The final year
2019-2020

Bio-Informatics Programme

Leiden University of Applied Sciences

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1. Introduction

Since the discovery of the human genome in 2001, a quiet revolution has been taking place in bioscience. Since then, research laboratories have found it reasonably easy to collect enormous quantities of biological data and it is the analysis of these data by bio-informatics specialists that is now holding up the progress of research. For this reason, thousands of bio-informatics specialists will be needed in the Netherlands over the next few years.

In 2003, Leiden University of Applied Sciences launched its four-year, full-time Bachelor degree course in Bio-informatics. Learning in and with professional practice plays a prominent part in the curriculum of the Bio-informatics programme. As early as the second year, students can work in university on projects supplied by the professional field. The fourth year is reserved for the graduation project, when the student learns to work as a bio-informatics specialist in the professional field. This is a very important element of the course, because the professional field requires independent, self-reliant and creative professionals who can accept responsibility and are capable of solving problems in constantly changing situations. This presupposes insight into the relevant professional situations, the ability to foresee the implications of specific actions and the ability to reflect on one's own capabilities. The graduation project is the concluding part of the programme and is in fact an assessment of the competences that are essential for a new professional graduate.

The Bio-informatics programme taught by Leiden University of Applied Sciences aims to be a programme where learning the desired professional attitude has a high priority. Only then is it possible to acquire knowledge and skills efficiently and effectively in terms of professional practice.

This document deals with different aspects of the graduation project in order to clarify matters to students and placement providers.

Where "he" is used in this document, this should be understood as "he" or "she". Where "his" is used, this should be understood as "his" or "her".

Definitions

Academic Guidance Counsellor	Leiden University lecturer who mentors the student during his/her studies and approves the graduation project.
Academic supervisor	The lecturer based at Leiden University who supervises the student and conducts the evaluation meetings.
DLO	Leiden University's Digital Learning Environment.
Graduation coordinator	The coordinator of the graduation project for the Bio-informatics programme at Leiden University of Applied Sciences.
Examiner 1	The academic supervisor who chairs the graduation session and carries out the interim assessment and final assessment of the graduation.
Examiner 2	A lecturer from Leiden University, appointed by the graduation coordinator, who carries out the final assessment of the graduation.
Graduation process	Period of 40 calendar weeks in which at least 190 eight-hour days are spent working on the graduation project. The exact start date may vary from person to person.
Graduation project plan	An action plan in which attention is focused on describing the organisation where the student will perform the project, the activities and the schedule.
OER	The Education and Examination Regulations for the programme. These regulations are the deciding factor in the event of ambiguity or inconsistency with this document.
Placement application form	Form that the student completes to specify where he wants to perform the project and details of the project he will complete there. This form is submitted to the academic guidance counsellor and a second lecturer for approval.
Placement contract	Contract entered into at the beginning of the graduation project between the student and the placement supervisor in which arrangements for the project are agreed.
Placement provider	The company or institution at which the graduation project is completed.
Placement supervisor	The person who supervises the student at the company or institution at which the student completes his/her graduation project.
Programme/the programme	Leiden University's Bio-informatics programme.
Thesis (graduation report)	The student's final report describing the completed project and results.
Student	A student who is registered on the Bio-informatics programme of Leiden University.

2   Criteria for starting a graduation project

In order to start the graduation project, students must have passed the foundation course examination and obtained 160 ECs from the programme (see also OER).

In addition, the graduation project and the placement must have been approved by the student's academic guidance counsellor and a second lecturer.

The rule for a graduation project abroad is that the project will only be finally approved if the student meets the requirements below (additional requirements, the above requirements still apply):

- Permission from the University of Applied Sciences: the "Authorisation form for study or placement abroad" must be completed
- The "Registration form for placements or study abroad" must be completed
- Attendance at health and safety information session

Further information on graduation projects abroad and the forms required can be found on the Digital Learning Environment (DLO).

For almost the entire academic year, a student who meets the requirements above may start the graduation internship. Only in the period running from week 5 in the fourth school period up to and including the end of the fifth school period it is not permitted to start with the graduation internship.

3   Graduation project and placement

3.1   Application procedure

- The student looks for a placement himself. He can contact placement providers himself or make use of the offered graduation assignments that are published on the DLO in the study group "Studiewijzer bio-informatica" under "Stages en afstuderen".
- After consulting his placement supervisor, the student formulates his individual project and sets it out in the placement application form (Appendix III). If the graduation project starts in the first school period, the placement application form has to be submitted to the academic guidance counsellor for approval **before June the 1st** (previous school year). If the graduation project starts in the second, third or fourth school period, the placement application form has to be submitted at least six working weeks before the start of the graduation project.
- The academic guidance counsellor discusses the graduation project with a second lecturer.
- If the graduation project is approved by both lecturers, it is forwarded to the graduation coordinator. The graduation coordinator appoints an academic supervisor. If the project is not approved, the academic guidance counsellor informs the student that the project has to be altered or that he will have to find a new project.
- The future placement supervisor and the student are informed by the graduation coordinator that the graduation project has been approved by e-mail. The point at which the student can actually start his graduation project will depend on when the student has met the requirements referred to in Section 2.

