

COURSE AND EXAMINATION REGULATIONS

Valid from 1 September 2021

Master's programmes. Biomedical Sciences, Population Health Management and Vitality and Ageing.

These Course and Examination Regulations (henceforth OER) have been drawn up in accordance with the Higher Education and Research Act [*Wet op het hoger onderwijs en wetenschappelijk onderzoek*; WHW] (henceforth the Act) and the following Leiden University regulations:

- the Leiden Register of Study Programmes Framework Document;
- the Academic Calendar;
- the Regulations for Student Registration, Tuition Fees and Examination Fees;
- the Regulations for Admission to Master's Programmes.

Pursuant to Article 7.14 of the Act, the Faculty Board regularly evaluates the OER and considers, for the purpose of monitoring and –if necessary– adjusting the study load, how much time it takes students to comply. In accordance with Article 9.18 of the Act, the Programme committee is assigned the task of annually assessing the implementation of the OER.

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Chapter 1 **General Provisions**

Article 1.1 **Scope of the regulations**

These regulations apply to the teaching and examinations of the Master's programmes Biomedical Sciences, Population Health Management and Vitality and Ageing, henceforth referred to as the programme.

The programme is instituted in the Faculty of Medicine of Leiden University i.c. the Leiden University Medical Center, henceforth referred to as the Faculty, and is taught in Leiden and/or the The Hague.

Article 1.2 **Definitions**

In these regulations the following definitions apply:

- a. Board of Admissions: the Board established by the Faculty Board that has the duty of determining, with the application of the entry requirements referred to in Article 7.30b, (1) and (3) of the Act and the University Regulations for Admission to Master's Programmes, which applicants can be admitted to this Master's programme;
- b. Board of Examiners: the Board of Examiners for the programme, established and appointed by the Faculty Board in accordance with Article 7.12a of the Act;
- c. component: one of the courses or practical assignments of the programme, as referred to in Article 7.3 of the Act. The study load of each component is expressed in whole credits. Each component is concluded with an examination;
- d. credit: the unit in EC that expresses the study load of a component as referred to in the Act. According to the ECTS, one credit equals 28 hours of study;
- e. degree classification: further degree classification by the Board of Examiners;
- f. digital teaching environment a digital environment, such as Brightspace, in which students can work together, communicate and learn;
- g. ECTS: European Credit (Transfer System);
- h. Education Administration Office the office in the faculty where students can go for information and to register for courses (education information centre, service desk, (faculty name));

- i. Prospectus: the digital prospectus containing specific and binding information about the programme: <https://studiegids.universiteitleiden.nl/>; the Prospectus constitutes an integral part of these regulations, as an appendix;
- j. examination: (tentamen) an inspection of the knowledge, understanding and skills of the student with respect to a particular component, and an assessment thereof (in accordance with Article 7.10 of the Act). The assessment can take place in written form, orally as well as digitally, or a combination of these methods. An examination may consist of several constituent examinations. Credits are only awarded for examinations passed. The inspection is conducted according to the method determined by the Board of the Examiners to assure the quality of examination and final examinations;
- k. examiner: the person appointed by the Board of Examiners to conduct examinations, in accordance with Article 7.12c of the Act;
- l. final examination: (examen) the examinations associated with the components belonging to the programme or the propaedeutic phase of the programme, including an investigation to be carried out by the Board of Examiners itself, as referred to in Article 7.10 (2) of the Act;
- m. first/second reader the first or second examiner to read and assess the thesis/final paper/final report. The first reader/reviewer is also the supervisor;
- n. language of instruction the language of a programme, in which lectures and tutorials are given and examinations and final examinations are held;
- o. Leiden Register of Study Programmes register of the programmes offered by Leiden University, maintained under the supervision of the Executive Board, as referred to in Article 7 of the Management and Administration Regulations;
- p. level: the level of a component according to the abstract structure as defined in the Leiden Register of Study Programmes Framework Document¹;
- q. nominal duration of study the study load in years of study as established in the Central Register of Higher Education Programmes;
- r. portfolio: a monitoring and assessment file with which students (1) demonstrate that they have achieved a sufficient level of academic education to be awarded the degree; (2) record their personal process of academic learning during the programme; and (3) receive appropriate supervision and study advice;

¹ [Leiden Register of Study Programmes Framework Document](#)

- s. practical assignment: a practical assignment that contributes to an examination or final examination, as referred to in Article 7.13 (2) (d) of the Act, and takes one of the following forms:
- writing a thesis/final paper/final report,
 - writing a paper or creating an artistic work,
 - carrying out a research assignment,
 - participating in fieldwork or an excursion,
 - completing an internship, or
 - participating in another educational activity aimed at acquiring particular skills;
- t. programme: the programme to which the OER relates: a coherent set of components, aimed at achieving clearly defined objectives relating to the knowledge, understanding and skills that a graduate of the programme is expected to have acquired. Each programme is concluded with a final examination;
- u. student: a person enrolled at Leiden University in order to follow the courses, and/or sit the examinations and final examinations of the programme;
- v. the Act: the Higher Education and Research Act [*Wet op het hoger onderwijs en wetenschappelijk onderzoek*; WHW];
- w. working day: Monday to Friday, excluding public holidays and the compulsory closure days specified by the Executive Board;
- x. Student Council: Student participation council of the LUMC, as referred to in Article 9.37 of the Act.

The other definitions have the meaning that the Act ascribes them. Definitions specific to the programme are laid out in Appendix 1.

Article 1.3 **Codes of conduct**

1.3.1 The Leiden University Code of Conduct on Standards of Behaviour between Lecturers and Students is applicable.² The aim of this code is to create a framework for a good, safe and stimulating work and study environment within Leiden University, in which teachers and students respect each other and in which mutual acceptance and trust are important values.

1.3.2 The Code of Conduct on Digital Teaching applies³; this provides guidelines for teaching and learning in digital environments, remote environments or any form of teaching that is primarily dependent on IT Services.

²[Leiden University Code of Conduct on Standards of Behaviour between Lecturers and Students](#)

³[Gedragscode onderwijs op afstand](#)

1.3.3 The Leiden University Regulations on ICT and Internet Use are also applicable.⁴ These regulations define what is considered appropriate use of ICT and internet and how usage checks will be made. They also explain which conduct is not tolerated and the consequences that apply

1.3.4 Furthermore, the Faculty codes of conduct apply to the programme, which can be found on the university website⁵.

Chapter 2 Description of the Programme

Article 2.1 Objectives of the programme

The programme has the following objectives all of which are laid out in Appendix 1.

Article 2.2 Specialisations

Specialisations of the programmes, if applicable, are laid out in Appendix 1.

Article 2.3 Learning outcomes

Graduates of the programme have attained the following learning outcomes, listed according to the Dublin descriptors, in Appendix 1.

Article 2.4 Structure of the programme

The programme offers full-time tuition.

The nominal duration of the programme is specified in Appendix 1.

Article 2.5 Study load

The programme has a study load as specified in Appendix 1.

Article 2.6 Start of the programme; uniform structure of the academic year

Starting dates of the programme are laid out in Appendix 1. In terms of regular courses, the programme is not based on the university semester system which comprises 42 teaching weeks. The programme is flexible and is based on the schedule of the academic year, provided by the LUMC.

Article 2.7 Final examinations of the programme

The programme is concluded with a master's final examination.

⁴[Leiden University Regulations on ICT and Internet Use](#)

⁵[University website with faculty codes \(of conduct\)](#)

Article 2.8 **Language of instruction**

2.8.1 Subject to the Code of Conduct on the Language of Instruction and Examination,⁶ the language(s) of instruction and examinations is English. Exceptions are specified in Appendix 1. Students are expected to have an adequate command of the language(s) of instruction and examination in the programme, in accordance with the requirements stated in Article 5.2.3. As appropriate, the Faculty publishes OER in English for English-taught programmes.

2.8.2 Contrary to Article 2.8.1, in individual cases the Board of Examiners can permit the student to write the final thesis in another language, in accordance with the Guideline on Language Policy.⁷

Article 2.9 **Quality**

The programme is accredited by NVAO⁸ and meets the national and international quality requirements for degree programmes. The programme's teaching also meets the quality standards for teaching set out in the Leiden Register of Study Programmes Framework Document.

Chapter 3 **Curriculum**

Article 3.0 **Exceptions due to coronavirus measures**

3.0.1 If, due to coronavirus measures, it is not possible to provide or take part in teaching components as set out in this Regulation or in the Prospectus, changes will be announced by the authorised body in good time via Brightspace.

Article 3.1 **Compulsory components**

3.1.1 The programme includes compulsory components worth a total study load as specified in Appendix 1. These compulsory components include the set components from which students are obliged to choose.

3.1.2 The Prospectus further specifies the actual structure of the programme, the study load, level,⁹ content, method of examination, and structure of the components of the curriculum.

Article 3.2 **Optional components**

3.2.1 In addition to the components referred in 3.1.1, the student selects components worth a total study load as specified in Appendix 1.

3.2.2 The Board of Examiners must approve the student's selection of components.

⁶ [Code of Conduct on Language of Instruction](#)

⁷ [Guideline on Language Policy](#)

⁸ The Accreditation Organisation of the Netherlands and Flanders.

⁹ In accordance with the 'abstract structure', as described in the Framework Document of the Leiden University Register of Study Programmes.

3.2.3 In addition to the components taught at this university, and subject to the approval of the Board of Examiners, students may also select components offered by other Dutch or foreign universities, or components offered by another legal entity offering accredited undergraduate higher education programmes.

3.2.4 Students who are enrolled in the programme may assemble their own curriculum of components that are taught by an institution, as long as these are concluded with a final examination. They will require the permission of the most appropriate Board of Examiners. When granting such permission, the Board of Examiners also indicates to which University programme the curriculum is considered to belong.¹⁰ If necessary, the Executive Board designates a Board of Examiners to take this decision.

Article 3.3 **Practical assignments**

3.3.1 For each component, the Prospectus specifies which practical assignments are included, the nature and scope of the student's workload for these practical assignments and whether participation in these is a condition of admission to (other parts of) the examination. The Board of Examiners may exempt students from a practical assignment, in which case the Board can choose to apply alternative conditions.

3.3.2 The Prospectus specifies the scope and study load of the thesis/final paper/final report, including the requirements that the final thesis/final paper/final report must meet.

Article 3.4 **Sitting examinations and taking part in programme components during semester 1**

3.4.1 Students who wish to sit an examination must register no later than ten days before the date of the examination, in line with the applicable procedure (further specified in Appendix A).

3.4.2 Students are allocated to components in order of registration, on the provision that, provided they register in good time, students who are enrolled in a programme are guaranteed access to the components that are obligatory to the programme. Students may only take certain components once they have passed the examination of a preceding component. The e-Prospectus specifies the components to which this condition applies.

Article 3.4 **Taking part in programme components and sitting examinations during semester 2¹¹**

3.4.2.1 At the same time as registering for the programme component, students register for the corresponding examination. A confirmation of registration for the examination is required.

3.4.2.2 In order to sit the examination, students must confirm their participation. They can only sit an examination once confirmation of participation has been given.

