

BLOCK 1.5	COURSE	ECTS
	Numerical Mathematics	4
	Software Engineering	4
	Logic	4
	Project 1-2	

BLOCK 1.6	COURSE	ECTS
	Project 1-2	6

Course year 2:

BLOCK 2.1	COURSE	ECTS
	Databases	4
	Graph Theory	4
	Probability and Statistics	4
	Project 2-1	

BLOCK 2.2	COURSE	ECTS
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	Reasoning Techniques	4
	Machine Learning	4
	Linear Programming	4
	Project 2-1	
BLOCK 2.3	COURSE	ECTS
	Project 2-1	6
BLOCK 2.4	COURSE	ECTS
	Human Computer Interaction and Affective Computing	4
	Theoretical Computer Science	4
	Mathematical Modelling	4
	Project 2-2	
BLOCK 2.5	COURSE	ECTS
	Natural Language Processing*	4
	Introduction to Image & Video Processing*	4
	Philosophy & Artificial Intelligence	4
	Simulation and Statistical Analysis	4
	Project 2-2	
BLOCK 2.6	COURSE	ECTS
	Project 2-2	6

*\*Electives (Second year students choose 1 out of 2 and may not register for a second one until they are in year 3).*

Course year 3:

BLOCK 3.1	COURSE	ECTS
	Parallel Programming*	4
	Digital Society*	4
	Game Theory*	4
	Semantic Web*	4
	Robotics and Embedded Systems *	4
	Computer Security*	4
	Project 3-1	
BLOCK 3.2	COURSE	ECTS
	Large Scale IT and Cloud Computing*	4
	Logic for Artificial Intelligence*	4
	Software & Systems Verification *	4
	Recommender Systems*	4

	Introduction to Bio-Informatics*	4
	Quantum Computing*	4
	Project 3-1	
<b>BLOCK 3.3</b>	<b>COURSE</b>	<b>ECTS</b>
	Project 3-1	6
<b>BLOCK 3.4</b>	<b>COURSE</b>	<b>ECTS</b>
	Data Analysis	4
	Operations Research Case Studies	4
	Intelligent Systems	4
<b>BLOCK 3.4 - 3.6</b>	<b>COURSE</b>	<b>ECTS</b>
	Bachelor Thesis	18

*\*Electives (Third year students choose 3 elective courses in each block (3.1 and 3.2)).*

*In case students have passed both electives of block 2.5, either the course Introduction to Image & Video Processing or Natural Language Processing can replace 1 of the third year electives*

2. After obtaining permission from the Board of Examiners, in blocks 3.1, 3.2, and 3.3, students can also choose to (1) study abroad for a semester, (2) to choose elective courses at other UM bachelor programmes of at most 18 ECTS (3) the minor Entrepreneurship or (4) the educational minor. These options cannot be combined and cannot be taken extracurricular unless stated otherwise.

### **Article 3.7 Projects and Bachelor Thesis**

The programme includes projects and thesis work for which additional regulations apply as specified in the Rules and Regulations.

### **Article 3.8 Minor Entrepreneurship**

1. Students of the programme have the possibility to choose the minor Entrepreneurship from SBE in blocks 3.1, 3.2 and 3.3 of the third year to fulfil part of the elective obligation in year 3.
2. The minor Entrepreneurship has a total study load of 26 ECTS.
3. Every minor proposal is subject to approval by the Board of Examiners.

### **Article 3.9 Educational Minor**

1. Additionally, to the possibilities stated in Article 3.8, students of the programme have the possibility to choose an educational minor in year 3 that replaces the elective period in blocks 3.1, 3.2, and 3.3 of the third year.
2. This educational minor has a study load of 35 ECTS of which 5 are extracurricular, hence do not count towards the study load referred to in Article 3.5.
3. For this minor it is required that the student is fluent in Dutch, is starting the minor no later than his/her third year of enrolment of the programme and before starting the minor has, in addition to study progress as mentioned in Article 5.3.2, obtained 52 ECTS from year 2.
4. The Board of Examiners can impose further conditions and restrictions.
5. Participation is only possible with prior permission of the Board of Examiners based on a motivation letter in Dutch, study progress and suitability.

### **Article 3.10 Study Abroad**

1. Students of the programme can apply to study abroad for a semester, at another University with whom Maastricht University has an Agreement of Exchange.
2. Nomination and approval is decided on by the Board of Examiners. Guidelines can be found in the Rules and Regulations, withstanding Article 5.3.2;
3. This study abroad will take place in block 3.1, 3.2 and 3.3 and has a study load of 30 ECTS.
4. The selected course programme has to be approved by the Board of Examiners.
5. Further regulations can be found in Appendix 3 and in the Rules and Regulations.

