Research Master's programme in Molecular Mechanisms of Disease

Education and Examination Regulations (format curriculum 2015)
(OER: Onderwijs en Examen Regeling)

Paragraph 1 General Rules

Section 1.1 Applicability of the regulations

These regulations apply to the two-year research Master's programme Molecular Mechanisms of Disease further referred to as 'the programme'.

The programme is presented at the Radboud Institute for Molecular Life Sciences (RIMLS) research graduate school, a joint graduate school of Radboud university medical center and the Faculty of Science, Mathematics, and Computing Sciences, both part of Radboud University and further referred to as 'the faculties'.

Section 1.2 Definitions

Those concepts appearing in the regulations, which are covered in the Higher Education and Scientific Research Act, (Dutch: "Wet op het hoger onderwijs en wetenschappelijk onderzoek, 8 October 1992, Stb 593"), will have the meaning ascribed to them in this Act.

The following definitions apply to these regulations:

Academic adviser	staff member who may be consulted by students to be advised about academic and/or personal issues
Academic year	period from September 1 up to and including August 31 of the following year
Act	Higher Education and Scientific Research Act of 8 October 1992 as it currently stands (Dutch: Wet op het hoger onderwijs en wetenschappelijk onderzoek Stb 1992, 593)
Assessor	a scientist of sufficient seniority and expertise, holding a PhD degree
Blackboard	a digital learning environment: course manuals, full details of the courses, timetables and rooms, as well as PowerPoint presentations and other study materials, will be made available through Blackboard
Board of Examiners	Board of Examiners of a programme instituted in terms of the Act
Fraud	action or non-action of a student, where the aim is to make it partially or wholly impossible to judge his/her knowledge, insight and skills. This includes copying or using material from printed or digital sources (plagiarism) when writing essays, reports, theses or examinations
Course	a range of lectures and/or practical trainings on a specific subject resulting in an assessment
Course examination	an assessment of a student's knowledge, insight and skills with regard to a particular course as well as an evaluation of that assessment by at least one Examiner appointed for this purpose by the Board of Examiners. A course examination may consist of several tests, each of which may be assessed on separate occasions
EC	European Credit (Transfer System). Each EC point equals a study load of 28 hours
Electives	either theoretical or practical optional courses in life sciences which the student uses to specialise him/herself. Examples are found in the prospectus
Examiner	person appointed by the Board of Examiners to set and mark course examinations in terms of the Act
External assessor	a PI from another department than the department of the supervisor, who assesses a research training period report, Master's thesis or literature thesis
Junior PI	junior scientist appointed by the Radboud university medical center

	or Radboud university as assistant professor or "tenure-track". A junior PI (jPI) may act as a supervisor or external assessor of a research training period or literature thesis
Knowledge Transfer	seminars, forums, conferences and workshops in life sciences
Master's Examination / final examination:	a review of the student's academic achievements in which the Board of Examiners assesses whether or not all course examinations and assessments of all courses and research training periods that are part of the Master's programme (as defined in the OER), have been successfully completed. The Board of Examiners may decide to complete this review with an overall assessment (in terms of the Act)
Master's thesis	reports of practical training periods
Mentor	senior scientist, also appointed as student adviser especially with respect to elective subjects and research training periods. Mentors discuss progress with their students approximately four times a year
Module	a teaching period on a specific subject
RIMLS	Radboud Institute for Molecular Life Sciences at Radboud university medical center
PI	senior scientist appointed by Radboud university medical center or Radboud university as associate professor or professor. A PI may act as supervisor or external assessor of a research training period or literature thesis
Research training period	a practical project as referred to in the Act, in one of the following forms: a. practical training and experience b. writing a Master's thesis c. writing an assignment d. participating in workshops e. conducting a literature study f. participating in some other educational activity designed for the acquisition of certain skills
Research training period supervisor	Principal Investigator (PI) or junior PI who gives guidance during a research training period
Resit	resubmission of coursework and/or resitting a (course) examination or test
Student Information Point (StIP):	central student information desk on the first floor of the Medical Science Study Centre (Dutch: "studiecentrum medische wetenschappen")
Student Web Record	secured web page containing personal study-related information
Test	assessment set to confirm whether the student has achieved the goals of (a part of) the education programme
Work plan	work plan of the intended research training period, in which the student describes background and research question of the intended project and specifies aims, methods, investigation plan and other activities during the training period. The Board of Examiners assesses the work plan as part of the individual study plan in order to safeguard the academic quality of the training periods and the broadness of the individual programme

Section 1.3 Aim of the programme

This highly selective programme provides a sound balance of theory and practice.

