

**Rules and Guidelines of the Board of Examiners
 Research Master’s programme in Molecular Mechanisms of Disease
 2024-2025 Academic Year**

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Rules and Guidelines
Research Master's programme in Molecular Mechanisms of Disease

(Regels en Richtlijnen voor Tentamens en Examens)

Article 1 Definitions

The following definitions apply to these Rules and Guidelines:

- a. HERA: Higher Education and Research Act ([Wet op het Hoger onderwijs en Wetenschappelijk onderzoek](#)). The Dutch text of HERA is authoritative.
- b. Contact moment: a moment of teaching during which a lecturer is present (physically or online);
- c. Examination: a component of a final examination, as referred to in Article 7.10, first paragraph, of HERA, that is concluded with an assessment linked to a number of study credits (EC)
- d. Partial examination: an examination of the knowledge, understanding and skills of the student, as well as the assessment of the results of this examination, which in coherence with one or more other partial examinations constitutes the examination as referred to in Article 7.10, first paragraph of HERA. Where these regulations refer to examination¹, this term may also be taken to mean partial examination, unless stipulated otherwise;
- e. Final paper: an assessment of the student's academic achievements in the programme's specific discipline (Master's thesis);
- f. Resit: an opportunity to resit an examination as referred to in Article 7.10, first paragraph of HERA;
- g. Regulations on Fraud: the Regulations on Fraud established by the dean through a separate decision. In order to provide the student with proper and clear information, the Regulations on Fraud have been attached to these regulations as Appendix I;
- h. Assessment regulations: description of the form and components of an examination, the requirements for taking part in these components, and the manner in which the result is determined;
- i. UMC-Raad: the faculty joint assembly of Radboudumc;
- j. Academic adviser: staff member who may be consulted by students to be advised about academic and/or personal issues;
- k. Academic year: period from 1 September up to and including 31 August of the following year;
- l. Assessor: a scientist of sufficient seniority and expertise, holding a PhD degree, who assesses an oral presentation or written report, Master's thesis or literature thesis;
- m. Board of examiners: a committee appointed by the dean of Radboudumc in accordance with Article 7.12a of HERA;
- n. Brightspace: a digital learning environment. Course manuals, full details of the courses, assessment regulations, timetables and rooms, as well as PowerPoint presentations and other study materials, will be made available through Brightspace;
- o. Course (educational unit of study). Every organized teaching activity that is linked to a number of study credits and concluded with a test/examination;
- p. EC: European Credits (study credits), being units that express study load in accordance with the European Credit Transfer System, whereby 1 EC represents 28 hours of study. The study load of an academic year is 60 study credits, which is equivalent to 1680 hours of study;
- q. Electives: either theoretical or practical optional courses in molecular medicine and/or life sciences which the student uses for specialisation or broadening of knowledge;
- r. Examiner: the person designated by the Board of Examiners to administer the tests and examinations, in accordance with Article 7.12 of HERA;

¹ In this translation, the concept of 'Bachelor's or Master's examination' is used for the Dutch concept of 'examen', and 'examination' for the Dutch concept of 'tentamen'.

- s. External assessor: a Principal Investigator (PI) from another department than the department of the supervisor, who assesses a research training period (oral presentation and/or report), Master's thesis or literature thesis;
- t. Knowledge Transfer: seminars, forums, conferences and workshops in life sciences;
- u. Master's 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 regulations), have been successfully completed. The Board of Examiners may decide to complete this review with an overall assessment (in terms of HERA);
- v. Mentor: senior scientist, also appointed as student adviser especially with respect to elective subjects and research training periods. Mentors discuss progress and future career perspectives with their students approximately four times a year;
- w. Principal Investigator (PI): scientist appointed by Radboudumc or RU as assistant professor, associate professor or professor. A PI may act as supervisor or external assessor of a research training period or literature thesis;
- x. Research training period (internship): a practical project as referred to in HERA, in the following form: practical training and experience, writing a report or Master's thesis;
- y. Research training period supervisor: a Principal Investigator (PI) who gives guidance during a research training period;
- z. RIMI: Research Institute for Medical Innovation at Radboudumc;
- aa. Study plan: the individual Master's programme must be submitted as a study plan. Study plans should include all educational units of the Master's programme (see EER, Appendix II Examination programme Molecular Mechanisms of Disease), including elective subjects 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 units of study.
- bb. 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.
- ab. [EER: Education and Examination Regulations](#) (*Onderwijs- en Examenregeling (OER)*) for the Master's degree programme Molecular Mechanisms of Disease.

Article 2 The Board of Examiners

1. The Board of Examiners consists of six members: a chair, a vice chair and four members each appointed by the Dean of the Radboudumc. At least one of the four members is an external member, i.e. not employed by Radboudumc. A secretary is appointed to the Board of Examiners in order to maintain accurate record of the Board's proceedings.
2. In order to comply with HERA, the Board of Examiners:
 - a. determines in an objective and expert manner whether a student satisfies the conditions set out in the Education and Examination Regulations (EER) of the Master's programme with respect to the knowledge, insight and skills to earn a Master's degree;
 - b. sets guidelines and instructions for examiners and students (i.g. these Rules and Guidelines), within the framework of the Education and Examination Regulations (EER) for the Master's degree programme Molecular Mechanisms of Disease as drawn up by the programme director and approved by the Dean of the Faculty;
 - c. appoints examiners; secures the quality of (course) examinations; sets rules to ensure that assessment procedures are followed correctly and that marking is accurate, fair and consistent; monitors progress of students; decides upon student's applications for study plans, research training periods and electives; assesses whether students are eligible to complete their Master's

- studies; confers Master's awards and, if appropriate, distinctions (iudicia), and discusses other related issues;
- d. selects applicants for the Master's programme and advises upon their admission.
3. Approval of the Master's (final) examination results requires the chair or vice-chairman, and at least two members of the Board of Examiners to be present. The Board of Examiners decides by majority vote.
 4. The chair and vice-chairman are responsible for the day-to-day business of the Board of Examiners.

Article 3 Examiners

1. The Board of Examiners has established a profile for examiners. Minimal requirements to be appointed as examiner by the Board of Examiners are: an appointment with Radboud University or Radboudumc; and a Basic Teaching Qualification (Basiskwalificatie Onderwijs) or University Teaching Qualification (UTQ).
2. In accordance with HERA, examiners:
 - a. issue proof to attest that a student sat a course examination by determining the result of this course examination;
 - b. provide the Board of Examiners with the information requested;
 - c. follow the instructions the Board of Examiners set in these Rules and Guidelines or any further instructions based on these Rules and Guidelines and/or the EER.

Article 4 Students

In accordance with HERA, students comply:

- a. with these Rules and Guidelines set by Board of Examiners;
- b. with any further instructions given by the Board of Examiners based on these Rules and Guidelines and/or the EER.

Article 5 Language

Education and assessments are in English. Elective courses may be followed in other languages, provided they have been approved as part of the study plan by the Board of Examiners.

Article 6 Course examinations

1. A course examination can be a written or practical assessment and may consist of more than one partial examination, each of which may be assessed on separate occasions. In case of more than one partial examination, the examiner specifies in the course assessment regulations how the final grade for the course examination will be determined.
2. Course assessment regulations for course examinations need to be approved by the Board of Examiners and are to be drawn up by the examiner in a template provided by the Board of Examiners (see Appendix III to these Rules and Guidelines).
3. Questions and assignments of an assessment must be in accordance with the contents of the sources and learning objectives on which an assessment is based. The sources and learning objectives are to be found in the course manual available at the Brightspace MMD-student community.
4. Questions and assignments have to be clear and give indications as to the details required in the answers.
5. Examiners are to have their course examinations peer-reviewed. Each course examination should include a cover page which includes the name of the examiner and name(s) of peer reviewer(s) who evaluated the course examination (see Appendix IV to these Rules and Guidelines).
6. Model answers have to be made available by listing the major points a correct answer should contain. Model answers do not need to be published and/or posted for students after the course examination.
7. The course examination question paper should indicate the weighting of each component and/or (sub)question to clarify how the total marks for the course examination can be achieved.

