

**UNOFFICIAL ENGLISH TRANSLATION  
OF THE EXAMINATION REGULATIONS FOR THE DEGREE PROGRAMMES IN  
ARTIFICIAL INTELLIGENCE & DATA SCIENCE, BIOCHEMISTRY, BIOCHEMISTRY  
INTERNATIONAL, BIOLOGY, BIOLOGY – 1-YEAR VARIANT, CHEMISTRY, INDUSTRIAL  
PHARMACY, COMPUTER SCIENCE, MATHEMATICS, MEDICAL PHYSICS, AND PHYSICS  
LEADING TO A “MASTER OF SCIENCE” DEGREE  
WITHIN THE FACULTY OF MATHEMATICS AND NATURAL SCIENCES  
AT HEINRICH HEINE UNIVERSITY DÜSSELDORF**

**in the version of the  
sixth order amending the examination regulations dated  
10.11.2023**

Based on Articles 2(4) and 64(1) of the Higher Education Act of the State of North Rhine-Westphalia dated 16 September 2014 (GV. NRW. p. 547) last amended on 30 June 2022 (GV. NRW p. 780b), Heinrich Heine University Düsseldorf hereby issues the following regulations:

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Entry into force

Master of Science in Artificial Intelligence & Data Science

Master of Science in Biochemistry

Master of Science in Biochemistry International

Master of Science in Biology – two-year variant

Master of Science in Biology – one-year variant

Master of Science in Chemistry

Master of Science in Industrial Pharmacy

Master of Science in Computer Science

Master of Science in Mathematics

Master of Science in Medical Physics

Master of Science in Physics

## **Article 1**

### **Scope of application**

These examination regulations apply for the master's degree programmes "Artificial Intelligence & Data Science", "Biochemistry", "Biochemistry International", "Biology", "Biology – 1-year variant", "Chemistry", "Computer Science", "Industrial Pharmacy", "Mathematics", "Medical Physics", and "Physics" and lead to awarding of a Master of Science (MSc) degree from the Faculty of Mathematics and Natural Sciences at Heinrich Heine University Düsseldorf. Subject-specific regulations can be found in the appendix forming part of these regulations.

## **Article 2**

### **Studies: requirements and qualification goals**

(1) A first degree in the subject of the master's degree programme or a closely related subject in addition to the special aptitude to complete scientific work are required to enrol on the master's degree programme. Further details, along with the exact procedure for determining special aptitude, are set out in the regulations on the determination of special aptitude for the respective master's degree programme.

(2) In deviation from (1), provisional enrolment in a master's degree programme (in the sense of Article 49(6) of the Higher Education Act) is possible if special aptitude has been determined in accordance with the regulations on the determination of special aptitude for the corresponding master's degree programme and at least 160 credits have already been earned in a bachelor's degree programme. The provisional enrolment shall expire if proof of the first degree is not provided within six (6) months, calculated from the first day of the semester of enrolment.

(3) The master's degree programme aims to provide students with the advanced subject-specific knowledge, skills and methods needed for scientific work and science-oriented professional activities and to enable them to critically review new scientific findings and apply these in professional practice. It moreover aims to familiarise students with the current state of research in a specialised area within their selected subject and serves to prepare them for independent scientific work.

(4) The master's degree programme includes an introduction to the principles of good research practice as per the currently valid version of the guidelines issued by the German Research Foundation.

(5) In addition to imparting subject-specific knowledge, the master's degree programme aims to encourage students to engage with society and to foster the development of individual personalities. Students should thus be empowered to act responsibly in a free, democratic and social constitutional state. The social and personal skills required for this are taught through the course formats and content (in particular, seminars, tutorials, practical laboratory courses, project work, group work) and are supported and reinforced through the supervision during the courses.

## **Article 3**

### **Studies: programme structure**

(1) The period during which the master's degree programme should normally be completed (standard study period) totals four (4) semesters. This includes the completion of all module examinations and preparation of the master's dissertation. Exceptions are detailed in the subject-specific appendix.

(2) Each master's degree programme is designed in such a way that it can be completed with an average workload of 900 hours per semester.

(3) Each master's degree programme is divided into modules, as detailed in the subject-specific appendix. The module contents are explained in the degree programme-specific module handbooks. As a rule, each module concludes with a module examination.

(4) Students who, pursuant to Article 2(5) of the doctoral regulations of the Faculty of Mathematics and Natural Sciences at Heinrich Heine University Düsseldorf, can be admitted to doctoral studies even though they do not have a master's degree or Diplom ("fast-track doctoral studies"), can pursue a master's degree programme with a slightly different structure in some subjects upon application. Further details can be found in the subject-specific appendix.

(5) Any specification of the degree programme contents by the examination board or responsible teaching staff above and beyond the provisions of these examination regulations and their subject-specific appendix is only admissible insofar as the degree programme can still be completed within the standard study period.

(6) Student & Examination Administration uses ECTS statistics to address students with specific advising needs in order to make this group aware of relevant offers.

#### **Article 4**

##### **Examination board**

(1) For organisation of the examinations and tasks assigned in these examination regulations, the Faculty Council of the Faculty of Mathematics and Natural Sciences at Heinrich Heine University Düsseldorf shall elect an examination board for each degree programme.

(2) The examination board shall consist of five members:

- chairperson (from the group of professors)
- deputy chairperson (from the group of professors)
- one further member from the group of professors
- one member from the group of academic staff
- one member from the group of students for the corresponding degree programme

Deputies shall also be elected from the same group for each of the last three members. Each group may submit nominations for its members and their deputies to the Faculty Council. The term in office is one year for student members and three years for the other members and their deputies. Members can be re-elected. If a member resigns prematurely, a successor shall be elected for the remaining term in office. Further provisions on the composition of the examination board are stipulated in the subject-specific appendix.

(3) The examination board shall ensure that the provisions set out in these examination regulations are complied with and that examinations are conducted in an orderly manner. In particular, it is responsible for the recognition of coursework and examination achievements pursuant to Article 9 and for deciding on appeals against rulings reached during examination procedures.

(4) The examination board may delegate the execution of its tasks in all standard cases to the chairperson or her/his deputy. This does not apply for decisions on appeals.

(5) The examination board shall be quorate if at least one other voting member is present in addition to two professors. Decisions shall be based on a simple majority of the members present; in case of a tied vote, the chairperson, or in the event of her/his absence, the deputy chairperson shall have the casting vote. The student members of the examination board are not eligible to vote on the assessment, recognition or crediting of coursework and examination achievements or the appointment of examiners

and assessors. Deputy members of the examination board may take part in meetings, but shall only be eligible to vote if the member they represent is not present.

(6) The meetings of the examination board shall not be open to the public. Its members and their deputies are duty bound to keep its proceedings confidential. If they are not in public service, they shall be obliged by the chairperson of the examination board to maintain confidentiality.

(7) The members of the examination board have the right to be present during examinations.

## **Article 5**

### **Examiners**

(1) The examination board is responsible for appointing examiners for the module examinations (Article 10) and the master's dissertation (Article 16). It may delegate this responsibility to its chairperson.

(2) Only persons belonging to the group of persons detailed in Article 65(1) of the Higher Education Act may be appointed as examiners for module examinations.

(3) As a rule, the person who was last responsible for teaching the module shall be appointed as the examiner for the module examination.

(4) The examiners shall be independent in all matters relating to their examination activities.

(5) When an oral examination must be repeated, the student may propose an alternative examiner to the examination board. Written justification must be provided for this proposal and the stipulations laid out in paragraph (2) observed. The proposal does not constitute any entitlement, but should be taken into account wherever possible.

(6) Repeat examinations for which a fail is definitive and no possibility exists to compensate for this must be evaluated by at least two examiners.

(7) Oral examinations must always be conducted by several examiners or by one examiner in the presence of a competent assessor. Only persons, who have completed the degree programme in which the examination is being taken or a related degree programme may be appointed as an assessor for oral examinations.

(8) The examiners and assessors are duty bound to maintain confidentiality. Examiners, who are not in public service, shall be obliged by the chairperson of the examination board to maintain confidentiality. Assessors shall also be obliged by the appointed examiners to maintain confidentiality.

## **Article 6**

### **Master's examination: purpose**

The master's examination constitutes the qualifying conclusion to the master's degree programme. This examination thus serves to determine whether the goals set out in Article 2(2) have been achieved.

## **Article 7**

### **Master's examination: admission**

(1) Only students who are enrolled on the corresponding master's degree programme at Heinrich Heine University Düsseldorf or admitted as a visiting student pursuant to Article 52(2) of the Higher Education Admission Act may be admitted to the master's examination.

(2) Admission to the master's examination must be refused if

- the requirement set out in paragraph (1) is not met, or
- the student has definitively failed an examination in the same or a closely related degree programme at another university where the provisions of the German Higher Education Framework Act apply.

(3) A student is automatically registered for the master's examination as soon as s/he registers for a module examination for the first time pursuant to Article 11.

## **Article 8**

### **Master's examination: regulations**

(1) The master's examination consists of the module examinations taken during the degree programme pursuant to Article 10 and the master's dissertation pursuant to Article 16. As a rule, the master's examination should be completed by the end of the fourth subject semester.

(2) According to the subject-specific appendix, a total of at least 120 credits generally need to have been earned in the module examinations, the master's dissertation and creditable coursework. Exceptions are detailed in the subject-specific appendix.

(3) One credit within the sense of these examination regulations corresponds to one credit from the European Credit Transfer System (ECTS) and is awarded for achievements requiring a workload of approximately 30 hours when successful completion of this work is proven by a module examination or creditable coursework.

(4) Examination achievements within the sense of these examination regulations are determined by means of marked examinations and form the basis for the mark awarded for the module pursuant to Article 12.

(5) Study credits within the sense of these examination regulations are earned through the active participation in courses. No marks are awarded for study credits.

(6) If a student can demonstrate by means of a medical certificate that s/he is unable to complete an examination in whole or in part in the prescribed format or time due to a prolonged illness or permanent mental or physical disability, the examination board shall enable her/him to complete equivalent examinations in another format in order to compensate for disadvantages. Before the examination board makes its decision, it may, with the student's consent, consult the university's representative for students with disabilities and/or chronic illnesses. A written application for compensation for disadvantages must be submitted to the examination board at least four (4) weeks before the respective examination.

