Teaching and Examination Regulations
Appendices
Research Master Programs

Health Sciences
Clinical Research
Infection & Immunity
Molecular Medicine
Neuroscience

Academic year 2021-2022

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1 Introduction, objective and admission

The admission criteria in this appendix apply for all ~~For~~ students of the five Research Master programs (Sections 1.2.2 to 1.2.6 below). If required, and in all situations not covered by these admission criteria, a final decisions on student admission will be the responsibility of the Program director of the respective Research Master.

1.1 Objectives of the Research Master programs

1.1.1 General

In the Research Master Program students acquire the following skills and knowledge:

- The student has a solid knowledge base with regards to the domain of the RM and the relevant research methods and instruments within that field.
- The student is able to translate knowledge and insight, corresponding research methods and instruments into adequate research questions and hypothesis driven experiments to answer these questions.
- The student is able, under supervision, to complete the scientific cycle and demonstrates through the appropriate products his or her contribution to science and its impact to society.
- The student is, given a specific question, able to find relevant literature, summarize it and turn it into an answer to the research question.
- The student acts from the scientific values and principles and has adopted *the* scientific attitude.
- The student perseveres when an experiment fails or the results don't answer the research question, using different methods to solve the problem if needed.

1.1.2 Health Sciences

In the Research Master Health Sciences students acquire the following competencies and knowledge:

- The student is able to translate a (clinical) epidemiologic, public health or health care problem into a scientific research question.
- The student is able to translate a scientific research question in the area of (clinical) epidemiology, public health or health care into a research protocol and/or proposal.
- The student is able to conduct a systematic literature review of a clinical or public health issue.
- The student has knowledge about quantitative methods and the ability to apply this knowledge in preparing, performing, analysing and interpreting research.
- The student understands core concepts of etiologic (causality), prognostic, diagnostic, prevention, and intervention research.
- The student has knowledge of regulations and ethical rules applicable to the fields of clinical and public health research, and is able to apply this knowledge.

- The student is able to collaborate with fellow members of a research group in order to set up and conduct a research project, to collect data, and to analyse these data to draw conclusions.
- The student is able to write a draft manuscript or Master of Science thesis, based on a (clinical) epidemiologic, public health or health care subject.
- The student is able to present the research findings in an engaging way.
- The student is able to respond to criticism in a constructive and productive manner.
- The student is able to critically review and assess the relevance of scientific results.
- The student engages in personal and professional development.

1.1.3 Clinical Research

In the Research Master Clinical Research students acquire the following competencies and knowledge:

- The student is able to translate a clinically relevant problem into a scientific research question.
- The student is able to translate a scientific research question into a research protocol and/or proposal which can be studied in clinical practice, choosing appropriate methodology for the specific setting and patient population.
- The student is able to conduct a systematic literature review of a clinical issue.
- The student has knowledge about quantitative methods and the ability to apply this knowledge in preparing, performing, analysing and interpreting research.
- The student understands core concepts of etiologic (causality), prognostic, diagnostic, prevention, and intervention research.
- The student has knowledge of regulations and ethical rules applicable to the fields of clinical research, and is able to apply this knowledge, e.g. in writing a protocol for a medical ethics approval or designing a study according to GCP regulations.
- The student is able to collaborate with fellow members of a research group in order to set up and conduct a research project, to collect data, and to analyse these data to draw conclusions.
- The student is able to write a draft manuscript or Master of Science thesis.
- The student is able to present the research findings in an engaging way with a specific focus on the clinical readership.
- The student is able to respond to criticism in a constructive and productive manner.
- The student is able to critically review and assess the relevance of scientific results.
- The student engages in personal and professional development.

1.1.4 Infection and Immunity

In the Research Master program Infection and Immunity students acquire the following competences and knowledge:

- The student has solid knowledge base in the field of infections and immunity, both in the area of fundamental and applied research and in relation to (infectious) diseases that occur

in humans. In addition, the student is able to make accurate use of scientific assays, techniques and equipment.

- The student is able to translate knowledge and insight associated with the domain of infections and immunity, and relevant research methods and instruments, into research questions and hypothesis-driven experiments to answer these questions.
- The student has followed relevant elective education to enrich the program matching his or her personal scientific interests and future direction.
- The student is able, under supervision, to prepare, plan and complete hypothesis-driven experiments and show in the accompanying products his or her contribution to science and, if applicable, its impact on society.
- The student is able to find relevant literature on the basis of a specific question, summarize it and based on this give an answer to the research question, insofar as it is available in the literature.
- The student is able and willing to communicate accurately and professionally with his supervisor and the other supervisors and technicians in the lab about the progress of his own experiments, and the experiments of others.
- The student acts on the basis of scientific values and principles, ensures safety in the lab for both his own experiments and the rest of his surroundings, and has mastered a generally applicable scientific attitude and the regulations.
- The student understands why an experiment may fail or does not provide the intended answers, and continues, under supervision, with other methods to solve the problem.
- The student is able to write a complete and scientifically sound report of his / her research, and is able to adequately answer the comments of the assessors in a rebuttal.
- The student is able to give a scientific presentation about an article, a literature study or his or her research carried out.

1.1.5 Molecular Medicine

In the Research Master Molecular Medicine students acquire the following competencies and knowledge:

- The student has a solid knowledge base of molecular cell biology, developmental biology and genetics and the relevant research methods and instruments within that field.
- The student is able to translate knowledge and insight of molecular cell biology, developmental biology and genetics and their research methods and instruments into research questions and relevant experiments to answer these questions.
- The student is able, under supervision, to complete the scientific cycle and demonstrates through the appropriate products their contribution to science and its impact to society.
- The student is, based on a specific question, able to find relevant literature, summarize it and turn it into an answer to the research question.
- The student acts from the scientific values and principles and has adopted the general scientific attitude.
- The student perseveres when an experiment does not succeed or return the intended answers, using different methods to solve the problem if needed.

