LEIDS UNIVERSITAIR MEDISCH CENTRUM

Procedure Work Placement Training (Internships, Proposal and Scientific Review) master's program Biomedical Sciences 2023-2024

1. Master's Internship Committee and Board of Examiners

A large part of the master program is dedicated to two internships. All students perform their first internship JRP1 in a research environment. The second internship JRP2 falls within their specialisation (Research, Management, Communication, Health or Education). During these internships students acquire knowledge on various (biomedical) subjects depending on the choices they make. At the same time, they will further develop both hard and soft skills, such as knowledge, creativity, commitment, working in multi- and interdisciplinary teams, and communication. These skills can be used in numerous and diverse ways in their future career.

In order to facilitate the process of application, evaluation and assessment of these internships, a digital system called KL-APP has been developed. The Master's Internship Committee (MIC) has been mandated by the Board of Examiners and is responsible for evaluating the applications for internships, including the (research) proposals and the Scientific Review. The MIC oversees the scope and width of the internships. The MIC also checks the Interim and Final Evaluation and the (formative) Interim Assessment. The MIC recruits a reviewer (second reader in Course and Examination Regulations (OER)) to review the reports on the internships and the Scientific Review. The members of the MIC are also responsible for the review of the (research) proposal of the second internship (JRP2). Members of the MIC are appointed as examiner by the Board of Examiners to determine final grades of internships, Scientific Review and the (research) proposal.

Finally, the scope and width of the master's program of the student will be evaluated by the Board of Examiners, who is responsible for certification.

2. Choice and location of an internship

2a. Location of a research internship

Students are responsible for finding an internship and there are multiple ways to find one, e.g.:
- In the modules 'internship folder' ('*Stageklapper*') or Career orientation on Brightspace, projects can be found that are suitable for Biomedical Sciences master students.
- Students can contact a department, e.g. via the education coordinator of that department (for info see departmental websites and Brightspace module Master BMS). The coordinator will indicate the possibilities within the department and will refer students to possible supervisors for more specific information.
- Students can contact the (education) coordinator of LUMC research themes (see https://www.lumc.nl/research/research-themes/).
- Students can contact a researcher directly (see info on LUMC website).
- For a master's internship outside the LUMC students can contact researchers directly (for info see (university) websites, BMS alumni *via* LinkedIn and PubMed). An internship outside the LUMC can in principle be carried out wherever high-quality biomedical research is conducted, and quality supervision of students is guaranteed. In the Netherlands, this includes universities, companies at the Leiden Bio Science Park and medical centres such as TNO laboratories, Sanquin (Blood Supply Foundation), the National Institute for Public Health and the Environment, the Netherlands Cancer Institute, the Netherlands Institute for Brain Research and many other institutions. There are many possibilities for research projects for master's degree students abroad, in and outside Europe, e.g. *LERU* (League of European Universities), Eurolife and *Ivy League* universities in the USA. Students should always contact *DOO Internationalisation*, e-mail intoff@lumc.nl, for general info regarding internships outside the Netherlands. For more information, see the Leiden university master Biomedical Sciences website. If students would like to discuss their plans for internship, they can mail masterBMS@lumc.nl or contact the study advisor.

2b. Subjects for a research internship

Students choose the topics for research projects themselves, as well as the department or laboratory where the internship is to be conducted. However, internships must cover a diverse spectrum of research disciplines and diseases to gain experience in multiple areas of research. In addition, gaining experience in several different research methodologies is mandatory. The scope and width of the master's internships is safeguarded by the MIC.

To ensure that the required diversity of topics is covered, students can make use of the categories listed below.

1. Type of research
    a. Mainly statistical and/or data analyses ("dry")
    b. Mainly bench work; Technical applications ("wet")
    c. Combination of dry and wet
2. Disease/clinical entity
    a. Ageing
    b. Neurological Diseases
    c. Cancer
    d. Cardiovascular diseases
    e. Infectious diseases
    f. Haematological disorders
    g. Chronic inflammatory disorders including allergy and autoimmune diseases
    h. Transplantation
    i. Metabolic disorders
    j. Congenital malformations
    k. Other, namely
3. Discipline
    a. Bioinformatics
    b. Genetics
    c. Epidemiology
    d. Cell Biology
    e. Molecular Biology
    f. Physiology
    g. Pathology
    h. Regenerative Medicine
    i. Immunology
    j. Neurosciences
    k. Microbiology
    l. Anatomy/Developmental Biology
4. Methods
    a. DNA/RNA
    b. Protein / Proteomics
    c. Cell culture
    d. Statistical models
    e. In vivo functional (including clinical)
    f. Imaging
    g. Microscopy
    h. Functional Genomics
    i. Animal models

By selecting at least one item per category, all research in- and outside the LUMC can be described and together they cover a very diverse range of topics from very fundamental molecular biology to predominantly patient-related research.