### **Article 3.11 KE@Work**

1. KE@Work is an honours programme during the second and third year available for selected students of the programme.
2. Eligibility requirements for KE@Work entail that students:
  - a) have passed all courses/components in the first year of the Bachelor's programme at first opportunity
  - b) have obtained a GPA of at least 7.5 for all courses of year 1, (to be eligible for pre-selection a GPA of at least 7.5 has to be obtained for blocks 1 to 4)
  - c) have not been convicted of fraud and have not been reprimanded for a violation of house rules or code of conduct.Further criteria and leniency can be specified in the Rules and Regulations.
3. Because the number of places is limited, students will be selected from the eligible students by the KE@Work coordinator. Hereafter, selection will also be performed by the prospective internship organization.
4. Students perform Data Science & Artificial Intelligence related tasks as part of an internship for companies selected by the KE@Work coordinator.
5. KE@Work participation is subject to approval by the Board of Examiners, withstanding Article 5.3.2.
6. For every KE@Work internship an examiner who will act as supervisor will be appointed by the Board of Examiners.
7. KE@Work replaces each of the 3 projects of 6 ECTS in year 2 and 3 by 3 individual projects of 6 ECTS at the selected company. Additionally, the students dedicate their bachelor thesis to a topic relevant for the internship company.
8. Every semester the study performance of the KE@Work student is evaluated. If study progress suffers, the student is transferred to the educational programme stated in Article 3.6.
9. Additional regulations apply as specified in the Rules and Regulations.

### **Article 3.12 MaRBLLe 2.0**

1. The programme includes a research-based component called MaRBLLe 2.0 (Maastricht Research Based Learning (MaRBLLe), which is an honours programme available for selected students of the programme.
2. Eligibility requirements for MaRBLLe 2.0 entail that students:
  - a) have passed all courses/components in the first year of the Bachelor programme at the first attempt
  - b) obtained a GPA of at least 7.5 for the courses of year 1,
  - c) have not been convicted of fraud and have not been reprimanded for a breach of house rules or the code of conduct.Further criteria and leniency can be specified in the Rules and Regulations.
3. Because the number of places is limited, students will be selected by the MaRBLLe coordinator from the eligible students.
4. Selected students participate in a state-of-the-art research project.
5. Participation is subject to approval by the Board of Examiners, withstanding Article 5.3.2.

6. For each project two or more examiners will be appointed.
7. MaRBLLe 2.0 replaces each of the 2 projects of 6 ECTS in year 2 by 2 individual projects of 6 ECTS..
8. Every semester the study performance of the participating student is evaluated. If study progress suffers, the student is transferred to the educational programme stated in Article 3.6.
9. Additional regulations apply as specified in the Rules and Regulations.

### **Article 3.13 The examination**

The examination of the programme consists of the following components

- a. Course year 1, offered from September 2013 or later:
  - exams from blocks 1.1, 1.2, 1.4, 1.5
  - projects 1-1 and 1-2
- b. Course year 2, offered from September 2014 or later:
  - exams from blocks 2.1, 2.2, 2.4, 2.5
  - projects 2-1 and 2-2, or completion of semesters 2-1 and 2-2 of a KE@Work / MaRBLLe project
- c. Course year 3, offered from September 2015 or later:
  - Semester 1: exams from 6 optional courses during blocks 3.1 and 3.2 and the project 3-1.
  - Alternative options in the elective semester are (as further specified in section 3):
    1. A study abroad semester with one of our partner universities;
    2. Electives from other UM bachelor programmes with a maximum of 18 ECTS. They are supplemented by elective courses from this programme.
    3. A minor as specified in paragraph 3.8, supplemented with an elective course at DKE or the minor as specified in paragraph 3.9;
    4. Participation in KE@Work, supplemented by elective courses from the programme.
  - Semester 2: exams from block 3.4 and the Bachelor thesis.

## **Section 4 Education**

### **Article 4.1 Courses; composition; actual design**

1. For the programme components, courses are given with the study load stated in Article 3.6.
2. The education is given in the form of classes, project groups, practical training, lectures, individual supervision, or otherwise. On average, the student has 18 hours of face-to-face time per week, but this can differ per period. For further details, please see the study guide and Student Portal/the digital learning environment.
3. The educational programme includes 41 weeks per year. During this period students are expected to be available for educational activities.

### **Article 4.2 Entrance requirements; Prior knowledge**

1. The student may only participate in the following components after he/she has passed the listed components (indicated as prerequisites in the study guide):

#### *Year 1*

Project 1-2: after attainment of two out of four courses from the set: Discrete Mathematics, Calculus, Computer Science I and Computer Science II.

### *Year 2*

Project 2-1: after attainment of Project 1-1 and two out of three courses of Computer Science I, Computer Science II, and Data Structures & Algorithms, and only if a student is registered for at least three courses in year 2, semester 1, or has already successfully completed at least three courses in year 2, semester 1.