1.1.6 Neuroscience

In the Research Master Neuroscience students acquire the following competencies and knowledge:

- acquire, structure and integrate information in the field of the Neurosciences to generate novel hypotheses that further the field, both orally and in writing;
- to translate a scientific question from the field of Neuroscience into a scientific experimental protocol and/or into a neuroscientific research proposal;
- acquire, structure and integrate information in the field of the Neurosciences to extensive study a neuroscientific topic/issue, and apply this knowledge to perform, analyze and interpret neuroscientific research;
- reflect on ethical aspects of neuroscience research, and include these in decision-making processes;
- work in a team and to collaborate with researchers from other disciplines and/or countries;
- compose a concept manuscript or Master of Science thesis in the field of Neuroscience, which, possibly in collaboration with the primary investigator, can be further developed into a neuroscientific manuscript suitable for publication in an international peer-reviewed journal;
- present the research findings in a scientific meeting;
- discuss neuroscience related criticism from internal and external evaluators on the Master of Science thesis, both orally and in writing;
- critically review and assess relevance of scientific results of others, in the field of Neuroscience.

1.2 Admission requirements per Research Master program

1.2.1 General

For all Research Masters the Admissions Committee determines whether a student is admitted to the program. Reasons will be given for the decision not to admit a student on his or her request.

Candidates who meet the selection criteria may be invited by the Admissions Committee for an additional interview (in person or via the internet) and an entrance examination.

Lateral entry admission is possible. This means that students of the Erasmus MC or other institutes can be placed in the second year of the Master of Science program. These students must have successfully completed the first year of another equivalent Research Master, or have obtained comparable knowledge elsewhere. Requests for exceptions to lateral entry admission should be submitted to the Examination Board by the Program Director. This request must be honored before the student may be admitted.

Candidates must demonstrate that they meet the selection requirements for written and spoken English. International applicants from countries where English is not the official language and who have not had any English-language education at secondary school and university must

take a TOEFL, IELTS or Cambridge proficiency test. The result of the TOEFL test must be at least 575 (paper based) with partial scores of at least 57, or a score of 232 (computer based) with partial scores of at least 23. The applicant must achieve a minimum score of 90 for the online test with a minimum partial score of 22. The achieved Cambridge proficiency level should be C1. The result of the IELTS test must be at least 6.5 with partial scores of at least 6.0. Candidates who have completed their Dutch HBO/VWO do not need to take any of these tests.

1.2.2 Health Sciences

Admission to the program is possible for:

- Candidates with a Bachelor degree in a discipline relevant to the health sciences such as medicine, health sciences, (medical) biology, chemistry, pharmacy, human movement sciences, sociology, psychology, nutrition, dentistry and veterinary medicine, or a broad Bachelor's education with sufficient basic subjects in the abovementioned disciplines. In addition, candidates must have affinity with research, as demonstrated by their motivation letter.

1.2.3 Clinical Research

Admission to the program is possible for:

- Candidates with a Bachelor degree in medicine, biomedical sciences or medical biology, or a broad bachelor education with sufficient basic subjects in medicine and/or biomedical sciences and/or medical biology. In addition, candidates must have affinity with research, as shown in the motivation letter.

1.2.4 Infection and Immunity

Admission to the program is only possible for:

- Medical students (from the Netherlands or from abroad), who have successfully completed their Bachelor.
- Biology, biomedical sciences, biochemistry, veterinary medicine, pharmacy and molecular sciences (LUW) students (from the Netherlands or from abroad), who have successfully completed their Bachelor.
- HLO-BML (Higher Laboratory Education Biomedical Laboratory Techniques) students who have successfully completed their studies.

After a positive assessment by the Admissions Committee (see 1.3.3 and 1.4.2), the student is admitted to the Research Master program Infection and Immunity. However, the first tests for competence and suitability for the Infection and Immunity program are the (re)exam for the Summer Course I and the interim assessment (Mid Term Review) of the first research project of the Research Master program Infection and Immunity. If the student does not pass the (re)exam of the Summer Course I, or if the interim assessment of the first research project is negative, the student receives the advice to stop the study, because the student shows insufficient capacities to successfully complete the program in the future.

1.2.5 Molecular Medicine

Admission to the program is only possible for:

- Candidates with a Bachelor of Science degree in one of the biomedical sciences (such as biology, biochemistry, biomedical sciences)
- Candidates with a Bachelor of Science degree from a Dutch higher professional program in biomedical laboratory techniques (HBO-BML)

Admission to the program is also possible for medical students who have successfully completed their Bachelor program and who have shown to be interested in biomedical research. For foreign candidates study results already achieved are used in the assessment: they must have a minimum grade point average of 80%.

1.2.6 Neuroscience

Admission to the course is only possible for dandidates with:

- an academic Bachelor's degree (with a minimum of 180 ECs) in a Life Sciences discipline, for example Nanobiology, Bio-engineering, etc
- a Bachelor's degree in Psychology with a biological psychology background/profile
- a Bachelor's degree in non-biology-related sciences, but with a substantial knowledge of biology
- an applied Bachelor's degree (HLO) in Biology or in Life Sciences with a minimum GPA of 8 (Dutch EC-system)

Candidates are admitted to the program after a positive decision by the admission committee of the Research Master Neuroscience

1.3 Admissions Committee

1.3.1 Health Sciences.

The Admissions Committee of the Research Master program in Health Sciences for external candidates with a different study background than Medicine at Erasmus University consists of the associate program director and a program coordinator. The Health Sciences and Clinical Research Admissions Committee for medical students at Erasmus University consists of the Program Directors of Health Sciences and Clinical Research, lecturers who are closely involved with the program and a program coordinator.

1.3.2 Clinical Research.

The Admissions Committee of the Research Master program in Clinical Research for external candidates with a different study background other than Medicine at Erasmus University consists of the program director or a member of the advice council of Clinical Research and a program coordinator. The Health Sciences and Clinical Research Admissions Committee for medical students at Erasmus University consists of the Program Directors of the two programs, lecturers who are closely involved with the program and a program coordinator.

1.3.3 Infection and Immunity.

The Infection and Immunity Admissions Committee consists of the Program Director (or Deputy Program Director), the Scientific Director (or his or her Deputy) and key lecturers closely involved in the program. The presence of three members and consensus is required for admission to the program.

1.3.4 Molecular Medicine.

The members of the Admissions Committee are the board members of the Research Master program, the Program Director, and where applicable a course coordinator. The presence of at least two members and consensus is required for admission to the program.