(7) Upon application by the student, the examination board must decide whether individual elements of an examination may be taken within a grace period after the scheduled deadline has passed. Valid reasons for the need for compensation for disadvantages must be provided in the application.

(8) The protective provisions of the German maternity protection act and the deadlines of the German federal parental allowance and parental leave act must be taken into account when registering and scheduling coursework and examinations. Time off to care for persons requiring care must be recognised. The student must apply in writing to Student & Examination Administration for application of the protective provisions or deadline and the examination board must be notified.

## **Article 9**

### **Recognition of coursework and examination achievements**

- (1) Upon application, equivalent coursework and examination achievements completed in the same or a closely related degree programme at another university or equivalent institute of higher education shall be recognised. The applicant is responsible for providing the documents required for recognition.
- (2) Coursework and examination achievements from other degree programmes shall be recognised once equivalence has been determined.
- (3) Study credits and examination achievements shall be deemed equivalent if they essentially correspond to or exceed in their content, scope and requirements those for the master's degree to which these regulations apply. The assessment of equivalence shall be based on an overall review and evaluation rather than a schematic comparison. Coursework and examination achievements completed in states party to the Convention on the Recognition of Qualifications concerning Higher Education in the European Region dated 11.04.1997 (known as the Lisbon Recognition Convention) shall only not be recognised if substantial differences are deemed to exist between the coursework and examination achievements being compared. The examination board is responsible for providing proof that coursework or examination achievements do not meet the requirements for recognition. Pursuant to Article 63a(5) of the Higher Education Act, applicants may request a review of the decision by the Rectorate should recognition be denied.
- (4) The equivalence agreements approved by the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany and the German Rectors' Conference as well as any agreements reached within university partnerships are to be taken into account in the recognition and crediting of qualifications, coursework and examination achievements completed outside the jurisdiction of German Basic Law.
- (5) Students admitted to a degree programme based on a placement test pursuant to Section 49(11) of the Higher Education Act shall receive credits for the knowledge and skills demonstrated in the placement test corresponding to the contents of the master's degree to which these regulations apply. The equivalence documented in the placement test certificate is binding for the examination board.
- (6) The examination board is responsible for recognising and awarding credits in accordance with paragraphs (1) to (5) and for assigning the coursework and examination achievements to the individual modules. The student must provide the documents required for recognition. The responsible subject representatives may be consulted before equivalence is determined.
- (7) If examination achievements are recognised for the master's degree to which these regulations apply, the marks shall also be recognised (insofar as the grading systems are comparable) and, in accordance with these examination regulations, taken into account in calculation of the overall mark. If the grading systems are incomparable, a "Pass" shall be indicated. Such indications of recognition shall be permitted in the transcript of records.
- (8) If study credits earned externally are recognised, no module with comparable content may be completed again as part of the master's degree programme at Heinrich Heine University Düsseldorf. Therefore, students must submit any applications for recognition no later than three months after commencing their studies at Heinrich Heine University Düsseldorf and before registering for any modules with comparable content. Recognition is not possible at a later date. If an examination has already been taken at Heinrich Heine University Düsseldorf in a module for which an application for the recognition of credits has been submitted, the study credits earned for this module elsewhere cannot be recognised.
- (9) As a rule, a master's dissertation completed elsewhere cannot be recognised.

## **Article 10**

### **Module examinations: general rules, admission restrictions**

(1) Module examinations are based on the content covered during a module. They take place throughout the degree programme shortly after the relevant courses for the module have been attended.

(2) A module consists of one or more courses. Students cannot select the same course as a component for different modules of a degree programme.

(3) Admission restrictions (e.g. a maximum number of participants) may be set for individual modules or courses for educational, capacity or infrastructural reasons. The examination board shall be responsible for determining and announcing any restrictions as well as for setting the criteria before the start of the application period. The following criteria shall be used to rank students for admission:

- degree programme for which the module/course is being taken
- number of subject semesters completed by the student to date
- past academic achievements

(4) The examination board shall announce the content of the examinations and/or coursework required for each module. As a rule, this content shall be specified in the module descriptions published by the examination board.

(5) The examiners appointed pursuant to Article 5 shall specify the type and exact procedure for each module examination. Students shall be informed of each module examination on the internet and/or noticeboards at the start of the module:

- admission requirements (e.g. specific academic achievements)
- type, scope and duration of the examination(s)
- permitted aids
- procedure for determining the marks or successful passing of the module

(6) As a rule, three dates at least three weeks apart shall be offered for each module examination in an academic year:

- shortly after the last course for the module
- within six (6) months of the first examination date
- within six (6) months of the second examination date

The examination dates shall be announced at the start of the module or no less than three (3) months before each examination at the latest. For oral examinations, time windows shall be announced rather than specific dates.

(7) Module examinations usually take the form of a final examination covering all of the material explored during the module. Examiners can set written or oral examinations or other assessment formats (e.g. presentations or final reports).

(8) A written examination is a written piece of work completed under supervision, which is set and evaluated by the examiner and awarded a mark. Such examinations should last no less than one (1) hour and no more than four (4) hours.

(9) An oral examination is an individual or group examination involving no more than six (6) students. Such examinations should last no less than 15 minutes and no more than 60 minutes per student. The examination is assessed by the appointed examiner(s). The examination contents and results shall be recorded in a protocol. The mark shall be determined by the examiner(s). The opinion of an assessor



present during the examination shall be heard before the mark is decided. The student shall be informed of the result of the oral examination immediately after the examination.

(10) Space permitting, oral module examinations may be conducted in the presence of an audience. Admission shall not constitute any entitlement to involvement in the deliberations and announcement of the examination result. Upon written application by the student when registering for the examination, listeners shall be excluded from the examination. The examiners have the right to exclude members of the audience in case of concern about possible disruption to the examination procedure.

(11) An individual presentation completed during a seminar can be deemed an examination achievement and awarded a mark. The responsible member of teaching staff shall inform of the assessment criteria at the start of the seminar. A mark shall be provided within four (4) weeks of the end of the seminar.

(12) A written report is a piece of written work for which a mark is usually awarded. The responsible member of teaching staff shall inform of the assessment criteria. A mark shall be provided within four (4) weeks of submission of the report.

(13) Further examination formats are detailed in the subject-specific appendix to these examination regulations.

(14) If a student can credibly demonstrate by means of a medical certificate that s/he is unable to complete an examination in whole or in part in the prescribed format due to a health impairment, the examination board may allow equivalent examinations to be completed in another format.

(15) In exceptional cases, the examination board may stipulate that a module examination be taken as a cumulative examination comprising several examinations, each of which deals with a specific area of the material covered during the module.

(16) The attendance of courses may be made compulsory in all modules or parts of modules in which regular attendance and active participation are required for achievement of the learning objectives. Active participation can be both an examination requirement (for admission to the examination) and a component of the examination. This is generally the case with practical courses. The attendance of lectures cannot be made compulsory. For other courses, attendance shall only be compulsory if this is explicitly stipulated in the respective subject-specific appendix. Unless stipulated otherwise in the subject-specific appendix for a course with compulsory attendance, the compulsory attendance requirement shall be deemed fulfilled if a student has attended a course 80% of the time. Lecturers may offer alternative assessment options for excused absences above and beyond this, insofar as the nature of the course permits this. For this purpose, a student shall be considered excused if s/he provides proof of a reason beyond their control for their absence that is also accepted by the lecturer. If the lecturer determines that attendance has not been regular, the module shall be considered not attended and must be repeated.

## **Article 11**

### **Module examinations: registration and withdrawal, deadlines**

(1) Students must register with Student & Examination Administration for module examinations at least one (1) week before the examination date.

(2) Registration for certain module examinations may depend on requirements stipulated in the subject-specific appendix.

(3) Students are able to withdraw from examinations by contacting Student & Examination Administration up to one (1) week before the respective examination date.

(4) Registration and withdrawal procedures for module examinations within a degree programme deviating from paragraphs (1) and (3) may be provided in the subject-specific appendix. In addition, the examination board responsible for the individual module examinations may, in consultation with Student & Examination Administration, stipulate regulations for registration and withdrawal other than those set out in the examination regulations. These regulations shall be announced on the internet and/or noticeboard.

(5) Students who register for an examination but do not meet the admission requirements by the date of the examination shall be deemed not registered.

(6) The examiner must provide Student & Examination Administration with the examination achievements or, where applicable, information on non-fulfilment of the admission requirements for all registered students no later than four (4) weeks after the examination.

## **Article 12**

### **Module examinations: assessment, grading scale**

(1) The following marks shall be used to assess students' performance in examinations:

1 (Very Good):	An excellent performance
2 (Good):	A performance significantly exceeding the average requirements
3 (Satisfactory):	A performance meeting the average requirements
4 (Sufficient):	A performance still meeting the requirements despite shortcomings
5 (Insufficient):	A performance no longer meeting the requirements due to significant shortcomings

Marks may be increased or decreased by 0.3 for further differentiation, whereby the marks of 0.7, 4.3, 4.7 and 5.3 are inadmissible.

(2) The examiners appointed are responsible for awarding the marks for each module examination.

(3) For modules involving cumulative examinations pursuant to Article 10(15), the marks awarded for the individual examinations pursuant to paragraph (1) shall be averaged. This shall involve weighting the examinations completed for the different courses according to the credits allocated for the courses. The mean value shall be taken as the module mark, whereby this shall be rounded to one decimal place.

## **Article 13**

### **Module examinations: success and failure**

(1) An examination shall be deemed successfully completed and thus passed if at least the mark of "Sufficient" (less than or equal to a mark of 4.0) has been awarded.

(2) A module examination shall be deemed failed if at least a mark of "Insufficient" (5.0) has been awarded.

(3) A cumulative examination for a module shall be deemed passed if at least the mark of "Sufficient" has been awarded for all of the required examinations and all required study credits have been earned. The mark of "Insufficient" (5.0) shall be awarded for the cumulative examination otherwise.

(4) When a module examination is passed, the student shall be awarded all of the credits for the respective module pursuant to the appendix.