Students are encouraged to design their master's program in such a way that during their whole program as many as possible, although not necessarily all items are covered. For each internship students will mark

one item under (1), and maximally two items under (2), (3), and (4). The profiles for items (2) and (3) thus obtained preferably do not overlap between JRP1 and JRP2; combined profiles for category 4 should cover a wide experience in methods. This will be checked by the MIC before a student can start with JRP2. Before certification, the Board of Examiners will determine whether sufficient depth and width in the program has been attained by a student.

2c. Location and subject of a Management or Communication internship
An internship within the M-(Management) and C-(Communication) specialisations can be done in a company, organisation or institute, provided that it is related to a topic in the life sciences. Students are responsible for finding an internship themselves. The BMS coordinator of M and C specialisations will be the LUMC supervisor and can be consulted for advice on finding such an internship.

3. Procedure of application and approval

3a. Junior Research Project 1 (Appendix 1)
Students who have been admitted to the Master with a deficiency (maximum of 15 EC) are not allowed to start with a FOS or internship within the field of that deficiency. This is monitored by the MIC. The on-line system KL-APP is used for the application of JRP1 (https://KL-APP.lumc.nl/portal/) and an example of the application form is posted on the Brightspace module Master BMS-general info. The project coordinator should provide a student with the information, necessary to fill in the form. The student should ask approval for the internship **four weeks prior to the intended starting date** by submitting the form to the MIC**.** The project coordinator will receive information and access to KL-APP via the student administration, after the application has been submitted by the student. The project coordinator has to approve the application via KL-APP. The student and supervisor(s) will be informed of the approval or disapproval of the internship application by the MIC via KL-APP. It is not allowed to start an internship without the approval of the application by the MIC.

3b. Junior Research Project 2
Before starting JRP2 (all specialisations), the final version of the report (and preferably also the final grade) of JRP1 must have been uploaded in KL-APP. Furthermore, the course How to write a research proposal must have been successfully completed prior to JRP2. All deficiencies, as determined in the admission statement, have to be passed before starting JRP2.

The JRP2 **Research** application form is submitted via KL-APP **at least six weeks before** the internship is due to begin and should take into account the time required for writing a research proposal (Appendix 2). The student will be informed whether or not the internship application has been approved by the MIC. In the event that the application is disapproved, the student will be advised about additional information that needs to be supplied. After approval, the student will write a research proposal about the subject that is to be studied in JRP2, in consultation with the project coordinator. The research proposal (5 EC) for JRP2 has to be written and submitted via KL-APP prior to the start of JRP2.

Prior to the start of a JRP2 **Management**, a project proposal (3 EC) for the internship is written in consultation with the supervisor of the company or organisation where the internship is to be conducted (Appendix 4). At least **two weeks before** the start of a M internship a **draft** of the project proposal is sent to the BMS coordinator M and C specialisations for consultation (acting as LUMC internal supervisor). Before the start of the internship this proposal, together with the completed internship form, must be submitted in KL-APP for approval by the MIC. The student and supervisor(s) will be informed about the approval or disapproval of this project proposal and internship form. In the event that one of these (or both) is disapproved, the student will be advised about additional information that needs to be supplied. It is not allowed to start the internship without the approval of the application by the MIC.

Prior to the start of a JRP2 **Communication, the application form is mailed** for approval to the MIC, by sending an email to the student administration (cc. to supervisors and coordinator of the M and C specialisations to show their consent (acting as LUMC internal supervisor)) (Appendix 5). The internship can only start after it has been approved. Students in the communication specialisation can either perform a practical internship and a research internship separately or a combination of practical and research. When

the internship **includes a research component,** a research proposal (3 EC, separate from the internship ECs) is written in consultation with the supervisor of the company or organisation where the internship is to be conducted and the Science Communication & Society supervisor. Before the start of the internship this research proposal must be submitted for approval to the BMS coordinator of M and C specialisations. After approval, it can be submitted to the MIC, by sending an email to the student administration (cc. to (SCS) supervisor(s) and BMS coordinator M and C specialisations to show their consent).

Students who choose the **Education** specialisation complete their internship (2 times 15 EC) as a biology teacher at a secondary school. In this case no proposal has to be written.
N.B. The procedures with respect to the *Specialisatie*, *Praktijk* and *Portfolio* in the Education specialisation (*lerarenopleiding*) are governed by the ICLON *portfolio handleiding* and *specialisatie handleiding*, instead of the procedures laid down in this document.