1.3.5 Neuroscience.

The members of the Admissions Committee are the Program Director and two Research Master Neuroscience examiners. The presence of all three members and consensus is required for admission to the program.

1.4 Admission procedure

1.4.1 Health Sciences and Clinical Research

A written selection procedure is applied for external candidates with a different study background than Medicine from the Erasmus University who apply for the Research Master program in Health Sciences. The application documents of these students will be assessed by the Admission Committee. For medical students, an interview can be part of the admission procedure. If there are insufficient places on one of the Health Sciences or Clinical Research Masters suitable candidates will be offered a place on the other Master.
The applicant will receive a written response within six weeks with the outcome of his or her application.

1.4.2 Infection and Immunity

All medical students at the Erasmus MC who write an application letter are invited for an interview. A written selection procedure is first applied for the other candidates who apply for the Research Master program. The application forms of these students will be assessed by the Admissions Committee. On this basis, selected students are invited for an interview. The applicant will receive a written response within six weeks of the interview with the outcome of his or her application.

1.4.3 Molecular Medicine

Candidates who meet the selection criteria listed under 1.2 can be invited by the Admissions Committee for an additional admission interview (in person or online) and an entrance examination. Admission is decided based on results achieved in previous education, the result obtained in the entrance examination, the references, and the personal motivation of the candidate, as presented in the written motivation and/or the individual admission interview. The Admissions Committee determines whether a student is admitted to the program. The

applicant receives a written notification of the outcome of his or her application within six weeks, unless the entrance exam has not yet been taken at that time.

1.4.4. Neuroscience

Candidates who meet the selection criteria listed under 1.2 can be invited by the Admissions Committee for an admission interview (in person or online). Admission is decided based on results achieved in previous education, the personal motivation of the candidate and C.V., as presented in the written motivation and/or the individual admission interview.
The Admissions Committee determines whether a student is admitted to the program. The applicant receives a written notification of the outcome of his or her application within six weeks, .

2. Assessment

2.1. Interim exams

2.1.1 Health Sciences and Clinical Research.

Interim exams are taken during the module or at the end of a block. The learning environment of Canvas and the NIHES website contain information about which subjects interim exams are given. For certain subjects or sections of subjects an attendance obligation applies. In case of an attendance obligation for the entire course, the upper limit for absence is 20%. EC points are only granted if the attendance obligation has been met and a sufficient result has been obtained on the interim exam.

2.1.2 Infection and Immunity

The compulsory courses Summer Course 1 & 2, Winter Course 1 & 2 and Population Dynamics in Infection and Immunity are concluded with a written exam In principle, student attendance is obligatory for the whole I&I program. Student absence is only allowed after a valid motivation and in consultation with the management of the program. Twenty percent (20%) of a course or internship period is the upper limit for non-attendance (and only in the event of non-preventable absence). EC points are only awarded if the obligation to attend has been complied with and a satisfactory result is obtained for the examination if the course has interim exams. The student must be available to attend the compulsory courses and research outside of the timetable free periods in the timetable of the I&I Master program.

2.1.3 Molecular Medicine

All course components of the Molecular Medicine program are tested as explained in the study guide. Attendance is obligatory for a number of subjects. Students are only allowed to be absent for a maximum of 20% after motivated sign-out to the program coordinator and/or the relevant course coordinator. EC points are only awarded if the obligation to attend has been met and a satisfactory mark has been awarded for a test.

Access to year 2 of the Molecular Medicine Research Master program. Achieving 40 EC points of year 1 gives right of access to the following second year of the Molecular Medicine Research Master program.

2.1.4. Neuroscience.

For all course part in the program (i.e. modules, workshops, labtalks and seminars) an attendance obligation applies. Students are only allowed to be absent for labtalks and seminars for a maximum of 20% after motivated sign-out to the program coordinator and/or the relevant course coordinator. EC's will be awarded if students meet the attendance obligation and/or pass the course test with sufficient results.

Achieving the 60 EC points of year 1 gives right of access to the second year of the Neuroscience Research Master program.

2.2. Resits

2.2.1. Health Sciences and Clinical Research.

A maximum number of attempts of three times applies for the core competence test. Each other interim exam is subject to a maximum number of two attempts. For exams that belong to courses that are attended before 2021-2022 a maximum of 3 attempts applies.

There are two regular exam times per year: an exam and a resit. A third examination opportunity is only organized during the current academic year if at the end of the current academic year the student can (and wants to) graduate, and can prove that he or she has not been able to take advantage of the previous two examination opportunities. After the second ~~third~~ attempt the student can submit a motivated request for an extra resit to the Examination Board~~.~~ The procedure for a resit for the scientific research is recorded in section 2.2 of the TER.

2.2.2 Infection and Immunity

There is a maximum number of three attempts for each exam. All exams may be retaken, even if a sufficient mark was obtained, after which the highest mark is valid. This can only take place if a re-examination is organized for the students that have earned an insufficient mark.

2.2.3 Molecular Medicine

Students are entitled to one resit per year, per test.

2.2.4 Neuroscience

Students are entitled to one resit per test. This also applies to the end products of the first and second year (end product 1st year: the research proposal and the presentation of the research proposal, end product 2nd year: the Master thesis and the defense of the Master thesis). If the 60 EC points for year 1 and year 2 are not obtained, in individual cases at the written request of

the student, if possible, supported by his or her research supervisor and due to special circumstances, an additional resit can be offered at the discretion of the Examination Board.

2.3. Master of Science (MSc) thesis

2.3.1 General

The program is concluded with the defense of a Master of Science (MSc) thesis. The thesis is in the form of a report written by the student alone that in principle can be submitted to a peer-reviewed international journal as a scientific paper. The Master thesis must demonstrate that the student has the skills to collect data and to present results, and has sufficient knowledge to write a scientific article. Students must also respond to comments on the master thesis by internal and external reviewers, as if responding to a peer review in an international peer reviewed journal. Submitting the manuscript for publication is not required, but is an aim.