## **Article 14**

### **Module examinations: repeating examinations**

- (1) Examinations that have already been passed cannot be repeated.
- (2) If a student fails a module examination, Student & Examination Administration shall notify the student in writing accordingly and also indicate if and, where applicable, in what format and within which period the examination may be repeated. This notification shall be accompanied by information on the procedure to appeal the decision.
- (3) A failed module examination can be repeated a total of two times.
- (4) A failed module examination should be repeated on the next possible date (or, in the case of oral examinations, within the time window set). Students are able to withdraw from repeat examinations (see Article 11(3)).
- (5) The format of the repeat examination does not need to be the same as the original examination. The examiner shall determine the format for the repeat examination.
- (6) The mark awarded for a repeated final module examination shall be taken as the examination mark for the module.
- (7) In the case of cumulative module examinations, only the examination components for which the mark of "Insufficient" (5.0) has been awarded may be repeated. The repeated cumulative examination components shall be deemed passed if the conditions detailed in Article 13(3) are met. Pursuant to Article 12(3), the mark for the repeated module examination shall be determined by taking the mark awarded for the repeated examination components into account.
- (8) A module examination shall be deemed definitively failed if the mark of "Insufficient" (5.0) has been awarded for all of the repeat attempts permitted.
- (9) The regulations for the repetition of module examinations for a degree programme may deviate from paragraphs (3) and (4) and instead be stipulated in the subject-specific appendix.

## **Article 15**

### **Module examinations: absence, withdrawal, deception and breaches of the regulations**

- (1) An examination shall be deemed failed if a student misses it without a valid reason or if s/he withdraws from it without a valid reason after the examination has started.
- (2) The student must inform the examination board in writing without delay via Student & Examination Administration of the valid reason for her/his failure to attend or withdrawal from an examination, providing credible proof. If the examination board accepts the reason provided, the examination shall be deemed not to have been taken. In case of illness, a medical certificate stating the grounds for the student being unable to take the examination must be submitted to Student & Examination Administration.
- (3) If the student attempts to influence her/his examination result through deception or by using unauthorised aids, the examination in question shall be deemed failed. The use of electronic devices (e.g. smartphones or smartwatches) is not permitted in examinations. Taking out or using any unauthorised aids within the sense of Article 18 of the examination regulations is punishable with the awarding of a fail for the examination, unless this has been expressly permitted in advance by the person responsible for the module or the invigilator(s).

(4) If a student disrupts the orderly course of an examination, s/he may be excluded from the examination by the examiner following a warning. In this case, the examination in question shall be deemed failed.

(5) The student may request within four (4) weeks that a decision pursuant to paragraph (3) or (4) be reviewed by the examination board. The student must be informed immediately in writing of any decisions detrimental to her/him reached by the examination board, stating the reasons for this decision and informing on the appeal procedure. The student must be given the opportunity for a fair hearing before such a decision is reached.

## **Article 16**

### **Master's dissertation: topic assignment**

(1) The master's dissertation is the final piece of academic work that must be prepared during the master's degree programme. Students should demonstrate with this work that they are able to complete independent work on an important topic from their field of study within a set period of time and to present it in an appropriate format, taking good scientific practices into account. The master's dissertation may be written in German or English.

(2) The topic shall be assigned and the dissertation supervised by a professor or a habilitated member of the academic staff who works full-time at Heinrich Heine University Düsseldorf in the subject of the master's degree to which these regulations apply. Exceptions to this stipulation may be made at the discretion of the examining board. The examination board is also responsible for appointing the supervisor.

(3) Students must apply to one of the supervisors approved by the examination board pursuant to paragraph (2) for the assignment of a topic for the master's dissertation. The requirements and deadlines for submission of the topic can be found in the subject-specific appendix.

(4) The proposed supervisor shall assign the topic for the master's dissertation and forward this to the examination board. Provided the requirements are met, the examination board shall appoint a second examiner and communicate the topic of the master's dissertation as well as the names of the examiners to Student & Examination Administration and the student. The preparation period shall begin on the date of this notification.

(5) Provided all requirements pursuant to the subject-specific appendix are met, a student may apply to the examination board for assignment of a topic for the master's dissertation and appointment of a supervisor even without her/his own proposals or the approval of a supervisor. In this case, the examination board shall assign the topic for the master's dissertation and appoint a supervisor within one (1) month.

(6) Student & Examination Administration shall make a record of the topic assigned for the master's dissertation and the start of the preparation period and make this accessible to the student.

(7) A student may only reject the topic assigned for the dissertation once and only within two (2) weeks of the start of the preparation period. In this case, a new topic shall be assigned pursuant to paragraph (4) or (5). Pursuant to Article 15(2), the topic for the dissertation may also be rejected at a later date for a valid reason.

(8) The preparation time, scope and submission deadline for the master's dissertation are stipulated in the subject-specific appendix.

(9) Upon submission of the master's dissertation, the student must confirm that s/he prepared the dissertation independently and did not use any sources and/or aids other than those specified.

## **Article 17**

### **Master's dissertation: assessment and acceptance**

(1) The master's dissertation must be submitted in an electronic format (as a PDF file) by the deadline stipulated, i.e. by the end of the preparation period at the latest. The PDF file must be submitted by uploading it to the student portal of Heinrich Heine University Düsseldorf ([studierende.uni-duesseldorf.de](http://studierende.uni-duesseldorf.de)). Student & Examination Administration shall record the date of submission. If the master's dissertation is not submitted on time, the mark of "Insufficient" (5.0) shall be awarded. At the request of the first examiner, the student shall submit two bound copies of the dissertation identical to the electronic version to the first examiner without delay.

(2) The master's dissertation shall be assessed by two examiners who are qualified to assign topics pursuant to Article 16(2). At least one of these persons must be a full-time member of the academic staff at Heinrich Heine University Düsseldorf. The first examiner is the supervisor for the master's dissertation. The examiners for the master's dissertation are appointed by the examination board.

(3) The first examiner shall assess the master's dissertation and provide a written justification for her/his assessment. The second examiner may agree with this assessment and the justification or provide a different assessment, which must then also be justified in writing. Marks pursuant to Article 12(1) shall be awarded for the assessments.

(4) The mark awarded for the master's dissertation is the arithmetic mean, rounded to one decimal place, of the marks awarded by the two examiners pursuant to paragraph (3), provided that these are both at least a mark of "Sufficient" (4.0) and do not differ by more than 2.0. If both examiners award the mark of "Insufficient" (5.0), then this mark shall also be awarded for the master's dissertation. In all other cases, the examination board shall appoint another person as an examiner pursuant to paragraph (2), who shall award a third mark for the master's dissertation and justify this in writing. The mark for the master's dissertation is then the arithmetic mean, rounded to one decimal place, of the better two of the three marks, provided that these better marks are both at least a mark of "Sufficient" (4.0). A mark of "Insufficient" (5.0) shall be awarded for the master's dissertation otherwise.

(5) The examination board must inform the student of the mark for her/his master's dissertation no later than six (6) weeks after submission or, if a third examiner is appointed, no later than eight (8) weeks after submission.

(6) A master's dissertation awarded the mark of "Sufficient" (4.0) or better shall be deemed accepted. All of the credits for the master's dissertation shall be awarded when the master's dissertation is deemed accepted (see subject-specific appendix).

(7) If a master's dissertation is deemed not accepted, the examination board must notify the student in writing and advise whether the master's dissertation may be repeated (cf. Article 18). The notification of non-acceptance of the master's dissertation shall be accompanied by information on the appeal procedure.

(8) Article 15 shall apply *mutatis mutandis* to the master's dissertation.

## **Article 18**

### **Master's dissertation: repeating examinations**

(1) A master's dissertation accepted pursuant to Article 17(6) cannot be repeated.

(2) A master's dissertation that has been awarded the mark of "Insufficient" pursuant to Article 17(7) or (8) and thus deemed to have not been accepted may be repeated once. A second repetition is not possible.

(3) The application for admission to repeat the master's dissertation and assignment of a topic (pursuant to Article 16) must be submitted no later than three (3) months of dispatch of the notification informing the student of non-acceptance of her/his master's dissertation.

(4) The topic for the repetition shall be assigned in accordance with Article 16.

## **Article 19**

### **Additional modules**

Students may take module examinations in more modules than prescribed in the subject-specific appendix for her/his degree programme or a closely related degree programme (additional modules) as part of their master's examination. Upon application by the student, the examination achievements for these modules may be included in the transcript of records, but shall not be taken into account in determination of the overall mark. The examination board may prohibit students from taking additional modules, in particular for capacity reasons.

## **Article 20**

### **Viewing of examination files**

(1) An appointment shall be offered for each examination within one (1) month of announcement of the examination results during which the student may view her/his examination paper.

(2) Upon application (to the member of teaching staff), the student shall be given the opportunity to make a copy of a corrected and marked written examination. This includes the questions.

(3) Upon completion of the master's examination, Student & Examination Administration shall, upon application by the student, permit her/him to view to her/his examination records and examination protocols relating to her/him. The student must apply in writing within one (1) month of issue of the transcript of records.

## **Article 21**

### **Master's examination: assessment**

(1) The master's examination shall be deemed passed if all credits have been earned in accordance with the subject-specific appendix.

(2) The overall mark for the master's examination shall be determined from the weighted average of the marks awarded for the module examinations and the mark awarded of the accepted master's dissertation. The weighting of the modules is specified in the subject-specific appendix.

(3) The overall mark for the passed master's examination shall be rounded to one decimal place.

(4) A mark description shall be assigned for a passed master's examination according to the following scale:

Overall mark of 1.0–1.5:	Very Good
Overall mark of 1.6–2.5:	Good
Overall mark of 2.6–3.5:	Satisfactory
Overall mark of 3.6–4.0:	Sufficient

(5) In addition, an ECTS grading scale shall be provided in the diploma supplement that advises on the statistical distribution of the marks awarded within the respective student group. The ECTS grading scale shall take the following format:

Total number of graduates for the master's degree programme:		
Mark interval	Proportion (%)	Cumulative proportion (%)
1.0–1.2		
1.3–1.6		
1.7–1.9		
2.0–2.2		
2.3–2.6		
2.7–2.9		
3.0–3.2		
3.3–3.6		
3.7–4.0		

The deadline for preparation of the ECTS grading scale is always 31 December of each year. The overall marks of the graduates of the corresponding degree programme who completed their studies in the five previous examination years form the calculation basis. An ECTS grading scale cannot be prepared if less than 50 students have completed the degree programme.