Students from the **Health** specialisation fill in the JRP2 application form in consultation with the project coordinator and submit it via KL-APP **at least four weeks before** the internship is due to begin (Appendix 3). The student and supervisor(s) will be informed of the approval or disapproval of the research project by the MIC. The internship can only start once the internship has been approved. Students that follow a Health specialisation do not have to write a research proposal.

3c. Elective Junior Research Project
For all specialisations it is allowed to perform an extra internship in the elective area. The same rules apply for application, approval and assessment of this extra internship as for JRP1. A minimum length of 12 weeks (= 17 EC) is advised, but students can deviate from this, as indicated in their application.

3d. Scientific Review (JRP1: Appendix 1, JRP2 R: Appendix 2, JRP2 H:Appendix 3)
For the R specialisation a Scientific Review is written. The subject of the Review can be related to, but not identical to the subject of JRP1 or JRP2. It is also possible to choose a subject not related to an internship. The student fills in the Scientific Review application form in consultation with the project coordinator and submits it via KL-APP to the MIC **preferable six weeks before** the end of the internship. The student and supervisor(s) will be informed of the approval or disapproval of the subject of the Scientific Review by the MIC.

For the C-, M-, H- and E specialisations a Scientific Review can be written in the elective area. The same rules and forms apply as for students from the R specialisation

All communication with the MIC is via the e-mail address: research-project@lumc.nl of the student administration (DOO) or via KL-APP.

4. Duration and extension of internships

4a. Duration
In the first year of the master's program, an internship of at least 20 weeks JRP1 (29 EC) is carried out, regardless of the specialisation chosen.

After completion of JRP1, a second internship (JRP2) can be started, lasting:

- 28 weeks (R specialisation: 40 EC),
- 18-29 weeks (M specialisation: 26-42 EC),
- 16-24 weeks (C specialisation: 23-34 EC),
- 20-28 weeks (H specialisation: 29-40 EC, depending on the previous education of the student (see OER)

4b. Extension
An internship of e.g. 20 weeks may not exceed these 20 weeks. Both the student and the project coordinator must monitor this period, which is planned and known in advance. JRP1 and JRP2 are concluded with a written report and an oral presentation. The report must be written during the designated period. If a student wishes to make use of the elective area to apply for a possible extension of

the internship, the student should approach the MIC via KL-APP at **least a month before** the original completion date. With respect to extensions, the following rules apply:

For JRP1:

- Research specialisation: JRP1 may be extended with a maximum of 8 EC;
- Health specialisation: JRP1 may be extended with a maximum of 8 EC;
- Management specialisation: JRP1 may be extended with the maximum of the elective area;
- Communication specialisation: JRP1 may be extended with the maximum of the elective area;
- Education specialisation: JRP1 may be extended with the maximum of the elective area.

For JRP2:

- Research and Health specialisation: JRP2 may be extended with the maximum of the elective area.

To calculate EC, the following formula is used: 1 week = 1,43 EC and subsequently ECs are rounded off to whole numbers. For more information, see the OER at the Leiden university master Biomedical Sciences website.

5. Responsibilities of the student

Students are expected to find an internship themselves. Content of the internship is determined in consultation with the project supervisor. During the internship the student is expected to conduct individual research in which the available time should be adequately divided between reading relevant literature, carrying out the (research) activities, analysing results and writing an internship report. In addition, the student is expected to be actively involved in the (research) group, to be motivated and acts as a member of the (research) group. For consultation/discussion the student should talk to the project coordinator and other members of the (research) group who have been authorised by the project coordinator to provide concrete assistance to the student.

6. Responsibilities of the project coordinator (first supervisor)

The project coordinator is expected to assist the student in drawing up a (research) protocol for application for approval of JRP1 and JRP2 in KL-APP and in creating an (research) environment which allows the student to perform optimally. This implies that the project coordinator is available for consultation/ discussions on a regular basis during the internship. The project coordinator ensures the availability of the appropriate equipment and/or other facilities/materials, which are needed to complete the project. The project coordinator is expected to encourage the student's enthusiasm for the project and to guide the student in the course of the (research) project. Project coordinators are allowed to delegate tasks to post-docs, PhD candidates and technicians (R and H internships) or junior staff (M and C internships), but this does not relieve project coordinators of their responsibilities with respect to the success of the student's internship.

For a research internship (JRP1 and JRP2 R and H specialisations) outside the LUMC, a LUMC lecturer with expertise in the field of the research concerned, acts as internal supervisor. The student will provide regular updates to the internal supervisor. For the M and C specialisations, internal supervision is carried out by the BMS coordinator M and C specialisations.