The final qualifications of the programme are the following:

a. broad fundamental knowledge on the molecular mechanisms underlying disease processes in the full width of the molecular life sciences;
b. knowledge about key developments in translational medicine and ability to translate fundamental molecular knowledge into medical experimental research towards new therapies and diagnostics;
c. ability to autonomously formulate a research problem, design and perform scientific research on a high level, keeping up with international standards;
d. competence to participate in scientific discussions and present his/her work in the English language to an international scientific audience;
e. capacity to write at the level of published articles in international peer-reviewed journals;
f. ability to integrate the societal and ethical impact of scientific research at relevant moments and in relevant situations in his/her scientific career;
g. proficiency to move into an international PhD programme or participate in projects at biotechnology companies or the pharmaceutical industry.

Section 1.4 Type of programme

1. The programme is a full-time programme.
2. In a case of for instance illness, pregnancy or child care commitments, the Board of Examiners may allow the individual programme to be adapted at the request of the student.

Section 1.5 Title awarded on completion of the programme

The title of Master of Science (MSc) will be awarded.

Section 1.6 Academic weight

The Master's examination has a weight of 120 credits in accordance with the European Credit Transfer System.

Section 1.7 Language

All classes and assessments are in English, unless the Board of Examiners decides otherwise. An advanced command of English is required to participate in classes and examinations, as stated in the Code of Conduct Foreign Languages of Radboud University Nijmegen. This requirement is satisfied if the student can submit a testimonial of one of the following tests:

- a TOEFL test or an equivalent test certifying a minimum score of 575 (paper test), 232 (computer test), 90 (Internet test);
- IELTS (International English Language Testing System),applicants must achieve an overall minimum test score of 6.5;
- Cambridge EFL examinations, applicants must have obtained a CAE or CPE diploma, both with a minimum pass grade C.

For native speakers and students who have completed their prior education in English, a General Certificate of Education (grade C) or equivalent is sufficient. It is assumed that students who have studied to Bachelor's or equivalent level in the Netherlands will have a sufficient level of the English language and therefore they do not need to submit a TOEFL test or equivalent.

Section 1.8 Additional students

Additional students undertaking certain components of the Master's in Molecular Mechanisms of Disease are expected to adhere to the Rules and Guidelines as stipulated by the Board of Examiners Molecular Mechanisms of Disease.

Paragraph 2 The Master's programme

Section 2.1 Master's programme

1. The programme consists of the following theoretical modules: MED-MMIC, MED-MMEC, MED-MMSS, MED-MM1CF, MED-MM1TR, MED-MM2CF, MED-MM2TR, MED-MM3CF, MED-MM3TR, MED-MMSTA, MED-MM1MC, MED-MM2MC , MED-MM3MC, MED-MMSKA (see Table 1).
2. The programme comprises two research training periods (see Table 1): The first research training period (MED-MMPA) of 22 weeks (31.5 EC), includes a full written report. The second research training period takes either 31 weeks (MED-MMP2B, 45 EC) or 27 weeks (MED-MMP2A, 39 EC). These time periods include writing a Master's thesis. MED-MMP2A can only be performed in combination with a written literature thesis (MED-MMLT, 4 weeks, 6 EC). Research training periods and literature thesis have to be approved by the Board of Examiners as part of the individual study plan.
3. Both research training periods (MED-MMPA and MED-MMP2A or MED-MMP2B) are assessed on: professional attitude and activities, an oral presentation and a written report (MED-MMPA) or Master's thesis which has to be written in the format of a scientific paper with supplements (MED-MMP2A or MED-MMP2B).
4. The student must follow elective courses with a total study load of 11.0 EC (see Table 1). All electives have a minimum study load of 1.5 EC (5 work days) and are graded. Shorter courses may be included in Knowledge Transfer (MED-MMKT, adding up to 3.0 EC, assessed but not graded). A maximum of 6.0 EC of electives may be spent on bachelor's courses, but only if used to repair knowledge deficiencies. All other electives may be chosen from other Master's or PhD studies, or may be composed as an individual course (code: VKO/IND). Electives have to be approved by the Board of Examiners as part of the individual study plan.
5. Study plan: The individual Master's programme must be submitted as a study plan. Guidelines for study plans are to be found in the prospectus. Study plans should include all of the Master's programme (see Table 1), including elective courses and two research training periods, and are to be submitted to the Board of Examiners for approval prior to the start of any of these components. The preliminary study plan can be changed and additions may be made at any time, provided these are approved by the Board of Examiners. The final study plan is submitted before application for the Master's examination, which is assessed according to the approved final study plan.