8. The examiner draws up an assessment matrix to ensure that examination questions match the learning objectives.
9. The examiner ascertains that criteria used to determine grades, enable to clearly distinguish between the differences in achievement.
10. If the result of an course examination is lower than 5,5 or if the result is indicated as 'ND' (no show - 'niet deelgenomen', or 'did not participate') the student has to sit that examination again, keeping in mind that there are two opportunities per academic year to sit a course examination (see EER, article 21).
11. Students who passed a course examination are allowed to resit that course examination, provided the conditions are met as stipulated in EER, article 9, Appendix III and Appendix VI.
12. A resit grade for any assessment replaces the grade of an earlier attempt and is therefore the final grade that counts towards the Master's examination, taking into account Appendix VI Guidelines for Distinctions Molecular Mechanisms of Disease of the EER.
13. If the result of a resit is lower than 5.5 (or a Fail), the student has to follow the course again in the following academic year before sitting the course examination, taking into account possible changes in contents and manner of assessment.
14. Assessment regulations for course examinations as approved by the Board of Examiners are added in Appendix III to these Rules and Guidelines.
15. Dates and times of regular written course examinations are specified in My Timetable . In case of any sudden unforeseen change in schedules, students shall be notified via Brightspace or their RU-email addresses.
16. Examiners have to inform students of date and time on which their examination papers (answer sheets) may be perused after being evaluated and graded.
17. In the event of unforeseen circumstances, the Board of Examiners may decide to (partially) cancel or (partially) change examinations in accordance to the testing frameworks for the educational period in question as adopted by the Executive Board.

Article 7 Study plans

1. Details on completion of a study plan which includes requests for electives (including Knowledge Transfer (MED-MMKT) and/or a Literature Thesis (LT)) and titles of research training period reports, are to be found on the study plan form on the Brightspace MMD Programme Information.
2. Students are not to commence any educational unit of their study plan without prior written approval of the Board of Examiners.
3. Approval for study plans can be requested by submitting a study plan via <https://radboudumc.topdesk.net/> no later than two weeks before a meeting of the Board of Examiners.
4. Study plans and work plans are discussed by the Board of Examiners during regular Board meetings. A meeting list is published on the Brightspace MMD Programme Information.
5. A study plan can only be approved by the Board of Examiners after the student has signed the study plan, thereby confirming that the study plan was discussed with their mentor.
6. Electives, including Knowledge Transfer (MED-MMKT) and/or a Literature Thesis (LT), to be included in a study plan, must comply with the conditions of EER, article 15, and need approval of the Board of Examiners.
7. Electives are to be graded numerically. Exceptions are Knowledge Transfers (MED-MMKT) and, when approved by the Board of Examiners, a maximum of 6 EC of individual electives may be qualified with Pass (P) or Fail (F).
8. Electives approved by the Board of Examiners, and graded Pass or 6.0 or higher, may not be withdrawn from previously approved study plans.
9. Students are responsible for ensuring that approval by the Board of Examiners of their study plan takes place at least three weeks before the start of any of the educational units included in the study plan. Any additional electives to a study plan bringing the total number of credits above the required 120 EC

to a maximum of 138 EC may be of influence to any possible distinctions (but not the GPA) as stipulated in article 16 of these Rules and Guidelines.

10. In case of individual electives and/or electives graded *outside* Radboud University or Radboudumc, it is the responsibility of the student that assessments are submitted correctly, see article 10 of these Rules and Guidelines.
11. Approval of study plans by the Board of Examiners will be sent to the student's RU-email address, within ten days after the Board meeting in which the study plan was considered.
12. It is the student's responsibility that in case of any changes in their study plan, the adapted study plan is submitted for approval of the Board of Examiners.
13. When a student wishes to graduate, the Board of Examiners checks whether all electives, including Knowledge Transfer and/or a Literature Thesis, and research training periods included in the final study plan, are graded. This means that the results have to be registered in Osiris. Any educational units not included in the study plan, whether graded or not, will be ignored.

Article 8 Work plans for research training periods

1. Students are not to commence a research training period without prior written approval of the Board of Examiners.
2. The Board of Examiners ensures that research training periods meet the academic standards required for the Master's programme. This implies that host departments are required to have a good academic standard and are affiliated with or part of a PhD awarding body. In case the host department is not affiliated with a PhD awarding body (e.g. a department of a company in the biomedical field), the supervisor of the research training period needs to be affiliated with a PhD awarding body.
3. Application forms for work plans regarding Research Training Period 1 (RTP1) and Research Training Period 2 (RTP2) and Traineeship Agreements (TA) can be found in the Brightspace MMD Programme Information.
4. Work plans for research training periods to be considered for approval by the Board of Examiners, must be approved by the internship supervisor and submitted to the Board of Examiners via Osiris Case at least two weeks before the Board of Examiners' meeting in which students want the Board of Examiners to consider and decide upon their applications.
5. Work plans for Research Training Period 1 (RTP1) need to be signed by the student and approved by the primary supervisor in Osiris Case.
6. Work plans for Research Training Period 2 (RTP2) need to be signed by the student and approved by the primary supervisor in Osiris Case. In case a Research Training Period 2 is not taken at Radboudumc or Radboud University, a Traineeship Agreement (TA) is also required. A Traineeship Agreement is to be signed by the host department, the student involved and the programme director Molecular Mechanisms of Disease who signs the Traineeship Agreement on behalf of Radboud University.
7. Students are responsible for ensuring that approval by the Board of Examiners of work plans for research training periods takes place at least six weeks before the start of a research training period.
8. Students are advised to submit their work plans for Research Training Period 2 no later than two weeks prior to the September or October Board meeting. This in order to have sufficient time to make any adjustments prior to the start of the research training period, in case this is required by the Board of Examiners.
9. If the Board of Examiners asks a student to make adjustments to a work plan, the student has to clearly indicate the adjustments by using the option 'track changes' in Microsoft Word.
10. In case of a change in the research question or specific aims, the student submits an adapted work plan accompanied by a motivation, within two weeks after this change was found necessary. Changes are to be indicated by using the option 'track changes' in Microsoft Word .
11. Students are responsible for ensuring that the titles of research training periods are included correctly in their final study plan and in the assessment in Osiris Case. More instructions are given in the Graduation Guidelines provided by the Board of Examiners.

12. Decisions by the Board of Examiners upon requests regarding work plans will be sent to the student's RU-email address, within ten working days after the Board meeting in which the plan was considered.

Article 9 Supervision and grading of research training periods

1. Research training periods are assessed by means of several assessment forms (supervisor and assessor), to be obtained from the Brightspace MMD Programme Information.
2. Reports of research training periods are subjected to a plagiarism check, which is embedded in the assessment procedure.
3. A research training period supervisor must be a Principal Investigator (PI). The research training period supervisor provides the means, both material and intellectual, to enable the student to carry out their research project and arranges regular meetings to discuss progress. The research training period supervisor will also support the student by giving feedback and asking the student to reflect on their progress in achieving the final qualifications, as expressed in the Master's thesis.

Students are responsible for finding research training period supervisors. Supervisors are allowed to only supervise students who are working on the research line of this PI, and are directly supervised by this PI. Supervisors are allowed to supervise only one MMD student at the time. It is not allowed to primarily supervise MMD students which are part of another PI group. Information on supervisors at the RIMI can be found on the RIMI website.

Students are to be aware of the following:

- a. daily supervision of a research training period may be carried out by a daily supervisor that may be a different person as the research training period supervisor. A daily supervisor may be a postdoc or PhD student preferably in their second, third, or fourth year. A daily supervisor is the first point of contact for the student, but is *not* the one who is responsible for final assessment of the research training period;
- b. external assessor: the report of Research Training Period 1 must be independently assessed by the supervisor (assessor 1) and one external assessor (assessor 2), both appointed by the Board of Examiners. For the report of Research Training Period 2, two external assessors (assessor 2A and assessor 2B) are appointed by the Board of Examiners. Supervisors of the student's Research Training Period 1 are excluded as assessors for Research Training Period 2 and the student's mentors are excluded as assessors for both Research Training Period 1 and 2.