Before the start of an internship, internal and external supervisors are informed via KL-APP or mail on their tasks and responsibilities by means of the "Guidelines for JRP1/-II".

7. Evaluation and interim assessment

In the fourth week of the internship and at the end of the internship evaluation forms are filled in by the student and the project coordinator. After 12 weeks an interim (formative) assessment form is filled in by the student and the project coordinator. All forms are available via KL-APP. In the unlikely event that problems should occur, the student will first discuss these with the project coordinator. If a conflict cannot be solved by mutual agreement, the MIC will be informed. After hearing the student and the project coordinator, the MIC will give an advice which is binding for both parties. In cases of fraud and misconduct the Board of Examiners will always be informed and will act according to the OER (links to OER and study guide). Protocols are available via KL-APP. The student administration of the Directorate of Education

(DOO) will monitor whether all forms have been submitted and (automatic) reminders will be sent to supervisor(s) and student. The MIC will monitor the content of the evaluation and interim assessment and will mediate and advise when problems or insufficient progress arise. The final grade of an internship will only be posted in uSis when all evaluation and (interim) assessment forms have been submitted and all other requirements have been met.

For the M and C specialisations, monthly updates and the interim assessment form, including a summary, are sent to the BMS coordinator M and C specialisations. As part of JRP2 Management, students have to attend at least three (online) management (M) sessions as part of (peer) support during the internship. These sessions are organised by BMS.

8. Students' Symposium

Master BMS students present the results of one of their internships (JRP1 or JRP2) to an audience of bachelor and master students, supervisors and other interested persons during the "BW symposium", which is organised by a team of BMS master students. The students are guided by lecturers of *Communication in Science (CiS)* in the organisation of this symposium.

9. Reporting (written and oral) and CiS

The report of JRP1 (all specialisations), an elective internship and of JRP2 (R and H specialisation) is structured according to the guidelines provided in KL-APP. Guidelines for the writing of the Scientific Review are also provided in KL-APP.

For the C and M internship, the proposal stipulates how the reporting is to be performed, with the emphasis on quality and professionalism. The format of the reporting depends on the location and the subject of the internship. This is discussed with the project coordinator of the company or organisation where the internship will be carried out, and the BMS coordinator M and C specialisations, prior to the start of the internship. In addition to the content-driven report, a reflective report is written (info on Brightspace module Master BMS).

At the end of the internship, an oral presentation is given to the (research) group. This presentation is part of the assessment.

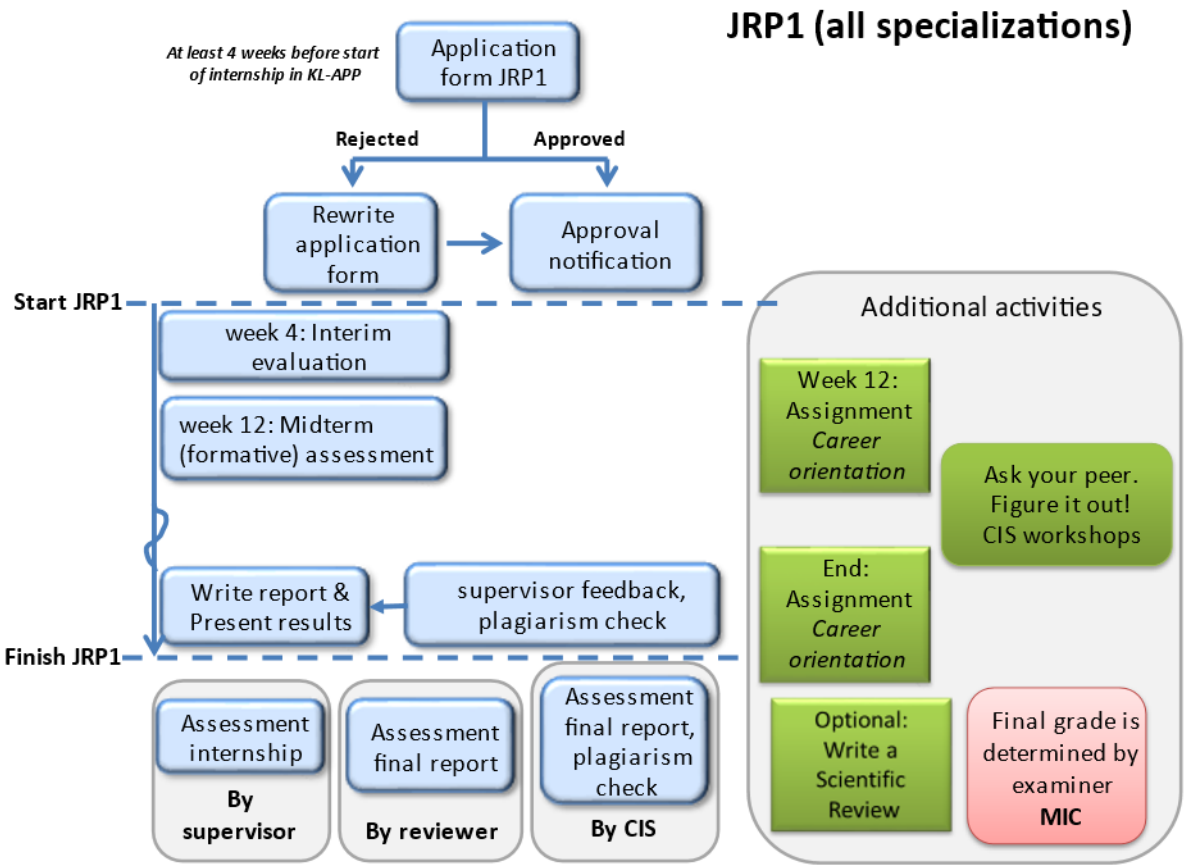
The lecturers of CiS provide writing support for the JRP reports and the Scientific Review. For students, who started in Sept. 2020 or later, participation in 'Ask your peer' and Figure it out!' is a mandatory part of JRP1. Information is provided in the guidelines JRP1 in KL-APP and instructions for both activities are provided via the Brightspace module master BMS.