## Article 22

### Master's examination: failure

(1) The master's examination shall be deemed definitively failed if

- a repeated master's dissertation is not accepted (Article 17), or
- a module examination for which there is no possibility of compensation is failed definitively (Article 14(8)).

(2) The examination board shall notify the student in writing that the master's examination has been failed and inform of the appeal procedure.

## Article 23

### Master's examination: academic degree, transcript of records, degree certificate

(1) Upon successful completion of the master's examination, the Faculty of Mathematics and Natural Sciences at Heinrich Heine University Düsseldorf shall confer the academic degree of "Master of Science" ("MSc") in the respective subject.

(2) Once the student has passed the master's examination, s/he shall receive a transcript of records indicating her/his overall mark and the module examinations taken, together with the corresponding marks and credits awarded. In addition, the topic of the master's dissertation along with the mark and number of credits awarded for this shall be indicated. The transcript of records shall bear the date of the final examination and the signature of the chairperson of the examination board.

(3) Upon application by the student, the results of additional examination modules taken pursuant to Article 19 shall also be included in the transcript of records.

(4) A diploma supplement in German and English shall accompany the transcript of records that includes the qualification earned with this degree programme as well as the overall mark achieved (Article 21(3)), the mark description (Article 21(4)) and the ECTS grading scale (Article 21(5)).

(5) The student shall at the same time be issued with the master's degree certificate bearing the same date as the transcript of records. This shall certify awarding of the master's degree in accordance with paragraph (1).

(6) The master's degree certificate shall be signed by the Dean of the Faculty of Mathematics and Natural Sciences at Heinrich Heine University Düsseldorf and by the chairperson of the examination board, and bear the faculty seal.

(7) A student who has not yet passed or definitively failed the master's examination may, upon application, be issued with a written record of the credits earned as well as the module examinations taken together with their marks, the examination achievements still needed to pass the master's examination and an indication that the master's examination has not yet been passed or definitively failed.

#### **Article 24**

##### **Master's examination: invalidity**

(1) If a student engages in deception during an examination and this only comes to light after the transcript of records has been issued, the examination board may retroactively amend the marks awarded for the examinations in which the student engaged in deception and declare these examinations failed, either in whole or in part.

(2) If a student, without intending to deceive, does not actually meet the requirements for admission to an examination and this fact only comes to light after the results of the examination have been announced or the transcript of records has been issued, then this shortcoming shall be deemed remedied by the student successfully passing the examination.

(3) If a student intentionally wrongfully gains admission to an examination, the examination board shall decide on the legal repercussions, taking the Administrative Procedures Act for the federal state of North Rhine-Westphalia dated 21 December 1976 (GV. NRW, p. 438) in its currently valid version into account.

(4) Prior to a decision by the examination board pursuant to paragraph (1) or (3), the student concerned must be given the opportunity to state her/his case.

(5) The incorrect transcript of records must be withdrawn and a new one issued as appropriate. The master's degree certificate must also be withdrawn together with the incorrect transcript of records.

#### **Article 25**

##### **Interim arrangements**

(1) These examination regulations shall apply to all students enrolled on the master's degree programmes of the Faculty of Mathematics and Natural Sciences at Heinrich Heine University Düsseldorf listed in the subject-specific appendix after the date on which these examination regulations enter into force.

(2) Students who were enrolled on one of the master's degree programmes listed in the subject-specific appendix prior to the date defined in paragraph (1) shall take the master's examination pursuant to the examination regulations in force at the time of their enrolment, unless they apply for the new



examination regulations to be applied. In this case, they must apply to the examination board in writing via Student & Examination Administration for application of the new examination regulations at the latest when they register for the final module examination of the master's examination. This application is irrevocable.

### **Entry into force**

These regulations shall enter into force on the day following their publication in the Official Bulletin of Heinrich Heine University Düsseldorf and apply for all students of the degree programmes detailed herein who have commenced their studies on or after the effective date indicated in the subject-specific appendix.

Issued based on the resolution of the Faculty Council of the Faculty of Mathematics and Natural Sciences at Heinrich Heine University Düsseldorf dated xx.xx.202x.

Düsseldorf, xx.xx.202x

The President

of Heinrich Heine University Düsseldorf

Anja Steinbeck

(Univ.-Prof. Dr. iur.)

**Subject-specific appendix to the examination regulations for the  
Master of Science in Artificial Intelligence & Data Science  
at Heinrich Heine University Düsseldorf**

**Regarding Article 2(1) Studies: requirements**

The required first degree can be in mathematics, physics, computer science, electrical engineering or another closely related subject.

**Regarding Article 3(3) Structure of the MSc in Artificial Intelligence & Data Science**

The following table lists the modules that must be completed as part of the degree programme. The semester foreseen for completion and the corresponding credits are indicated in each case. The marks are weighted according to the credits awarded for the marked module examinations for calculation of the overall mark.

<b>Module</b>	<b>Semester</b>	<b>Credits</b>	<b>Mark awarded?</b>
Mathematical & Statistical Foundations of Data Science	1	10	Yes
Advanced Programming and Algorithms	1–2	10	Yes
Machine Learning	1	10	Yes
Deep Learning	2	5	Yes
Lab Rotation I	2	10	No
Lab Rotation II	3	10	No
Elective modules	2–3	≥ 35	Yes
Master's dissertation	4	26	Yes
Master's seminar	4	4	Yes

**Compulsory modules**

Credits can be awarded for modules already completed that correspond in their content and scope to the compulsory modules. The credits still lacking as a consequence must be earned by taking compulsory elective modules.

**(Compulsory) elective modules**

The (compulsory) elective modules that may be selected are indicated in the module handbook. The latest version of the module handbook is published on the HHU website.

A module can only be assigned to a compulsory elective area if the module was completed as part of a master's degree programme or if the module was completed as part of a bachelor's degree at HHU, but the examination result was not counted toward the bachelor's degree.

**Lab rotations**

Each of the two lab rotations lasts six weeks and can be completed in one or two work groups at university or non-university institutions. They conclude with a seminar presentation within the work groups.

The lab rotations also serve as preparation for the master's dissertation, hence one of the two lab

rotations should be completed within the work group in which the master's dissertation will also be completed, where possible.

### **Master's seminar**

At the end of the degree programme, students must defend their accepted master's dissertation publicly before an examination commission. The commission shall comprise at least two members, who are appointed by the chairperson of the examination board and should ideally be the examiners who assessed the master's dissertation. The oral defence should last no more than 45 minutes, whereby 30 minutes are reserved for presentation of the work by the student.

The examination commission shall prepare a protocol of the oral defence and award a mark after consulting in private. If the examiners cannot agree on a mark, the mark shall be determined from the arithmetic mean of the individual marks they award.

### **Regarding Article 16 Master's dissertation**

#### **Regarding (3) Application**

Students can only apply for admission to the master's module and assignment of a topic when they have earned at least 60 credits.

#### **Regarding (9) Preparation time, scope and submission**

The master's dissertation must be submitted no later than six (6) months after the topic has been assigned. In individual cases, the examination board may extend the preparation time by up to four (4) weeks upon justified application. The application for an extension must be made at least two (2) weeks before the normal deadline.

The topic and assignment must be formulated in such a way that the master's dissertation can be written within a total workload of 780 hours (26 credits). The master's dissertation should not exceed 80 pages in length.

### **Regarding Article 17(3) Assessment of the master's dissertation and master's seminar**

The mark awarded for the master's dissertation and master's seminar can be combined to determine a joint mark in the case of a joint assessment. This is weighted according to the credits and taken into account in determination of the overall mark.

### **Regarding Article 25(1) Effective date of validity**

The effective date of validity pursuant to Article 25(1) is 30 September 2021.

**Subject-specific appendix to the examination regulations for the  
Master of Science in Biochemistry  
at Heinrich Heine University Düsseldorf**

**Regarding Article 2(2) Studies: goals**

The specialist content focuses on the research into and use of enzymes, the elucidation of their molecular deployment, their characterisation using biological, chemical, physical and theoretical methods, and their application in biotechnology.

**Regarding Article 3(3) Structure of the MSc in Biochemistry**

The following table lists the modules that must be completed as part of the degree programme. The semester foreseen for completion and the corresponding credits are indicated in each case. The marks are weighted according to the credits awarded for the marked module examinations for calculation of the overall mark.

Module	Semester	Credits	Mark awarded?
Methods of Biophysical Chemistry	1*	15	Yes
Advanced Protein Biochemistry	1*	15	Yes
Applied Enzyme Technology	2*	15	Yes
Compulsory elective module – Chemical and Physical Biology	2/3	Min. 5	Yes/No
Compulsory elective module – Molecular Biology & Biotechnology	2/3	Min. 5	Yes/No
Elective module(s)	2/3	Variable	Yes
Research practical	2/3	Max. 15	No
Master's module	4	30	Yes

\* When the degree programme is started in the winter semester.

**(Compulsory) elective modules**

Students pursuing a master's degree in biochemistry, biology or chemistry select elective modules from the courses offered by the Faculty of Mathematics and Natural Sciences and the Faculty of Medicine according to the requirements set by the persons responsible for the modules. Insofar as a mark is awarded for the coursework for a module, this mark shall be taken into account in the overall mark, weighted according to the number of credits.

One elective module must be selected from each of the two compulsory elective areas of "Chemical & Physical Biology" and "Molecular Biology & Biotechnology". The examination board is responsible for assigning modules to the compulsory elective areas; these shall be announced on the website for the respective degree programme.

**Master's module**

The master's module comprises the master's dissertation (26 credits) and the master's seminar (4 credits). The topic explored in the master's dissertation and the findings shall be presented in the master's seminar and followed by a scientific discussion. The presentation must be given in English.

**Regarding Article 16 Master's dissertation****Regarding (3) Application**

Students can only apply for admission to the master's module and assignment of a topic when they have earned at least 90 credits.

**Regarding (9) Preparation time, scope and submission**

The master's dissertation must be submitted no later than six (6) months after assignment of the topic. In individual cases, the examination board may extend the preparation time by up to four (4) weeks upon justified application. The application for an extension must be made at least two (2) weeks before the normal deadline.