Project 2-2: after attainment of Project 1-1, Project 1-2 and two out of three courses of Computer Science I, Computer Science II, and Data Structures & Algorithms, and only if a student is registered for at least three courses in year 2, semester 2, or has already successfully completed at least three courses in year 2, semester 2.

### *Year 3*

Project 3-1: after attainment of Project 2-1, and only if a student is registered for at least three courses in year 3, semester 1, or has already successfully completed at least three courses in year 3, semester 1.

2. Subject to the provisions in the first paragraph, the prior knowledge needed to successfully participate in each course is indicated in the study guide. The prior knowledge is a prerequisite for students that do not follow the programme as stated in Article 3.6 and students that are admitted to courses based on special circumstances. I.e., these components can only be taken when the prior knowledge has been fulfilled.
3. The Board of Examiners can deviate from the provisions in the previous two paragraphs in the case of premaster students.

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#### **Article 4.3 Component registration**

Withstanding Article 4.2 and Article 5.3, students may participate in a component after they have timely registered for it through the Student Portal/the digital learning environment.

#### **Article 4.4 Attendance and best-efforts obligation**

1. The student must participate in at least 70% of the scheduled meetings (e.g. lectures and practical training) of each course in year 1.
2. (Non)compliance regarding attendance will be taken into account by the BSA Committee if a student receives a negative BSA at the end of the academic year.
3. Attendance and participation at project skill trainings and project meetings is mandatory. In addition, each student is required to participate actively in doing tasks with respect to the project and to cooperate actively with their group in order to successfully finish the project assignment.
4. The requirements in paragraph 3 are requirements as in article 7.13(2)(t) of the act. A student who has not met the requirements as stated in paragraph 3, cannot participate in the examination of the research project and will receive an NG. More information can be found in the Rules and Regulations.
5. Students whose absence or inactivity during the project has been marked as inexcusable by the project coordinator, and/or students that have a substandard contribution to the group work will not receive a pass for the project concerned.
6. Attendance and participation in other education activities may be part of an exam when announced in the study guide or Student Portal/the digital learning environment. Prior approval of the Board of Examiners is required.

#### **Article 4.5 Components with limited capacity**

The components mentioned in Appendix 1 are available to a limited number of students enrolled at UM, provided that the students enrolled in the programme will anyhow be placed in the components belonging to the compulsory part of their programme, in compliance with the periods the faculty designated to them. For components belonging to the optional parts of the bachelor's programme, most places will be reserved for students enrolled in the programme.

#### **Article 4.6 Practical training**

Some components indicated in Article 3.6 include a practical training for which additional regulations apply as specified in the Rules and Regulations.

### **Section 5 Assessment**

#### **Article 5.1 General**

1. During a component, the student will be tested for academic training and the extent to which the student has sufficiently achieved the stated learning objectives.
2. The study guide describes the achievements the students must make to pass the component and the criteria on which the student is assessed. Any amendments are published on Student Portal/the digital learning environment.
3. The Rules and Regulations describe the assessment procedure.

#### **Article 5.2 Marks**

1. Marks are awarded on a scale of 1 to 10. Whole grades are awarded to exams. Both half and whole grades can be awarded for study components of at least 10 ECTS as well as for projects.
2. The student must receive a final mark of 6.0 or higher to pass the component.
3. The highest result attained determines the final mark.
4. NG (no grade) can be assigned as a result of plagiarism or academic dishonesty; or when assessment is incomplete and no grade can be assigned. An NG automatically constitutes a fail and no credits are awarded.

#### **Article 5.3 Order of exams**

1. If the student has obtained at least 45 credits in course year 1, he/she may sit and register for the exams in course year 2.
2. If the student has obtained at least 60 credits in course year 1 and at least 40 credits in course year 2, he/she may sit and register for the exams in course year 3.
3. If the student has obtained at least 60 credits in course year 1, at least 40 credits in course year 2, and at least 140 ECTS overall, he/she may apply for the bachelor thesis in course year 3.
4. The student may not take an exam for certain components until the entrance requirements as stated in Article 4.2 have been fulfilled.
5. In conformance with article 7.30 paragraph 3 of the Act, the Board of Examiners may grant a student permission to sit other exams than referred to in paragraphs 1, 2 and 3.
6. If a student deviates from the sequence as described in paragraphs 1 through 4, without permission from the Board of Examiners, the result of the component in question can be declared invalid.