10. Assessment

The student is assessed according to the criteria on the internship assessment forms (available via KL-APP and Brightspace). The final assessment will be carried out by the project coordinator. Besides the project coordinator a reviewer (second reader) will be involved in the assessment of the report and the Scientific Review. This reviewer is an expert in a relevant field of science and is appointed by the MIC. A CiS tutor also assesses the written reports of JRP1 (all specialisations) and JRP2 (R and H specialisation), and the Scientific Review. In all cases, the final grade is determined by an examiner of the MIC. The research/project proposal is assessed by the project coordinator, internal supervisor (when applicable) and the MIC (pass/no pass).

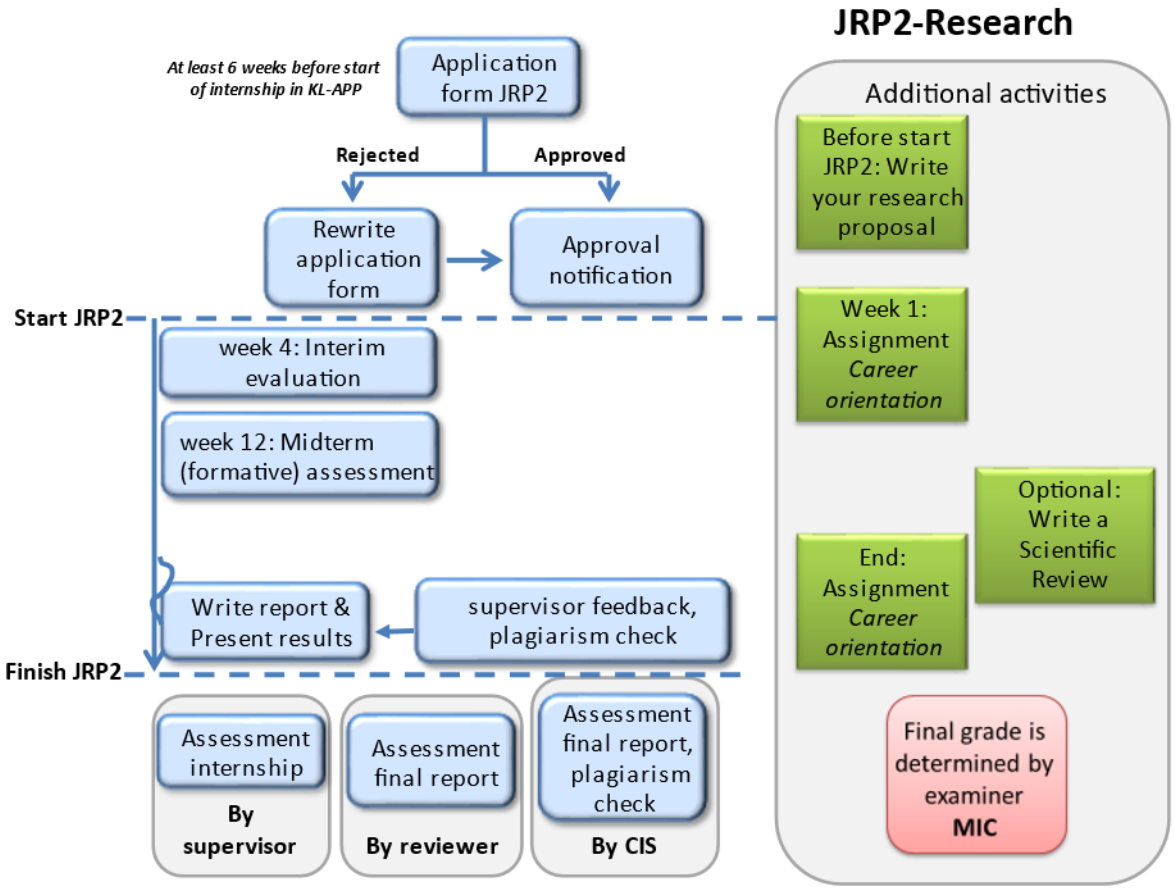
Dr. J. van der Zee, program director of the master Biomedical Sciences, in consultation with the Board of Examiners.
Version date: 31 August 2023