2.3.2 Health Sciences

The master thesis will be evaluated by the research supervisor and an independent evaluator. The definitive assessment will be confirmed by the associate program director of the specialization followed by the student. The students must defend their thesis before the research supervisor and a second independent assessor, as well as present their thesis to the research group of the department where they completed their research project.

2.3.3 Clinical Research

The MSc thesis will be assessed by the research supervisor, at least one member of the Clinical Research Advisory Board and an independent evaluator. The students must defend their thesis before this independent evaluator and present their thesis to the research group of the department where they completed their research project.

2.3.4 Infection and Immunity

The master thesis will be assessed by the research supervisor and three reviewers of which one external reviewer. Defense of the MSc thesis consists of oral presentation of the objective, the methods used (or to be used), results and conclusions of the research. The final result of the labwork, assessment of the thesis, the presentation and defence will be reported together to the Educational Director and will lead to a final mark.

2.3.5 Molecular Medicine

The Master thesis contains a detailed introduction and 'Materials and Methods' section that is more extensive than required for a scientific article. The manuscript of the Master thesis will be assessed by the research supervisor, an independent assessor and the coordinator of year 2 of the master program. Defense of the MSc thesis consists of an oral presentation of the objective, the results and conclusions of the research, followed by discussion of the contents of the thesis.

The final result of the evaluation, presentation and defense determines the final grade for the Master of Science thesis.

2.3.6 Neuroscience

For Neuroscience, the Master of Science thesis and oral presentation, the rebuttal and the revision of the Master of Science thesis are assessed by at least 2 independent assessors. An independently written rebuttal on the review of the Master of Science thesis must demonstrate that the student can defend his or her research, research results and conclusions and / or assess their value. The review and rebuttal procedure can lead to an overhaul of the Master of Science thesis.

3 Programs

3.1.1. Health Sciences, Curriculum

Cohort before 2021

Research Master of Science in Health Sciences - 120 EC points - 2020-2022												
Calendar	**Course code**	**Course**	**EC**	**EC points** per specialisation**								
COMMON CORE				**EP**	**CE**	**GE**	**PH**	**HEA**	**MP**	**Bstat**	**HDS**	**Medical students**
Aug 2020	ESP01	Principles of Research in Medicine and Epidemiology	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7
Aug-Sept 2020	CC01	Study Design	4,3	4,3	4,3	4,3	4,3	4,3	4,3	4,3	4,3	4,3
Sept-Oct 2020	CC02	Biostatistical Methods I: Basic Principles	5,7	5,7	5,7	5,7	5,7	5,7	5,7	5,7	5,7	5,7
Nov-Dec 2020	EP03	Biostatistical Methods II: Classical Regression Models	4,3	4,3	4,3	4,3	4,3	4,3	4,3	4,3	4,3	4,3
Nov 2021-Jan 2022	SC07	Scientific Writing in English for Publication	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0
Sep 2020-Jun 2022	SEM	24 research seminars	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
Sep 2020-Jun 2022	LLS	Lifelong Learning Skills	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0
		Common core TOTAL EC points	**20**	**19,8**	**19,8**	**19,8**	**19,8**	**19,8**	**19,8**	**19,8**	**19,8**	**19,8**
REQUIRED				**EP**	**CE**	**GE**	**PH**	**HEA**	**MP**	**Bstat**	**HDS**	**Med**
Aug 2020	ESP11	Methods of Public Health Research	0,7	0,7	0,7		0,7	0,7	0,7		0,7	EC points according to chosen specialisation except for research and final exam
Aug 2020	ESP25	Health Economics	0,7		0,7			0,7			0,7	
Aug 2020	ESP41	Introduction to Global Public Health	0,7	0,7	0,7		0,7	0,7	0,7	0,7	0,7	
Aug 2020	ESP42	Methods of Health Services Research	0,7				0,7					
Aug 2020	ESP43	Principles of Genetic Epidemiology	0,7			0,7						
Aug 2020	ESP57	Genomics in Molecular Medicine	1,4			1,4						
Aug 2020	ESP61	Social Epidemiology	0,7	0,7			0,7		0,7			
Aug 2020	ESP65	The Practice of Epidemiologic Analysis	0,7	0,7	0,7		0,7		0,7		0,7	

Aug 2020	ESP70	Fundamentals of Medical Decision Making	0,7	0,7	0,7			0,7	0,7		0,7	
Aug 2020	ESP74	Genome-wide Association Studies	0,7			0,7						
Aug 2020	ESP75	Human Epigenomics	0,7			0,7						
Aug / Oct 2020	BST01	Review of Mathematics and Introduction to Statistics (Bstat in Aug, HDS in Oct)	1,0							1,0	1,0	
Oct 202	CE01	Clinical Translation of Epidemiology	2,0		2,0					2,0		
Oct-Nov 2020	CE02	Clinical Epidemiology	3,7		3,7					3,7	3,7	
Oct 2020	GE14	Linux for Scientists	0,6			0,6						
Oct-Nov 2020	MP01	Psychology in Medicine	5,7						5,7			
Nov 2020	MP02	The Placebo Effect	1,4						1,4			
Oct-Nov 2020	GE02	Genetic-epidemiologic Research Methods	5,1			5,1						
Oct-Nov 2020	HS02	Public Health Research: part a, b and c	5,7				5,7					
Oct-Dec 2020	GW4546M	HealthTechnology Assessment	5,0					5,0				
Nov 2020	GE08	SNPs and Human Diseases	1,4			1,4						
Nov 2020	EP01	Principles in Causal Inference	1,4	1,4	1,4					1,4	1,4	
Winter 2021	GE03	Advances in Genome-Wide Association Studies	1,4			1,4						
Winter 2021	GE10	Mendelian Randomisation	0,9			0,9						
Winter 2021	EWP02	Advanced topics in Decision-making in Medicine	2,4								1,4	
Winter 2021	CE16	Using R for Decision Modeling, Simulation, and Health Technology Assessment	1,1								1,4	
Winter 2021	MP03	Psychopharmacology	1,4						1,4			
Winter 2021	MP05	Preventing Failed Intervention Research	1,4						1,4			
Winter 2021	GE13	An introduction to the Analysis of Next-generation Sequencing Data	1,4			1,4						
Spring 2021	HS11	Quality of Life Measurement	0,9						0,9			
Spring 2021	CE08	Repeated Measurements (also in Spring 2021 for CE and HDS)	1,7							1,7		
Spring 2021	EP16	Missing Values in Clinical Research	1,7							1,7		
Spring 2021	PU03	Site Visit to the Municipal Health Center	0,3				0,3					
Aug 2021	ESP48	Causal Inference	1,4	1,4	1,4			1,4				
Aug 2021	ESP69	Causal Mediation Analysis	1,4	1,4								
Aug 2021	ESP77	Advances in Clinical Epidemiology	0,7	0,7	0,7							