The final grade for Research Training Period 1 is established as follows:

- 15% grade for the written research training period report, graded by the supervisor (assessor 1);
- 50% grade professional attitude and activities during the Research Training Period, graded by the supervisor (assessor 1);
- 10% oral presentation and/or discussion, graded by the supervisor (assessor 1);
- 25% grade research training period report, graded by the external assessor (assessor 2).

In case the difference between the report grades of external and supervisor is more than 1 grade point, a third assessor (assessor 3) will be appointed by the Board of Examiners. The final grade for the report will then be average of the three grades.

The final grade for Research Training Period 2 is established as follows:

- 40% grade for professional attitude and activities during the Research Training Period, graded by the supervisor (assessor 1);
- 10% oral presentation, graded by the supervisor (assessor 1);
- 50% grade report, graded by external assessor 2A (25%) and external assessor 2B (25%).

In case the difference between the report grades of both external assessors is more than 1 grade point a third assessor (assessor 3) will be appointed by the Board of Examiners. The final grade for the report will then be the average of the three grades.

4. Research training period reports must be uploaded in Osiris Case in order to be graded, within six weeks after completion of the research training period as is indicated by the end date as stipulated on the approved work plan.
5. Deadlines for students and assessors/supervisors of students who want to graduate in August:
 - students submit their research training period reports no later than 15 July in Osiris Case;
 - assessors complete their assessments in Osiris Case no later than 15 August.

Article 10 Results and authenticity of assessment forms

All assessment forms are available at the Brightspace MMD Programme Information.

1. Results of assessments are expressed according to the EER, articles 30 and 30a.; exemptions are graded as 'EX'/'VR' ('exemption'/'vrijstelling' according to EER, articles 17 and 30a).
2. Grades assigned to a research training period, individual elective and/or literature thesis need to be motivated in writing by the assessor(s) and/or examiner in question.
3. No grades will be registered in Osiris without an authentic assessment form, authenticated by the examiner or supervisor (not a daily supervisor) and/or external assessor as appointed by the Board of Examiners (i.e. as agreed upon via an approved study plan or work plan).
4. An assessment form regarding a research training period is considered authentic *only* when it is uploaded in Osiris Case by the supervisor or external assessor.
5. Assessment forms submitted by a student are *not* considered authentic, which means that the grade will not be registered.
6. Assessment forms that cannot be uploaded personally by an examiner, supervisor and/or assessor in Osiris, must also be sent to StIP via email (signed by examiner, supervisor or assessor) at stip@radboudumc.nl \

Article 11 Right of perusal and inspection

1. For a period of at least twenty working days following the publication of an examination result , the student is entitled, to peruse and inspect the assessed work.
2. For the period referred to in the first paragraph , any student who sat the examination is entitled to inspect the questions and/or assignments set for this examination and the standards used in the assessment.
3. Notwithstanding the provisions of paragraphs 1 and 2 , the examiner may decide that perusal shall take place for all students at the same time, on a pre-defined date, time and location. If a student is unable to attend this collective perusal session due to demonstrable circumstances beyond their control, a separate perusal opportunity can be arranged, upon request, preferably within the time period referred to in paragraph 1 .
4. If the examination involves an examination format to which the perusal and inspection procedure described in paragraphs 1 and 2 cannot be applied, Appendix III of the EER describes how perusal is to be organized.
5. In any event, the opportunity for perusal is offered no later than 5 working days prior to the first following opportunity to sit the examination.
6. The provisions in paragraph 1 through 5 also apply to partial examinations.

Article 12 Special requests from students

1. Any student's request:
 - a. for an exemption as meant in EER, article 17;
 - b. for a replacement of study units or dispensation as meant in EER, article 18;
 - c. to have a student's work assessed in another format as meant in EER, article 28,

must be made in writing, must be motivated and must be submitted to the Board of Examiners via <https://radboudumc.topdesk.net> least four weeks before the start of the relevant course or event so as to allow the Board to come to an informed decision and if needed to seek expert advice before taking a decision.

2. The decision, or delay (if any) in taking a decision, will be sent to the student's RU-email address within four weeks after the request was made.
3. In case of exceptional personal circumstances it is the responsibility of the student to provide the Board of Examiners in advance of their meeting, at the earliest opportunity, with any relevant information.

Article 13 Requests for alternative assessment arrangements for students with special needs

1. Requests for alternative assessment arrangements should be submitted prior to the assessment, at the earliest opportunity, to the Board of Examiners via <https://radboudumc.topdesk.net/>. A separate request must be made for each assessment for which an alternative arrangement is to be considered. Prior to making a decision, the Board may seek expert advice.
2. The student will be informed digitally in writing of the decision, or delay (if any) in taking a decision, within four weeks after the request was made.

Article 14 Discord over course examinations, examination irregularities

The Board of Examiners may declare a course examination and/or partial examination of the Master's programme invalid if the Board of Examiners is of the opinion that the assured quality and/or Master's level of a course examination and/or module examination is insufficient.

Article 15 Formal complaint procedure in case of discord in relation to a decision of an examiner or a decision of the Board of Examiners

1. Decisions pursuant to these regulations are sent digitally to the student's RU-email address.
2. A student can appeal against any decision made under these regulations within six weeks following the date on the decision in question, by lodging a notice of appeal at the [Examinations Appeals Board](#) (College van Beroep voor de Examens (CBE)), online or in writing to CBE, Postbus 9102, 6500 HC Nijmegen.

Article 16 Distinctions (iudicia)

The Board of Examiners judges whether the Master's certificate should be awarded the distinctions of *cum laude* or *summa cum laude*, according to the *Guidelines for Distinctions Molecular Mechanisms of Disease*, see EER Appendix VI.

Article 17 Final Master's examination and degree certificate

1. Assignment of EC credits for the various course examinations and research training periods of the programme, is stipulated in the EER, Appendix II.
2. In order to graduate,
 - all final grades have to be 6.0 or above;
 - electives graded by Pass/Fail (≤ 6 EC) are graded as Pass;
 - the study plan contains at least 120 EC.
3. Students who are eligible to complete their final studies in August and have their Master's degrees conferred in September, must ensure that all grades are available before the grade entry deadline of 15 August.
4. In the September meeting, the Board of Examiners will evaluate the student's results. If the Board of Examiners confirms that the student has met with all requirements, the student is allowed to participate in the official graduation ceremony in which the degree will be awarded.
5. Students who defer their graduation to a later date:

- ensure that all grades are available at least three weeks before the Board meeting in which they want the Board of Examiners to determine whether they have met all requirements of the Master's programme;
 - notify the Board of Examiners of their intention to graduate via <https://radboudumc.topdesk.net/> no later than three weeks before the previously mentioned meeting of the Board;
 - send in their final study plan via <https://radboudumc.topdesk.net/> no later than three weeks before the previously mentioned meeting of the Board of Examiners.
6. The official graduation date, i.e. the date written on the official Master's certificate, for those who graduate in August, will be the last working day of the academic year. For those who graduate later in the academic year, the official graduation date is the date of the Board meeting in which the Board of Examiners has decided that the student has met all requirements for graduation as laid down in EER, article 34.
 7. The official Master's certificate will be signed by at least the Chair of the Board of Examiners and the Secretary to the Board of Examiners.
 8. A diploma supplement which comprises a summary of the courses accomplished during the Master's programme is attached to the Master's certificate. In addition any educational unit that brings the total number of credits above the 120 EC required, will be mentioned, provided it was included in the student's final study plan and approved by the Board of Examiners.
 9. Neither Radboud University, nor Radboudumc, nor the Board of Examiners hold any copies of official diplomas and/or diploma supplements.

Article 18 Graduation ceremony

1. Graduation ceremonies are convened in September and, in case of sufficient participants, one other date in each academic year.
2. Graduation ceremonies take place in public unless the Board of Examiners specifies otherwise.