Appendix 1

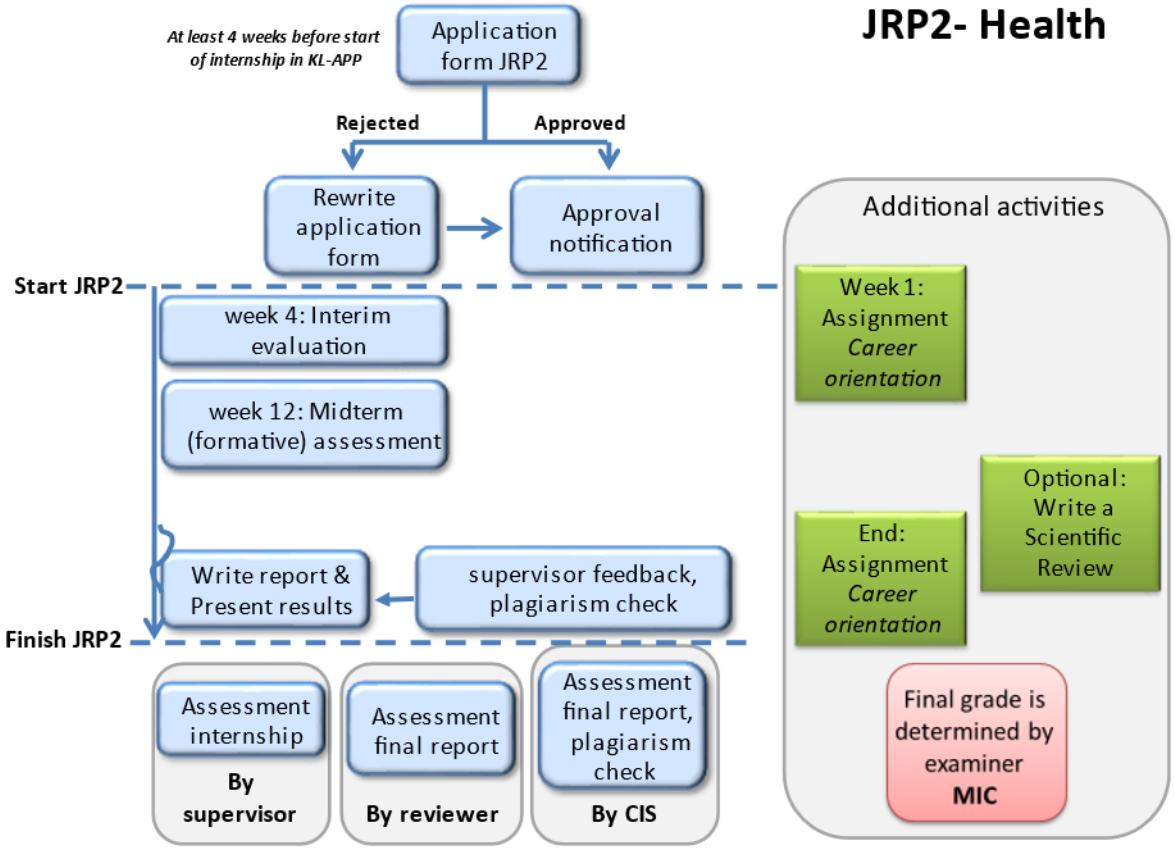


'Ask your peer' and 'Figure it!' out are mandatory parts of JRP1 and the CiS requirements for students who started in Sept. 2020 and later.