Winter 2022	BST02	Intermediate Course in R	1,4							1,4		
Winter 2022	EWP03	Pharmaco-epidemiology and Drug Safety	1,9	1,9								
Winter 2022	EWP10	Advanced Topics in Clinical Trials	1,9	1,9	1,9							
Winter 2022	EWP13	Advanced Analysis of Prognosis Studies	0,9	0,9	0,9							0,9
Spring 2022	CE08	Repeated Measurements (also in Spring 2020 for Bstat)	1,7		1,7							1,7
Spring 2022	CE09	Bayesian Statistics	1,4							1,4		
Spring 2022	GW4579M	Research Topics in Health Economics	5,0					5,0				
Spring 2022	FEM11087	Quantitative Methods for Applied Economics	4,0					4,0				
Spring 2022	PU04	Integration Module	0,3				0,3					
Spring 2021	PU06	Public Health in Low and Middle Income Countries	3,0				3,0					
Jan 2021-Jul 2022	RM-RES	Research	67,0	67,0	67,0	67,0	67,0	67,0	67,0	67,0	67,0	
Jan 2021-Jul 2022	RM-RES-MED	Research	65,0									65,0
After MSc Med	FE	Final Exam	2,0									2,0
		Required TOTAL EC points		**80,1**	**84,2**	**81,3**	**79,8**	**85,2**	**81,3**	**82,0**	**82,0**	
ELECTIVES				**EP**	**CE**	**GE**	**PH**	**HEA**	**MP**	**Bstat**	**HDS**	**Med**
Oct-Nov 2020	EP students choose between either:			5,7								EC points according to chosen specialisation
	CE01	Clinical Translation of Epidemiology AND	2,0									
	CE02	Clinical Epidemiology	3,7									
		OR										
	HS02	Public Health Research: part a, b and c	5,7									
	HEA students choose at least 10 EC points out of the following courses:							10,0				
	GW4568M	Economics of Health and Health Care	5,0									
	GW4548M	Behavioural Decision Theory in Health	5,0									
	GW4580M	Measurement of Patient Preferences Using Discrete Choice Experiments	5,0									
	GW4582M	Global Health Economics	5,0									
	GW4587M	Advanced Health Economic Modelling - *limited number of places available*	5,0									
	GW4575M	Pharmaceutical Pricing and Market Access (PPMH)	5,0									

	EWP02	Advanced Topics in Decision-making in Medicine	2,4									
	CE16	Using R for Decision Modeling, Simulation, and Health Technology Assessment	1,1									
	CE15	Advanced Decision Science Modeling	1,4									
	PH students choose at least 2.8 EC points out of the following courses:											
	HS04	Medical Demography	1,1									
	HS05	Planning and Evaluation of Screening	1,4				2,8					
	HS09	Maternal and Child Health	0,9									
	HS11	Quality of Life Measurement	0,9									
	HS18	From Problem to Solution in Public Health	1,1									
				14,4	16,0	18,9	17,6	5,0	18,9	18,2	18,2	
Electives TOTAL EC points (max 2,8 extra points)				**20,1**	**16,0**	**18,9**	**20,4**	**15,0**	**18,9**	**18,2**	**18,2**	
TOTAL EC points				**120,0**	**120,0**	**120,0**	**120,0**	**120,0**	**120,0**	**120,0**	**120,0**	**120,0**

Specialisations: EP = Epidemiology, CE = Clinical Epidemiology, GE = Genomic and Molecular Epidemiology (previously Genetic Epidemiology), PH = Public Health Epidemiology (previously Public Health), HEA = Health Economic Analysis, MP = Medical Psychology, Bstat = Biostatistics, HDS = Health Decision Sciences, Med = Medical students

**** 1.4 EC points = 1 week**

Health Sciences, Curriculum

Cohort 2021 – 2023

Research Master in Health Sciences - 120 EC points - 2021-2023					
Calendar	**Course code**	**Course**	**EC**	**Regular programme**	**Erasmus MC medical**
Aug 2021	ESP01	Principles of Research in Medicine and Epidemiology	0,7	0,7	0,7
Aug 2021	ESP11	Methods of Public Health Research	0,7	0,7	0,7
Aug 2021	ESP43	Principles of Genetic Epidemiology	0,7	0,7	0,7
Aug 2021	ESP61	Social Epidemiology	0,7	0,7	0,7
Aug 2021	ESP65	Practice of Epidemiologic Analysis	0,7	0,7	0,7
Aug 2021	ESP70	Fundamentals of Medical Decision Making	0,7	0,7	0,7
Aug 2021	CK001	Review of Mathematics and Introduction to Statistics	1,0	1,0	1,0
Fall 2021	CK010	Study Design	4,0	4,0	4,0
Fall 2021	CK020	Biostatistics I	4,5	4,5	4,5
Fall 2021	CK030	Biostatistics II	4,5	4,5	4,5
Fall 2021	CK040	Clinical Epidemiology	3,0	3,0	3,0
Fall 2021	CK050	Public Health Research	3,0	3,0	3,0
Fall 2021	CK060	Selected Topics in Epidemiology	3,0	3,0	3,0
Jan 2022	CK070	Core competences exam	1,0	1,0	1,0
Jan 2023	CK080	Core competences video	1,0	1,0	1,0
Winter-spring 2023	LLS02	Scientific Writing in English for Publication	2,0	2,0	2,0
Sep 2021-Jul 2023	LLS03	Personal Education Plan	1,1	1,1	1,1
Sep 2021-Jul 2023	LLS05	Intervision	0,4	0,4	0,4
Winter-spring 2022	LLS06	Scientific Integrity	0,3	0,3	0,3
Winter-spring 2022	LLS07	Intercultural Communication	0,2	0,2	0,2
Sep 2022-Jul 2023		Lifelong Learning Skills elective courses	1,0	1,0	1,0
Fall 2021-Jul 2023	RM-RES	Research	65,8	65,8	