The topic and assignment must be formulated in such a way that the master's dissertation can be written within a total workload of 780 hours (26 credits).

**Regarding Article 17(3) Assessment of the master's dissertation**

The mark awarded for the master's dissertation and master's presentation can be combined to determine a joint mark in the case of a joint assessment.

**Regarding Article 25(1) Effective date of validity**

The effective date of validity pursuant to Article 25(1) is 30 September 2015.

**Subject-specific appendix to the examination regulations for the  
Master of Science in Biochemistry International  
at Heinrich Heine University Düsseldorf**

**Regarding Article 3 Studies: programme structure**

**Regarding (1) Standard study period**

The standard study period is two (2) semesters.

**Regarding (3) Structure of the degree programme**

The following table lists the modules that must be completed as part of the degree programme. The semester foreseen for completion and the credits that shall be awarded are indicated in each case. The marks are weighted according to the credits awarded for the marked module examinations for calculation of the overall mark.

Module	Semester	Credits	Mark awarded?
Compulsory elective modules	1	Min. 8	Yes
Elective modules	1	Variable	Yes/No
Research practical	1	Max. 15	No
Master's module	2	30	Yes

**(Compulsory) elective modules**

Students pursuing a master's degree in biochemistry, biology or chemistry select compulsory elective modules and elective modules from the modules offered by the Faculty of Mathematics and Natural Sciences and the Faculty of Medicine according to the requirements set by the persons responsible for the modules. Insofar as a mark is awarded for the coursework for a module, this mark shall be taken into account in the overall mark, weighted according to the number of credits.

At least one compulsory elective module with at least 8 credits must be selected from one of the two compulsory elective areas for the master's degree in biochemistry.

**Research practical**

The research practical is a scientific course in a chemistry, biology or molecular medicine field for which a maximum of 15 credits are awarded. The research practical shall be supervised by an examiner from the Faculty of Mathematics and Natural Sciences or the Faculty of Medicine at Heinrich Heine University Düsseldorf, who has convinced herself/himself of the successful completion of the research practical based on a written or oral scientific report.

**Master's module**

The master's module comprises the master's dissertation (26 credits) and the master's seminar (4 credits). The topic explored in the master's dissertation and the findings shall be presented in the

master's seminar and followed by a scientific discussion. The master's dissertation, presentation and report must be written in English.

**Regarding Article 8(2) Minimum number of ECTS credits**

In deviation from Article 8(2), at least 60 credits must be earned.

**Regarding Article 16 Master's dissertation**

**Regarding (3) Application**

Students can only apply for admission to the master's module and assignment of a topic when they have earned at least 30 credits.

**Regarding (9) Preparation time, scope and submission**

The master's dissertation must be submitted no later than six (6) months after assignment of the topic. In individual cases, the examination board may extend the preparation time by up to four (4) weeks upon justified application. The application for an extension must be made at least two (2) weeks before the normal deadline.

The topic and assignment must be formulated in such a way that the master's dissertation can be written within a total workload of 780 hours (26 credits).

**Regarding Article 17(3) Assessment of the master's dissertation**

The mark awarded for the master's dissertation and master's presentation can be combined to determine a joint mark in the case of a joint assessment.

**Regarding Article 25(1) Effective date of validity**

The effective date of validity pursuant to Article 25(1) is 30 September 2015.

**Subject-specific appendix to the examination regulations for the  
Master of Science in Biology – two-year variant  
at Heinrich Heine University Düsseldorf**

**Regarding Article 3(3) Structure of the master’s degree in biology**

Module	Type	Semester	Credits	Weighting (credits)
Additional qualifications	S+L	1–3	8	0
Master’s module I	18 P + 2–3 L	1	14	14
Master’s module II	18 P + 2–3 L	1–2	14	14
Master’s module III	18 P + 2–3 L	2–3	14	14
Project practical (3 months)	32 P + 1–2 S	2–3	30	0
Pilot work and project outline (2 months)	PI + S	3–4	10	0
Master’s dissertation (6 months)	MA + S	3–4	30	30
<b>Total</b>		<b>4</b>	<b>120</b>	<b>72</b>

S: Seminar      L: Lecture      P: Practical course  
MA: Master’s dissertation      ECTS: Credits      Time in semester week hours

The mark for the master’s degree is composed of the marks for the module examinations and the master’s dissertation. These marks are weighted according to the credits.

**Specialisation**

Students can select a specialisation (“major”) for their studies. For a subject to be recognised as a “major”, students must have earned at least 98 credits in the subject. Details of which individual master’s modules must be taken for each “major” can be found in the current module descriptions on [www.biologie.hhu.de/studium](http://www.biologie.hhu.de/studium).

**Additional qualifications (8 credits)**

The “Additional qualifications” module consists of two master’s seminars, each of which is worth 2 credits. At least one of the two seminar presentations must be held in English.

Further credits can be gained in freely selectable courses, such as lectures, internships, tutorials, master’s seminars and workshops.

**Master’s modules (14 credits each)**

Students must successfully complete three master’s modules. Each master’s module concludes with a skills-based examination. The examination type and scope are specified in the module descriptions.

**Project practical (30 credits)**

The project practical is a full-day placement in the laboratory or a field experiment over a three-month period. Project practicals grant insights into the research activities of the different work groups. Students should work on a concrete project under individual supervision. This can also serve as preparation for a possible master’s dissertation topic.

**Pilot work and project outline (10 credits)**

The pilot work lays the groundwork for the master’s dissertation. A concept (project outline) for



preparation of the master's dissertation must be prepared.

### Master's dissertation (30 credits)

The master's dissertation involves experimental work.

### Regarding Article 3(4) Structure of the master's degree in biology for students pursuing a "fast-track" doctorate

The following curriculum applies for the master's degree for students pursuing a "fast-track" doctorate, who meet all of the requirements:

Module	Type	Semester	Credits	Weighting (credits)
Additional qualifications	S + L	1-3	8	0
Master's module I	18 P + 2-3 L	1	14	14
Master's module II	18 P + 2-3 L	1-2	14	14
Lab rotation I (6 weeks)	18 P	1-3	7	0
Lab rotation II (6 weeks)	18 P	2-3	7	0
Project practical	32 P + 1-2 S	2-4	30	0
Pilot work and project outline	P + S	3-4	10	0
Master's dissertation	MA + S	4	30	30
<b>Total</b>		<b>4</b>	<b>120</b>	<b>58</b>

S: Seminar      L: Lecture      P: Practical course  
 MA: Master's dissertation      ECTS: Credits      Time in semester week hours

### Lab rotations I+II (7 credits each)

The six-week lab rotations enable insights into the research activities of different work groups. Students should work on a concrete project under individual supervision.

### Regarding Article 10(16) Module examinations: general rules, admission restrictions

Different attendance regulations apply for master's modules I to III. Students are not allowed to miss more than three module days per master's module.

Active participation in the seminars forms part of the examination for the "Additional qualifications" module, hence attendance of the seminars is compulsory. The attendance requirement shall be deemed fulfilled when a student attends 90% of the course time.

### Regarding Article 16(3) Requirements and deadlines for registering for the master's dissertation

Students can only register for the master's dissertation when all of the master's modules and the project practical have successfully been completed.

### Regarding Article 16(9) Preparation time, scope and submission deadline for the master's dissertation

The written length of the master's dissertation should not exceed 80 pages. The master's dissertation must be written in either German or English. The examination board shall decide on any exceptions in consultation with the examiners.

For students pursuing a "fast-track" doctorate (cf. Article 3(4)), the master's dissertation may contain components of the dissertation in progress, but must constitute a self-contained piece of work.

The completed master's dissertation must be submitted to Student & Examination Administration no later than six (6) months after the topic was assigned. In individual cases, the examination board may extend the preparation time once by up to six (6) weeks upon justified application. The application must state the special circumstances for which the student is not responsible that prevent the master's dissertation from being submitted on time.

**Regarding Article 23(1) Addition to the title**

Upon application, the title can be supplemented with the addition of "Major in ..." if the requirements detailed in Article 3(3) "Specialisation" are met.

**Regarding Article 23(5) Addition to the title on the degree certificate**

Upon application, the addition of "Major in ..." shall be included on the degree certificate following a review.

**Regarding Article 25(1) Effective date of validity**

The effective date of validity pursuant to Article 25(1) is 30 September 2018.

**Subject-specific appendix to the examination regulations for the  
Master of Science in Biology – one-year variant  
at Heinrich Heine University Düsseldorf**

**Regarding Article 3(1) standard study period**

The standard study period for the one-year master's degree in biology is two (2) semesters.

**Regarding Article 3(3) Structure of the master's degree in biology – one-year variant**

Module	Type	Semester	Credits	Weighting (credits)
Additional qualifications	S+L	1	6	0
Project practical	18 P+S	1	14	14
Pilot work and project outline (2 months)	P+S	1	10	0
Master's dissertation (6 months)	MA+S	2	30	30
<b>Total</b>		<b>2</b>	<b>60</b>	<b>44</b>

S: Seminar      L: Lecture      P: Practical course  
MA: Master's dissertation      ECTS: Credits      Time in semester week hours

The mark for the master's degree is composed of the marks for the module examinations and the master's dissertation. These marks are weighted according to the credits.

**Additional qualifications (6 credits)**

The "Additional qualifications" module consists of one master's seminar worth 2 credits. The seminar presentation must be held in English.

Further credits can be gained in freely selectable courses, such as lectures, internships, tutorials, master's seminars and workshops.

**Project practical (14 credits)**

A project practical with seminar must have successfully been completed. The theoretical background to the project practical shall be assessed during a 60-minute oral examination.

**Pilot work and project outline (10 credits)**

The pilot work lays the groundwork for the master's dissertation. A concept (project outline) for preparation of the master's dissertation must be prepared.

**Master's dissertation (30 credits)**

The master's dissertation involves experimental work.

**Regarding Article 10(16) Module examinations: general rules, admission restrictions**

Active participation in the seminars forms part of the examination for the "Additional qualifications" module, hence attendance of the seminars is compulsory. The attendance requirement shall be deemed fulfilled when a student attends 90% of the course time.

**Regarding Article 16(3) Requirements and deadlines for registering for the master's dissertation**

Students can only register for the master's dissertation when the project practical has successfully been completed.