#### **Article 5.4 Scheduling and frequency of the exams**

1. Students can take written exams twice per academic year on dates to be determined by the Board of Examiners: once during or directly after the block (first sit for the exam) and once before the end of the semester in question (resit option).
2. Students can perform thesis research twice a year (once in each semester). More information can be found in the Rules and Regulations Bachelor's Programme DKE.
3. Students can take other exam forms, including practicals, in principle once a year (see also 5).
4. Once a student has successfully passed an assessment, he/she cannot re-sit the assessment.
5. If a student failed a practical, a repair can be offered subject to conditions. General provisions are given in the Rules and Regulations, further specific are given in the assessment plan of the component.

6. In exceptional cases, the Board of Examiners can decide that an exam may be taken at another time than determined in accordance with the first paragraph.

#### **Article 5.5 Registration for exams**

1. Students may take an exam for a course for which they are registered, after they have timely registered for the exam through the Student Portal.
2. In exceptional cases, the Board of Examiners may, at the student's request, exempt the student from the obligation in Article 4.4.
3. If a student deviates from the conditions as described in paragraphs 1 through 2, the result of the component in question will be declared invalid.

#### **Article 5.6 Form of the exams**

1. Exams can be 'written exams', 'oral exams' (including 'presentation'), 'project', 'thesis', 'MaRBLLe 2.0', 'KE@Work', 'participation', 'practicals' (including assignments), 'essay', a combination thereof, or the form as specified on Student Portal/the digital learning environment. 'Written exams' also include digital exams. The form and organization of exams can be further specified in the Rules and Regulations.
2. In principle all exams and assignments with the exception of projects are on an individual basis, unless explicitly announced otherwise.
3. Oral exams can only take place upon prior approval by the Board of Examiners.
4. The form of the exam is announced by the examiner at the start of the course.
5. Upon request, students with a disability may take exams in a manner which accommodates their specific disability as much as possible. If necessary, the Board of Examiners will obtain expert advice where necessary before taking a decision in such matters.

#### **Article 5.7 Oral exams**

1. Oral exams are taken only by one person at a time, unless the Board of Examiners decides otherwise.
2. An oral exam is given by the examiner in the presence of a second examiner, unless the Board of Examiners has decided otherwise.
3. Oral exams take place in public, unless the Board of Examiners or the relevant examiner decides otherwise in special cases.

#### **Article 5.8 Assessments in exceptional cases**

A student of the programme can submit a request to the Board of Examiners for an individual assessment

1. This request may be granted if the student has not passed the exam in question due to exceptional circumstances and not granting an individual assessment would result in an unacceptable study delay.
2. The following criteria apply to the granting of an individual assessment for the final component of the programme:
  - It must be the final study result to be obtained.
  - The study delay in case the individual assessment is not granted must be at least one semester.
  - The student must have taken part in the last two regular exam opportunities for the exam for which he/she is requesting another assessment.
3. Further requirements can be specified in the Rules and Regulations.

#### **Article 5.9 Practicals**

1. The Board of Examiners may draw up guidelines for the practicals, which include group projects, internships and theses. The guidelines will be included in the Rules and Regulations.
2. The bachelor's thesis project will be evaluated by at least two examiners (the relevant supervisor and a second assessor), at least two of them are affiliated with the programme for which the student is registered.

#### **Article 5.10 Determination and announcement of exam results**

1. The Board of Examiners determines the standards for assessing each examination component. The standards are included in the Rules and Regulations.
2. The examiner determines the result of a written exam within 15 working days of the date on which it was taken and before the registration of the resit, and provides the Student Affairs Office with the necessary information to inform the student of the result.
3. The examiner determines the result of an oral exam within 24 hours and issues the relevant certificate to the student. If more than one student takes the same exam after each other, this period may be extended by up to five working days.
4. When the result of a written exam is announced, it will be indicated how the student can inspect the exam and file an appeal as referred to in Article 6.6.

#### **Article 5.11 Right of inspection**

1. Within 10 working days of the date on which the result of a written exam, including a computer-based exam, is announced, students may inspect their evaluated work.
2. Within the period referred to in paragraph 1, any interested party may, upon request, inspect the questions and assignments for the written exam and, if possible, the standards based on which it was assessed.

#### **Article 5.12 Period of validity**

1. Exams which have been passed are valid for an unlimited period. Contrary to the above the Board of Examiners may require the participant to take an additional or replacement exam or examination component for an exam that was passed more than six years ago if the student's knowledge or insight that was examined is demonstrably outdated or the skills that were examined are demonstrably outdated.
2. If exceptional circumstances apply as referred to in Article 7.51 paragraph two of the Act, the period of six years in paragraph one will be extended by the duration of the financial support the student receives from the profiling fund.
3. Sub-tests and assignments that were passed within a component, which was not passed, will lose their validity after the academic year in which they were passed unless the Board of Examiners states otherwise.