APPENDICES to RULES AND GUIDELINES

Appendix I RU Regulations on Fraud

Paragraph 1 Introductory provisions

Article 1. Purpose and scope of these regulations

To prevent fraud during examinations and bachelor/master examinations, as referred to in article 7.12b *WHW*, relating to the education and examination in the Molecular Mechanisms of Disease programme of Radboud University (hereinafter: RU), the dean of the faculty of Medical Sciences adopts the following regulations.

Article 2. Definitions

The terms that are used in these regulations – in so far as these terms are also used in the Higher Education and Research Act (*Wet op het Hoger onderwijs en Wetenschappelijk onderzoek* (hereinafter: HERA)) or the Education and Examination Regulations of the degree programme (hereinafter: the EER) – have the same meaning that is given to these terms in HERA and the EER.

Paragraph 2 Definition fraud, procedure and sanctions

Article 3. Definition of fraud

1. At RU, fraud is understood to mean any act or omission by a student which, in its nature, is intended to have as an effect that proper assessment of the knowledge, understanding and skills of that student, or another student, is made fully or partially impossible.
2. Fraud is in any case understood to mean:
 - a) fraud when sitting written examinations, including
 - i. having materials available which are not permitted under the House Rules Examinations Rooms RU Regulations (*Regeling Huisregels Tentamenruimten RU*);
 - ii. copying or exchanging information;
 - iii. passing oneself off as someone else, or being represented by someone else during examinations or bachelor/master examinations;
 - b) fraud when producing theses and other papers, including
 - i. plagiarism in the sense of using or copying someone else's texts, data or ideas without complete and correct source references, plagiarism in the sense of copying the work of another student and presenting this as one's own work and other specifically academic forms of plagiarism;
 - ii. fabricating (making up) and/or falsifying (distorting) research data;
 - iii. submitting a thesis or any other paper that was written by someone else.
 - c) other fraud in the context of examinations or bachelor/master examinations, including
 - i. taking possession of assignments, answer keys and the like, prior to the time the examination or bachelor/master examination is to take place;
 - ii. changing answers to assignments in an examination or a bachelor/master examination after it has been handed in for assessment;
 - iii. providing incorrect information when applying for an exemption, extension of validity period, and the like, of an examination or a bachelor/master examination.
3. For the purpose of these regulations, an attempt to commit fraud will also be seen as fraud.

Article 4. Procedure establishing fraud

1. When fraud is suspected, the board of examiners or the examiner immediately informs the student of this suspicion. If the suspicion of fraud is established when the examination is administered, the board of examiners or the examiner will allow the student to complete the examination.
2. The board of examiners or the examiner may order the student to make any material related to the suspicion of fraud available to them.
3. For the purposes of the provisions in paragraphs 1 and 2 of the present article, examiner is also understood to mean the invigilator or any other RU member of staff.
4. The board of examiners or the examiner drafts a report of the suspicion of fraud. The report drafted by the examiner will be sent to the board of examiners without delay.
5. The board of examiners makes the report referred to in paragraph 4 available to the student without delay and then starts an investigation into the matter. The board of examiners provides the student with the opportunity to respond to the report in writing. The board of examiners hears both the examiner and the student.
6. Within four weeks following the date the report was made available to the student, the board of examiners decides whether fraud was actually committed. The board of examiners informs both the student and the examiner of their decision in writing. The four-week period may be extended by two weeks.

Article 5. Remedial action

If the board of examiners has established fraud:

- a. the board of examiners declares the relevant examination invalid, and;
- b. the board of examiners includes a statement in the student's student file that it has established fraud and, if applicable, which sanctions have been imposed.

Article 6. Sanctions

1. If the board of examiners has established that fraud has been committed, the board of examiners may:
 - a) determine that the student may not sit one or more examinations during a period to be set by the board of examiners, which period amounts to a maximum of one year;
 - b) determine that no distinction will be awarded on the degree certificate;
 - a) make a recommendation to the Dean of the Honours Academy that the student should not be admitted to the honours programme of the university or the faculty or recommend that the student's participation in the honours programme of the university or the faculty should be ended.

If the board of examiners has established that *serious* fraud has been committed, the board of examiners may also

- b) make a recommendation to the executive board that the student's registration for a degree programme should be terminated with definitive effect.
2. After the board of examiners has established that serious fraud has been committed, the executive board – upon the board of examiners' recommendation – may terminate the student's registration for a programme with definitive effect.
3. The sanctions referred to in this article are imposed as from the day following the date the student is notified of the decision that sanctions are imposed.

Paragraph 3 Transitional provisions
Not applicable.

Paragraph 4 Final provisions

Article 7. Decisions and legal protection

1. Decisions pursuant to these regulations may be sent to the student digitally and/or by email.
2. The student can appeal against any decision made under these regulations, within six weeks following the date on the relevant decision, by lodging a notice of appeal at the Examinations Appeals Board (*College voor Beroep van de Examens (CBE)*).

Article 8. Adoption and amendment

1. These regulations are adopted by the dean.
2. In so far as the content of these regulations relates to the duties and powers of the degree programme's board of examiners, the content must also be confirmed by that board of examiners.

Article 9. Effect

These regulations take effect on September 1, 2019. These regulations will then replace any previous regulations.

Article 10. Publication

1. The dean ensures the appropriate publication and possible amendments of these regulations.
2. For the purpose of proper and clear provision of information to students and prospect students, the dean includes these regulations as an appendix to the Education and Examination Regulations (*Onderwijs- en Examenreglement (OER)*). Accordingly, the board of examiners includes these regulations accordingly as an appendix to the rules and guidelines of the degree programme to be laid down by that board.

Thus adopted by the dean on July 2, 2019 and ratified by the Board of Examiners on September 3, 2019.

Appendix II RU Regulations on House Rules Examination Rooms

Paragraph 1 Introductory provisions

Article 1. Purpose of the regulations

For the proper course of events during examinations and bachelor/master examinations relating to the education and the examination of the Molecular Mechanisms of Disease programme that are administered in examination rooms at Radboud University (hereinafter: RU), the dean of the faculty of Medical Sciences of RU adopts the following regulations.

Article 2. Definitions

The terms that are used in these regulations – in so far as these terms are also used in the Higher Education and Research Act (*Wet op het Hoger onderwijs en Wetenschappelijk onderzoek* (hereinafter: HERA)) or the Education and Examination Regulations of the degree programme (hereinafter: the EER) – have the same meaning that is given to these terms in HERA and the EER.

Article 3. Examiners and invigilators

1. For the administration of examinations the board of examiners Molecular Mechanisms of Disease has appointed one or more examiners.
2. The examiners appointed as referred to in paragraph 1 are responsible for the supervision and execution of the provisions in these regulations. On behalf of the examiner(s) appointed, one or more invigilators may be present in the examination rooms, assigned by or on behalf of the executive board.
3. When invigilators have been assigned, at least one appointed examiner is also present in the examination room or, as appropriate, available on call.

Article 4. Instructions by the executive board

1. In view of the executive board's mandating decision dated May 15, 2019, these regulations include instructions in the sense of article 7.12b of HERA. The student is obliged to comply with the instructions laid down in these regulations.
2. A student who fails to comply with any instructions under these regulations may be denied access to the examination room by or on behalf of the examiner. Non-compliance with the instructions may also lead to a suspicion of fraud in the sense of the Regulations on Fraud (*Regeling Fraude*).

Article 5. Guidelines for examiners

These regulations include instructions in the sense of article 7.12b of HERA. The examiner is obliged to comply with the instructions laid down in these regulations.

Article 6. Instructions by examiners for students

1. The examiner may give instructions, in the context of the instructions described in these regulations, to a student in the RU examination room if a concrete situation should be cause for this. The student is obliged to comply with these instructions.
2. The student who fails to comply with the instructions referred to in paragraph 1 may be denied access to the examination room by or on behalf of the examiner. Not-compliance with the instructions may also lead to a suspicion of fraud in the sense of the Regulations on Fraud (*Regeling Fraude*).