**Regarding Article 16(9) Preparation time, scope and submission deadline for the master's dissertation**

The written length of the master's dissertation should not exceed 80 pages. The master's dissertation must be written in either German or English. The examination board shall decide on any exceptions in consultation with the examiners.

The completed master's dissertation must be submitted to Student & Examination Administration no later than six (6) months after the topic was assigned. In individual cases, the examination board may extend the preparation time once by up to six (6) weeks upon justified application. The application must state the special circumstances for which the student is not responsible that prevent the master's dissertation from being submitted on time.

**Regarding Article 22 Master's examination: failure**

The master's examination for the master's degree in biology (one-year variant) shall be deemed failed if the project practical is not passed by the start of the second subject semester. The master's examination for this programme shall also be deemed failed if the examination for the project practical is passed with a mark of between 2.7 and 4.0. In this case, the student is able to switch to the two-year variant of the master's degree in biology. In individual cases, the examination board may grant exceptions upon justified application.

**Regarding Article 25(1) Effective date of validity**

The effective date of validity pursuant to Article 25(1) is 30 September 2018.

**Subject-specific appendix to the examination regulations for the  
Master of Science in Chemistry  
at Heinrich Heine University Düsseldorf**

**Regarding Article 3(3) Structure of the master's degree in chemistry**

Module	Type	Semester	Credits (min.)	Weighting
Compulsory module – inorganic chemistry	C	1* (winter semester)	9	14
Compulsory practical course– inorganic chemistry	C	1* (winter semester)	5	
Compulsory module – physical chemistry	C	1* (winter semester)	9	14
Compulsory practical course – physical chemistry	C	1* (winter semester)	5	
Compulsory module – organic chemistry	C	2* (summer semester)	9	14
Compulsory practical course –organic chemistry	C	2* (summer semester)	5	
Compulsory specialisation module – lectures	CE	2* (summer semester)	9	16
Compulsory specialisation module – practical course	CE	2* (summer semester)	7	
Compulsory elective module 1	CE	3	8	8
Compulsory elective module 2	CE	3	8	8
Compulsory elective module 3	CE	3	8	8
Compulsory elective module 4	CE	3	8	8
Master's dissertation	CE	4	25	36
Master's presentation	CE	4	5	9
			120	77

\* If the master's degree is started in the winter semester.

C: Compulsory module            CE: Compulsory elective module

For calculation of the overall mark, exactly the number of credits indicated shall be used to weight the marks, even if more than the required minimum number of credits were earned in an area or module.

(A)

The compulsory modules in the core subjects of inorganic, organic and physical chemistry must be taken in the first year of study.

The specialisation must additionally be determined through the selection of compulsory specialisation modules. 16 credits must be earned from one of the following research schools for this:

- Advanced Materials
- Biological Chemistry
- Molecular Photonics & Excited-State Processes
- Molecular & Biomolecular Catalysis

Before selecting a specialisation, students are advised to consult a mentor (from among the chemistry teaching staff).

*Information on the allocation of places for the compulsory specialisation modules:*

Places on the compulsory specialisation modules (research schools) are allocated once a year in the summer semester.

Timely registration is required to ensure that all of the places can be allocated by the start of the lecture period. The examination board shall set the registration deadline and announce this online. It is usually

one (1) week before the start of lectures. Applications received after this deadline shall not be considered.

The places shall be allocated after the application deadline has passed, once the entire field of applicants has been determined.

The examination board shall ensure that sufficient places are available overall in the research schools to be able to offer all applicants a place. However, the number of places available in the individual schools may be limited, hence students may need to be selected for the respective schools.

The aim is always to take students' individual interests into account as far as possible in the allocation of places. Students must therefore set three preferences when registering for the research schools (1 = highest preference, 3 = lowest preference). Should the number of applications exceed the number of places available at a school, admission shall be based on the overall mark students were awarded for their bachelor's degree.

If admission to the research school for which the application has been given the highest preference is not possible, a place shall be allocated in one of the other research schools. The aim here is to allocate a place in the research school indicated as the next highest preference.

Students, who turn down a place in a research school, cannot derive any entitlement from this to be offered a place in this research school again at a later date.

(B)

Students must select four compulsory elective modules at the start of their second year of study. The compulsory elective modules should mainly be selected from the compulsory elective modules offered for the subject of chemistry. The examination board for chemistry shall announce these modules.

Compulsory elective modules can also be selected from the courses offered by the Faculty of Mathematics and Natural Sciences at Heinrich Heine University Düsseldorf. Upon application by the student, the examination board for chemistry must determine before the module is taken whether credits can be awarded for the module.

At the end of the degree programme, students must defend their accepted master's dissertation publicly before an examination commission. The commission shall comprise at least three members, who are appointed by the chairperson of the examination board; two of the members should be the examiners who assessed the master's dissertation. The oral defence should last no more than 30 minutes, whereby 15 minutes are reserved for presentation of the work by the student.

The examination commission shall prepare a protocol of the oral defence and award a mark after consulting in private. If the examiners cannot agree on a mark, the mark shall be determined from the arithmetic mean of the individual marks they award.

#### **Regarding Article 10(16) Module examinations: general rules, admission restrictions**

An attendance obligation exists for all modules or module components in which regular attendance and active participation are required to achieve the learning objectives. Active participation can be both an examination requirement (for admission to the examination) and a component of the examination.

The attendance of lectures cannot be made compulsory.

In tutorials and seminars, the learning objectives include active participation in the academic discourse in a close exchange with other students. Attendance is therefore compulsory for tutorials and seminars

with small groups of max. 15 students. The attendance requirement shall be deemed fulfilled when a student is excused for 20% of the time at the most. A student shall be considered excused if the person responsible for the module accepts the student's proof justifying their absence (e.g. a medical certificate). If the person responsible for the module determines that a student's attendance was not sufficient, the module shall be considered not attended and must be repeated.

The following rules apply for practical courses:

- As a rule, all required study credits must have successfully been completed in order to successfully pass a practical course.
- In the case of students, who have been unable to complete a maximum of 20% of the total study credits on the scheduled dates, dates can be arranged in consultation with the respective practical course supervisor to make up work, provided that the student was excused on the scheduled dates.
- A student shall be considered excused if the practical course supervisor accepts the student's proof justifying their absence (e.g. a medical certificate).
- Practical course supervisors can exclude students from a practical course as soon as they have failed to complete more than 20% of the total study credits on the scheduled dates due to absences.
- Since certain events during practical courses can be fundamental requirements for the further course of a practical course (e.g. safety instructions, equipment briefings), absence from these events can lead to immediate exclusion from a practical course. Details must be specified in the respective practical course regulations.
- Following the voluntary termination of a practical course or exclusion by the practical course supervisor, or if the required study credits have not successfully been earned, the practical course as a whole shall be deemed not completed, meaning that the entire practical course shall be considered "failed" and must be repeated in full.

### **Regarding Article 14(3) Exceptions to the repetition of examinations**

Upon application to the examination board, students shall be granted one additional repetition of a module examination that according to Article 14(3) cannot be repeated. Further repetition of this module examination and a third repetition of more than one module examination is not possible.

### **Regarding Article 16 Master's dissertation**

#### **Regarding (3) Registration**

Students can only apply for admission to the master's dissertation and assignment of a topic when they have passed all of the compulsory modules and earned at least 82 credits.

#### **Regarding (9) Submission**

The master's dissertation must be submitted no later than six (6) months after the topic has been assigned. The written length of the master's dissertation should not exceed 100 pages.

Upon justified application, the examination board may, after hearing from a student's supervisor for the master's dissertation, extend the aforementioned deadline once by a maximum of four (4) weeks.

The application must state the special circumstances for which the student is not responsible that prevent the master's dissertation from being submitted on time. This application must be submitted to the examination board at least two (2) weeks before the deadline.

**Regarding Article 25(1) Effective date of validity**

The effective date of validity pursuant to Article 25(1) is 30 September 2011.



**Subject-specific appendix to the examination regulations for the  
Master of Science in Industrial Pharmacy  
at Heinrich Heine University Düsseldorf**

**Regarding Article 2(1) Studies: requirements**

The required first degree can be in pharmacy, biology, chemistry, process engineering or another closely related subject.

**Regarding Article 2(3) Studies: goals**

The specialist content focuses on the research, development, production, trialling and use of pharmaceuticals, characterisation using chemical, physical, biological and theoretical methods as well as knowledge of the special legal regulations in the pharmaceutical field.

**Regarding Article 3(3) Structure of the master's degree in industrial pharmacy**

The following table lists the modules that must be completed as part of the degree programme. The semester foreseen for completion and the corresponding credits are indicated in each case. The marks are weighted according to the credits awarded for the marked module examinations for calculation of the overall mark.

<b>Module</b>	<b>Semester</b>	<b>Credits</b>	<b>Mark awarded?</b>
Pharmaceutical Development	1	10	Yes
Pharmaceutical Manufacturing	2	10	Yes
Quality Control	2	10	Yes
Quality Management	3	4	Yes
Drug Regulatory Affairs	3	10	Yes
Compulsory elective modules	1–3	≥ 24	Yes
Elective module(s)	1–3	Variable	Yes/No
Master's module	4	30	Yes

**(Compulsory) elective modules**

Which modules can be selected in which area (compulsory elective modules and elective modules) is indicated in the module handbook. The latest version of the module handbook is published on the website of the Department of Pharmacy. The marks obtained are weighted according to the number of credits and taken into account in the overall mark.

**Master's module**

The master's module comprises the master's dissertation (26 credits) and the master's seminar (4 credits).

At the end of the degree programme, students must defend their accepted master's dissertation publicly before an examination commission. Upon written application by the student when registering for the examination, listeners shall be excluded from the examination. The commission shall comprise at least three members, who are appointed by the chairperson of the examination board; two of the members

should be the examiners who assessed the master's dissertation. The oral defence should last no more than 30 minutes, whereby 15 minutes are reserved for presentation of the work by the student.

The examination commission shall prepare a protocol of the oral defence and award a mark after consulting in private. If the examiners cannot agree on a mark, the mark shall be determined from the arithmetic mean of the individual marks they award.