3.4.2.3 Students will receive a notification in good time asking them to confirm or cancel their participation. Confirmation of participation in an examination is possible up to ten calendar days before the examination takes place.

¹⁰ In accordance with Article 7.3h of the WHW ('free curriculum in higher education').

¹¹ If the new enrollment system does not start in semester 2 in the 21/22 academic year, article 3.4 for semester 1 will remain valid for semester 2.

3.4.2.4 Students who have not enrolled on time according to the applicable enrolment protocol (which is further specified in Appendix A) may report to the Education Administration Office of the faculty of which the programme forms part.

3.4.2.5 A different term applies for the situation as referred to in Article 4.6.2; in this case, students can register up to five calendar days before the examination takes place.

Article 3.5 **Distribution of study materials**

3.5.1 Students are not permitted to take photographs or make audio or video recordings of lectures or education-related meetings, including the feedback sessions after examinations (including examination assignments and model answers), without the explicit prior permission of the relevant lecturer. Should such permission be granted, students are only legally permitted to photograph or record for their own use; all forms of distribution or publication of the photograph or recording are prohibited.

3.5.2 Students are prohibited from all forms of distribution or publication of study materials. The materials are for students' own use only.

Chapter 4 **Examinations, Final Examinations and Further Education**

Article 4.0 **Exceptions due to coronavirus measures**

4.0.1 If as a result of coronavirus measures it is not possible to offer exams and examinations in the form and at the point in time set out in this regulation or in the Prospectus, changes will be announced by the authorised body in good time via Brightspace.

Article 4.1 **Frequency of examinations**

4.1.1 Examinations are held twice during the academic year for each component offered in that year. The Board of Examiners determines the manner of resit for practical assignments.

4.1.2 The Faculty Board is responsible for the practical organisation of the examinations and final examinations and ensures, if necessary by means of invigilation, that the examinations and examinations proceed properly. If remote invigilation is used, students will be informed of this at least ten days in advance.

4.1.3 If a component includes a practical assignment, students may only sit the examination as referred to in 4.1.1 if they have passed the practical assignment, unless the Board of Examiners decides otherwise.

4.1.4 If the grade for a component results from several constituent examinations, it is possible to vary from the number of examinations and resits as referred to in 4.1.1, on the understanding that students are given the opportunity to resit and pass the component by taking an examination that is representative of the component. If applicable, this is specified in the Prospectus.

- 4.1.5 In accordance with Article 7.13 (2) (h) of the Act, the Prospectus specifies the dates of the examinations.
- 4.1.6 The Board of Examiners may set certain rules for taking the resit. These rules are specified in the Rules and Regulations of the Board of Examiners.
- 4.1.7 Contrary to the provisions of Article 4.1 and at a student's request, the Board of Examiners may in exceptional circumstances allow an additional resit.
- 4.1.8 If a student has passed an examination linked to a given component but nevertheless resits this examination without the permission of the Board of Examiners after the academic year in which the student passed this examination, the result of the last sitting will not be assessed.

Article 4.2 **Obligatory sequence**

- 4.2.1 The Prospectus specifies the sequence in which examinations must be taken. Students may only sit examinations that are subject to a compulsory sequence once they have passed the examinations for one or more other components.
- 4.2.2 For the components and their attendant examinations which must be completed in a given sequence, the Board of Examiners may in special cases, and following a substantiated written request by the student, agree to an alternative sequence.

Article 4.3 **Form of examination**

- 4.3.1 The Prospectus states whether an examination or the constituent examinations for a component will take the form of a written, oral or other test.
- 4.3.2 The procedure during examinations and the guidelines and instructions, as referred to in article 7.12b, paragraph 1 under b of the Act, for assessing and establishing the results of examinations and examinations are described in the 'Rules and Guidelines of the Board of Examiners'.
- 4.3.3 Students with a disability or chronic medical condition are given the opportunity to apply for individual examination arrangements adjusted to their particular disability or condition. These arrangements may not affect the quality or level of difficulty of the examination. If necessary, the Board of Examiners seeks expert advice, as referred to in the Protocol on Studying with a Disability,¹² before reaching a decision.
- 4.3.4 In special cases, the Board of Examiners may, at the request of the student and within the scope of the OER, permit a student to sit an examination in another manner than specified in the Prospectus.
- 4.3.5 Examinations are held in the language(s) of instruction for this programme that are specified in the OER. At the request of the student, the Board of Examiners may permit him or her to sit an examination in another language.
- 4.3.6 The final report is presented in a seminar or in an alternative manner that is to be further specified in the Prospectus.

Article 4.4 **Oral examinations**

¹² [Protocol on Studying with a Disability](#)

4.1.1 Students take oral examinations individually, unless the Board of Examiners decides otherwise.

4.4.2 Oral examinations are public, unless the Board of Examiners or the examiner concerned decides otherwise owing to special circumstances, or unless the student has reservations.

Article 4.5 **Rules and Regulations of the Board of Examiners**

4.5.1 In accordance with Article 7.12b (3) of the Act, the Board of Examiners establishes rules concerning the performance of its tasks and responsibilities and the measures it can take in the event of fraud.

4.5.2 The Board of Examiners must guarantee that students are entitled to appeal against decisions of the Board of Examiners or the examiners.

Article 4.6 **Assessment**

4.6.1 The examiner determines the grade immediately after an oral examination has been conducted. The student receives a message about the grade via the University study progress system.

4.6.2 The examiner determines the grade of any written or other form of examination or constituent examination within fifteen working days of the day on which the examination or constituent examination was held. The result is notified to the student. The final grade is recorded in the University study progress system, and the student receives a message about it via that system. The student will be informed of the result at least five working days before the next opportunity to resit the relevant examination. If this deadline is not met, the resit can be postponed.

4.6.3 If the examiner is unable to comply with the periods of fifteen and five working days respectively, as specified in Article 4.6.2, the student is notified accordingly in a message sent to the student's u-mail address before this term expires. This message includes the (latest) date by which the student will be informed of the result.

4.6.4 The examination result is expressed as a whole number or a number to a maximum of one decimal place, between and including 1.0 and 10.0. The result of the examination is not expressed as a number between 5.0 and 6.0.

4.6.5 The examination result is considered to be a pass if it is 6.0 or higher.

4.6.6 If students must complete a practical assignment to be permitted to sit an examination, the Board of Examiners may decide that students have sat the examination once they have passed the practical assignments.

4.6.7 Together with the written or electronic notification of examination results, students are also informed of their right to inspect their graded examination papers, as referred to in Article 4.8, as well as of the appeals procedure.

4.6.8 The Board of Examiners may draw up rules that specify under which conditions it may exercise its power as specified in Article 7.12b (3) of the Act to determine that students do not have to pass every examination and/or under which conditions the results of constituent examinations can compensate for each other. These rules are specified in the Rules and Regulations of the Board of Examiners.

Article 4.7 **Period of validity of examinations**

4.7.1 The Faculty Board may limit the validity of an examination pass, subject to the authority of the Board of Examiners to extend the period of validity in individual cases. The period of validity of an examination pass may only be limited if the examined knowledge, understanding or skills are demonstrably outdated.

4.7.2 The Board of Examiners may, in accordance with the criteria specified in the Rules and Regulations and at the request of the student, extend the validity of examinations for a period to be specified by the Board itself. In the event of special circumstances in the sense of article 7.51, (2) of the Act the Board of Examiners will act in accordance with the pertinent provisions in article 7.10 (4) of the Act.

4.7.3 The validity period referred to 4.7.1 starts on 1 September of the academic year following that in which the grade was obtained or the exemption granted.

Article 4.8 **Inspection and feedback session**

4.8.1 Students are entitled to inspect their graded examination within a maximum period of 30 days following the publication of the results of a written or digital examination.

4.8.2 During the period referred to in 4.8.1, students may inspect the examination questions and assignments, as well as the grading schemes used to grade the examination.

4.8.3 The time and manner of the inspection and feedback session on the examination are specified in the Prospectus or the digital teaching environment.

4.8.4 The Board of Examiners is authorised to decide whether the inspection of the examination paper and the feedback session are to be collective or individual.

4.8.5 The examiner determines where and when the inspection of the examination paper and the feedback session will take place.

4.8.6 Students who are unable to attend the feedback session due to demonstrable circumstances beyond their control are granted another opportunity, if possible within the period referred to in 4.8.1.

Article 4.9 **Exemption from examinations and/or practical assignments**

At the student's request and after consultation with the examiner in question, the Board of Examiners may grant the student exemption from one or more examinations or practical assignments if the student:

- has completed a component at a research university or university of applied sciences that is similar in content and level to the component for which the student is requesting exemption, or
- has demonstrated, through relevant work or professional experience, that he or she has acquired sufficient skills and knowledge in relation to the component in question.

Article 4.10 **Final examination**

4.10.1 The Board of Examiners awards a degree certificate when there is sufficient proof that the final examination has been passed.

4.10.2 As part of the final examination, the Board of Examiners is entitled to conduct its own evaluation of the knowledge, understanding and skills of the examination candidate and assess the results.

4.10.3 The degree is only conferred once the Executive Board has declared that all procedural requirements (including the requirement to pay tuition fees) have been met. One degree certificate is awarded for each programme. The degree certificate states that the programme or specialisation was delivered by Leiden University.

4.10.4 Pursuant to the regulations referred to in Article 7.11 (3) of the Act, a student who is entitled to graduate may ask the Board of Examiners to postpone graduation, as long as the student has not exceeded the maximum period of enrolment of four years for the programme in question.

4.10.5 This request must be submitted within five working days of the student receiving notification of his or her final examination results. In the request the student must indicate when he or she wishes to receive the degree certificate.

4.10.6 The Board of Examiners may also approve the request if refusing it would result in a considerable injustice.

4.10.7 A supplement in Dutch and/or in English that conforms to the standard European Diploma Supplement format, including the grading table applicable for the degree programme, is attached to the degree certificate. In addition to the degree certificate, students are issued with a translation of the degree certificate and a certificate in Latin.

Article 4.11 **The degree**

4.11.1 The degree of Master «of Science» is awarded to those who have passed the final examination of the programme.

4.11.2 The degree certificate specifies which degree has been awarded.

Article 4.12 **Degree classification**

4.12.1 The student is awarded a degree classification for the final examination.

4.12.2 The final degree classification is based on the weighted average of the grades obtained for all examinations that form part of the final examination, with the exception of the components for which an exemption was granted or for which the student only obtained a proof of attendance. Components completed from other programmes, including components followed abroad, must be approved by the Board of Examiners.

4.12.3 The weighted average of all grades is determined by multiplying the number of ECTS credits for each component by the grade awarded for this component, adding these together and then dividing the result by the number of credits earned.

4.12.4 Without prejudice to the provisions of 4.12.6 and 4.12.7, the degree certificate and diploma supplement include the 'cum laude' classification if the following conditions are met for the full-time programmes:

- the weighted average for all components is 8.0 or higher;
- the grade for the final assignment of the master's programme is 8.0 or higher;
- the examination was passed within the nominal duration of study + 1 year;
- Further conditions specific to the programme are laid out in Appendix 1.

The Board of Examiners sets corresponding conditions for part-time programmes, proportionate to the nominal duration of the study programme.