Paragraph 2 House Rules

Article 7. Admission to the examination room and leaving it

1. With respect to entering and leaving the examination rooms, the following applies:

- a. the examination room is accessible for the student at least [15] minutes before the examination starts;
 - b. except in the circumstances described in paragraphs c and d, the student is no longer admitted into the examination room after the examination has started;
 - c. the student who arrives too late at the examination room is given the opportunity, 15 minutes following the start of the examination, to be as yet admitted into the examination room;
 - d. the student is permitted to use the toilet during the examination;
 - e. the student is not allowed to leave the examination room within the first [30] minutes following the start of the examination,;
 - f. the student is not allowed to leave the examination room within the last 15 minutes of the examination.
2. In special circumstances the examiner may act contrary to the provisions in paragraph 1. If the provisions in paragraph 1 are departed from, the student will be informed of this in due time.

Article 8. Student ID

1. In the examination room the student must be able to furnish proof of identity, at any time, by producing a valid identity document (passport, driver's license, ID-card or residence permit).
2. The student who cannot furnish proof of identity as laid down in the first paragraph of the present article will not be admitted into the examination room or can as yet be denied access to that room.

Article 9. Start and duration of the examination

The examiner starts the examination at the time scheduled. If the examination starts at a later moment in time because of relevant circumstances, the examiner ensures that the scheduled duration of the examination can be fully used by the student.

Article 10. Materials permitted in examinations

1. When taking the examination, the student is not allowed to have materials available that serve or could serve as auxiliary materials for the examination paper, unless the use of that material has been explicitly permitted by the examiner before the start of the examination.
2. Materials for the purpose of these regulations include, amongst other things: textbooks and dictionaries, notes and lecture notes, and watches, laptops, tablets, telephones and other smart devices and/or wearables.

Article 11. Handing in examination papers

1. When the examination ends, the student is obliged to hand in the examination paper.
2. The student may also be requested to hand in other examination materials, such as examination question papers and/or note paper used during the examination.

Article 12. Peace and order and furniture and fixtures in the examination room

1. Both during and after completion of the examination, the examiner ensures that measures are taken that are required for adequate surveillance and for maintaining the necessary peace and order in the examination room. Eating and drinking is allowed during the examination, with due observance of the provisions in these regulations.
2. When examinations take place, each examination room has at least one clock which is clearly visible for every student.

Paragraph 3 Transitional provisions
Not applicable.

Paragraph 4 Final provisions

Article 13. Departure from rules and house rules

In special circumstances the examiner may depart from the provisions in these regulations.

Article 14. Adoption and amendment

1. These regulations are adopted by the dean.
2. In so far as the content of these regulations relates to the duties and powers of the programme's board of examiners, the content must also be confirmed by that board of examiners.

Article 15. Effect

These regulations take effect on September 1, 2019. These regulations then replace any previous regulations.

Article 16. Publication

1. The dean ensures the appropriate publication of these regulations and any amendments of these regulations.
2. For the purpose of proper and clear provision of information to students and prospect students, the dean includes these regulations as an appendix to the Education and Examination Regulations (*Onderwijs- en Examenreglement (OER)*). The board of examiners includes these regulations accordingly as appendix to the rules and guidelines of the programme that are to be laid down by that board.

Thus adopted by the dean on July 2, 2019 and ratified by the Board of Examiners on September 1, 2020.

Appendix III Assessment regulations for course examinations MMD

A. General assessment regulations 2024-2025

General assessment regulations for course examinations 2024-2025 issued by the Board of Examiners Molecular Mechanisms of Disease
The following general assessment regulations apply to all courses in Appendix III part B of these Rules and Guidelines.
<ol style="list-style-type: none"> 1. Once a student has registered for a course, participation in all graded components of this course is mandatory in order to obtain a final grade (and earn credits). 2. In case a student has not participated in all graded components (e.g. written exam, essay, presentation, etc.) without notice of absence at least two days prior to the examination date of the component to be assessed, the final result of the course will be 'F' (Failed, not sufficient, 'onvoldoende') and no EC will be awarded. This means that during the current academic year, this student has one attempt left to sit the examination or any component of this examination. 3. In case notice of absence has been given at least two days prior to the component to be assessed, the final result of the course examination will be 'NS' (no show, did not participate, 'niet deelgenomen') and no EC will be awarded. This means that during the current academic year, this student has one attempt left to sit the examination or any component of this exam. In this case the student is entitled to use their second attempt during the next academic year. 4. In case the student deregistered for the course examination via Osiris (ultimately at 23.59 on the day preceding a period of five working days prior to the date of the examination) no result will be registered, instead 'NS' is the result (No Show) and no EC will be awarded. This means that during the current academic year, this student has one attempt left to sit the examination or any component of this examination. In this case the student is entitled to use their second attempt during the next academic year. 5. In order to pass a course examination, all partial examinations that are included in the final grade should be graded 5.5 or higher in case of graded components (5.5 cannot be the final grade for the complete course examination). In case of components graded by Pass/Fail, all components should be graded as 'P' (Passed, 'voldaan') in order to pass the course examination. If a student fails one or more graded components or did not submit their work before the due date, the final result will be 'F' (Failed, not sufficient, 'onvoldoende') for the total course. All failed course components need to be resat by the student. 6. The results of partial examinations are expressed in decimals, on a scale of 1.0 - 10.0, unless otherwise specified in Appendix III of the EER. Course examinations for each mandatory course may be resat once every academic year (resit). The form of assessment in a resit should, in principle, be similar to that of the first attempt (e.g. written examination for written examination, essay for essay, presentation for presentation etc.). In case the assessment form cannot be similar to that of the first course examination, the examiners should inform the Board of Examiners. 7. In case the result of a <u>resit</u> of one or more graded components that count for the final grade is still below 5.5, or a 'Fail' the student has failed the complete course. In this case the examiner grades the final result as 'F' (Failed, not sufficient, 'onvoldoende'), and the student has to retake the course and sit the course examination during the next academic year. 8. No third attempt within one academic year for any course examination or component of a course examination is allowed without permission of the Board of Examiners. 9. A resit may affect the possibility of a Master's degree with distinction, see EER, Appendix VI.

B. Assessment regulations MMD courses

Assessment regulation MMD course MED-MM1CFA		
Immunity, Infection and Inflammation Examiner: prof. dr A.B. van Spriel – secondary examiner: dr. L. Querol Cano		
Assessment regulations 2024-2025 issued by the Board of Examiners Molecular Mechanisms of Disease General assessment regulations for course examinations 2024-2025 as stated in Appendix III part A also apply.		
Learning objectives – learning outcomes		
After completion of this course students will be familiar with immune regulatory cell-types and circuits, inflammatory reactions, and their biomedical significance in the occurrence and treatment of diseases.		
Specifically, students are able to: <ol style="list-style-type: none"> 1. recognize the significance of regulatory pathways within the immune system. 2. understand the mechanisms underlying immune-related disorders. 3. define research questions and design research proposals to answer questions. 		
Assessments*	Weight of assessment in final grade (%)**	Individual assessment or group assessment (n=...)
1) Written Test	50%	Individual assessment
2) Research proposal project	35%	Group assessment: n=4
3) Journal Club	15%	Group assessment: n=5
4) Round table discussion	0% (graded Pass / Fail. A Pass is required in order to receive a final grade)	Individual assessment
*Include all examination components that count towards the final grade such as written test (short answer open-ended questions), research proposal, essay, report, oral presentation, etc. Of note: 'attendance', 'participation' or 'eagerness to discuss' cannot be used to grade students unless supported by a rubric or assessment form to evaluate the students as objectively as possible.		
**Please note that 50% of the final grade needs to be obtained by individual assessment.		