#### **Article 5.13 Retention period for exams**

1. The exercises, answers and the evaluated work of the written exams will be retained in paper or digital form for two years after the exam/examination result is determined.
2. The bachelor thesis and its evaluation will be kept for at least seven years after the evaluation.

#### **Article 5.14 Exemption**

The Board of Examiners may, at a student's request and having heard the relevant examiner, grant the student an exemption from taking an exam if he/she demonstrates that he/she previously:



1. Either passed an exam for a university or higher professional education programme which was similar in terms of content and level or gained sufficient knowledge and skills relevant to the exam concerned, either through work or professional experience.
2. An exemption may only pertain to an entire component and not a part thereof.
3. At most 60 credits for the programme may be earned based on the exemptions granted.
4. The bachelor's thesis is excluded from this exemption option.
5. The Board of Examiners will not grant any exemption based on exams passed by a student outside the programme during the period in which the student was barred by the Board of Examiners from taking exams for the programme because of fraud.
6. The same period of validity applies to exemptions as to exam results.

#### **Article 5.15 Fraud**

1. 'Fraud', including 'plagiarism', means actions or omissions by a student which make it impossible in whole or in part to properly evaluate his/her knowledge, understanding and skills. Allowing and/or enabling other students to engage in fraud is also considered fraud under these regulations.
2. 'Plagiarism' means the presentation of ideas or words from one's own or someone else's sources without proper acknowledgement of the sources.
3. If the Board of Examiners determines that a student has engaged in fraud, the Board of Examiners can take appropriate measures.
4. In serious cases of fraud, the Board of Examiners can propose to UM's Executive Board that the student(s) concerned be permanently deregistered from the programme.
5. The Rules and Regulations include further provisions about what constitutes fraud and which disciplinary measures the Board of Examiners can impose.

#### **Article 5.15A Invalid exam**

If an exam involves irregularities that make it impossible to accurately assess a candidate's knowledge, insight and skills, or when the quality of the exam or assessment cannot be guaranteed, the Board of Examiners may declare the exam invalid for the examinee and/or a group of examinees.

#### **Article 5.16 Unsuitability (Iudicium Abeundi)**

1. In exceptional cases and after careful consideration of the interests involved, the Board of Examiners or the Dean/the Faculty Board may ask the Executive Board to terminate or, as the case may be, refuse the enrolment of a student in a programme, if that student, through her/his behaviour or opinions ventured, has demonstrated his/her unsuitability for the practice of one or more professions for which s/he is trained by the programme s/he follows, or, as the case may be, for the practical preparation for the practice of the profession.
2. The relevant clauses of Maastricht University's Enrolment Provisions apply.

### **Section 6 Examination**

#### **Article 6.1 Examination**

1. The Board of Examiners determines the result and date of the examination and issues the certificate as referred to in Article 6.3 as soon as the student has satisfied the requirements for the examination programme.
2. Prior to determining the result of the examination, the Board of Examiners may conduct their own investigation of the student's knowledge regarding one or more components or aspects of the programme if and insofar as the results of the relevant exams/assessments give reason to do this.
3. To pass the examination, the student must pass all components referred to in Article 3.14.

4. To pass the examination and receive the certificate, the student must also have been registered for the programme during the period that the exams were taken.
5. A certificate may only be issued after it has been shown that the student has satisfied all the obligations, including paying the tuition fees.
6. The last day of the month in which the student satisfied all the examination obligations will be considered the examination date (graduation date).
7. Students who have passed the examination and who are entitled to the issuance of a certificate may, stating reasons, ask the Board of Examiners not to do this yet. This request must be submitted at least one month before the final assignment is turned in or the final exam is taken.

The Board of Examiners in any event grants the request:

- if the student is selected by the faculty for a double degree, an extracurricular internship or an extracurricular exchange, or
- if the student holds or will hold a board position for which at least nine months of financial support is awarded from the profiling fund or holds or will hold an 'INKOM' board position.

The Board of Examiners may grant the request if refusal would result in an exceptional case of extreme unfairness because of the fact that the student concerned could not have taken the automatic graduation into account when he/she was planning his/her study.

## **Article 6.2 Degree**

Students of the programme who have passed the examination will be awarded the degree 'Bachelor of Science in Data Science & Artificial Intelligence'.