4.12.5 Without prejudice to the provisions of 4.12.6 and 4.12.7, the degree certificate and the diploma supplement include the 'summa cum laude' classification if the following conditions are met for the full-time programmes:

- the weighted average for all components is 9.0 or higher;
- the grade for the final assignment of the master's programme is 9.0 or higher;
- the examination has been passed within the nominal duration of study;
- Further conditions specific to the programme are laid out in Appendix 1.

The Board of Examiners sets corresponding conditions for part-time programmes, proportionate to the nominal duration of the study programme.

4.12.6 The Board of Examiners may also decide to award a distinction in other, exceptional cases, on the condition that the weighted average grade does not differ by more than 0.5 from the grades stipulated in the fourth and fifth paragraphs above. This may involve such considerations as the student's development throughout his or her study programme, any exceptional performances on the part of the student in completing the final paper or thesis and any other relevant exceptional circumstances.

4.12.7 If a student has been subject to a disciplinary measure as a result of irregularity, fraud or plagiarism, as set out in the Rules and Regulations, he or she is not awarded a distinction.

Article 4.13 **Further education**

The degree awarded grants the holder access to a PhD programme.

Chapter 5 Admission to the Programme

Article 5.1 **Confirmation of admission**

5.1.1 The Faculty Board provides confirmation of admission if the student meets the entry requirements specified in Articles 5.2 and 5.3, as long as the maximum number of students that the Executive Board has determined may be enrolled in the programme has not been exceeded. If admission is on the basis of Article 5.2.1, the proof of registration is also confirmation of admission.

5.1.2 Confirmation of admission must be applied for according to the rules set out in the Regulations for Admission to Master's Programmes.¹³

¹³[Regulations for Admission to Master's Programmes](#)

Article 5.2 Admission to the programme

5.2.1 Pursuant to Article 7.30b (1) of the Act, holders of one of the following degrees as indicated in the Appendix, or those who have successfully completed the bridging programme imposed on the basis of Article 5.4.1 may be admitted to the programme.

5.2.2 The Board of Admissions may, on request, admit persons to the programme who do not meet the requirements specified in 5.2.1, but who can demonstrate to the satisfaction of the Board of Admissions that they possess the same level of knowledge, understanding and skills as holders of a degree specified 5.2.1, points a and b, possibly under further conditions, without prejudice to the requirements specified in 5.2.4. This article is further specified in the appendix.

Article 5.2.3 Dutch and English languages

5.2.3.1 As further clarification of Article 2.8 concerning command of the language of instruction, a student who wishes to be admitted to an English-taught master's programme must have one of the following diplomas or must meet the criteria of:

- An International Baccalaureate diploma (with English A);
- A diploma of secondary or higher education completed in Australia, Canada (with the exception of the French-language programmes in Canada), Germany, Ireland, Malta, New Zealand, Singapore, the United Kingdom, the United States or South Africa;
- A diploma of an English-taught university degree programme completed at a Dutch research university;
- A pre-university education (VWO) diploma.
- Components to be determined by the Board of Admissions, which provide evidence of a particular level of language, obtained in a bachelor's programme specified in Appendix 1.

5.2.3.2 If a student who wishes to be admitted does not meet the requirements in 5.2.3.1, at least one of the following language requirements can be set:

- IELTS, each test component must score a minimum of 6.0; with an average score of at least 6.5;
- TOEFL, overall score 90 (internet based), each test component must score a minimum of 22 (internet based);
- Cambridge C2 Proficiency (CPE) or C1 Advanced (CAE) 180, Cambridge component score 176

5.2.3.3 As further clarification of Article 2.8 concerning command of the language of instruction, a student who is not a native Dutch speaker and who wishes to be admitted to a Dutch-taught master's programme must have passed *TUL-gevorderd*.

5.2.3.4 If so wished, the language requirements specified in this article can be included as one of the qualitative admission requirements referred to in Article 5.2.4.

Article 5.2.4 Qualitative admission requirements

5.2.4.1 In addition to the requirements specified in 5.2.1 or 5.2.2, the qualitative admission requirements as specified in Appendix 1 apply for the programme pursuant to Article 7.30b (2) of the Act. Both the admission and the admission deadline requirements are further specified in Appendix 1.

Article 5.2.5 **Capacity limitation**

5.2.5.1 If the Executive Board has determined a maximum capacity for the programme, the order of admission will be determined by the qualitative admission requirements as referred to in Article 5.2.4.1. The method of selection, the deadlines for selection and the weighting of the criteria are further specified in Appendix 1.

Article 5.3 **Deficiencies**

5.3.1 Holders of a bachelor's degree from a research university, a related university bachelor's diploma as referred to in 5.2.1, point b or an equivalent diploma with a maximum of 15 ECTS of deficiencies, may be admitted to the programme, as long as it may reasonably be expected that they will meet the entry requirements within a reasonable period of time.

5.3.2 Students who still have the deficiencies referred to in 5.3.1 when admitted to the programme may participate in the programme but may not sit any final examinations or examinations that the Faculty Board has specified in its decision to grant admission.

5.3.3 For the admission referred to in 5.3.1 the Board of Admissions assembles a catch-up programme with examination opportunities.

5.3.4 If students are admitted to the programme on the basis of 5.3.1 and must sit examinations to meet the entry requirements, these are not considered part of the curriculum of the master's programme.

Article 5.4 **Bridging programmes (Pre-master's)**

5.4.1 Bridging programmes in order to remove deficiencies are laid out in Appendix 1.

5.4.2 Information on the bridging programmes can be requested from the programme's study advisor.

Chapter 6 **Student Counselling and Study Advice**

Article 6.1 **Study progress administration**

6.1.1 On behalf of the Faculty Board, the Education Service Center keeps records of the results achieved by individual students.

6.1.2 Students may inspect their results in the study progress system at any time.

Article 6.2 **Introduction and student counselling**

The programme is responsible for the introduction and student counselling.

Article 6.3 **Supervision of the thesis/final paper/final report**

6.3.1 Together with the first reader, the student draws up a plan for the thesis/final paper/final report as referred to in 3.3.2. This plan is based on the study load for this component, as specified in the Prospectus.

6.3.2 The plan referred to in 6.3.1 also specifies the frequency and manner of supervision.

Article 6.4 **Top-level sport**

Students who engage in top-level sport at a professional level are given the opportunity to adjust their study programme to their sporting activities wherever possible. The programme determines who falls within this category in line with the guidelines drawn up by the Executive Board.

Article 6.5 **Disability or chronic medical condition**

Where possible, students with a disability or chronic medical condition are given the opportunity to adjust their study programme to the limitations resulting from their disability or chronic medical condition. The study programme can be adjusted to the individual disability or chronic medical condition of the student in question, but this must not affect the quality or level of difficulty of the components or the final examination curriculum itself.¹⁴

Article 6.6 **Study and internships abroad**

Special measures will be taken for students who suffer from a demonstrable delay in their studies as a result of study or an internship abroad that has been approved by the Board of Examiners, in order to limit the delay.

Chapter 7 **Evaluation of the Programme**

Article 7.1 **Evaluation of the programme**

The education in the programme is evaluated as follows:

The PDCA cycle serves as a guideline for our study programme evaluations. This approach allows for systematic and continual improvement:

- The quality of programme components is evaluated through an anonymous survey. This survey is at the core of student participation at the LUMC. The survey's results are incorporated into an improvement plan which is shared with the Programme Committee.
- The quality of the programme in its entirety is evaluated continuously through various instruments, such as: programme audit, midterm review, student panel discussions, discussions with external stakeholders, programme evaluation, the *Nationale Studenten Enquête* (National Student Survey), the *Keuzegids*, and the *Nationale Alumni Enquête* (National Alumni Survey).

The Programme Board/Programme Director will inform the Programme Committee about the outcomes of the evaluation.

Chapter 8 **Final Provisions**

Article 8.1 **Amendments**

¹⁴[Protocol on Studying with a Disability](#)

8.1.1 Amendments to these regulations are adopted by a separate order of the Faculty Board with the prior consent of the Student Council or the Programme Committee, depending on the topics concerned.

8.1.2 Amendments to these regulations which apply to a particular academic year must be adopted before the start of that year and published in the prescribed manner, unless earlier implementation of an amendment to the regulations is strictly necessary and in all reasonableness does not harm the students' interests.

8.1.3 Amendments to these regulations may not adversely affect any prior decision pertaining to students taken by the Board of Examiners on the basis of these regulations.

Article 8.2 **Publication**

The Faculty Board or Programme Board is responsible for publishing these regulations, the Rules and Regulations established by the Board of Examiners, and any amendments to these documents via the University website.

Article 8.3 **Term of application**

The Course and Examination Regulations apply for the duration of one academic year.

Article 8.4 **Entry into force**

These regulations enter into force on 1 September 2021.

Appendix

Part A:

Additional provisions for the Master's programme Biomedical Sciences

Appendix 1: Master's Degree Programmes MSc Biomedical Sciences

Ad. Article 1.2 Definitions

Internship "Junior research project-I (JRP-I)" and "Junior research project-II (JRP-II)". The Master's Internship Committee is responsible for the procedures of all master internships and the Scientific Review.

Ad. Chapter 2 Description of the Programme

Ad. Article 2.1 Objectives of the programme

The programme had the following objectives:

- to impart to students' academic knowledge, insight, skills, and methodology in the field of biomedical sciences;
- to encourage students to adopt an academic attitude by acquiring the ability to:
 - engage in individual and independent academic thinking;
 - analyse complex issues;
 - write academic reports;
 - apply specialist knowledge and skills in a philosophical and social context;
- to prepare students for an academic career and postgraduate education, or to prepare them for a career in teaching or another career outside academia.

Ad. Article 2.2 Specialisations

The programme has the following specialisations:

- Research;
- Management;
- Communication;
- Education;
- Health.

Specialisation and diversity

A. The Master's programme of each student must cover a diverse spectrum of research methods. In order to accomplish this required diversity, the combination of the student's Junior Research Projects I and II, and FOS courses should cover the areas of research methodology listed in the Procedure for Training Periods Biomedical Sciences 2021-2022.

B. Students are furthermore encouraged to cover a diverse spectrum of research disciplines and diseases. However, students with specific interest in and strong motivation towards specialization in e.g. Data-driven research, Neurosciences, Immunity, Infectious disease and Tolerance, Cancer Pathogenesis and Therapy (see appendices IV till VII), or other disciplines are allowed to do so,

provided they cover the diverse spectrum of research methods stated under A.

Ad. Article 2.3 Learning outcomes

General learning outcomes (applicable to all specialisations), in accordance with the Dublin descriptors.

The holder of a Master's Degree in Biomedical Sciences:

Knowledge and Understanding

- K1 knows and understands (state-of-the-art) the development, structure, growth and integrated functioning of the healthy human body;
- K2 knows and understands (in-depth and current) the main developmental disorders and diseases of the human body, as well as the endogenous and exogenous factors that play a part in the development of such disorders and diseases;
- K3 knows and understands subject-specific aspects in various combinations of the following fields: molecular and cellular biology, genetics, immunology, anatomy, pathology, physiology, microbiology, neurobiology, endocrinology, -omics and/or data science;
- K4 knows and understands the most common and recent analytical techniques in biochemistry, molecular biology, cellular biology, immunology and/or imaging, as well as different research methodologies in epidemiology and/or statistics;
- K5 knows and understands the social aspects of the biomedical field, such as medical and scientific ethics, as well as legislation and rules related to conducting his/her own research;
- K6 knows and understands the measures for promoting and protecting general health, as well as measures for avoiding or reducing complications and/or recurrence of diseases.