3.2   Requirements for graduation project

The contents of the graduation project must meet the requirements below:

- Individual project
  The student must demonstrate that he can function as a self-reliant bio-informatics specialist. That is why each student must complete an individual project. If several students carry out a graduation project with one placement provider, it must be clearly specified what the boundaries of the projects are. The students will also be allocated a different academic supervisor so that the students can be individually assessed.
- Biology component and informatics component
  The graduation project must involve both a biology component (at least 10%) and an informatics component (at least 10%). This means that when an application is built during the graduation project, this application will also be tested with biological data. This must be linked to answering a biological research question.
  The same applies vice versa, i.e. when the graduation project mostly consists of analysing biological data, scripts must also be written for use in this analysis. Both the biology component and the informatics component must be reproduced in the thesis.

- (Biological) data
  Any (biological) data that the student needs for the execution of the graduation project must be available at the start of the graduation internship.
- Theoretical framework
  The graduation project must be embedded within a scientific theoretical framework. The student must be able to demonstrate in his thesis that he has read a sufficient amount of scientific literature, i.e. at least 10 articles.
- Capable of completion within graduation period
- Beginning and end
  The graduation project must have a beginning and an end. It is also permitted for a graduation period to be made up of multiple projects, provided that they can be completed.
- Higher professional (HBO) level
  When working on the graduation project, the student must reach the final level of the Bachelor's Degree in Bio-informatics, as described in Appendix II and Section 5. These competences are based on the competences described for Bachelor of Applied Science.
- Consistent with student's course of study
  The graduation project must be consistent with the course of study followed by the student. The student is responsible for ensuring this. The assessment is performed by the academic guidance counsellor.
- Knowledge of bio-informatics available
  Someone at the placement must have some knowledge of bio-informatics or the student must have easy access to a bio-informatics specialist outside the placement organisation, so that the student's subject knowledge can be properly assessed.

3.3 Placement requirements

A number of requirements have been imposed on the placement in order to maximise the likelihood of a successful graduation project for the placement provider, the student and the University of Applied Sciences. These requirements are (but not limited to):
- The student must have his own workplace, which meets health and safety requirements. The student does his work from this workplace throughout the graduation project;
- Within the organisation, a placement supervisor is responsible for supervising the student (in terms of both content and organisation). This placement supervisor is in regular contact with the student and takes part in the evaluation meetings;
- The placement supervisor ensures the organisation's commitment in terms of the graduation period and the graduation project;
- The placement supervisor has a working and thinking level which is minimal bachelor level;
- This commitment is set forth in a placement contract. The responsibility for entering into a placement contract rests with the student and the placement provider. An example of a placement contract is available from DLO in the study group "Studiewijzer bio-informatica" under "Stages en afstuderen". If you use a different placement contract and have any questions, please contact the graduation coordinator.

4 Progression and content of the graduation project

The graduation project is the concluding part of the programme and is in fact an assessment to ascertain the competences that it is essential for a new professional graduate to possess. During the graduation project, the student does practical work in response to a clearly defined problem.
The graduation project is generally hosted externally in a company, research institute, university or hospital in the Netherlands or abroad. The duration of the graduation project is approximately 40 working weeks including writing the thesis and the graduation presentation.
The proposal for the graduation project is made by the placement supervisor but the student works out the project himself in an action plan.

4.1 The progression of the graduation project
- Week -1 (before the project starts): Return day 1 (*startup meeting and peer-to-peer interaction*)

- As soon as the student starts his graduation project, he informs his academic supervisor accordingly.
- The first placement visit by the academic supervisor takes place in week 2, 3 or 4. During this first placement visit, the dates are also set for the next placement visits.
- In week 4 of the graduation project, the Graduation project plan (Action Plan) is submitted to the academic supervisor.
- In week 5 or 6 of the graduation project, the academic supervisor discusses the Action Plan with the student. This discussion takes place via email or by telephone. If a large part of the Action Plan has to be changed, the student will have to call in at Leiden University.
- In week 16-19, an interim assessment is made during the second placement visit. The academic supervisor and the placement supervisor will jointly complete the interim assessment form (see Appendix VIII). The interim assessment will then be discussed directly with the student. For further information on the interim assessment, see Section 5.1.1.
- In week 25, the student submits a written interim report to the academic supervisor. For details, see Section 4.2.5.
- In week 27-29, the academic supervisor's third placement visit takes place. The written interim report and other matters are discussed during this third placement visit. In addition, the previous interim assessment is consulted to ascertain whether the student has improved.
- In week 35, the student delivers an electronic version of the final thesis via Gradework.
- The graduation coordinator appoints a second examiner (examiner 2).
- The academic supervisor (= examiner 1) and examiner 2 give a final Go/No go decision for the graduation session based on the reports submitted. An appeal against this decision can be filed with the graduation coordinator and then the examination board for the programme.
- In week 38-42, the student gives his graduation presentation at Leiden University and provides an account of his graduation project. The graduation presentation is attended by the placement supervisor.