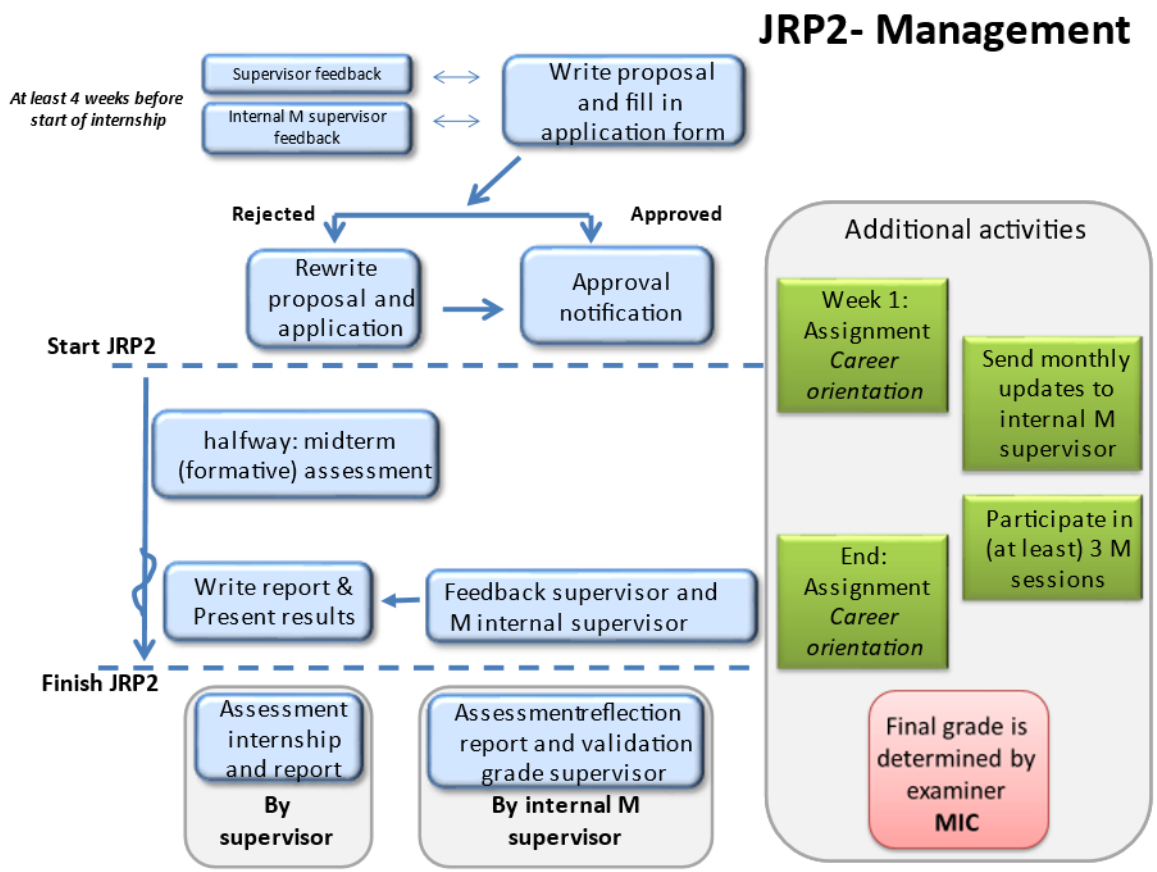
Appendix 2


JRP2-Research
At least 6 weeks before start of internship in KL-APP
Application form JRP2
Rejected
Approved
Rewrite application form
Approval notification
Start JRP2
week 4: Interim evaluation
week 12: Midterm (formative) assessment
Write report & Present results
supervisor feedback, plagiarism check
Finish JRP2
Assessment internship
By supervisor
Assessment final report
By reviewer
Assessment final report, plagiarism check
By CIS
Additional activities
Before start JRP2: Write your research proposal
Week 1: Assignment Career orientation
Optional: Write a Scientific Review
End: Assignment Career orientation
Final grade is determined by examiner MIC