Fall 2021-Jul 2023	RM-RES-MED	Research (medical students)	63,8		63,8
After MSc Med	FE	Final Exam	2,0		2,0
Jan 2022-Jul 2023		Elective courses (max 2,8 extra EC)	20,0	20,0	20,0
TOTAL EC points				**120,0**	**120,0**

1.4 EC points = 1 week

Year 1 = August 2021 until July 2022

Year 2 = August 2022 until July 2023

3.1.2. Clinical Research, Curriculum

Cohort before 2021

Research Master in Clinical Research - 120 EC points - 2020-2022					
Calendar	**Course code**	**Course**	**EC**	**EC points* per specialisation**	
COMMON CORE				**CR**	**Medical students**
Aug 2020	ESP01	Principles of Research in Medicine and Epidemiology	0,7	0,7	0,7
Aug-Sept 2020	CC01	Study Design	4,3	4,3	4,3
Sept-Oct 2020	CC02	Biostatistical Methods I: Basic Principles	5,7	5,7	5,7
Nov-Dec 2020	EP03	Biostatistical Methods II: Classical Regression Models	4,3	4,3	4,3
Nov 2021-Jan 2022	SC07	Scientific Writing in English for Publication	2,0	2,0	2,0
Sep 2020-Jun 2022	SEM	24 research seminars	0,8	0,8	0,8
Sep 2020-Jun 2022	LLS	Lifelong Learning Skills	2,0	2,0	2,0
		Common core TOTAL EC points	**19,8**	**19,8**	**19,8**
REQUIRED				**CR**	**Med**
Aug 2020	ESP11	Methods of Public Health Research	0,7	0,7	0,7
Aug 2020	ESP14	Clinical Trials	0,7	0,7	0,7
Aug 2020	ESP65	The Practice of Epidemiologic Analysis	0,7	0,7	0,7
Aug 2020	ESP70	Fundamentals of Medical Decision Making	0,7	0,7	0,7
Aug 2020	BST01	Review of Mathematics and Introduction to Statistics	1,0	1,0	1,0
Oct 2020	CE01	Clinical Translation of Epidemiology	2,0	2,0	2,0
Oct-Nov 2020	CE02	Clinical Epidemiology	3,7	3,7	3,7
Nov 2020	EP01	Principles in Causal Inference	1,4	1,4	1,4
Winter-Spring 2022	EWP03	Pharmaco-epidemiology and Drug Safety	1,9	1,9	1,9
Winter-Spring 2022	EWP10	Advanced Topics in Clinical Trials	1,9	1,9	1,9
Winter-Spring 2022	EWP13	Advanced Analysis of Prognosis Studies	0,9	0,9	0,9
Jan 2021-Jul 2022	RM.RES	Research	67,0	67,0	
Jan 2021-Jul 2022	RM-RES-MED	Research (incl. Final Exam)	67,0		65,0

After MSc Med	FE	Final Exam	2,0		2,0
		Required TOTAL EC points		**82,6**	**82,6**
ELECTIVES				**CR**	**Med**
		Advanced elective courses		17,6	17,6
		Electives TOTAL EC points (max 2,8 extra points)		**17,6**	**17,6**
		TOTAL EC points		**120,0**	**120,0**

Specialisations: CR = Clinical Research, Med = Medical students

*** 1.4 EC points = 1 week**

Clinical Research, Curriculum

Cohort 2021 - 2023

Research Master in Clinical Research - 120 EC points - 2021-2023					
Calendar	**Course code**	**Course**	**EC**	**Regular programme**	**Erasmus MC medical**
Aug 2021	ESP01	Principles of Research in Medicine and Epidemiology	0,7	0,7	0,7
Aug 2021	ESP11	Methods of Public Health Research	0,7	0,7	0,7
Aug 2021	ESP43	Principles of Genetic Epidemiology	0,7	0,7	0,7
Aug 2021	ESP61	Social Epidemiology	0,7	0,7	0,7
Aug 2021	ESP65	Practice of Epidemiologic Analysis	0,7	0,7	0,7
Aug 2021	ESP70	Fundamentals of Medical Decision Making	0,7	0,7	0,7
Aug 2021	CK001	Review of Mathematics and Introduction to Statistics	1,0	1,0	1,0
Fall 2021	CK010	Study Design	4,0	4,0	4,0
Fall 2021	CK020	Biostatistics I	4,5	4,5	4,5
Fall 2021	CK030	Biostatistics II	4,5	4,5	4,5
Fall 2021	CK040	Clinical Epidemiology	3,0	3,0	3,0
Fall 2021	CK050	Public Health Research	3,0	3,0	3,0
Fall 2021	CK060	Selected Topics in Epidemiology	3,0	3,0	3,0
Jan 2022	CK070	Core competences exam	1,0	1,0	1,0
Jan 2023	CK080	Core competences video	1,0	1,0	1,0
Winter-spring 2023	LLS02	Scientific Writing in English for Publication	2,0	2,0	2,0
Sep 2021-Jul 2023	LLS03	Personal Education Plan	1,1	1,1	1,1
Sep 2021-Jul 2023	LLS05	Intervision	0,4	0,4	0,4
Winter-spring 2022	LLS06	Scientific Integrity	0,3	0,3	0,3
Winter-spring 2022	LLS07	Intercultural Communication	0,2	0,2	0,2
Sep 2022-Jul 2023		Lifelong Learning Skills elective courses	1,0	1,0	1,0
Fall 2021-Jul 2023	RM-RES	Research	65,8	65,8	

Fall 2021-Jul 2023	RM-RES-MED	Research (medical students)	63,8		63,8
After MSc Med	FE	Final Exam	2,0		2,0
Jan 2022-Jul 2023		Elective courses (max 2,8 extra EC)	20,0	20,0	20,0
			TOTAL EC points	**120,0**	**120,0**