Assessment regulation MMD course MED-MM1MC		
Master Class Therapy development for rare neuromuscular diseases Examiner: dr. D.G. Wansink – secondary examiner: dr. M.M.P. Zegers		
Assessment regulations 2024-2025 issued by the Board of Examiners Molecular Mechanisms of Disease General assessment regulations for course examinations 2024-2025 as stated in Appendix III part A also apply.		
Learning objectives – learning outcomes		
After completion of this MMD master class, you are able to <ol style="list-style-type: none"> 1. describe molecular and cellular mechanisms in inherited rare diseases, in particular muscular dystrophies. 2. design strategies for molecular, genetic and cell-based therapies for rare genetic diseases. 3. analyse and evaluate therapy development critically, from a clinical and patient perspective, in a fast-changing academic and societal context. 4. communicate professionally about science, orally and through state-of-the-art graphics. 		
Assessments*	Weight of assessment in final grade (%)**	Individual assessment or group assessment (n=...)
1) Infographic	50%	Group assessment (n=2)
2) Peer feedback	0% (graded Pass / Fail. A Pass is required in order to receive a final grade)	Individual assessment

3) Prepared written questions	0% (graded Pass / Fail. A Pass is required in order to receive a final grade)	Individual assessment
4) Position paper	50%	Individual assessment
*Include all examination components that count towards the final grade such as written test (short answer open-ended questions), research proposal, essay, report, oral presentation, etc. Of note: 'attendance', 'participation' or 'eagerness to discuss' cannot be used to grade students unless supported by a rubric or assessment form to evaluate the students as objectively as possible.		
**Please note that 50% of the final grade needs to be obtained by individual assessment.		
Assessment regulation MMD course MED-MM1TR		
Immunity-related disorders and immunotherapy Examiner: prof. dr R.P. van Rij – secondary examiner: dr. A.B. van der Waart		
Assessment regulations 2024-2025 issued by the Board of Examiners Molecular Mechanisms of Disease General assessment regulations for course examinations 2024-2025 as stated in Appendix III part A also apply.		
Learning objectives – learning outcomes		
After successful completion of the course, students:		
<ol style="list-style-type: none"> 1. understand the molecular mechanisms underlying rheumatic diseases, specifically scleroderma; 2. gained insights into the role of the immune system in viral pathogenesis and can discuss immune-modulatory interventions against viral infections; 3. can describe approaches to vaccine development and identify advantages and disadvantages of them; 4. have obtained insights into state-of-the-art immune therapeutic approaches to treat cancer. 		
Assessments*	Weight of assessment in final grade (%)**	Individual assessment or group assessment (n=...)
1) Written test (open-ended questions)	100%	Individual assessment
*Include all examination components that count towards the final grade such as written test (short answer open-ended questions), research proposal, essay, report, oral presentation, etc. Of note: 'attendance', 'participation' or 'eagerness to discuss' cannot be used to grade students unless supported by a rubric or assessment form to evaluate the students as objectively as possible.		
**Please note that 50% of the final grade needs to be obtained by individual assessment.		

Assessment regulation MMD course MED-MM2CFA		
Metabolism, Transport and Motion Examiner: dr. M.P. Zegers – secondary examiner: dr. J.N. Spelbrink		
Assessment regulations 2024-2025 issued by the Board of Examiners Molecular Mechanisms of Disease General assessment regulations for course examinations 2024-2025 as stated in Appendix III part A also apply.		
Learning objectives – learning outcomes		
After completion of the course students are familiar with regulation and defects in energy metabolism, membrane transport and cell migration and with the biomedical research towards the molecular mechanisms, diagnosis, treatment and prevention of these diseases.		
After successful completion of the course, students are able to:		
<ol style="list-style-type: none"> 1. explain the pathophysiology of energy metabolism, small molecule transport and cell migration including the molecular mechanisms; 2. value the use of bioinformatics, proteomics and structure analysis for molecular understanding of the pathology of diseases.; 3. apply knowledge of the molecular mechanisms of (defects of) energy metabolism, transport of small molecules and cell migration to define research questions and design research proposals to advance the knowledge in these fields. 		
a) Assessments*	b) Weight of assessment (%) for final grade**	c) Individual assessment or group assessment (n=...)
1) written examination	60%	Individual assessment

2) research proposal	25%	Group assessment: n=4-5
3) oral presentation	15%	Group assessment: n=4-5
*Include all examination components that count towards the final grade such as written test (short answer open-ended questions), research proposal, essay, report, oral presentation, etc. Of note: 'attendance', 'participation' or 'eagerness to discuss' cannot be used to grade students unless supported by a rubric or assessment form to evaluate the students as objectively as possible.		
**Please note that 50% of the final grade needs to be obtained by individual assessment.		

Assessment regulation MMD course MED-MM2MC		
Master Class The mechanism of calcifying aortic valve disease Examiner: prof. dr. N.A.J.M. Sommerdijk – secondary examiner: dr. S. El Messaoudi		
Assessment regulations 2024-2025 issued by the Board of Examiners Molecular Mechanisms of Disease. General assessment regulations for course examinations 2024-2025 as stated in Appendix III part A also apply.		
Learning objectives – learning outcomes		
<ol style="list-style-type: none"> 1) Knowns and unknowns on the mechanisms of CAVD (individual assignment as part of meeting report) 2) Presentations and group discussion on new approaches to understand CAVD (group presentation and meeting report) 3) International afternoon Symposium with the invited scientists (organization and participation by the MMD students) 		
Assessments*	Weight of assessment in final grade (%)**	Individual assessment or group assessment (n=...)
1) Journal club oral presentation	40%	Group assessment
2) Essay (meeting report)	60%	Individual assessment
*Include all examination components that count towards the final grade such as written test (short answer open-ended questions), research proposal, essay, report, oral presentation, etc. Of note: 'attendance', 'participation' or 'eagerness to discuss' cannot be used to grade students unless supported by a rubric or assessment form to evaluate the students as objectively as possible.		
**Please note that 50% of the final grade needs to be obtained by individual assessment.		

Assessment regulation MMD course MED-MM2TR		
Metabolic disorders Examiner: dr. I.J.C. Lamers – secondary examiner: dr. A.P.M. de Brouwer		
Assessment regulations 2024-2025 issued by the Board of Examiners Molecular Mechanisms of Disease General assessment regulations for course examinations 2024-2025 as stated in Appendix III part A also apply.		
Learning objectives – learning outcomes		
<p>After completion of the course, you are familiar with the clinical appearance of defects in metabolism, glycosylation, adrenal disorders, lipids and renal ciliopathies. In this course you focus on the biomedical research towards the molecular mechanisms, diagnosis, treatment and prevention of these diseases. You will gain knowledge of the various diagnostics for disease classification and of the options for treatment.</p> <p>Specifically, after completion of the course you will</p> <ol style="list-style-type: none"> 1. understand the clinical consequences of molecular defects in the metabolism and transport of small molecules. 2. be aware of current possibilities and developments in the field of diagnosis, treatment and prevention of these diseases. 3. be able to use the link between the knowledge about molecular mechanisms and diseases into future research in the biomedical field. 4. get acquainted with the doctor and patients perspective dealing with the diseases mentioned above. 		
a) Assessments*	b) Weight of assessment (%) for final grade**	c) Individual assessment or group assessment (n=...)
1) written examination (essay type questions)	100%	Individual assessment

*Include all examination components that count towards the final grade such as written test (short answer open-ended questions), research proposal, essay, report, oral presentation, etc. Of note: 'attendance', 'participation' or 'eagerness to discuss' cannot be used to grade students unless supported by a rubric or assessment form to evaluate the students as objectively as possible.

**Please note that 50% of the final grade needs to be obtained by individual assessment.

Assessment regulation MMD course MED-MM3CFB

Cell Growth and Differentiation

Examiner: prof. dr. A. Cambi – secondary examiner: dr. J.H.A. Martens

Assessment regulations 2024-2025 issued by the Board of Examiners Molecular Mechanisms of Disease
General assessment regulations for course examinations 2024-2025 as stated in Appendix III part A also apply.

Learning objectives – learning outcomes

After completion of this course students are familiar with the fundamentals of inter- and intra-cellular interactions and signalling processes that guide normal growth and development and that are defunct in diseases like malformation syndromes and cancer.