Table 1: *Credit points guide*

The total programme must add up to at least 120 EC. All courses are graded.

Code	**Course**	**EC**	
MED-MM1CF	Infection, immunity and regenerative medicine	3.5	
MED-MM1MC	Masterclass 1	1.5	
MED-MM1TR	Immunity related disorders and immunotherapy	2.0	
MED-MM2CF	Metabolism, transport and motion	3.5	
MED-MM2MC	Masterclass 2	1.5	
MED-MM2TR	Metabolic disorders	2.0	
MED-MM3CF	Cell growth and differentiation	3.5	
MED-MM3MC	Masterclass 3	1.5	
MED-MM3TR	Developmental disorders and malignancies	2.0	
MED-MMEC	Excellence in communication	1.5	
MED-MMIC	Introduction to Molecular Mechanisms of Disease	2.5	
MED-MMLT**	Literature thesis	6.0	
MED-MMPA	Research training period 1	31.5	
MED-MMP2A*	Research training period 2 – 27 weeks	39.0	
MED-MMP2B*	Research training period 2 – 31 weeks	45.0	
MED-MMSS	Science and society	1.5	
MED-MMSKA	Scientific skills	3.0	
MED-MMSTA	Genomics and statistics	3.0	
EL#	Electives	11.0	
	Total	**120**	EC

* Students either do MED-MMP2B or MED-MMP2A plus MED-MMLT
** literature thesis (6 EC) solely in combination with MMP2A, not as an independent component
#A maximum of 6 EC of electives can be used to fill deficiencies at bachelor's level. All other elective courses must be of master's or PhD level.
3 EC may be used for knowledge transfer (MED-MMKT)

Section 2.2 Form of tuition

The programme entails different forms of tuition:

1. (*Compulsory) theoretical courses*: these courses may consist of four distinct forms of tuition: lectures and demonstrations, discussions, enquiry-based projects, communication skills training.
2. *Research training periods:* the programme includes two compulsory research training periods, in which the student conducts research under supervision of a scientist (Principal Investigator or junior Principal Investigator). Research training periods are concluded with a full written report (MED-MMPA, 1st research training) or a Master's thesis (MED-MMP2A or MED-MMP2B, 2nd research training). Work plans for research training periods must be approved by the Board of Examiners as part of the study plan before the start of the research training period.

3. *Elective courses:* elective courses may be either theoretical or practical courses, which the student uses to specialise him/herself. Examples of elective courses are found in the prospectus. Elective courses must be approved by the Board of Examiners as part of the study plan before the start.
4. Students receive support and guidance from their personal mentor throughout the programme, as described in the prospectus.