1.4 EC points = 1 week

Year 1 = August 2021 until July 2022
Year 2 = August 2022 until July 2023

3.1.3 Infection & Immunity
Curriculum 2021-2022

	Year 1	**EC points**
	MSCII-101: First Summer Course	8.6
	MSCII-116: Population Dynamics in Infection and Immunity	3.6
	MSCII-115: Biomedical Research Techniques (BRT)	1.5
	MSCII-108: SPSS	1.0
	MSCII-109: Biomedical English writing	2.0
	MSCII-119: PubMed, Endnote and 'Drown or not'	0.6
	MSCII-114: Survival analysis	0.5
	MSCII-104: Visiting research labs. Literature reading and orientation on research programs. Acquisition of specific knowledge of the areas of research	12.0
	MSCII-105: First Winter Course	8.6
	MSCII-E99: Elective courses 1	2.4
	MSCII-118: First internship: Performing research in the area of choice at Erasmus MC. Visiting seminars, journal clubs, research discussions. Literature reading.	19.2
	Total year 1	**60.0**

	Year 2	
	MSCII-201: Second Summer Course	8.6
	MSCII-E99: Elective courses 2	4.4
	MSCII-202: First Internship part 2 and/or second internship part 1: Performing research in the area of choice, stay abroad (optional). Visiting seminars, journal clubs, research discussions. Literature reading.	15.0

	MSCII-203: Second Winter Course	6.8
	MSCII-E99: Elective courses 3	6.2
	MSCII-204: Performing research in area of choice, stay abroad. Visiting seminars, journal clubs, research discussions, literature reading. Writing rebuttal on reviews, writing and presentation MSc thesis.	19.0
	Total year 2	**60.0**
	Total	**120.0**
	Alternative program for medical students	
	(MSCII-118, 202 and 204 courses are skipped):	
	MSCII-301: Performing research in the area of choice at Erasmus MC. Visiting seminars, journal clubs, research discussions. Literature reading	**29.0**
	MSCII-302: Performing research in area of choice, stay abroad (optional). Visiting seminars, journal clubs, research discussions, literature reading. Writing rebuttal on reviews, writing and presentation MSc thesis	**24.2**

3.1.4 Molecular Medicine Curriculum 2021 – 2022

Course code	Name	EC points
MM-IW	Introduction Weeks	2.0
MM-DB	Developmental Biology	2.0
	DB - Review Presentation	1.0
MM-MBC-A	Molecular Biology of the Cell – A	5.0
MM-MBC-B	Molecular Biology of the Cell – B	5.0
MM-GEN	Genetics	4.0
MM-CRT-F	Contemporary Research Topics - Faculty sessions	4.0
MM-BOD	Biology of Disease	3.0
MM-RES1	Lab Research Project Year 1	24.0
MM-PS	Presentation Skills	2.0
MM-P1	Research Progress Presentation - YR1	2.0
MM-RW	Report Writing	2.0
	Research Report	4.0
Total Year 1		**60.0**

Course code	Name	EC points
MM-CS	Courses and Seminars	4.0
MM-LR	Literature Review	4.0
MM-PP	Writing a Project Proposal	2.0
MM-P2	Research Progress Presentation - YR2	2.0
MM-RES2	Lab Research Project Year 2	38.0
MM-MSTH	Master of Science thesis	8.0
	Master of Science thesis – Presentation	2.0
Total Year 2		**60.0**

3.1.5 Neuroscience (1st year) Curriculum Cohort 2021 - 2022

Course code	Name	EC points
RMNS-1.0	Introduction Week	0
RMNS-1.1	Basic(Neuro)science	3
RMNS-1.2	Neural signaling and computational neuroscience	6
RMNS-1.3	Structure and organization of the nervous system	3
RMNS-1.4	Sensorimotor systems	7
RMNS-1.5	The changing brain: mechanisms	7
RMNS-1.6	Complex brain functions	6
RMNS-1.7	Scientific writing	3
RMNS-1.8	Lab talk, and Seminars	2
RMNS-1.9	Research training	15
RMNS-1.10	Presentation Research proposal	8
	Beoordeling onderzoekvoorstel 4 EC (50%)	
	Presentatie 4 EC (50%)	
Total Year 1		**60.0**

Neuroscience (2nd year)	**Curriculum Cohort 2021-2022:**	
Course code	**Name**	**EC points**
RMNS-2.x	Attend workshops of your choice Workshops are indicated below. Three of the 10 points can be obtained outside the RM Neuroscience program offer (f.e. Animal welfare or eBrok course). One of these 3 points can be obtained by attending a neuroscience conference and presenting data at the conference.	**10**
RMNS-2.3	Neuro-anatomy and Pathology	*2*
RMNS-2.4	Eye movements of mice and men	*1*
RMNS-2.6	f-MRI analysis techniques	*1*
RMNS-2.7	Linear systems	*2*
RMNS-2.8	Molecular neuro biology/Advanced	*1*
RMNS-2.9	Animal welfare (art. 9)*	*3*
RMNS-2.10	Genetics and neurological diseases	*1*
RMNS-2.11	Tools and therapy in psychiatry	*1*
RMNS-2.12	Hippocampal field recording	*1*
RMNS-2.13	*E*brok*	*1.5*
RMNS-2.14A	Introduction of Matlab/Beginners	*1*
RMNS-2.14B	Data analysis with Matlab/Advanced	*1*
RMNS-2.15	Career outside academia	*1*
RMNS-2.16	Modeling neural networks using NEURON	*1*
RMNS-2.17	Introduction to Labview	*2*
RMNS-2.18	Nerve conduction studies	*1*
RMNS-2.19	High performance brain simulation	*1*
RMNS-2.20	Optical Imaging (Live cell microscopy)	*2*

RMNS-2.21	History of Neuroscience	*1*
RMNS-2.22	(Poster) presentation at Neuroscience conference*	*1*
RMNS-2.23	*'off campus'* workshops or courses*	*1*
RMNS-3.1	Research project	**37**
RMNS-3.2	Labtalks en seminars - jaar 2	**3**
RMNS-3.3	Schrijven Master of Science thesis	**10**
	Onderzoeksopzet - 7 EC(70%)	
	presentatie - 3 EC (30%)	
Total Year 2		**60.0**

Remarks

3.2 Lab talks, seminars and journal club (3 EC)

Before every seminar of the Neuroscience seminar series, students will discuss one of the papers of the seminar speaker during a supervised journal club.