Applying Knowledge and Understanding

- AK1 is able to apply most common and recent analytical, quantitative and statistical techniques in biomedical science;
- AK2 is able to develop a scientifically sound research plan and protocol and to evaluate this plan against the opinion of others;
- AK3 is able to critically analyse and consider experimental results and data from his/her own research, to process this data and to construct databases of relevant specialist literature;
- AK4 is able to think in multidisciplinary terms and to make connections between his/her own research and (international) research results.

Making Judgements

- J1 is able to estimate the value and applicability of laboratory and clinical results obtained within the context of his/her own research;
- J2 is able to relate research within the field of Biomedical Sciences to relevant associated fields (such as Medicine, Biology, Pharmacology);
- J3 is able to systematically collect, select and interpret biomedical data from scientific literature for his/her own research;
- J4 shows responsible scientific conduct through his/her capacity to form a balanced judgement based on consideration of relevant social, cultural, scientific or ethical aspects.

Communication

- C1 is able to communicate scientific data, conclusions from his/her own research, as well as the

- knowledge, motives and considerations underlying this research clearly and unambiguously to a specialist and non-specialist public;
- C2 is able to defend and debate his/her own position regarding his/her own research;
- C3 is able to participate in organisation and management of multidisciplinary (project)teams, both in the private and public sector;
- C4 is able to translate questions from the public debate into a scientific research question and to formulate research projects based on this.

Learning Skills

- L1 is able to acquire and extend knowledge and understanding efficiently, which includes study of specialist literature;
- L2 is able to reflect on his/her own actions as well as on the actions and judgements of others, and to assimilate these to improve his/her own product or approach;
- L3 is able to adopt a professional and critical position during (research) projects and is able to give and receive peer review;
- L4 is able to think and work at an academic level and is able and willing to improve on this;
- L5 is able and aware of the necessity to keep abreast of relevant developments in the biomedical field;
- L6 is able to make a conscious choice in favour of a possible further specialist training or a position in the job market.

Additional learning outcomes: Research

Knowledge and Understanding

- R-K7 is able to deepen and extend learning outcomes K1 - K6 by performing a second research internship;
- R-K8 knows and understands interdisciplinary aspects regarding laboratory animal science.

Applying Knowledge and Understanding

- R-AK5 is able to work independently on his/her research in order to show overall control in his/her research and to assess where his/her own research can contribute to the biomedical sciences field and to society;
- R-AK6 is able to formulate scientific questions/objectives in such a way that useful experiments can be designed of which the results will not only extend knowledge but preferably also contribute to problem solving that is relevant to the biomedical sciences field and to society.

Making Judgements

- R-J5 is able to systematically collect, select and interpret biomedical data from scientific literature in order to write a scientific review.

Learning Skills

- R-L7 is able to acquire and extend knowledge and understanding independently and efficiently for the purpose of his/her own research.

Additional learning outcomes: Management*Knowledge and Understanding*

- M-K7 knows and understands (at a basic level) the structure of businesses and organisations in the health care as well as the biomedical sector;
- M-K8 knows and understands the basics of strategic and marketing management, financial management, project management, organisational sciences, patent policy and quality management.

Applying Knowledge and Understanding

- M-AK5 is able to plan and execute organisational research within a business, relevant to a biomedical research domain;
- M-AK6 is able to work independently on his/her project in order to show overall control in his/her project and to assess where his/her own project can contribute to the field.

Making Judgements

- M-J5 is able to call attention to, characterise and describe problems in projects and organisations, and to develop policies to address and resolve these problems.

Learning Skills

- R-L7 is able to acquire and extend knowledge and understanding independently and efficiently for the purpose of his/her own project.

Additional learning outcomes: Communication*Knowledge and Understanding*

- C-K7 knows and understands aspects of modern information and communication technology;
- C-K8 knows and understands aspects of human learning processes.

Applying knowledge and understanding

- C-AK5 is able to work independently on his/her project in order to show overall control in his/her project and to assess where his/her own project can contribute to the field.

Communication

- C-C5 is able to apply different methods of communicating knowledge;
- C-C6 is able to place developments in (biomedical) science within a social perspective and to make these developments understandable for a wider audience;
- C-C7 is able to interest a wider audience in such developments, and to motivate this audience to participate in a social debate on such developments;
- C-C8 is able to communicate research results comprehensibly to non-specialists, and to advise judiciously on the implications of such research results.

Learning Skills

- C-L7 is able to acquire and extend knowledge and understanding independently and efficiently for the purpose of his/her own project.

Additional learning outcomes: Education

Knowledge and Understanding

E-K7 knows and understands human learning processes.

Applying Knowledge and Understanding

E-AK5 is able to familiarise students with the most important features and contents of the field, as well as the position of the field within society;

E-AK6 is able to help students form contacts with other fields, including as a means of supporting them in their choice of education and occupation;

E-AK7 is able to develop and evaluate an educational product on workability and relevance.

Making Judgements

E-J6 has a vision of biology as a school subject and of its place in society, as well as in relation to other natural sciences.

Communication

E-C5 is able to apply different methods of communicating knowledge.

Learning Skills

E-L7 is able to acquire and extend knowledge and understanding independently and efficiently for the purpose of his/her own project and/or teaching.

For more information on the learning outcomes for the purpose of a function in secondary education see: 'Learning outcomes/ Initial Competence Requirements ICLON Teacher Education' (Eindtermen/ Startbekwaamheidseisen ICLON Lerarenopleiding) and the 'Decision on Competence Requirements for Teaching Staff' (Besluit Bekwaamheidseisen Onderwijspersoneel) (<http://wetten.overheid.nl/BWBR0018692/> under Title 4: Competence Requirements havo and vwo upper school, in Dutch).

Additional learning outcomes: Health*Knowledge and Understanding*

H-K7 is able to deepen and extend learning outcomes K1 - K6 by performing a second research internship;

H-K8 has a broad overview of the medical sciences.

Applying Knowledge and Understanding

H-AK5 is able to critically analyse medical data and to integrate this data in his/her own research;

H-AK6 is able to work independently on his/her research in order to show overall control in his/her research and to assess where his/her own research can contribute to the biomedical sciences field and to society.

Communication

H-C5 is able to mediate between the life sciences and medical science by working in both disciplines.

Learning Skills

H-L7 is able to acquire and extend knowledge and understanding independently and efficiently for the purpose of his/her own research.

Ad. Article 2.4 **Structure of the programme**

The nominal duration of the master's programme Biomedical Sciences is two years.

Ad. Article 2.5 **Study load**

The programme has a study load of 120 ECTS credits.

Ad. Article 2.6 **Start of the programme**

The programme starts on 1 September and on 1 February of each year.

Ad. Article 2.8 **Language of instruction**

In accordance with the Code of Conduct on the Language of Instruction and Examination¹⁴ the language of instruction and examination in the programme is English in the programme for the Research, Management and Communication specialisations and English and Dutch for the specialisations Education and Health. Students are expected to have an adequate command of the language(s) of instruction and examination in the programme, in accordance with the requirements stated in Article 5.2.3. As appropriate, the Faculty publishes the Course and Examination Regulations in English for English-taught programmes.

Ad. Chapter 3 Curriculum

Ad. Article 3.1 **Compulsory components**

The programme includes compulsory components worth a total study load of 107 (Research); 94 (Health); 96 (Management); 101 (Communication); 112 (Education) ECTS credits. These compulsory components include the set components from which students are obliged to choose.

Ad. Article 3.2 **Optional components**

Alongside the components referred to 3.1.1, the student selects components worth a total study load of 13 EC for the Research specialisation; 26 EC for the Health specialisation; 24 EC for the Management specialisation; 19 EC for the Communication specialisation and 8 EC for the Education specialisation.

Article 3.4 **Taking part in programme components and sitting examinations:**

Ad. Article 3.4.1.1.

For enrolment in the FOS courses the procedure is described in "Procedure enrolment FOS courses 20-1-22" on the master's programme Brightspace website.

Ad. Chapter 4 Examinations, Final Examination and Further Education

Ad. Article 4.12 **Degree classification**

The degree certificate and the diploma supplement include the ‘cum laude’ classification if the following additional condition is met:

- all programme components of the master’s programme were passed at the first attempt with a grade of 7.3 or higher.
- the grade for the JRP-I of the master’s programme is 8.0 or higher;

The degree certificate and the diploma supplement include the ‘summa cum laude’ classification if the following additional condition is met:

- all programme components of the master’s programme were passed at the first attempt with a grade of 8.3 or higher.
- the grade for the JRP-I of the master’s programme is 9.0 or higher;

Final assignment is defined as “Junior research project-II (JRP-II)”.

Ad. Chapter 5 Access and Admission to the Programme

Ad. Article 5.1 **Confirmation of admission**

The maximum number of students that can be enrolled in the first year of the programme of the master Biomedical Sciences at the LUMC is 100 students.

Ad. Article 5.2 **Admission to the programme**

Ad. Article 5.2.1 Pursuant to Article 7.30b (1) of the Act holders of one of the following degrees may be admitted to the programme and one of its specialisations or who have successfully completed the following prescribed pre-master’s programme:

- a bachelor’s degree in Biomedical Sciences [bachelor biomedische wetenschappen], of a NVAO accredited Biomedical Sciences programme, at the level of a Dutch or Flemish University;
- a prescribed pre-master’s programme pursuant to article 5.4.1.

Ad. Article 5.2.3.1

- For the Education specialisation, which requires additional knowledge of Dutch (see article 2.8), this means vwo-6 Dutch, or: a TUL Advanced Leiden University examination for the regular teachers training programme, or a TUL Intermediate Leiden University examination for the bilingual World Teachers Training Programme (WTTP), or equivalent qualifications in the Dutch language. The Board of Admissions may request that applicants demonstrate an adequate command at this level. If required, language requirements can be included as one of the qualitative admission requirements referred to in Article 5.2.4

Components to be determined by the Board of Admissions, which provide evidence of a particular level of language, obtained in a bachelor’s programme:

- Applicants who have completed a bachelor's degree at a Dutch University and have started their bachelor's (WO) programme with a HBO-P are exempted from submitting an English Proficiency test.
- Applicants who have completed a bachelor at a Dutch university of applied sciences (HBO) (and have successfully completed our premaster's programme) are exempted from submitting an English Proficiency test.