Paragraph 3 Assessment of the programme

Section 3.1 Form of assessment

1. Assessments are in the form of written course examinations, assignments, or presentations.
2. All components of the programme are assessed. Course examinations and research training periods of the individual Master's programme are to be graded numerically. The Board of Examiners may decide that a student's work can be assessed in another form if a student requests this in writing.
3. Students with disabilities are allowed to write course examinations in a manner best suited to their particular disability. Requests to this effect are to be submitted to the Board of Examiners, prior to the assessment. If necessary the Board of Examiners will obtain expert advice before taking a decision.
4. In case of oral presentations at least two assessors from the MMD Master's programme are present.
5. Course assessment regulations are to be drawn up by the Examiner and must specify the requirements to be met when a student is assessed, how the final grade is determined and how candidates who fail at the first attempt will be reassessed; in case of course examinations consisting of various tests, the Examiner specifies whether students are to be reassessed in any or all of the tests.
6. Both research training periods are to be assessed by different (j) PI's. Detailed assessment regulations for research training periods are printed on the assessment form.
7. Assessment regulations need approval of the Board of Examiners.
8. Assessment guidelines are described in the Rules and Guidelines issued by the Board of Examiners prior to the start of each academic year.
9. Electives are subject to assessment of the faculty involved. Students are provided with access to the various assessment forms via Blackboard. Assessment regulations for individually composed electives are to be provided by the Examiner prior to the start of the assignment and have to be approved by the Board of Examiners.

Section 3.2 Determination and announcement of course examination results

1. Written course examinations, including assignments, are evaluated by Examiners from the relevant course.
2. The Examiner determines the result of a written course examination within four weeks from the day on which it was written.
3. The Examiner provides the faculty administration (Radboudumc Health Academy) with the information required in order to keep record of students' progress and give students access to their results via their Student Portal.
4. Results are announced at least two weeks before the resit course examination takes place.
5. Students who have passed a course examination are not allowed to resit that course examination unless permission has been obtained from the Board of Examiners.

6. In all cases the grade most recently obtained will count towards the Master's examination, taking into account the rules set by the Board of Examiners regarding Judicia (distinctions).
7. Students will be allowed a minimum of 5 days between the opportunity for perusal (see section 3.5) and a resit. This does not count for special course examinations as stipulated in the Rules and Guidelines as issued by the Board of Examiners.
8. The results of courses and research training periods are numerically graded on a scale of 1-10, with intervals of 0.5, where 6.0 or higher is a pass and 10 is exceptional. The grade 5.5, however, cannot be given. "ND" stands for Not Done; "GU" is used to indicate that no mark can be assigned due to incomplete or lack of data. Notwithstanding any of the foregoing, the results of Knowledge transfer (MED-MMKT) and Scientific skills (MED-MMSKA) are qualified with P (Pass) or F (Fail).
9. When given access to the grade attained for a course examination the student's attention is drawn to the right of perusal of evaluated work as defined in 3.5. below, as well as the possibility to appeal against a decision of an Examiner or Board of Examiners, as stipulated in the Rules and Guidelines of the Board of Examiners.
10. The Examiner must keep written course examination and assessment papers for two years.

Section 3.3 Fraud

If fraud or plagiarism is suspected or proven in a course examination, test or written assignment, the Board of Examiners can bar the student involved from taking any further part in the relevant course examination, test or assignment, as stipulated in the Rules and Regulations of the Board of Examiners.

Section 3.4 Period of validity

1. The credits for courses completed in the programme are valid for four years.
2. In individual cases the Board of Examiners may extend the validity of a successfully completed course for a stipulated period.

Section 3.5 Right of perusal of evaluated work

1. On request, students may inspect their examination papers (answer sheets) after their work has been evaluated, during a period of four weeks after the announcement of the results of a written course examination have been made accessible via their Student Portals. During the period stipulated above, interested parties may be notified of the questions and assignments of the relevant course examination, and if possible of the norms according to which the student's course examination was evaluated.
2. In contrast to the articles above, an Examiner may decide that a meeting is convened on an assigned moment at an assigned place. If the student cannot be present because of circumstances beyond his/her control, an extra opportunity of inspection is offered within four weeks after the student was notified about his/her results. Students are not to review papers of any other students.

Section 3.6 Dispensation

The Board of Examiners may give a student, if so requested and after hearing the Examiner, dispensation for a course examination, test or certain components of a programme. This means that the student is not required to take those components but may, as appropriate, be required to take alternatives. Any such request has to reach the Board of Examiners before the start of the specific component or course examination. The student will receive the decision of the Board of Examiners in writing, within four weeks after the Board has received the request.