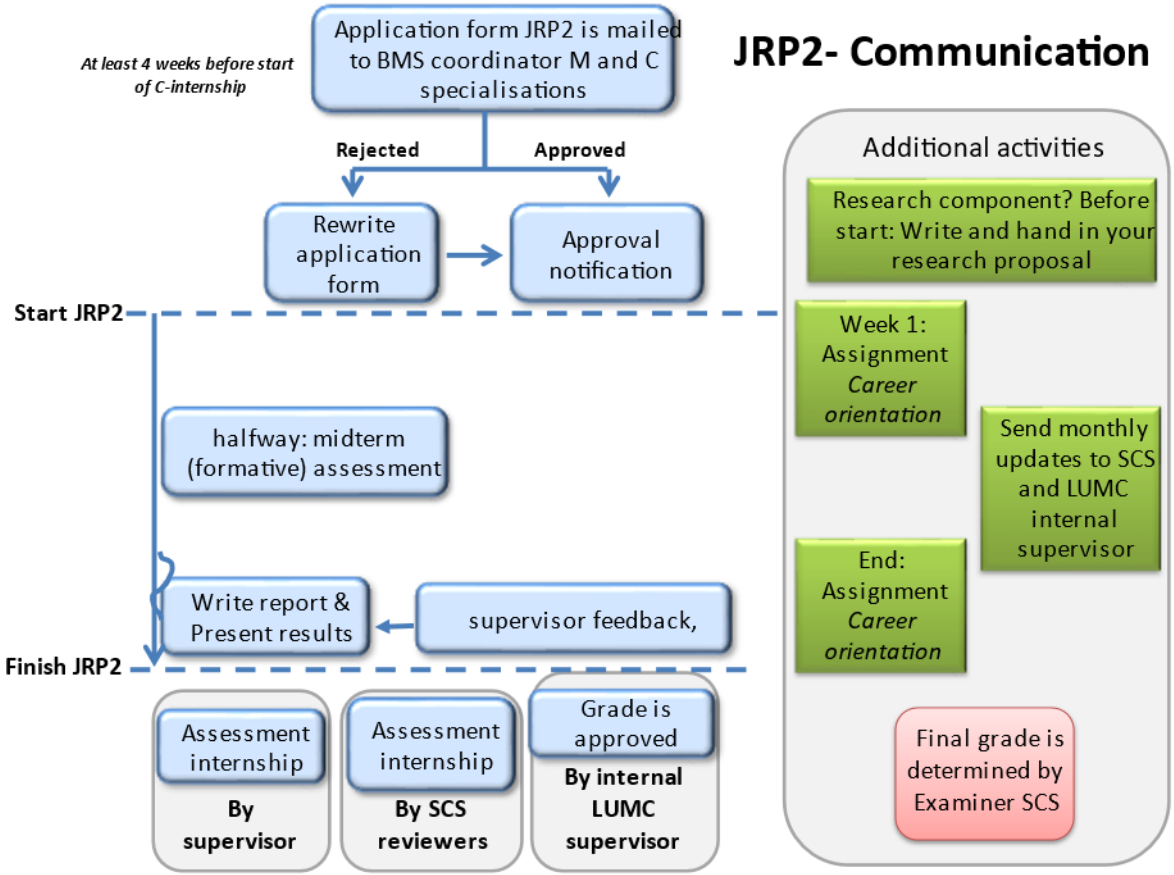
Appendix 3


JRP2- Health
At least 4 weeks before start of internship in KL-APP
Application form JRP2
Rejected
Approved
Rewrite application form
Approval notification
Start JRP2
week 4: Interim evaluation
week 12: Midterm (formative) assessment
Write report & Present results
supervisor feedback, plagiarism check
Finish JRP2
Assessment internship
By supervisor
Assessment final report
By reviewer
Assessment final report, plagiarism check
By CIS
Additional activities
Week 1: Assignment Career orientation
Optional: Write a Scientific Review
End: Assignment Career orientation
Final grade is determined by examiner MIC

Appendix 4


JRP2- Management
At least 4 weeks before start of internship
Supervisor feedback
Internal M supervisor feedback
Write proposal and fill in application form
Rejected
Approved
Rewrite proposal and application
Approval notification
Start JRP2
halfway: midterm (formative) assessment
Write report & Present results
Feedback supervisor and M internal supervisor
Finish JRP2
Assessment internship and report
By supervisor
Assessmentreflection report and validation grade supervisor
By internal M supervisor
Additional activities
Week 1: Assignment Career orientation
Send monthly updates to internal M supervisor
Participate in (at least) 3 M sessions
End: Assignment Career orientation
Final grade is determined by examiner MIC

Appendix 5


JRP2- Communication
At least 4 weeks before start of C-internship
Application form JRP2 is mailed to BMS coordinator M and C specialisations
Rejected
Approved
Rewrite application form
Approval notification
Start JRP2
halfway: midterm (formative) assessment
Write report & Present results
supervisor feedback,
Finish JRP2
Assessment internship
By supervisor
Assessment internship
By SCS reviewers
Grade is approved
By internal LUMC supervisor
Additional activities
Research component? Before start: Write and hand in your research proposal
Week 1: Assignment Career orientation
Send monthly updates to SCS and LUMC internal supervisor
End: Assignment Career orientation
Final grade is determined by Examiner SCS