### **Regarding Article 10(16) Module examinations: general rules, admission restrictions**

An attendance obligation exists for all modules or module components in which regular attendance and active participation are required to achieve the learning objectives. Active participation can be both an examination requirement (for admission to the examination) and a component of the examination.

The attendance of lectures cannot be made compulsory.

The learning objectives are achieved during the tutorials and seminars for the compulsory, compulsory elective and elective modules, among others through active participation in the academic discourse in close exchange with other students and the lecturers, meaning that active participation in classes counts as an examination requirement and a component of the examination. Hence the attendance of all seminars and tutorials is compulsory.

The following rules apply for practical courses:

- As a rule, all required study credits must have successfully been completed in order to successfully pass a practical course.
- In the case of students, who have been unable to complete a maximum of 20% of the total study credits on the scheduled dates, dates can be arranged in consultation with the respective practical course supervisor to make up work, provided that the student was excused on the scheduled dates.
- Practical course supervisors can exclude students from a practical course as soon as they have failed to complete more than 20% of the total study credits on the scheduled dates due to absences.
- Since certain events during practical courses can be fundamental requirements for the further course of a practical courses (e.g. safety instructions, equipment briefings), absence from these events can lead to immediate exclusion from a practical course. Details must be specified in the respective practical course regulations.
- Following the voluntary termination of an practical course or exclusion by the practical course supervisor, or if the required study credits have not successfully been earned, the practical course as a whole shall be deemed not completed, meaning that the entire practical course shall be considered "failed" and must be repeated in full.

### **Regarding Article 16 Master's dissertation**

#### **Regarding (3) Application**

Students can only apply for admission to the master's module and assignment of a topic when they have earned at least 75 credits.

#### **Regarding (9) Preparation time, scope and submission**

The master's dissertation must be submitted no later than six (6) months after the topic has been assigned. In individual cases, the examination board may extend the preparation time by up to four (4)

weeks upon justified application. The application for an extension must be made at least two (2) weeks before the normal deadline.

The topic and assignment must be formulated in such a way that the master's dissertation can be written within a total workload of 780 hours (26 credits).

**Regarding Article 17(3) Assessment of the master's dissertation**

The mark awarded for the master's dissertation and master's presentation can be combined to determine a joint mark in the case of a joint assessment.

**Regarding Article 25(1) Effective date of validity**

The effective date of validity pursuant to Article 25(1) is 30 September 2018.

**Subject-specific appendix to the examination regulations for the  
Master of Science in Computer Science  
at Heinrich Heine University Düsseldorf**

**Regarding Article 3(3) Studies: programme structure**

<b>Compulsory elective areas / teaching units</b>	<b>Type</b>	<b>Semester</b>	<b>Credits (min.)</b>	<b>Weighting</b>
Practical or Technical Computer Science	CE	1–3	15	1
Theoretical Computer Science	CE	1–3	15	1
Project work	CE	2+3	20	0
Specialisation	CE	1–3	30	2
Individual supplementary module	CE	1–3	10	0
Master's dissertation (6 months) incl. oral defence	MA	4	30	2
<b>Total</b>			<b>120</b>	

CE: Compulsory elective module MA: Master's dissertation

The compulsory elective areas of “Practical or Technical Computer Science”, “Theoretical Computer Science”, “Specialisation”, “Project work” and “Individual supplementary module” comprise the compulsory elective modules that are marked accordingly in the module handbook for the master's degree in computer science as courses for these areas.

Modules for the bachelor's degree programme in computer science marked in the module handbook as courses for this area can be selected for the compulsory elective area “Individual supplementary module”, provided that students have not already completed modules with similar content as part of their bachelor's degree.

For the “Specialisation” compulsory elective area, modules from other subjects may also be selected that build on and deepen the specialisation selected during the bachelor's degree. Upon written application, the examination board may additionally allow any other subject offered at Heinrich Heine University Düsseldorf as a specialisation in which methods of computer science are used. The specialisation is set by the Student & Examination Administration before the first examination is taken in the specialisation. Upon justified application, the examination board may allow a specialisation to be changed as long as the subject examinations in the specialisation have not been definitively failed.

All modules selected for the compulsory elective areas of “Practical or Technical Computer Science”, “Theoretical Computer Science” and “Specialisation” must conclude with a marked module examination.

The modules selected for the compulsory elective areas of “Project work” and “Individual supplementary module” can conclude with a marked or unmarked module examination.

A module for the master's degree in computer science can only be assigned to a compulsory elective area if the module was completed as part of the master's degree in computer science or if the module was completed as part of a bachelor's degree, but the examination result was not counted toward the bachelor's degree in computer science.

The marks for the compulsory elective areas of “Practical or Technical Computer Science”, “Theoretical Computer Science” and “Specialisation” are determined from the arithmetic mean of the module

examinations completed in the compulsory elective areas, weighted according to the number of credits for each module.

The overall mark is determined from the arithmetic mean of the marks awarded for the compulsory elective areas of “Practical or Technical Computer Science”, “Theoretical Computer Science” and “Specialisation” and the mark awarded for the master’s dissertation, weighted by the factors indicated in the table above, even if more than the minimum number of credits required were earned in one area.

The project work also serves as preparation for the master’s dissertation and should, as a rule, be completed within the work group in which the master’s dissertation is to be completed.

In the oral defence, students publicly present the findings from their master’s dissertation during a seminar presentation. The presentation followed by a discussion should last no more than 45 minutes, whereby 30 minutes are reserved for presentation of the work by the student.

### **Regarding Article 10(13) Further examination formats**

Written paper:

A written paper may contain programming text or consist entirely of programming text. It may comprise several parts, which must be submitted in a set format by the deadlines specified. The responsible member of teaching staff shall announce the format, deadlines and assessment criteria during the course.

### **Regarding Article 14(3) Exceptions to the repetition of examinations**

Upon application to the examination board, students shall be granted a third opportunity to repeat a module examination that according to Article 14(3) cannot be repeated. Further repetition of this module examination and a third repetition of more than one module examination is not possible.

### **Regarding Article 16(3) Master’s dissertation: topic assignment**

Students can only apply for admission to the master’s dissertation and assignment of a topic when they have earned 60 credits.

### **Regarding Article 16(9) Master’s dissertation: topic assignment**

The master’s dissertation must be submitted no later than six (6) months after the topic has been assigned. The written length of the master’s dissertation should not exceed 80 pages.

Upon justified application, the examination board may, after hearing from the supervisor, extend the deadline for preparation of the master’s dissertation once by a maximum of four (4) weeks. The application must state the special circumstances for which the student is not responsible that prevent the master’s dissertation from being submitted on time. This application must be submitted to the examination board before the deadline.

### **Regarding Article 25(1) Effective date of validity**

The effective date of validity pursuant to Article 25(1) is 30 September 2015.

**Subject-specific appendix to the examination regulations for the  
Master of Science in Mathematics  
at Heinrich Heine University Düsseldorf**

**Regarding Article 3(3) Structure of the master's degree in mathematics**

The master's degree in mathematics is divided into the following areas:

Area	Number of modules	Credits
Specialisation	3	23
Pure Mathematics	Min. 2	≥18
Applied Mathematics	Min. 2	≥18
Supplementary area	Min. 3	≥23
Master's dissertation	1	30
Key skills	2	≥8

The **specialisation** consists of a lecture series with a total of 18 credits as well as a seminar, the content of which should relate to the lecture series.

In the area of **Pure Mathematics**, 18 credits must be earned in at least two pure mathematics modules.

In the area of **Applied Mathematics**, 18 credits must be earned in at least two applied mathematics modules.

Marks must be awarded for a total of at least 27 credits in the two areas of pure mathematics and applied mathematics.

23 credits must be earned in the **supplementary area**. Students may select modules from mathematics or an applied subject. A mathematics seminar must be completed as part of this. A maximum of 18 credits may be earned from the courses taken as part of a bachelor's degree.

Computer science, physics or economics can be selected as an applied subject and, upon written application, also another subject (e.g. biology, chemistry, philosophy or psychology) following approval from the examination board. Selection of an applied subject is not compulsory.

30 credits are awarded for the accepted **master's dissertation**.

The area of **key skills** consists of the modules "Techniques of scientific work" and "Further key skills". No marks are awarded for this area.

The module "Techniques of scientific work" serves as preparation for the master's dissertation. It can for example consist of a reading course or another seminar. 5 credits must be earned in this module.

For the module "Further key skills", any other courses offered at Heinrich Heine University Düsseldorf can be selected or a supervised external internship completed, which lead to skills or competences that are useful to the student in her/his studies or professional life. Such courses are for example offered as part of the "Studium Universale" general studies programme. At least 3 credits must be earned in this module.

In general, credits cannot be awarded again for the master's degree for modules that have already been used for a bachelor's examination.

### **Regarding Article 10(16) Module examinations: general rules, admission restrictions**

In the case of seminars forming part of the specialisation or supplementary area or the module “Techniques of scientific work” (see the section regarding Article 3(3) Structure of the degree programme), active participation in the sessions forms part of the examination. The attendance of seminars is therefore compulsory.

### **Regarding Article 16 Master’s dissertation: topic assignment**

**Regarding (2)** The topic of the master’s dissertation can also be assigned with a *specialisation in an applied subject*. In this case, in addition to the supervisor for the subject of mathematics, there is a second supervisor from the applied subject for whom Article 16(2) applies accordingly. In deviation from the above regulation for Article 3, at least 18 credits must be earned in the applied subject in the specialisation area and at least 9 credits in the subject of mathematics in the supplementary area.

For assessment of the master’s dissertation, the supervisors from the subject of mathematics shall serve as the first examiners and the supervisors from the applied subject shall serve as the second examiners.

**Regarding (3)** Students can only apply for admission to the master’s dissertation and assignment of a topic when they have earned 60 credits.

**Regarding (9)** The master’s dissertation must be submitted six (6) months after admission and assignment of the topic. The topic must be formulated in such a way that this preparation time can be adhered to and relates to the content of the specialisation area. The length of the master’s dissertation should not exceed 100 pages (excluding the cover pages and table of contents). Upon written application, the examination board may, after hearing from the supervisor, extend the deadline for preparation once by a maximum of six (6) weeks. The application must state the special circumstances for which the student is not responsible that prevent the master’s dissertation from being submitted on time.