Ad. Article 5.2.4 **Qualitative admission requirements**

Ad. Article 5.2.4.1 In addition to the requirements specified in 5.2.1 or 5.2.2, the qualitative admission requirements apply for the programme pursuant to Article 7.30b (2) of the Act:

- The (bachelor) degree was passed within the nominal duration of the study plus one year at the start of the master's programme;
- Research experience for at least three months in a final project (internship) at the start of the master's programme.
- During a final project (internship) and/or courses the applicant has acquired skills with respect to working in a laboratory for at least three weeks;
- In depth knowledge, understanding and skills (demonstrated by grades and/or ECTS) in Immunology (6 ECTS), Pathology (6 ECTS), Bio-Statistics (6 ECTS), Neuroscience (6 ECTS) and Molecular Biology (9 ECTS) at the start of the master's programme;
- Grade Point Average of at least 6.5 (Dutch grading system; or international equivalent) at the submission deadline.

The admission requirements will be implemented as follows:

- Date when the (bachelor) degree was obtained;
- Nominal duration of the (bachelor) degree;
- Experience in performing research at a laboratory (internship);
- Skills with respect to working in a laboratory;
- In depth knowledge, understanding and skills in Immunology, Pathology, Bio-Statistics, Neuroscience and Molecular Biology;
- Grade Point Average (GPA; the GPA is the weighted average of the Bachelor's course grades according to the international Grading system (maximum 4.00)).

The deadline for the admission requirements is as follows:

Submission of all the required application documents on the first of April for a start in September.
Submission of all the required application documents on the first of November for a start in February, provided that the capacity of 100 is not exceeded.

Ad. Article 5.2.5 **Capacity limitation**

Where article 5.2.5.1 applies, the method of selection on the grounds of the criteria will be pursuant to article 5.2.4 and 5.2.5

The deadlines for selection are as follows:

A selection procedure shall be held if the number of applicants exceeds the maximum capacity.

Applicants will be informed about such a measure within eight weeks after the submission deadline.

Applicants will be informed whether or not they are provisionally admitted into the programme within ten weeks after the submission deadline.

The weighting of the criteria will be as follows:

- Period between the date that the (bachelor) degree was obtained and the start of the Biomedical Science master's programme; range 1-5
- The degree was passed within the nominal duration of the study plus one year; range 1-5;
- Research experience for at least three months in a final project (internship); range 1-5;
- During a final project (internship) and/or courses the applicant has acquired skills with respect to working in a laboratory; range 1-5;
- In depth knowledge, understanding and skills (demonstrated by grades and/or ECTS) in Immunology (6 ECTS), Pathology (6 ECTS), Bio-Statistics (6 ECTS), Neuroscience (6 ECTS) and Molecular Biology (9 ECTS); range 1-10;
- Grade Point Average of at least 6.5 (Dutch grading system; or international equivalent); range 1-7;

- Each applicant will be assigned a random number.
- All scores will be summed and each applicant will receive a ranking number.
- "Hoge Laboratorium School" applicants who have successfully completed their 1 year pre-master's programme (premaster applicants) will receive the lowest ranking (e.g. rank number 1, 2, etc.);
- For the other applicants, the applicant with the highest score will receive the lowest available ranking (e.g. rank number 10, 11, etc.);
- When applicants have an equal score, the pre-assigned random number determines the ranking order of the applicants (lowest pre-assigned number will obtain the lowest available rank number);
- The applicants ranked in the range 1-100 are conditionally admitted to the programme, provided that they accept the offer within two weeks. If the offer is not accepted within two weeks, we will consider it to be rejected. The position will then be offered to the applicant with the next ranking number.

Ad. Article 5.4 **Bridging programmes** (Pre-master's)

Ad. Article 5.4 .1. The programme in Biomedical Sciences has developed the following bridging programmes (for the following target groups) in order to remove deficiencies:

Premaster's programme Biomedical Sciences- Hogere Laboratorium School (Track Biology and Medical Laboratory Research)

Students (that master the Dutch language, meaning vwo-6 Dutch, or: a TUL Advanced Leiden University examination for the regular teachers training programme, or a TUL Intermediate Leiden University examination for the bilingual World Teachers Training Programme (WTTP), or equivalent qualifications in the Dutch language) from the Hogere Laboratorium School with a Dutch bachelor's degree in Biology and Medical Laboratory Research, including a research internship in an academic institution; entrance to the pre-master's programme is limited to a maximum of 10 Dutch Hogere Laboratorium School students;

The compulsory components of the premasters' programme Hogere Laboratorium School (HLO; Track Biology and Medical Laboratory Research) which prepares selected bachelors HLO for a masters' programme in Biomedical Sciences are:

code	course component	ECTS	Practical	Level
3127pre02Y	Immunology premaster (zonder practicum)	7	No	200
3127pre03Y	Infectious Agents and Immunity (zonder practicum)	5	No	300
11200120Y	Introduction to the Neurosciences	6	Yes	200
3127pre04Y	Introduction to MBO	2	No	100
3127pre05Y	Molecular Biology and Oncology (zonder practicum)	9	No	300
311100160Y	Methoden en Technieken van wet. Onderzoek	4	Yes	100
3127pre01Y	Human Pathology (zonder snijzaal)	5	No	300
311200170Y	Hormones and the Nervous System	10	Yes	300
3127pre06Y	CIS (premaster)	1	No	200

Premaster's programme Biomedical Sciences- Health (BW-track)

Medical students (LUMC); Journey into Biomedical Sciences (BW-track).

The compulsory components of the premasters' programme (Journey into Biomedical Sciences) which prepares selected Leiden Medical bachelors for a masters' programme in Biomedical Sciences (with specialisation Health) are:

code	course component	ECTS	Practical	Level
3113425PPY	Premaster Cellular Communication	3	Yes	200
3113431PPY	Premaster Medical Genetics	3	No	200-300
3113435PPY	Premaster Immunology	3	No	300
3113441PPY	Premaster Molecular Biology and Oncology	4	No	300-400
3113446PPY	Premaster Communication in Science	1	No	300
3113450PPY	Premaster Review	4	Yes	300
3113455PPY	Premaster Immunology Laboratory Skills	4	Yes	300
M2910, M2920, M3720, M3730 or OM040	Moleculair onderzoek in het laboratorium (Elective in Medicine)	4	Yes	200-300
M2910, M2920, M3720, M3730	Choice of Electives in Medicine	4	Variable	200-300

or according to the new programme offered from 2013-14 onwards:

code	course component	ECTS	Practical	Level
3113426PPY	BW-track Cellular Communication	4	Yes	200
3113432PPY	BW-track Medical Genetics	4	No	200-300
3113436PPY	BW-track Immunology	4	No	300
3113442PPY	BW-track Molecular Biology and Oncology	5	No	300-400
3113447PPY	BW-track Communication in Science	1	No	300
3113451PPY	BW-track Review	4	Yes	300
	LUMC-onderzoeksmenor	15	Yes	300-400

Contents of the programme

Students within all specialisations are required to earn a minimum of 60 European Credits (ECTS) from courses pertaining to Biomedical Sciences.

The components of the **Research** specialisation are:

code	course component	ECTS	practical	level
312100100Y	Clinical Research in Practice	6	yes	400
312100200Y	Junior Research Project-I	29	yes	500
312100510Y	Career orientation***	2	no	400
312200400Y	Course on Laboratory Animal Science	4	yes	400
312100300Y	How to Write a Research Proposal	2	yes	400
312200100Y	Research Proposal Biomedical Sciences	5	no	600
312200200Y	JRP-II Research Internship	40	yes	600
312200300Y	Scientific Review Biomedical Sciences	6	yes	600
312100400Y	Reflection Course: Scientific Conduct	1	no	400
3125FOS-variable-Y	Choice of: Frontiers of Science	12	yes	500
	Elective area	13		≥ 400

The components of the **Management** specialisation are:

Code	course component	ECTS	practical	level
312100100Y	Clinical Research in Practice	6	yes	400
312100200Y	Junior Research Project-I	29	yes	500
312100510Y	Career orientation***	2	no	400
4603BSMK3	Marketing Science*	3	yes	500
4603BSOM4	Operations Management*	4	yes	500
4603BSSF3	Strategic Financial management*	3	yes	500
4603BSSY5	Strategy and Technology*	5	yes	500
312300100Y	Project Proposal Management internship	3	yes	600
312300200Y	JRP-II Management Internship**	26-42	yes	600
312100300Y	How to Write a Research Proposal	2	no	400

312100400Y	Reflection Course: Scientific Conduct	1	no	400
3125FOS-variable-Y	Choice of: Frontiers of Science	12	yes	500
	Elective area	8-24		≥ 400

* Students with prior education in management, business and entrepreneurship (e.g. students who have completed the Science Based Business (SBB) Fundamentals course – Bachelor edition) are exempted from following the courses Strategy, Marketing (SBB), Technology and Operations Management and Financial management in the master's Management specialisation. These courses need to be substituted by at least an equal number of ECTS credits of other SBB master modules, offered by the Faculty of Science, or elsewhere. Technology and Operations Management still has to be followed.

Students that have finished Science Based Business (SBB) Fundamentals (MSc edition) are exempted from following courses in the master's Management specialisation: Strategy, Marketing (SBB), Financial management, Technology and operations management.

** During the JRP-II management internship it is compulsory to attend 3 Management discussion sessions at the LUMC.

*** Compulsory for students, starting from September 2018; For students, that have started in 2016-17 or 2017-18, 312100500Y Career orientation 1 ECTS suffices; students who have started prior to September 2016 have to take either Career orientation (1 ECTS or 2 ECTS) or Guest Lectures.

The components of the **Communication** specialisation are:

Code	course component	ECTS	practical	level
312100100Y	Clinical Research in Practice	6	yes	400
312100200Y	Junior Research Project-I	29	yes	500
312100300Y	How to Write a Research Proposal	2	no	400
312100400Y	Reflection Course: Scientific Conduct	1	no	400
312100510Y	Career orientation***	2	no	400
4603SCRSY	Research in Science Communication*	4	yes	400
4603SCISEY	Informal Science Education*	4	Yes	400
4603SCPDSY	Policy & Development in Science and Society*	4	Yes	400
4603SCSNVY	Science Journalism*	4	Yes	400
4603SCPRDY	Science Communication product development*#	4	yes	400
4603SCNV3Y	Scientific Narration and Visualization*	3	yes	400
4603SCSPPY	SCS Project Proposal	3	yes	600
variable	JRP-II SCS Internship	23-34	yes	600
3125FOS-variable-Y	Choice of: Frontiers of Science	12	yes	500
	Elective area	8-19		≥ 400

* Students that have finished 4603SCF19Y Science, Communication and Society (SCS)-Fundamentals (19 ECTS) are exempted from following these courses. All courses have to be successfully completed before the start of the JRP-II SCS internship.

This course can only be followed after successful completion of the courses: Research in Science Communication, Informal Science Education, Policy & Development in Science and Society, Science Journalism and SCS: Scientific Narration and Visualization;

the SCS project proposal has to be written prior to the start of the research part of JRP-II SCS Internship;

*** Compulsory for students, starting from September 2018; For students, that have started in 2016-17 or 2017-18, 312100500Y Career orientation 1 ECTS suffices; students who have started prior to September 2016 have to take either Career orientation (1 ECTS or 2 ECTS) or Guest Lectures.