## **Article 6.3 Certificate and statements**

1. As proof that the examination was passed, the Board of Examiners issues a certificate, after it has been stated by or on behalf of UM's Executive Board that the procedural requirements for receiving the certificate have been met. The certificate is based on the model that UM's Executive Board has adopted. One certificate will be issued per programme, even if the student completes several programmes.
2. The certificate that the examination has been passed also indicates:
  - a. the name of the institution;
  - b. the name of the programme;
  - c. the examination components;
  - d. (if applicable) the right to practice a specific profession which is related to the certificate;
  - e. the degree awarded;
  - f. the date on which the programme was most recently accredited or was subjected to the new programme test.
3. Students who are entitled to the issuance of a certificate may, stating reasons, ask the Board of Examiners not to do this yet (pursuant to Article 6.1(7)).
4. The certificate is signed by the chair of the Board of Examiners and the dean of the faculty.
5. The certificate includes a list of the examination components.
6. The Board of Examiners includes a diploma supplement as referred to in Article 7.11(4) of the Act with the certificate. This diploma supplement is based on the model adopted by UM's Executive Board, which is in compliance with the agreed European standard format.
7. The Board of Examiners may award the 'cum laude' or 'summa cum laude' designation in accordance with the provisions in the Rules and Regulations.
8. Students who have passed more than one exam and who cannot be issued a certificate will upon request, receive a statement issued by the Board of Examiners which at least indicates the exams which they passed.

#### **Article 6.4 Grade point average (GPA)**

The diploma supplement referred to in Article 6.3(7) indicates the final grade point average (GPA) as specified in the Rules and Regulations, to provide a reflection of the student's academic performance.

#### **Article 6.5 Honours programme certificate**

1. If one of the honours programmes referred to in Articles 3.11 or 3.12 is successfully completed, a separate certificate indicating this will be issued in addition to the one referred to in Article 6.3. The separate certificate is based on the model that UM's Executive Board has adopted.
2. To receive this certificate, the student must, in addition to the requirements for the regular bachelor's examination, satisfy the condition that the student has not been engaged in fraud with respect to an exam or a part thereof or has not been suspended due to other misconduct.
3. The Board of Examiners decides whether the student has satisfied all the specific requirements of the honours programme and can impose additional conditions in the Rules and Regulations.

#### **Article 6.6 Right of appeal**

Within six weeks after the decision by the examiner and the board of examiners is announced, the student may appeal this decision to UM's Complaint Service Point.

The appeal must be signed, must include a date and the name and address of the party lodging the appeal, must indicate the grounds for the appeal and, if possible, must include a copy of the decision being appealed.

### **Section 7 Study Guidance and Advice**

#### **Article 7.1 Study progress administration**

The faculty records the students' individual study results and makes them available through the Student Portal/the digital learning environment.

#### **Article 7.2 Study guidance**

1. The faculty will provide for the introduction and study guidance for students registered for the programme, which also includes orientating them regarding possible study paths in and outside the study programme
2. The study guidance includes:
  - a. an introduction during the first week of the first semester of the first academic year;
  - b. assignment of a mentor for the first year in the bachelor's programme;
  - c. group and individual advice on possible study paths in and outside the programme, partly with a view to the professional options after the master's programme and opportunities for immediately entering the labour market after obtaining the bachelor's diploma;
  - d. group and individual advice on study skills, study planning and choices of continuing study paths;
  - e. offering referrals and help if the student experiences problems during the study;
  - f. offering referrals for a more appropriate study programme to students who deregister for the programme before 1 February of the year of initial registration;
  - g. giving a (negative) binding study advice (BSA) on the continuation of studies.

#### **Article 7.3 Study advice for the propaedeutic phase**

1. At the end of the first year of registration for the propaedeutic phase of the bachelor's programme, the (negative) binding study advice (BSA) is issued by the BSA Committee on behalf of the Dean to each student regarding continuation or not of the programme.
2. Subject to the provisions in the first paragraph, the BSA Committee on behalf of the Dean may issue the advice to the student as long as the student has not passed the exams related to the propaedeutic phase programme components.

#### **Article 7.4 Standards**

1. At the end of the first year of registration of the bachelor's programme, the student must have earned at least 45 credits of the first course year.
2. When determining the number of credits obtained as referred to in paragraph 7.4.1 all credits obtained in the 1st year are included, except those for exemptions.

#### **Article 7.5 Negative binding study advice (nBSA)**

1. If the advice referred to in Article 7.3 is negative, the advice also entails a rejection for the bachelor's programme.
2. The rejection referred to in paragraph 1 is binding and means that the student cannot register for the bachelor's programme for the next 6 academic years.
3. The nBSA is issued to a student who was registered for the full-time programme at any time during the first academic year and who obtained less than 45 credits at the end of the academic year concerned.
4. Students who apply to deregister before 1 February of the first year of registration will not be issued with a study advice as referred to in Article 7.3.1. If a student re-registers in a subsequent academic year, the advice referred to in Article 7.3.1 will be issued in the next academic year based on the credits obtained in that academic year and in accordance with the regulations applicable to that year.
5. Before the nBSA is issued, the student will be given the opportunity to be heard by the BSA Committee.