Section 3.7 Exemption based on previous (academic) achievements

In limited circumstances, previous (academic) achievements may entitle candidates to exemption from (a) certain component(s) of the programme. Exemption decisions are made by the Board of Examiners and the procedure is outlined in the Rules and Guidelines set by the Board of Examiners.

Section 3.8 Results of the Master's examination /Final examination

1. The Board of Examiners determines the final grades once the student has submitted adequate proof that s/he has successfully accomplished all courses mentioned in the final individual study plan and has met all requirements of the programme.
2. Before determining the final results, the Board of Examiners will evaluate the Master's thesis.
3. The result of the Master's examination is determined by the Board of Examiners at least four times per academic year, on dates published in the prospectus before the start of the academic year.

Section 3.9 Degree

1. Candidates who have successfully completed the Master's examination will be conferred the academic degree Master of Science (MSc). This degree will be recorded on the Master's certificate.

Section 3.10 Judicia (distinctions)

1. The Board of Examiners will judge whether the Master's certificate should be awarded the distinctions of cum laude or summa cum laude. Based on the weighted mean of the courses stipulated in section 2.1, Table 1*, the following judicia can be awarded:
   No judicium: the weighted mean of the grades assigned is below 8.0.
   Cum laude: the weighted mean of the grades assigned is ≥ 8.0 and < 9.0.
   Summa cum laude: the weighted mean of the grades assigned is ≥ 9.0.
   * *This relates to courses assessed with a mark.*
   A cum laude or summa cum laude is awarded if the results of all course examinations and electives are 7 or more and the results of both research training periods are 8 or more.
2. In order for the Board to consider any distinction as mentioned in paragraph 1 here above, all results have to be obtained the first time the student takes a course examination; only one resit may have been involved in obtaining any of the results of the programme as stipulated in section 2.1.
3. The Board of Examiners can deviate from the criteria in paragraphs 1 and 2 in special circumstances.

Paragraph 4 Prior Education

Section 4.1 Admission requirements for Master's programme

1. To be admitted to the programme, candidates must:
   a. have a Bachelor of Science (BSc) degree in life sciences such as Cell Biology, Molecular Medicine, Biomedical Sciences, Biochemistry, Biotechnology or Molecular Biology or have completed training which the Board of Examiners deems to be of a comparable level;
   b. have BSc examination results in the top of their group as assessed by the selection committee for this programme, the Board of Examiners may make exceptions in special cases;

c. have chosen the research-oriented specialisation in their BSc programme, where possible;
d. have an excellent command of English.

2. In addition to the prior education or the qualities of the candidate, at least two members of the entrance selection committee of the Board of Examiners will hold an individual interview (in English) with the candidate. Admission to the programme is dependent on this interview and final overall judgement of the Board of Examiners of the Master's programme Molecular Mechanisms of Disease.

Paragraph 5 Tuition

Section 5.1 Administration of academic progress

1. The Faculty will keep record of students' individual academic results.
2. The Faculty will provide each student with access to their results at least once every semester.

Section 5.2 Coaching

1. The Faculty is responsible for introduction and coaching of students enrolled for the programme. This includes guidance in respect of possible avenues of study both within and outside the programme.
2. Students who regularly, or over an extended period, achieve little or no academic result will be invited for an interview with their Mentors to discuss whether to continue or terminate their studies. In case of persistent unsatisfactory results, the Mentor will consult the Board of Examiners in order to furnish pressing advice for the student to abandon the programme.

Paragraph 6 Concluding regulations

Section 6.1 Determining this OER/Amendments

1. Determining or amending the Education and Examination Regulations (OER) is the responsibility of the Dean of the Radboud university medical center.
2. In terms of these regulations, an amendment may not adversely affect any student already enrolled under the provisions of this OER.

Section 6.2 Declaration

The Dean of the Radboud university medical center is responsible for posting these regulations, the Rules and Guidelines laid down by the Board of Examiners and any amendments to these documents in an appropriate manner. Any interested party can obtain a copy of these documents from the Faculty Office.

Section 6.3 Coming into effect

These regulations will come into effect on September 1, 2016.