The components of the **Education** specialisation are:

Code	course component	ECTS	practical	level
312100100Y	Clinical Research in Practice	6	yes	400
312100200Y	Junior Research Project-I	29	yes	500
312100510Y	Career orientation***	2	no	400
variable	ICLON lerarenopleiding Biologie	60	yes	600
312100300Y	How to Write a Research Proposal	2	no	400
312100400Y	Reflection Course: Scientific Conduct	1	no	400
3125FOS-variable-Y	choice of: Frontiers of Science	12	yes	500
	Elective area	8		≥ 400

The compulsory components of the **Health** specialisation are:

Code	course component	ECTS	practical	level
312100100Y	Clinical Research in Practice	6	yes	400
312100200Y	Junior Research Project-I	29	yes	500
312100300Y	How to Write a Research Proposal	2	no	400
312100510Y	Career orientation***	2	no	400
312400100Y	JRP-II Research internship*	20-40*	yes	600
312400200Y	Semi-arts stage (16 wkn)**	22**	yes	600
312100400Y	Reflection Course: Scientific Conduct	1	no	400
3125FOS-variable-Y	choice of: Frontiers of Science	12	yes	500
	Elective area	6-26*		≥ 400

*The Examination Board decides on the minimum length of Junior Research Project-II depending on previous education of the student. This means that for students with a Dutch or Flemish, NVAO accredited bachelor Biomedical Sciences, JRP-II can be flexible in length. For students who have successfully completed the premaster Journey into Biomedical Sciences (BW-track; bachelor Medicine Leiden), JRP-II is at least 28 wks long (40 ECTS).

** The entry requirement for the “Semi-arts stage”, minimal length 16 weeks, consists of the successful completion of all compulsory clinical rotations (co-schappen) belonging to the master’s Dutch or Flemish, NVAO accredited, programme in Medicine. Depending on the Leiden Medical curriculum, Leiden medical students will obtain either 20 ECTS, curriculum 2007+ or 22 ECTS curriculum 2012 for their “Semi-arts stage”.

*** Compulsory for students, starting from September 2018; For students, that have started in 2016-17 or 2017-18, 312100500Y Career orientation 1 ECTS suffices; students who have started prior to September 2016 have to take either Career orientation (1 ECTS or 2 ECTS) or Guest Lectures.

Appendix: Frontiers of Science courses

The scope for Frontiers of Science (FOS) courses involves opting for components listed below.

Code	Course component	ECTS	Level
3125FOS01Y	Regulation of the Immune Response in Human Disease	6	500
3125FOS02Y	Allogeneic Transplantation and Immunotherapy: From Bench to Bedside	6	500
3125FOS03Y	Genome (In)Stability, Cancer and Ageing	6	500
3125FOS34Y	Molecular Data Science: from disease mechanisms to personalized medicine***	6	500
3125FOS05Y	Pathogen Host Interactions	6	500
3125FOS31Y	Optogenetics and Immortogenetics in Cardiovascular Research and Therapy	4	500
3125FOS07Y	Depression and other Stress Related Disorders	6	500
3125FOS33Y	Research Applications of Developmental Biology	6	500
3125FOS10Y	Molecular Virology of RNA Viruses	6	500
3125FOS27Y	Cardiometabolic Disease ⁺ , * ²	6	500
3125FOS12Y	The Pathophysiology of Coagulation	6	500
3125FOS13Y	Chemical Biology, Signal Transduction and Targeted Therapy	6	500
3125FOS14Y	Clinical Pharmacology	4	500
3125FOS16Y	Proteomics in Biomedical Research	6	500
3125FOS17Y	Biomedical Translational Research in Surgery	6	500
3125FOS18Y	Advances in Neurophysiology	6	500
3125FOS28Y	Biological Mechanisms of Ageing and Development	6	500
3125FOS21Y	Imaging in Neurosciences	6	500
3125FOS22Y	Cutting edge Immunology: from Chemistry to Metabolism* ²	6	500
3125FOS23Y	Finding new causes of thrombosis: the clinical-epidemiologic approach. From idea to publication	6	500
3125FOS25Y	Clinical and Functional Neuroanatomy	6	500
3125FOS32Y	Glycobiology in Health & Disease	6	500

The following components count as FOS course, but are organized outside the LUMC. Specific selection criteria may exist.

Code	Course component	ECTS	level
3125FOS50Y	Tumor Immunology, Virology and Cancer ‡ University of Heidelberg, German Cancer Research Center	5	500
3125FOS51Y	Pathogenic Microorganisms ‡ University of Heidelberg, German Cancer Research Center	5	500
3125FOS56Y	Molecules, neurons, networks and behavior ‡ University of Heidelberg, Interdisciplinary Center for Neurosciences	5	500
3125FOS52Y	Biolab internship Tumor immunology, Virology and Cancer ‡# University of Heidelberg, German Cancer Research Center	10-15	500
3125FOS53Y	Biolab internship Pathogenic Microorganisms ‡# University of Heidelberg, German Cancer Research Center	10-15	500
3125FOS58Y	Biolab internship Neuroscience ‡# University of Heidelberg, Interdisciplinary Center for Neurosciences	10-15	500
3125FOS54Y	Frontiers in Translational Medicine at Karolinska Institute	22	500
3125FOS55Y	Bioinformatics at Karolinska Institute***	5	500

the number of ECTS is agreed upon prior to the start of the Biolab internship by the master Biomedical Sciences and the student. A 6 week Biolab will give 10 ECTS and a 9 week Biolab will give 15 ECTS.

‡ In addition to a FOS Course and/or Biolab internship in Heidelberg, students always have to follow at least 1 FOS course in Leiden. The additional ECTS obtained in Heidelberg will go to the elective area.

*² Only one of these FOS courses may be followed.

*** Only one of these Bioinformatics FOS courses may be followed.

+ Students that have passed the minor “Heart and Blood Vessels” are not eligible to enter this course.

Appendix: Electives

The scope of Electives (art. 3.2.3) also involves components listed below.

code	course component	ECTS	level
3126ELE03Y	Philosophical Inquiry concerning Biomedicine A	1	400
3126ELE04Y	Philosophical Inquiry concerning Biomedicine B	1	400
3126ELE12Y	Regression-analysis	1	400
3126ELE07Y	CRiP-advanced concepts in epidemiology	1	400
3126ELE13Y	Survival-analysis	1	400
3126ELE14Y	Masterclass klinisch onderzoek en epidemiologie (in Dutch)	3	400
3126ELE15Y	Journal club: dagelijkse toepassingen van de epidemiologie (in Dutch)	3	400
3126ELE16Y	Statistical aspects of clinical trials	1	400
3126ELE17Y	Dwalingen in de methodologie (in Dutch)	2	400
3126ELE18Y	Repeated measures	1	400
3126ELE19Y	Genetical epidemiology	1	400
3126ELE20Y	Statistics and Probability	9	400
3126ELE21Y	Meta-analysis	1	400
3126ELE11Y	CIS: Presenting like a Pro	1	400
3126ELE11Y	CIS: Film-making for scientists	1	400

*

The following components count as elective course but are organized outside the LUMC.

5794KCA09	Art & Life Sciences	5	500
3126ELE50Y	Netherlands Cancer Institute: Experimental Oncology*	6	400

*Experimental Oncology, elective since Sept. 2016, before Sept. 2016 this was a FOS-course.

Appendix V – Specialisation Research – Track in Data-driven research

A specified track in Data-driven research can be followed within the master's Research specialization. The programme consists of:

Code	course component	ECTS	practical	level
312100100Y	Clinical Research in Practice	6	yes	400
312100200Y	Junior Research Project-I	29	yes	500
3125FOS-variable- Y	choice of: Frontiers of Science	12	yes	500
312100510Y	Career orientation	2	no	400
312200400Y	Course on Laboratory Animal Science	4	yes	400
312100300Y	How to Write a Research Proposal	2	no	400
312200100Y	Research Proposal Biomedical Sciences	5	yes	600
312200200Y	JRP-II Research Internship	40	yes	600
312200300Y	Scientific Review Biomedical Sciences	6	yes	600
312100400Y	Reflection Course: Scientific Conduct	1	no	400
	Elective area in Data-driven research (see below)	13		≥ 400

1. JRP-II, Research Proposal, and Scientific Review must be dedicated entirely to a subject related to Data-driven research;
2. Students should take at least 65 ECTS and at the most 71 ECTS (of a total of 120 ECTS) in Data-driven research subjects (including JRP-II, Research Proposal and Scientific Review). Data-driven research ECTS may be accumulated by choosing from Data-driven research related Frontiers of Science courses and elective courses listed in the table below, or Data-driven research related courses outside the LUMC and Leiden University;
3. JRP-I has to be conducted in a laboratory, in line with the rules and guidelines of the master in Biomedical Sciences (see Appendix II, section: specialization and diversity).

List of modules that can be used to accumulate at least 65 ECTS in Data-driven research:

Code	Course component	ECTS	level
3125FOS23Y	FOS: Finding new causes of thrombosis: the clinical-epidemiologic approach. From idea to publication	6	500
3125FOS04Y	FOS: Molecular Data Science: from disease mechanisms to personalized medicine	6	500
3125FOS28Y	FOS: Biological Mechanisms of Ageing and Development	6	500
3126ELE07Y	Elective: CRiP-advanced concepts in epidemiology	1	400
3126ELE12Y	Elective: Regression-analysis	1	400
3126ELE13Y	Elective: Survival-analysis	1	400
3126ELE21Y	Elective: Meta-analysis	1	400
3126ELE18Y	Elective: Repeated measures	1	400

3126ELE19Y	Elective: Genetical epidemiology	1	400
3126ELE16Y	Elective: Statistical aspects of clinical trials	1	400
3126ELE20Y	Elective: Statistics and Probability	9	400
3126ELE14Y	Elective: Masterclass klinisch onderzoek en epidemiologie (in Dutch)	3	400
3126ELE15Y	Elective: Journal club: dagelijkse toepassingen van de epidemiologie (in Dutch)	3	400
3126ELE17Y	Elective: Dwalingen in de methodologie (in Dutch)	2	400

Appendix – Specialisation Research – Track in Neurosciences

A specified track in Neurosciences can be followed within the master's Research specialization. The programme consists of:

Code	course component	ECTS	practical	level
312100100Y	Clinical Research in Practice	6	yes	400
312100200Y	Junior Research Project-I	29	yes	500
3125FOS-variable- Y	choice of: Frontiers of Science	12	yes	500
312100510Y	Career orientation	2	no	400
312200400Y	Course on Laboratory Animal Science	4	yes	400
312100300Y	How to Write a Research Proposal	2	no	400
312200100Y	Research Proposal Biomedical Sciences	5	yes	600
312200200Y	JRP-II Research Internship	40	yes	600
312200300Y	Scientific Review Biomedical Sciences	6	yes	600
312100400Y	Reflection Course: Scientific Conduct	1	no	400
	Elective area in Neurosciences (see below)	13		≥ 400

1. JRP-II, Research Proposal, and Scientific Review must be dedicated entirely to a neurosciences subject;
2. Students should take at least 65 ECTS and at the most 71 ECTS (of a total of 120 ECTS) in neurosciences subjects (including JRP-II, Research Proposal and Scientific Review). Neurosciences ECTS may be accumulated by choosing from neuroscience Frontiers of Science courses and neurosciences elective courses listed in the table below, or neurosciences master courses outside LUMC and Leiden University;
3. JRP-I may also be conducted in the broad neurosciences domain, provided that JRP-I and JRP-II are using research techniques and methodologies that are sufficiently different, in line with the rules and guidelines of the master in Biomedical Sciences (see Appendix II, section: specialization and diversity), and only after approval of the Board of Examiners. In that case, the maximum of 71 ECTS mentioned above may be surpassed.