#### **Article 7.6 Procedure**

1. No later than in the month of March of the first academic year of the programme, a student who has earned less than 24 credits at that time is given a written warning.
2. The warning indicates the period within which the study results must be improved.
3. In the month of August of the first academic year, students meriting negative binding study advice are given written notice that the BSA Committee intends to issue this advice to them.
4. Before the nBSA is issued, the student will be given the opportunity to be heard. The student will be informed of this in the notice referred to in paragraph 3. The hearings will take place in mid-August. A minimum of two members of the BSA Committee will attend the hearing.
5. The study adviser is informed which students merit negative binding study advice. The study adviser may, upon request or otherwise, make a recommendation to the BSA Committee.
6. After the student has been heard, the BSA Committee will determine whether to issue the nBSA to the student.
7. The student receives written notice of the nBSA decision by 31 August at the latest.
8. The written notice is signed by the Chair of the BSA Committee.
9. An appeal against the nBSA decision may be lodged with UM's Complaint Service Point within six weeks of the date on which the decision was announced.

#### **Article 7.7 Personal circumstances**

1. In issuing the study advice, the BSA Committee takes the personal circumstances referred to in paragraph 2 of this Article into account.
2. Personal circumstances which may be considered include:
  - a. Illness on the part of the student concerned;
  - b. physical, sensory or other impairments which the student concerned has;
  - c. pregnancy on the part of the student concerned;
  - d. special family circumstances;
  - e. administrative activities as referred to in Article 2.1(1) under (e), (f) and (g) of the Implementation Decree for the Act 2008 [Uitvoeringsbesluit WHW 2008].
  - f. participation in top-level sport;
  - g. circumstances other than those referred to in subparagraphs a. to f. which, if they were not to be honoured by the faculty board, would result in excessive unfairness.

To ensure that the student receives the best possible support, he/she must notify the study adviser of the personal circumstances as soon as possible and apply for facilities for disabilities through the disability office as soon as possible.

#### **Article 7.7b**

1. If it is impossible to issue advice on the student's suitability for the programme due to personal circumstances that occurred in the first year, contrary to Article 7.5 this advice may be postponed to a later moment during the propaedeutic phase. An adapted standard may be used for the student in question.
2. If the advice is postponed, a BSA will be issued by the end of the following year of registration in the programme. The postponed advice will be positive if the (adapted) BSA standard is met. The student will receive a negative BSA if he/she has not achieved the (adapted) BSA standard.
3. At the student's request, the BSA Committee will take personal circumstances into account when deciding to issue a BSA. This decision will also be based on the student's study behaviour, agreements and/or study plan made with the study adviser, the time at which the personal circumstances were reported and the study results achieved at the end of the first year of study. As reported in article 4.4(2), (non)compliance with attendance rules of first year courses will also be taken into account by the BSA Committee.

#### **Article 7.8 Hardship clause**

In exceptional cases in which application of the study advice rules would lead to unreasonable treatment or serious unfairness, the faculty board can deviate from the stated regulations in the student's favour.

### **Section 8 Transitional and Final Provisions**

#### **Article 8.1 Amendments**

1. Amendments to these regulations may be adopted in a separate decision by the Faculty Board in consultation with the Board of Examiners, after a recommendation and consent from the Educational Programme Committee and after consent from or consultation with the Faculty Council.
2. An amendment in these regulations will not pertain to the current academic year, unless the interests of the students will not reasonably be harmed as a result.
3. In addition, amendments may not affect, to the students' detriment, a decision regarding a student which has been taken by the Board of Examiners pursuant to these regulations.

#### **Article 8.2 Notice**

1. The faculty board ensures that proper notice is given of these regulations, the rules and regulations adopted by the board of examiners, and any changes to these documents, by, for example, placing such notice on the faculty website and/or the Student Portal/the digital learning environment.
2. Any interested party may obtain a copy of the documents referred to in the first paragraph from the Student Affairs office.

#### **Article 8.2a Evaluation**

The Faculty Board will ensure that the education of the programme is regularly evaluated, assessing at least – for the purpose of monitoring and if necessary adapting the student workload – the amount of time students need to complete their duties as set out therein.

#### **Article 8.3 Unforeseen cases/safety net scheme**

1. In cases not covered or not clearly covered by these regulations, decisions are taken by or on behalf of the faculty board, after it has consulted with the Board of Examiners.
2. In individual cases in which application of the Education and Examination Regulations, except for the study advice rules, would lead to manifestly unreasonable results, the Board of Examiners can deviate from the stated regulations in the student's favour.

#### **Article 8.4 Effective date**

This Regulation will come into force on 1 September 2021 and will apply for the academic year 2021/2022.

Adopted by the faculty board on May 18, 2021.