Specifically, students are able to:

1. recognize the significance of (epi)genetic regulation principles in molecular life sciences;
2. identify and employ interaction concepts within and between cells and biomolecules in studies addressing the composition and function of cellular and molecular networks;
3. value the newest applications of chemical techniques and tools to study and manipulate biological systems.

a) Assessments*

b) Weight of assessment
(%) for final grade**

c) Individual assessment or
group assessment (n=...)

Essay examination (open questions)

100%

Individual assessment

*Include all examination components that count towards the final grade such as written test (short answer open-ended questions), research proposal, essay, report, oral presentation, etc. Of note: 'attendance', 'participation' or 'eagerness to discuss' cannot be used to grade students unless supported by a rubric or assessment form to evaluate the students as objectively as possible.

**Please note that 50% of the final grade needs to be obtained by individual assessment.

Assessment regulation MMD course MED-MM3TR

Developmental disorders and malignancies

Examiner: Dr B.A. van der Reijden – secondary examiner: prof. dr. J.H. Jansen

Assessment regulations 2024-2025 issued by the Board of Examiners Molecular Mechanisms of Disease
General assessment regulations for course examinations 2024-2025 as stated in Appendix III part A also apply.

Learning objectives – learning outcomes

After completion of the course, students

1. understand the principles and potentials of key imaging techniques in translational research, in particular PET, SPECT and radio detection and you are able to propose their application in diagnosis;
2. can select appropriate diagnostic testing to provide insight into the molecular basis of hereditary cancers, and translate the results in genetic counselling of patients and family members;
3. understand the molecular mechanisms and therapy of leukaemia and myelodysplasia;
4. understand the role of cancer stem cells;
5. understand the potential but also limitations of precision medicine;
6. obtain insight in the application of molecular tools in the diagnosis, management, and treatment of diseases. To understand the molecular background of cancer susceptibility and its implications for molecular genetic diagnostics in hereditary cancer;
7. gain insight in the complexity of clinical genetic testing
8. understand the strategies used to model neurodevelopmental disorders in different cellular and animal models;
9. obtain insight in the current strategies for translational neuroscience;
10. understand the key molecular and cellular mechanisms underlying neurodevelopmental disorders;
11. obtain insight in the application of molecular tools in the diagnosis, management, and treatment of neurodevelopmental disorders.

a) Assessments*	b) Weight of assessment (%) for final grade**	c) Individual assessment or group assessment (n=...)
1) written examination (essay type questions)	100%	Individual assessment
*Include all examination components that count towards the final grade such as written test (short answer open-ended questions), research proposal, essay, report, oral presentation, etc. Of note: 'attendance', 'participation' or 'eagerness to discuss' cannot be used to grade students unless supported by a rubric or assessment form to evaluate the students as objectively as possible.		
**Please note that 50% of the final grade needs to be obtained by individual assessment.		

Assessment regulation MMD course MED-MMBS		
Understanding basic statistics using R Examiner: dr. J. Ramjith – secondary examiner tbd		
Assessment regulations 2024-2025 issued by the Board of Examiners Molecular Mechanisms of Disease General assessment regulations for course examinations 2024-2025 as stated in Appendix III part A also apply.		
Learning objectives – learning outcomes		
The aim of the course is to acquire basic statistical understanding, to be able to select and apply the appropriate statistical method to their experimental data and interpret the results. Students will learn these skills using the statistical package R via RStudio.		
Specifically, students are:		
<ol style="list-style-type: none"> 1. familiar with the concepts of effect estimation, statistical regression modelling and statistical testing in the context of molecular life science data, and to be able to apply them, including statistical regression, specifically linear regression including the use of covariable adjustment, to estimate relationships between variables and to test research hypotheses; 2. familiar with the basics of experimental design and to be able to perform simple sample size calculations; 3. familiar with the pitfalls of multiple hypothesis testing and with some approaches to deal with it; 4. able to interpret the results of basic statistical analyses and report conclusions; 5. able to perform basic statistical analyses using a software package (R). 		
a) Assessments*	b) Weight of assessment (%) for final grade**	c) Individual assessment or group assessment (n=...)
1) Assignment statistical analysis in R and writing scientific abstract (describing research question, methods, results and conclusions, based on given data set analysis)	100% (graded Pass/Fail)	Individual assessment
*Include all examination components that count towards the final grade such as written test (short answer open-ended questions), research proposal, essay, report, oral presentation, etc. Of note: 'attendance', 'participation' or 'eagerness to discuss' cannot be used to grade students unless supported by a rubric or assessment form to evaluate the students as objectively as possible.		
**Please note that 50% of the final grade needs to be obtained by individual assessment.		

Assessment regulation MMD course MED-MMEC		
Excellence in communication Examiner: prof. dr I.J.M. de Vries – secondary examiner: dr. J.C. Textor		
Assessment regulations 2024-2025 issued by the Board of Examiners Molecular Mechanisms of Disease General assessment regulations for course examinations 2024-2025 as stated in Appendix III part A also apply.		
Learning objectives – learning outcomes		
The aim of the course is to gain knowledge and training in scientific communication skills.		
At the end of the course you will be able to		
<ol style="list-style-type: none"> 1. make and present a well-structured and visually attractive poster to raise interest in your research 2. create appealing slides for an oral presentation to capture the attention of the audience 3. prepare and deliver an outstanding oral presentation to present research 		

<p>4. recognize differences between a medical / life science-oriented and laymen audience to prepare a presentation that addresses your target group</p> <p>5. have public outreach via social media</p>		
Assessments*	Weight of assessment (%) in final grade**	Individual assessment or group assessment (n=...)
1) Oral presentation - performance	25% (Pass / Fail)	Individual assessment
2) Oral and poster presentation - content	25% (Pass / Fail)	Group assessment: n=3 or 4
3) Oral and poster presentation - creativity	25% (Pass / Fail)	Individual assessment
4) Social media assignment - content and creativity	25% (Pass / Fail)	Individual assessment
The final course grade is alphanumeric: Pass / Fail.		
*Include all examination components that count towards the final grade such as written test (short answer open-ended questions), research proposal, essay, report, oral presentation, etc. Of note: 'attendance', 'participation' or 'eagerness to discuss' cannot be used to grade students unless supported by a rubric or assessment form to evaluate the students as objectively as possible.		
**Please note that 50% of the final grade needs to be obtained by individual assessment.		

<p>Assessment regulation MMD course MED-MMSKB</p> <p>Scientific Skills</p> <p>Examiner: prof. dr R.E. Brock – secondary examiner: prof. dr. R.P. van Rij</p>		
<p>Assessment regulations 2024-2025 issued by the Board of Examiners Molecular Mechanisms of Disease</p> <p>General assessment regulations for course examinations 2024-2025 as stated in Appendix III part A also apply.</p>		
<p>Learning objectives – learning outcomes</p> <p>The aim of the course is to facilitate the work as a scientist by providing competences in the documentation and presentation of data, preparation of an internship report and figures, communication with the public, publishing and reflection on career perspectives.</p>		
a) Assessments*	b) Weight of assessment (%) for final grade**	c) Individual assessment or group assessment (n=...)
1) Portfolio (consisting out of various assignments for the individual elements of this course)	100% (graded pass/fail)	Individual assessment
*Include all examination components that count towards the final grade such as written test (short answer open-ended questions), research proposal, essay, report, oral presentation, etc. Of note: 'attendance', 'participation' or 'eagerness to discuss' cannot be used to grade students unless supported by a rubric or assessment form to evaluate the students as objectively as possible.		
**Please note that 50% of the final grade needs to be obtained by individual assessment.		