List of modules that can be used to accumulate at least 65 EC in Neurosciences.

Code	course component	ECTS	practical	level
3125FOS25Y	FOS-Clinical and Functional Neuroanatomy	6	Yes	500
3125FOS18Y	FOS-Advances in Neurophysiology	6	Yes	500
3125FOS07Y	FOS-Depression and other Stress Related Disorders	6	No	500
3125FOS21Y	FOS: Imaging in Neurosciences	6	Yes	500

3120015PPY	Neuroscience (LCTN) seminars	2	No	500
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Appendix – Specialisation Research – Track in Immunity, Infectious Disease and Tolerance

A specified track in Immunity, Infectious Disease and Tolerance can be followed within the master's Research specialization. The programme consists of:

Code	course component	ECTS	practical	level
312100100Y	Clinical Research in Practice	6	yes	400
312100200Y	Junior Research Project-I	29	yes	500
3125FOS-variable-Y	choice of: Frontiers of Science	12	yes	500
312100500Y	Career orientation	2	no	400
312200400Y	Course on Laboratory Animal Science	4	yes	400
312100300Y	How to Write a Research Proposal	2	no	400
312200100Y	Research Proposal Biomedical Sciences	5	yes	600
312200200Y	JRP-II Research Internship	40	yes	600
312200300Y	Scientific Review Biomedical Sciences	6	yes	600
312100400Y	Reflection Course: Scientific Conduct	1	no	400
	Elective area in Immunity, Infectious Disease and Tolerance (see below)	13		≥ 400

1. JRP-II, Research Proposal, and Scientific Review must be dedicated entirely to an Immunity, Infectious Disease and Tolerance subject;
2. Students should take at least 65 ECTS and at the most 71 ECTS (of a total of 120 ECTS) in Immunity, Infectious Disease and Tolerance subjects (including JRP-II, Research Proposal and Review). Immunity, Infectious Disease and Tolerance ECTS may be accumulated by choosing from Immunity, Infectious Disease and Tolerance Frontiers of Science courses and Immunity, Infectious Disease and Tolerance elective courses listed in the table below, or Immunity, Infectious Disease and Tolerance master courses outside LUMC and Leiden University;
3. JRP-I may also be conducted in the broad Immunity, Infectious Disease and Tolerance domain, provided that JRP-I and JRP-II are using research techniques and methodologies that are sufficiently different, in line with the rules and guidelines of the master in Biomedical Sciences (see Appendix II, section: specialization and diversity), and only after approval of the Board of Examiners. In that case, the maximum of 71 ECTS mentioned above may be surpassed.

List of modules that can be used to accumulate at least 65 ECTS in Immunity, Infectious Disease and Tolerance.

Code	course component	ECTS	practical	level
3125FOS22Y	FOS: Cutting edge Immunology: from Chemistry to Metabolism	6	yes	500
3125FOS01Y	FOS: Regulation of the Immune Response in Human Disease	6	yes	500
3125FOS02Y	FOS: Allogeneic Transplantation and Immunotherapy: From Bench to Bedside	6	yes	500
3125FOS05Y	FOS: Pathogen Host Interactions	6	yes	500
3125FOS10Y	FOS: Molecular Virology of RNA Viruses	6	yes	500
3125FOS04Y	FOS: Molecular Data Science: from disease mechanisms to personalized medicine	6*	yes	500
3125FOS13Y	FOS: Chemical biology, Signal Transduction and Targeted Therapy	6*	yes	500
3125FOS32Y	Glycobiology in Health & Disease	6*	yes	500
3125FOS16Y	FOS: Proteomics in Biomedical Research	6*	yes	500

* A maximum of one of these courses may count for accumulating Immunity, Infectious Disease and Tolerance ECTS.

Appendix – Specialisation Research – Track in Cancer Pathogenesis and Therapy

A specified track in Cancer Pathogenesis and Therapy can be followed within the master's Research specialization. The programme consists of:

Code	course component	ECTS	practical	level
312100100Y	Clinical Research in Practice	6	yes	400
312100200Y	Junior Research Project-I	29	yes	500
3125FOS-variable-Y	choice of: Frontiers of Science	12	yes	500
312100510Y	Career orientation	2	no	400
312200400Y	Course on Laboratory Animal Science	4	yes	400
312100300Y	How to Write a Research Proposal	2	no	400
312200100Y	Research Proposal Biomedical Sciences	5	yes	600
312200200Y	JRP-II Research Internship	40	yes	600
312200300Y	Scientific Review Biomedical Sciences	6	yes	600
312100400Y	Reflection Course: Scientific Conduct	1	no	400
	Elective area in Cancer Pathogenesis and Therapy (see below)	13		≥ 400

1. JRP-II, Research Proposal, and Scientific Review must be dedicated
2. entirely to an Cancer Pathogenesis and Therapy subject;
3. Students should take at least 65 ECTS and at the most 71 ECTS (of a total of 120 ECTS) in Cancer Pathogenesis and Therapy subjects (including JRP-II, Research Proposal and Review). Cancer Pathogenesis and Therapy ECTS may be accumulated by choosing from Cancer Pathogenesis and Therapy Frontiers of Science courses and Cancer Pathogenesis and Therapy elective courses listed in the table below, or Cancer Pathogenesis and Therapy master related courses outside LUMC and Leiden University;

4. Junior Research Project-I (JRP-I) may also be conducted in the Cancer Pathogenesis and Therapy domain, provided that JRP-I and JRP-II are using research techniques and methodologies that are sufficiently different, in line with the rules and guidelines of the master in Biomedical Sciences (see Appendix II, section: specialization and diversity), and only after approval of the Board of Examiners. In that case, the maximum of 71 ECTS mentioned above may be surpassed.

List of modules that can be used to accumulate at least 65 ECTS in Cancer Pathogenesis and Therapy.

Code	course component	ECTS	practical	level
3125FOS13Y	FOS: Chemical Biology, Signal Transduction and Targeted Therapy	6**	yes	500
3125FOS02Y	FOS: Allogeneic Transplantation and Immunotherapy: From Bench to Bedside	6	yes	500
3125FOS03Y	FOS: Genome Instability, Cancer and Ageing	6	yes	500
3125FOS04Y	FOS: Molecular Data Science: from disease mechanisms to personalized medicine	6**	yes	500
3125FOS16Y	FOS: Proteomics in Biomedical Research	6**	yes	500
3126ELE50Y	Elective: Netherlands Cancer Institute: Experimental Oncology#*	6	yes	500
3125FOS05Y	FOS: Pathogen Host Interactions#	6#	yes	500
3125FOS10Y	FOS: Molecular Virology of RNA Viruses	6#	yes	500
3125FOS53Y	FOS: Courses and Biolab internships University of Heidelberg, German Cancer Research Center#	5-20**	yes	500
3125FOS54Y	Frontiers in Translational Medicine at Karolinska Institute#	22**	yes	500
3125FOS55Y	FOS Bioinformatics at Karolinska Institute#	5**	yes	500

** See Appendix III for more information.

Only one of these courses may count for Cancer Pathogenesis and Therapy ECTS.

* Experimental Oncology, elective since Sept. 2016, before Sept. 2016 this was a FOS-course.

Part B Appendix Population Health Management

Aim of the master's programme

The aim of the master PHM is competence-oriented education of students to become *academic trusted partners* in the field of health care. The learning outcomes pertain to acquiring substantive knowledge and subsequent ability to work with that knowledge and to acquiring the skills students need to be effective professionals.

Intended learning outcomes

The intended learning outcomes are covered by six competences. Population Health Management expertise lies at the core of the competences:

1. *Population Health Management expert*

- gather and analyse relevant data from multidisciplinary sources on population health to identify major health challenges in that population and formulate effective solutions;
- analyse the impact of past, present and future technological, social and medical developments on the population health and vice versa;
- create and apply instruments to segment and stratify risks in populations according to health (care) outcomes;
- appraise and contemplate the contribution of various scientific traditions, like primary care, epidemiology, social sciences, health psychology, medical anthropology, biostatistics, public administration and governance in relation to the population health management;
- design and contrast strategies to implement healthcare programmes with respect to population characteristics in which effective governance structures are respected.

2. *Academic skills*

- use scientific theories and research to formulate and analyse health problems;
- to create prediction models for health problems of specific and generic populations by using multidisciplinary research methods and scientific data;
- critically reflect on causal pathways between determinants and outcomes taken into account specific populations and contexts (like time and environmental factors);
- know, recognize, acknowledge and act upon the scientific foundation of the different value perspectives in healthcare of their own value perspectives in healthcare and of various stakeholders;
- analyse, interpret and appraise critically scientific evidence and distinguish scientific evidence with respect to quality (reliability and validity) and relevance;
- independently design, perform and reflect upon scientific research using quantitative, qualitative and mixed methods research-methodology.

3. *Data driven thinking and acting*

- describe and explain the health and its determinants of a population by using quantitative and qualitative research methods in an interdisciplinary way;
- assess methods used for healthcare interventions, such as screening, treatment and prevention of risk groups with respect to their effectiveness and apply these methods in concrete situations;
- know various innovative strategies to predict health(care) outcomes, and be able to develop an innovative predictive strategy;
- develop, implement and evaluate interventions which fit the risk profile of the population to improve health outcomes.

4. *Eclectic thinking and acting*

- collect, understand and communicate about the aetiology, diagnosis and prognosis of diseases related to healthcare needs of the population;
- recognize the importance of the complexity of interactions between different diseases (syndemics) and anticipate upon them in the development of intervention programmes;
- create and assess interdisciplinary healthcare programmes appropriate for the healthcare needs of a population to realise a sustainable healthcare infrastructure;
- contemplate the various perspectives of different stakeholders (see 4.1) with regard to the specific health problems (like: youth at risk, multi-problem, etc.);
- evaluate intervention programmes and implementation strategies of interventions with respect to their (financial) feasibility and relevance;
- demonstrate the benefits and challenges of data-linkage.

5. *Deliberative governance thinking and acting*

- independently acquire, maintain and critically appraise scientific research about issues related to the sustainability of the healthcare infrastructure and the behaviour of its stakeholders;
- synthesize and anticipate upon the interests of various stakeholders and characteristics of specific populations;
- generate, assess and communicate interdisciplinary solutions for health problems taking into account different disciplines and interests;
- argue the effect of the distinct governance structures and potential modifications for the health of a population.

6. *Transformative skills*

- reflect on healthcare programmes and its components such as analysis, design, implementation and evaluation;
- communicate solutions for health problems appropriately with the population at stake and stakeholders;
- report verbally and in written form on solutions, including recommendations for health problems;
- choose the appropriately communication and public affairs strategy appropriate for the population at stake and stakeholders;
- improve their selves continuously by critically reviewing their own and other actions;
- have insight in their personal (medical) leadership competencies to handle the continuously changing healthcare environment;
- independently acquire and maintain relevant knowledge and skills (life-long learning), whether or not in the context of career changes.