### **Regarding Article 21(2) Weighting for the overall mark**

The examination mark for each module is weighted according to the number of credits for the module and the total number of credits achieved for marked courses.

### **Regarding Article 25(1) Effective date of validity**

The effective date of validity pursuant to Article 25(1) is 30 September 2014.

**Subject-specific appendix to the examination regulations for the  
Master of Science in Medical Physics  
at Heinrich Heine University Düsseldorf**

**Regarding Article 3(3) Structure of the master's degree in medical physics**

Module/area	Type	Semester	Credits (min.)	Weighting
Experimental Biophysics	C	1	6	6
Theoretical Biophysics	C	2	6	6
Experimental Solid State Physics	C	1	6	6
Statistical Mechanics	C	1	8	8
Elective module – medical physics	CE	1+2+3	<b>Min. 28</b>	Max. 28
Elective module – physics	CE	2+3	<b>Min. 12</b>	Max. 12
Elective module	E	2	<b>Min. 6</b>	Max. 6
Specialisation	CE	3	15	15
Master's dissertation	CE	3+4	30	45
Final seminar	CE	4	3	3
<b>Total</b>		<b>4</b>	<b>Min. 48</b>	<b>Max. 135</b>

C: Compulsory module

CE: Compulsory elective module

E: Elective module

When calculating the overall mark, each area contributes at most the specified maximum mark weight, even if more than the minimum required number of credits have been earned in an area. If marked modules are completed in an area to an extent that exceeds the specified maximum mark weight, the mark weight of all marked achievements is reduced equally. The mark weight for the elective and compulsory elective areas is based on the number of credits assigned to marked examinations. The marks for marked modules are generally taken into account in calculation of the overall mark. German language courses for foreign language learners constitute an exception here, as they are included without a mark.

The assignment of modules to the areas is indicated in the module handbook. The current version of the module handbook is published on the website of the Department of Physics.

In the *compulsory elective area of medical physics*, the modules of the Faculty of Mathematics and Natural Sciences and the Faculty of Medicine can be selected that are marked for this area accordingly in the module handbook.

The physics compulsory elective area comprises elective modules from all physics fields offered at Heinrich Heine University Düsseldorf. Four modules must be selected, which are marked accordingly in the module handbook. In particular, these are modules from the fields of soft matter, plasma physics, solid state and nanophysics, quantum optics and quantum information, laser physics and computational physics. The modules can only be selected if the student has already taken the corresponding courses as part of a bachelor's degree or in another area of the master's degree.

In the *elective area*, any of the modules from all of the modules offered at Heinrich Heine University Düsseldorf can be selected. Up to 6 credits can be awarded in the *elective area* for the completion of a practical placement in administration, business, industry, a clinic or a scientific research establishment lasting at least four weeks, provided that a lecturer from the physics institutions acts as supervisor, confirms in advance that the practical placement can be recognised and receives a written report from the student upon completion of the practical placement.



The *specialisation module* serves as preparation for the master's dissertation and should, as a rule, be completed within the work group in which the master's dissertation is to be completed. The specialisation module takes the form of a written report that should not exceed 20 pages in length and shall be assessed by the supervisor.

In the *final seminar*, students present the findings from their master's dissertation publicly in a marked seminar presentation. The presentation duration shall be set by the member of teaching staff responsible for the final seminar and announced to the students.

#### **Regarding Article 4(2) Further regulations on composition of the examination board**

The professors on the examination board named in Article 4(2) shall be elected from among the professors for physics. The Faculty of Medicine at Heinrich Heine University Düsseldorf shall additionally appoint one further member to the examination board and her/his deputy from among the professors of the Faculty of Medicine by means of an election.

#### **Regarding Article 10 Module examinations: general rules, admission restrictions**

##### **Examinations within the Faculty of Medicine**

In deviation from the regulations laid out in Article 10, examinations for courses of the Faculty of Medicine shall be held pursuant to the conditions applicable for these. These regulations shall be announced by the respective lecturers.

#### **Regarding Article 10(16) Module examinations: general rules, admission restrictions**

- a) In the *final seminar*, active participation constitutes part of the examination. Attendance of this seminar is therefore compulsory. The attendance requirement shall be deemed fulfilled when a student has attended 50% of the course time for the respective course.
- b) In all other *seminars*, active participation in the sessions during the respective semester constitutes part of the examination. Attendance of these seminars is therefore compulsory. The attendance requirement shall be deemed fulfilled when a student has attended 80% of the course time for the respective semester.
- c) In the module *Medicine in Physics*, which consists of a series of excursions, active participation in the excursions constitutes part of the examination. Attendance is therefore compulsory for this course.
- d) In the *Ionising Radiation* module (*radiation protection course*), active participation in the sessions constitutes part of the examination and is mandatory for safety reasons. Attendance is therefore compulsory for this course. The attendance requirement shall be deemed fulfilled when a student has attended all course sessions.

#### **Regarding Article 14(3) Exceptions to the repetition of examinations**

Upon application to the examination board, students shall be granted one additional repetition of a module examination that according to Article 14(3) cannot be repeated. Further repetition of this module examination and a third repetition of more than one module examination is not possible.

#### **Regarding Article 16 Master's dissertation**

##### **Regarding (3) Registration**

Students can only apply for admission to the master's dissertation and assignment of a topic when they have passed the modules in experimental biophysics, theoretical biophysics, experimental solid state physics, and statistical mechanics in addition to the specialisation module and earned at least 60 credits.

**Regarding (9) Submission**

The master's dissertation must be submitted no later than six (6) months after the topic has been assigned. The written length of the master's dissertation should not exceed 100 pages.

Upon justified application, the examination board may, after hearing from the supervisor of the master's dissertation, extend the aforementioned deadline once by a maximum of four (4) weeks. The application must state the special circumstances for which the student is not responsible that prevent the master's dissertation from being submitted on time. This application must be submitted to the examination board at least two (2) weeks before the deadline.

**Regarding Article 25(1) Effective date of validity**

The effective date of validity pursuant to Article 25(1) is 30 September 2019.

**Subject-specific appendix to the examination regulations for the  
Master of Science in Physics  
at Heinrich Heine University Düsseldorf**

**Regarding Article 3(3) Structure of the master's degree in physics**

Module/area	Type	Semester	Credits (min.)	Weighting
Specialisation – physics	CE	1+2	24	24
Elective module – physics	CE	1+2+3	min. 36	Max. 36
Elective module	E	1+2	min. 12	Max. 12
Specialisation	CE	3	15	15
Master's dissertation	CE	3+4	30	45
Final seminar	CE	4	3	3
<b>Total</b>		<b>4</b>	<b>48</b>	<b>Max. 135</b>

CE: Compulsory elective module

E: Elective module

When calculating the overall mark, each area contributes at most the specified maximum mark weight, even if more than the minimum required number of credits have been earned in an area. If marked modules are completed in an area to an extent that exceeds the specified maximum mark weight, the mark weight of all marked achievements is reduced equally. The mark weight for the elective and compulsory elective areas is based on the number of credits assigned to marked examinations. The marks for marked modules are generally taken into account in calculation of the overall mark. German language courses for foreign language learners constitute an exception here, as they are included without a mark.

The assignment of modules to the areas is indicated in the module handbook. The current version of the module handbook is published on the website of the Department of Physics.

In the *specialisation area*, two subject specialisations must be selected from the fields of biophysics, soft matter, plasma physics, solid state physics and nanophysics as well as quantum optics and quantum information. Within each specialisation, one type A module and one type B module must be selected. The modules that can be selected are marked accordingly in the module handbook.

The physics compulsory elective area comprises elective modules from all physics fields offered at Heinrich Heine University Düsseldorf. Modules must be selected, which are marked accordingly in the module handbook. In particular, these should all be modules that can also be selected for the specialisation area as well as modules from the areas of laser physics, computer-assisted physics, medical physics and X-ray physics. The modules can only be selected if the student has already taken the corresponding courses as part of a bachelor's degree or in another area of the master's degree.

In the *elective area*, any of the modules from all of the modules offered at Heinrich Heine University Düsseldorf can be selected. Up to 6 credits can be awarded in the *elective area* for the completion of a practical placement in administration, business, industry, a clinic or a scientific research establishment lasting at least four weeks, provided that a lecturer from the physics institutions acts as supervisor, confirms in advance that the practical placement can be recognised and receives a written report from the student upon completion of the practical placement.

The *specialisation module* serves as preparation for the master's dissertation and should, as a rule, be completed within the work group in which the master's dissertation is to be completed. The specialisation module takes the form of a written report that should not exceed 20 pages in length and shall be assessed by the supervisor.

In the *final seminar*, students present the findings from their master's dissertation publicly in a marked seminar presentation. The presentation duration shall be set by the member of teaching staff responsible for the final seminar and announced to the students.

#### **Regarding Article 10(16) Module examinations: general rules, admission restrictions**

- a) In the *final seminar*, active participation constitutes part of the examination. Attendance of this seminar is therefore compulsory. The attendance requirement shall be deemed fulfilled when a student has attended 50% of the course time for the respective course.
- b) In all other *seminars*, active participation in the sessions during the respective semester constitutes part of the examination. Attendance of these seminars is therefore compulsory.

#### **Regarding Article 14(3) Exceptions to the repetition of examinations**

Upon application to the examination board, students shall be granted one additional repetition of a module examination that according to Article 14(3) cannot be repeated. Further repetition of this module examination and a third repetition of more than one module examination is not possible.

#### **Regarding Article 16 Master's dissertation**

##### **Regarding (3) Registration**

Students can only apply for admission to the master's dissertation and assignment of a topic when they have earned at least 60 credits, of which 15 credits are for the specialisation module.

##### **Regarding (9) Submission**

The master's dissertation must be submitted no later than six (6) months after the topic has been assigned. The written length of the master's dissertation should not exceed 100 pages.

Upon justified application, the examination board may, after hearing from the supervisor of the master's dissertation, extend the aforementioned deadline once by a maximum of four (4) weeks. The application must state the special circumstances for which the student is not responsible that prevent the master's dissertation from being submitted on time. This application must be submitted to the examination board at least two (2) weeks before the deadline.

#### **Regarding Article 25(1) Effective date of validity**

The effective date of validity pursuant to Article 25(1) is 30 September 2019.