<p>Assessment regulation MMD course MED-MMIC</p> <p>Introduction to Molecular Mechanisms of Disease</p> <p>Examiner: Dr J.H.F. de Baaij – secondary examiner: dr. A.B. van der Waart</p>		
<p>Assessment regulations 2024-2025 issued by the Board of Examiners Molecular Mechanisms of Disease</p> <p>General assessment regulations for course examinations 2024-2025 as stated in Appendix III part A also apply.</p>		
<p>Learning objectives – learning outcomes</p> <p>After completion of this course, you:</p> <ol style="list-style-type: none"> are acquainted with the study and research environment of the MMD programme and Radboudumc to find your way through the curriculum and make an appropriate choice for your first internship; 		

<ol style="list-style-type: none"> have identified the knowledge required for following MMD courses to make, if necessary, a personal plan with your mentor how to attain this knowledge level; use literature databases and Endnote to search, manage and correctly cite relevant journal articles and judge the value of scientific articles; apply different concepts and theories to analyse the ethical and societal issues in the molecular life science for the purpose of acting responsibly as a scientist; recognize the principles of scientific integrity and scientific misconduct in biomedical research for the purpose of taking responsibility as an upcoming scientist operating in an academic and non-academic environment. 		
Assessments*	Weight of assessment (%) in final grade**	Individual assessment or group assessment (n=...)
1) Written assignment “theme Immunity, infection and inflammation” (1 page A4 on immunological topic)	30% (graded Pass / Fail)	Group assessment: n=4 (maximum)
2) Written assignment “theme Metabolism, Transport and Motion” (self-test concepts in the field of Metabolism, Transport and Motion)	30% (graded Pass / Fail)	Group assessment: n=2
3) Written scientific report “theme Cell Growth and Differentiation”	40% (numerically graded for feedback purposes. The final grade for the course will be Pass / Fail)	Individual assessment
<p>*Include all examination components that count towards the final grade such as written test (short answer open-ended questions), research proposal, essay, report, oral presentation, etc. Of note: ‘attendance’, ‘participation’ or ‘eagerness to discuss’ cannot be used to grade students unless supported by a rubric or assessment form to evaluate the students as objectively as possible.</p> <p>**Please note that 50% of the final grade needs to be obtained by individual assessment.</p>		

<p>Assessment regulation MMD course MED-MMSS Science and Society Examiner: drs. ing. B. Bloemen - secondary examiner: prof. dr. G.J. van der Wilt</p>		
<p>Assessment regulations 2024-2025 issued by the Board of Examiners Molecular Mechanisms of Disease General assessment regulations for course examinations 2024-2025 as stated in Appendix III part A also apply.</p>		
<p>Learning objectives – learning outcomes</p> <p>After completion of the course, students are able to:</p> <ol style="list-style-type: none"> analyze the advantages and limitations of molecular biology in studying mechanisms of disease; recognize the societal and ethical context and implications of research on molecular mechanisms of disease; examine the relations between scientific, societal, ethical and clinical aspects in choices that you have to make when studying molecular mechanisms of disease; defend their own position on a desirable future for molecular medicine and the responsibilities of scientists in this development. 		
Assessments*	Weight of assessment (%) in final grade**	Individual assessment or group assessment (n...)
1) Group presentation	30%	Group assessment: n=5-6
2) Position paper	70%	Individual assessment
<p>*Include all examination components that count towards the final grade such as written test (short answer open-ended questions), research proposal, essay, report, oral presentation, etc. Of note: ‘attendance’, ‘participation’ or ‘eagerness to discuss’ cannot be used to grade students unless supported by a rubric or assessment form to evaluate the students as objectively as possible.</p> <p>**Please note that 50% of the final grade needs to be obtained by individual assessment.</p>		

Assessment regulation MMD course MED-MMSTA Omics data analysis and interpretation Examiner: dr. A.P.M. de Brouwer – secondary examiner: dr. J.B. Bralten		
Assessment regulations 2024-2025 issued by the Board of Examiners Molecular Mechanisms of Disease General assessment regulations for course examinations 2024-2025 as stated in Appendix III part A also apply.		
Learning objectives – learning outcomes After this course, students are familiar with the statistical principles of current-day ‘omics’ research and technology. After completion of the course, students are able to: <ol style="list-style-type: none"> determine an appropriate experimental design and corresponding statistical analysis to investigate a specific research question; calculate statistical values, interpret the results and report conclusions on ‘omics’ data; present a scientific protocol concerning proteomics data. 		
a) Assessments*	b) Weight of assessment (%) for final grade**	c) <u>Individual assessment or group assessment (n=2)</u>
1) Written test	100%	Individual assessment
2) Presentation	0% (pass/fail)	Group assessment: n=2
*Include all examination components that count towards the final grade such as written test (short answer open-ended questions), research proposal, essay, report, oral presentation, etc. Of note: ‘attendance’, ‘participation’ or ‘eagerness to discuss’ cannot be used to grade students unless supported by a rubric or assessment form to evaluate the students as objectively as possible. **Please note that 50% of the final grade needs to be obtained by individual assessment.		

Assessment regulation MMD course MED-MMCB Computational Biology & Bioinformatics Examiner: prof. dr. M.A. Huijnen – secondary examiner: prof. dr. C.F.H.A Gilissen		
Assessment regulations 2024-2025 issued by the Board of Examiners Molecular Mechanisms of Disease General assessment regulations for course examinations 2024-2025 as stated in Appendix III part A also apply.		
Learning objectives – learning outcomes After completion of this course, students are familiar with the fundamentals: <ol style="list-style-type: none"> of Linux for use in bioinformatic analysis; of DNA sequencing (analysis) using next generation sequencing technology; of RNA sequencing using next generation sequencing technology; of testing whether a set of genes are enriched for a specific pathway, e.g. in RNAseq data; of using exploratory types of analyses for your ‘omics data’; for T cell receptor sequence analysis. After completion of the course, students have learned: <ol style="list-style-type: none"> how to navigate a Linux system and manipulate files using Linux commands; a simple programming language, allowing you to process data files into a required format; the basic bioinformatic processing steps for NGS DNA and RNA data; how to interpret DNA variants from NGS experiments and how to identify disease causing mutations; the basics of how to use and interpret the results from an RNAseq experiment; the basics of cluster analysis and principle component analysis. 		
Assessments*	Weight of assessment (%) in final grade**	Individual assessment or group assessment (n=2-3)
Written examination (essay type questions)	50%	Individual assignment

Presentation of project	50%	Group assignment: n=2-3
<p>*Include all examination components that count towards the final grade such as written test (short answer open-ended questions), research proposal, essay, report, oral presentation, etc. Of note: 'attendance', 'participation' or 'eagerness to discuss' cannot be used to grade students unless supported by a rubric or assessment form to evaluate the students as objectively as possible.</p> <p>**Please note that 50% of the final grade needs to be obtained by individual assessment.</p>		

<p>Assessment regulation MMD course MED-MMCOA1 Coaching MMD Examiner: prof. dr R.E. Brock – secondary examiner: dr. A.E.M. Post</p>		
<p>Assessment regulations 2024-2025 issued by the Board of Examiners Molecular Mechanisms of Disease General assessment regulations for course examinations 2024-2025 as stated in Appendix III part A also apply.</p>		
<p>Learning objectives – learning outcomes</p> <p>After completion of the course, student will be able to:</p> <ol style="list-style-type: none"> 1. carry out their learning process withing the specified timeframe and make choices regarding their study programme; 2. set goals for their personal and professional development and obtain academic skills; 3. identify their unique selling points and communicate these to others. 		
Assessments*	Weight of assessment in final grade (%)**	Individual assessment or group assessment (n=...)
<p>Assignment: reflection reports</p> <p>4 written short reflection report per mentor meeting. 2 reports with peer feedback</p>	100% (graded Pass / Fail)	Individual assessment
<p>*Include all examination components that count towards the final grade such as written test (short answer open-ended questions), research proposal, essay, report, oral presentation, etc. Of note: 'attendance', 'participation' or 'eagerness to discuss' cannot be used to grade students unless supported by a rubric or assessment form to evaluate the students as objectively as possible.</p> <p>**Please note that 50% of the final grade needs to be obtained by individual assessment.</p>		

Appendix IV Cover sheet course examinations to be filled in by course examiners

Cover page and checklist course examinations Molecular Mechanisms of Disease, to be submitted to toetsingonderwijscoördinatie.rha@radboudumc.nl together with the course examination.

see article 6.5 Rules and Guidelines.

Name course examination :

Course code :

Module coordinator/lecturer :

Date course examination :

Course examination drawn up by :

Name :

Course examination peer reviewed by :

Name :

Submission date :