Duration and start of the programme.

The nominal duration of the master's programme Population Health Management is two years. The study load is 120 ECTS. The programme starts on 1 September of each year.

Contents of the programme

The compulsory components of the programme are:

Code	Year	Course	Level	EC
342110000Y	1	Fundamentals of Population Health Management	400	5
342120000Y	1	Study Design	500	5
342130000Y	1	Health and Health Behaviour	500	4

342140000Y	1	Governance	500	4
342150000Y	1	Responsible Data Analysis	500	5
342160000Y	1	Alternative Payment Models	500	4
342112000Y	1	Project Case I	500	6
342170000Y	1	Syndemics	500	5
342180000Y	1	Predictive Analytics	600	5
342190000Y	1	Panel Management Next Level	500	5
342111000Y	1	Implementation: putting PHM into action	500	5
342113000Y	1	Project Case II	500	7
	2	Choose one of the following fields:		
		Epidemiology	500	30
		Governance	500	30
		Data Science	500	30
		Syndemics	500	30
tba	2	Final research project	600	30
		Total		120

Optional components

In consultation with the track coordinator the student designs his/her own second year track (30ECTS) as long as it is a balanced programme which fits in one of the four fields. It is subject of approval of the examination Board.

Sequence

A student can only start the chosen second year track once he/she has passed the first year courses belonging to that track:

<i>track</i>	<i>Belonging courses</i>
Epidemiology	Fundamentals, Study Design, Responsible Data Analyses, Panel Management
Governance	Fundamentals, Governance, Alternative Payment Models, Implementation
Data Science	Fundamentals, Study Design, Responsible Data Analyses, Predictive Analytics
Syndemics	Fundamentals, Health and Health Behaviour, Syndemics, Panel Management

Admission to the programme

Elaboration 5.2.1: Pursuant to Article 7.30b (1) of the Act holders of (one of) the following degrees may be admitted to the programme, or who have successfully completed the following prescribed pre-master's/bridging programme:

- a. A bachelor's degree from a Dutch research university in one of the following programmes:
 - Medicine
 - Biomedical Sciences
 - Clinical Technology
 - Bio-Pharmaceutical Sciences
 - Pharmacy
 - Human Nutrition
 - Health Sciences
 - Veterinary
 - Health and Society
 - European Public Health

- Medical Natural Sciences
- b. a bachelor's degree from a Dutch University (including University of Applied Sciences) in the field of health, provided the student has at least 12 credits of each of the following relevant fields:
- Medicine: on pathophysiology and pathology (12 EC or equivalent), proven by bachelor certificates or working experience
 - Quantitative methods: on research methodology, epidemiology and/or statistics (12 EC or equivalent), proven by bachelor certificates or working experience

The Board of Admissions will assess whether the degree and background is sufficiently related to the level and content of the Dutch BSc degree in a health related programme.

- c. A prescribed pre-master's/bridging programme pursuant to article 5.4.1. The prescribed premasters/bridging programme must be completed within 1 year.

Further elaboration of article 5.2.2.:

To be considered as holding a degree equal to the one specified in 5.2.1a or b, applicants must meet the following requirements:

a bachelor's degree from a research university, equivalent to the level of a Dutch academic Bachelor's degree, or demonstrate to meet the requirements for such a degree. In addition, applicants must also meet the criteria mentioned in 5.2.1b.

Bridging programme

Bridging programmes (with a maximum of 36 EC) are tailor-made and can consist of courses in the domains of: medicine, health care and/or quantitative methods. The Board of Admissions determines the exact content of a bridging programme.

Part C: **Additional provisions for the Master's programme Vitality and Ageing**

Appendix 1: Master's degree programme Msc Vitality and Ageing

Ad. Chapter 1 General Provisions

Ad. Article 1.1 **Scope of the regulations**

The programme is taught in Leiden at the LUMC and at the campus The Hague of the Leiden University.

Ad. Article 1.2 **Definitions**

Internship Committee	The Master's Internship Committee is responsible for the procedures of all master internships
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Ad. Chapter 2 Description of the Programme

Ad. Article 2.1 **Objectives of the programme**

The programme has the following objectives:

- to impart to students' academic knowledge, insights and methodological background in the field of vitality and ageing;
- to enable students to develop skills to think and act interdisciplinary, independently and innovatively;
- to enable students to analyse complex issues in the field of vitality and ageing while taking into account the perspectives of older people;
- to prepare students for a career as an academic professional and innovator in the international field of vitality and ageing, regarding science, healthcare or policy.

Ad. Article 2.3 **Learning outcomes**

Graduates of the programme have attained the following learning outcomes, listed according to the Dublin descriptors.

The holder of a Master's Degree in Vitality and Ageing:

a. Knowledge and understanding

- | | |
|----|--|
| K1 | has subject specific knowledge and understanding of biological mechanisms of ageing; |
| K2 | has subject specific knowledge and understanding of somatic, psychological, |

functional and social mechanisms in older individuals, including healthy ageing and vitality;

- K3 has subject-specific knowledge and understanding of the organization of an ageing society: demography, healthcare financing and structures, prevention, models of care, international differences, health governance;
- K4 has state-of-the-art knowledge and understanding of research, study designs and evidence based decision making;
- K5 has the current knowledge and understanding of interdisciplinary collaboration, leadership, organizational (change)management and innovation.

b. Applying knowledge and understanding

- A1 is able to critically analyse the challenges, shortcomings and opportunities in the fields of biology of vitality and ageing, older individuals and organisation of an ageing society;
- A2 is able to conduct a scientific analysis of original data or existing literature in the field of vitality and ageing;
- A3 is able to tackle complex problems in the field of vitality and ageing by designing innovative solutions;
- A4 is able to develop well-founded policy recommendations regarding the organisation of an ageing society.

c. Making judgements

- J1 is able to base his or her decisions on the available scientific evidence and analyses of international practices, taking ethical and societal perspectives into account;
- J2 values the perspectives of older people and is able to revise prior judgments accordingly.

d. Communication

- C1 is able to communicate or debate scientific or societal findings, conclusions from his/her own research, as well as the knowledge, motivation and considerations of underlying topics clearly and unambiguously to a specialist and non-specialist audience in English.

e. Learning skills

- L1 has an academic level of thinking and operating within his/her field and is able and willing to further improve this level;
- L2 is able to use principles of leadership and interpersonal skills in a (interdisciplinary) team environment.

Ad. Article 2.4 Structure of the programme

The nominal duration of the full-time master's programme Vitality and Ageing is one year.

The programme will offer also part-time tuition starting September 2022

The part-time programme is offered predominantly as a daytime programme.

The nominal duration of the part-time programme is 2 years.

Ad. Article 2.5 **Study load**

The programme has a study load of 60 ECTS credits.

Ad. Article 2.6 **Start of the programme**

The programme starts on 1 September.

Ad. Article 2.8 **Language of instruction**

In accordance with the Code of Conduct on the Language of Instruction and Examination¹⁴ the language(s) of instruction and examination in the programme is: *English*. Students are expected to have an adequate command of the language(s) of instruction and examination in the programme, in accordance with the requirements stated in Article 5.2.3. As appropriate, the Faculty publishes the OER in English for English-taught programmes.

Ad. Chapter 3 Curriculum

Ad. Article 3.1 **Compulsory components**

The programme includes compulsory components worth a total study load of 60 ECTS credits. These compulsory components include the set components from which students are obliged to choose.

Ad. Article 3.2 **Optional components**

Alongside the components referred to 3.1.1, the student selects components worth a total study load of 0 ECTS. (note: despite that all programme components are obligatory, within the courses, in the majority of the courses, assignments can be chosen and students have a choice of internships).

Ad Chapter 4 Examinations, Final Examination and Further Education

Ad. Article 4.12 **Degree classification**

The degree certificate and the diploma supplement include the 'cum laude' classification if the following additional condition are met:

- all constituent exams must be passed at the first attempt;
- all programme components of the master's programme were passed at the first attempt with a grade of 7.5 or higher.

The degree certificate and the diploma supplement include the 'summa cum laude' classification if the following additional condition are met:

- all constituent exams must be passed at the first attempt;
- all programme components of the master's programme were passed at the first attempt with a grade of 8.5 or higher.

Thesis (Internship) is equivalent to "Science and Career"

Ad. Chapter 5 Access and Admission to the Programme

Ad. Article 5.2 Admission to the programme

Ad. Article 5.2.1 Pursuant to Article 7.30b (1) of the Act holders of one of the following degrees may be admitted to the programme and one of its specialisations:

- a Bachelor's degree in Medicine [Geneeskunde], or
- a Bachelor's degree in Biomedical Sciences [Biomedische wetenschappen] or
- a Bachelor's degree in Health and Society [Gezondheid en Leven] or
- a Bachelor's degree in Health Sciences [Gezondheidswetenschappen] or
- a Bachelor's degree in Nutrition and Health [Voeding en Gezondheid] or
- a Bachelor's degree in Clinical Technology [Klinische Technologie] or
- a Bachelor's degree in Technical Medicine [Technische Geneeskunde] or
- a Bachelor's degree in Liberal Arts, with a major/specialisation in public health, global health or premedical programme from University College.
- a Bachelor's degree in Movement Sciences [Bewegingswetenschappen] or
- a Bachelor's degree in Health and Society [Gezondheid en maatschappij] or
- a Bachelor's degree in European Public Health

based on the level of a bachelor's degree, of an NVAO accredited programme, at a Dutch or Flemish University.

Ad Article 5.2.2

To be considered as holding a degree equal to the one specified in 5.2.1, applicants must meet the following requirements:

- an appropriate (bachelor's) degree from a (research) university, equivalent to the level of a bachelor's degree, of an NVAO accredited programme, at a Dutch or Flemish University, described in 5.2.1, or demonstrate to meet the requirements for such a degree. This requirement must be substantiated in a motivation letter; stating why the applicant has chosen this master's programme; the degree of the applicant, the applicant's knowledge of, and experience in biology; the applicant's knowledge of, and experience with older individuals; and the applicant's knowledge of and experience with management; the applicant's experience with research and the applicant's future career perspectives.

The Board of Admissions will then assess whether the degree and background suffices for admission to the programme, based on the equivalence to the level of a bachelor's degree, of an NVAO accredited programme, at a Dutch or Flemish University, described in 5.2.1.

Ad. Article 5.2.3.1

Components to be determined by the Board of Admissions, which provide evidence of a particular level of language, obtained in a bachelor's programme:

- Applicants who have completed a bachelor's degree at a Dutch University and have started their bachelor's (WO) programme with a HBO-P are exempted from submitting an English Proficiency test.

Contents of the programme

Code	course component	credits	level
322110310Y	Future perspectives	1	400
322111100Y	Biology of vitality and ageing	10	500
322112100Y	The older individual	10	500
322113100Y	Organisation of the ageing society	10	500
322114100Y	Communication in science (Educational line)	5	400
322115100Y	Research and evidence (Educational line)	5	400
322116200Y	Academic development (Educational line)	7	400
322117100Y	Science and Career	12	600