#### **Appendix 1 Components with limited capacity (see Article 4.5)**

Component	Faculty	Number of participants	Offered in semester
2.1-3.6	FSE/DKE	t.b.a. – KE@Work	Year 2 and 3
2.1-2.6	FSE/DKE	t.b.a. – MaRBL 2.0	Year 2
3.1-3.3	FSE/DKE	t.b.a. – Exchange programme	Semester 1 of year 3
3.1–3.3	FSE/DKE	t.b.a. – Minor Entrepreneurship	Semester 1 of year 3
3.1–3.6	FSE/DKE	t.b.a Educational Minor	Year 3

#### **Appendix 2 Equivalent pre-university education**

A student that holds a non-Dutch diploma that is equivalent to the Dutch VWO diploma is admissible to the bachelor programme in Data Science and Artificial Intelligence in the following cases

- Belgian diplomas: ASO.
- German diplomas: Abiturzeugnis or an equivalent pre-university high-school diploma with a sufficient amount of Math education.
- Other countries: A pre-university high-school diploma equivalent to the Dutch VWO diploma with a sufficient amount of math education (see list on the DKE website).

If a student's diploma is not included in the list on the website, it must be evaluated first.

### **Appendix 3 Regulations for exchange programmes to study abroad**

1. Components attained in connection with an exchange programme adopted by the faculty board may be incorporated into the examination for the programme for which the student is registered.
2. In principle, a student pursuing part of his/her studies in a foreign country does this as part of the DKE's exchange programme at one of its exchange partners.
3. Studies in connection with the exchange programme constitute part of the studies at UM.
4. The certificate may not be issued until the exchange programme has been completed and the results in the foreign country have been incorporated. The results will be taken into account for classification on the same basis as the results attained in the faculty.
5. In connection with the requirements regarding the level and content of the examination for the programme concerned, several conditions apply to incorporation. The Board of Examiners assesses whether a component may be incorporated into the examination. Incorporation is only possible with the Board of Examiners' permission. The following conditions must be satisfied:
  - a. the component is academic in nature;
  - b. in terms of content, the component does not overlap with other examination components (Article 3.6 of the Education and Examination Regulations for Bachelor's Programmes);
  - c. the component was attained in connection with an exchange programme, except for the situation described below;
  - d. the student requested written permission for incorporation beforehand, in principle, by submitting a request with appendices to the Student Affairs Office, which forwarded the information to the Board of Examiners;
  - e. the student will submit additional information to the Board of Examiners upon request.
6. The following rules apply to incorporation by the Board of Examiners of results attained in foreign countries:
  - a. results must be provided to the Board of Examiners through clear, original written notices by the university concerned. In addition to personal information about the student and information about the university, these notices should preferably include the following information: subject code and name; subject level; subject study load; and exam date and result;
  - b. incorporation will only be possible if there has been a sufficient assessment. A mere statement that the subject was 'taken' or words to that effect will not be enough. A result which constitutes a pass in the country concerned will also be considered a pass here, and a fail in a foreign country will also be considered a fail here;
  - c. the study load conferred by the foreign university will be followed here without adjustment. If, for example, 5 ECTS are conferred by the university concerned for the subject, the subject will also count for 5 ECTS at the faculty, regardless of how difficult or easy the subject was for the student.
  - d. if the study load in the foreign country is not expressed in ECTS units but in other units, the Board of Examiners will convert the study load into ECTS units. The conversion will be based on the study load for a full year of study or a full programme in relation to a study load of 60 ECTS for a year at UM or 180 ECTS for a three-year bachelor's programme.
7. Study delay caused by the study abroad is the responsibility of the student.
8. Insofar as the Education and Examination Regulations and this appendix do not address matters relating to incorporation of components attained elsewhere, the Board of Examiners will decide on the matter.

### **Appendix 4 Accountability for the language of instruction**

The choice for the language of instruction of the programme is in line with the UM Code of Conduct on language in accordance with the Dutch Higher Education and Research Act (WHW) art. 7.2.

Because of the specific educational nature and profile of the programme, teaching and examinations are conducted in English. This guarantees the quality of education, because:

- The content of the programme has an international orientation and focus. Language of main course materials (handbooks, papers, tools) discussing or supporting the latest advances in AI or Data Science are in English.
- The academic community is internationally oriented and the staff is international. Project-Centred Learning implements the international classroom concept, which requires a common international language. Students participate in international collaboration by exchange programmes to study abroad, or conduct their thesis at companies / institutes where English is the lingua franca. There is a staff exchange with RWTH Aachen, such that the courses on Parallel Programming, Large Scale IT, Cloud Computing, and Computer Security in the programme are coordinated by RWTH Aachen.
- The labour market demand is internationally oriented (English speaking). Alumni typically end up in jobs at companies / institutes where English is the main language.
- The student intake and current population is internationally diverse and English is the common language (26% Dutch; 74% non-Dutch in 2018-2019).