Workshops (10 EC)

A total of 10 EC points need to be obtained by following workshops and courses.

*) external course items. 3 of the 10 points can be obtained outside the RM Neuroscience program offer.

1 of these 3 point can be obtained by attending a neuroscience conference and presenting data at the conference

3.2 Research project and supervisor allocation

3.2.1 Health Sciences and Clinical Research

After admission to the program the Health Sciences students are assigned a supervisor. Clinical Research students are allocated an advisor from the Advisory Board Clinical Research. Together with the student the advisor looks for a research position and supervisor. The supervisor will supervise the student in his or her research project. The supervisor is preferably a professor or senior researcher. The supervisor can delegate the practical supervision to one of his or her employees, but remains ultimately responsible. In consultation with their supervisor and with the Program Directors students may be permitted to do a research project abroad.

3.2.2 Infection and Immunity

The students, if desired, are assigned a supervisor after admission to the program. This supervisor will supervise the student in his or her research project. The supervisor is an assistant professor, an associate professor or a full professor. In addition, the student is appointed a reviewer, as a rule from the group of core lecturers of the study program, who co-assesses the research proposal, the Mid Term Review and the final report. In principle the research projects take place within the Erasmus MC. In consultation with the Program Director students can (preferably) follow two research projects of six to twelve months that add up to 18 months together. As an alternative, they can take one eighteen-month research project, with a preference for part of it being followed at another lab. The first research project always takes place within the Erasmus MC in order to properly assess the practical skills of the student. In consultation with the Program Director the second of the two research projects may be done in a Dutch institution other than Erasmus MC, or abroad. A (research) research project is only performed outside the Erasmus MC if it is necessary for progress of the research project and/or if it is in the student's interest. The institute where the student is going to should be of comparable scientific quality to the Erasmus MC. There should be sufficient guarantee that during the research project abroad the student can count on intensive support from the research supervisor within the institute where the student follows the research project. Furthermore, there must be sufficient expertise within the Erasmus MC in the field of research to which the project relates.

After 2 to 3 months an interim assessment of the student and the quality and quantity of his or her work during the research project, the Mid Term Review (MTR), follows. A report is made of this. This assessment must, if necessary after reassessment, be sufficient to successfully complete the research project.

3.2.3 Molecular Medicine

Research projects must be approved by the program director. A research project abroad is only considered if it is necessary for progress of the research project and/or if it is in the student's interest. The foreign institution where the student is going to should be of comparable scientific quality to the Erasmus MC institutes participating in the Molecular Medicine program. There

should be sufficient guarantee that the student can count on intensive supervision by the foreign research supervisor during the research project. A research project abroad will only take place in year 2 of the program, and only when the student is following relevant courses of the Master of Science program.

3.2.4 Neuroscience

After a supervisor-student acquaintance period, a student-supervisor matching procedure is carried out where the NRMP (National Resident Matching Program) algorithm is used. The results of this matching procedure form the basis of the supervisor assignment. The supervisor is appointed by the Program Director (see general provisions). The appointment of the research supervisor will be valid for the entire duration of the course.

4 Education

4.1 Optional and compulsory education

4.1.1 Health Sciences and Clinical Research.

All students starting from 2021-2022 follow the same compulsory courses during the first semester and take the compulsory core competence test. The courses as defined in the prospectus are compulsory components of the Research Master program. During the program, the students are also offered a selection of optional courses. Changes can be made to the student's program in consultation with the program coordinator of student affairs and with the approval of the Examination Board.

4.1.2 Infection and Immunity

All modules and workshops in the program are compulsory. Certain modules can be replaced by equivalent education elsewhere in consultation with the supervisor and with written approval from the Examination Board. The student must keep written evidence of all compulsory and optional components of the program in a file, the "portfolio". This also includes all assessment forms, with the exception of the exam results. This file must be stored digitally in the "Digital Learning Platform" of the program and is accessible to the program at all times.

4.1.3 Molecular Medicine

All course components in the program are compulsory. Applications for exemption from course components are reviewed by the Examination Board if a written request is received from the student

4.1.4 Neuroscience

All modules in the program are compulsory. Changes can be made to the student's program in consultation with the Admissions Committee and with the approval of the Examination Board. If the replacement education is followed with sufficient result then the EC point can be awarded for the workshops that were replaced on presentation of written proof. With regard to module followed elsewhere the related EC points count.

4.2 Exemption

The Examination Board may at the request of a student and after consultation with the Program Director and the relevant examiner waive a part of the program on the basis of knowledge or skills acquired in or outside of higher education

If the exemption is granted on the basis of education that is part of the Research Master Health Sciences or the Research Master Clinical Research, but that has been followed before the student was officially enrolled in the degree program, an exemption with retention of grade will be granted.

5 Practical information review

5.1 Registering for interim exams

5.1.1 Health Sciences and Clinical Research.

Students are automatically registered for the first round of the interim examinations. Students must monitor the situation regarding resit possibilities for ~~any~~ interim examinations themselves. Students must also register for resit examinations themselves. Resit examination dates will be announced via the electronic learning environment or by e-mail. If a student cannot sit the examination for which he or she is enrolled, the student must report this in advance to NIHES. Without ~~a~~ deregistration, a "no show" will be recorded for the examination that was missed and the missed examination counts as an examination attempt.

5.1.2 Molecular Medicine, Infection and Immunity and Neurosciences

The student is automatically registered for the relevant modules of the current academic year. Registering for individual modules and/or tests is not necessary.

5.2 Information about the form of an interim exam

An overview of the subjects that are examined can be found in the study guide and/or the electronic learning environment. The demands for and the form of the interim exam are at the latest on the first day of the course listed on the website, in the electronic learning environment and in Osiris.

5.3 Graduation requirements

Achieving 120 EC credits entitles the student to the degree of Master of Science in the specific domain of the Research Master.