A number of return days are also scheduled during the graduation project (see Appendix I and the Bin4 and/or bslb4 schedule). During the return days, all the students working on their graduation project (except for students doing their project abroad) go to Leiden University of Applied Sciences and various activities take place. See Appendix I for a list of dates for the return days and the activities that take place then.

4.2   Content of the graduation project

The elements of the graduation project are:

1. Graduation project plan
2. Practical work
3. Orientation day
4. Project presentation (for students, at the university during return day 3)
5. Written interim report
6. Interim presentation at placement
7. Poster presentation (at the university during return day 4)
8. Final presentation at placement
9. Thesis (graduation report)
10. Graduation presentation and defence of thesis

4.2.1 Graduation project plan

The Graduation project plan (Action plan) must be submitted electronically (after approval by the placement supervisor), via Gradework, not more than four weeks after the graduation project begins. As soon as the Action Plan has been submitted electronically, the student notifies the academic supervisor by email. The Action Plan is graded as a pass (P) or fail (F). Being awarded a pass for the Action Plan is a precondition for obtaining the Bafstu study unit. If the action plan is graded as a fail, this must first be improved (by means of a resit) before the student can continue with the graduation assignment.
The Action Plan can be written either in Dutch or in English. Before the action plan is submitted, it must be approved by the placement supervisor.

The Action Plan contains the following elements:

a) Title and title page
b) Introduction

c)   Goal/research question
d)   Products
e)   Flow chart
f)   Timetable
g)   Risk analysis
h)   Project boundaries
i)   Supervision
j)   References

Length: approx. 5 - 8 pages (A4 size)

Re a)   The title that will probably appear on the thesis, plus "Action Plan". You should also state your name, the date and version number on the title page. As well as your name, you should also mention Leiden University of Applied Sciences and the Bio-informatics programme, the period during which you will be doing your graduation project, details of the placement where you will be doing your graduation project, the name of your placement supervisor (with academic degree) and the name of your academic supervisor (with academic degree).

Re b)   Contains the objective or hypothesis of the graduation project plus all the background information the reader will need to understand the project. This is a substantive piece of text that describes the *what, why* and *how*, for which you have to do a lot of reading. When describing *what*, you explain the title; when describing *why*, it is important to set the project in a wider context (explain the public interest and provide a description of the background) and when describing *how,* state briefly what you intend to do. Don't copy what the "client" says, but explain it in your own words. If done correctly, this section will already constitute a large part of the introduction to the thesis. The AMA rules should be used for referring to consulted literature.

Re c)   The objective of the graduation project is repeated briefly and concisely.

Re d)   This describes precisely which products have to be delivered.

Re e)   The flow chart provides an overview of the research project and, if necessary, the software to be developed.

Re f)   General time schedule in weeks. Make a list of everything you have to do to bring the graduation project to a successful conclusion, e.g. desk research, writing program X that can do Y, writing reports, etc. This is set out in a schedule based on the weeks during which the project takes place.

Re g)   This describes the risks during the graduation project. For each risk, you must state the likelihood of the risk scenario arising and how serious it will be for the progress of the project if it happens. You will also have to think of a way of preventing or resolving each risk in advance.

Re h)   Here, the student indicates what the limits of the graduation project will be, i.e. what the student will <u>not</u> do. This is to prevent any ambiguity in the arrangements with the client.

Re i)   This describes the form and extent of the supervision.

Re j)   Provide a list of the literature you consulted when writing the Action Plan. Make sure that the text of the Action Plan also contains references to the literature consulted in the right place. Make use of the AMA rules.

4.2.2 Practical work

The placement provides the student with the opportunity to acquire learning and practical experience while working in a bio-informatics project in a representative working environment. The student also becomes familiar with the specific work activities, organisational structure and culture of a particular organisation. This experience can help him choose his subsequent career path. Qualities such as the ability to work independently, communicate, collaborate, take the initiative, make plans and give presentations are important and can be exercised during the graduation project.

The practical work calls for a project-based approach. Attention is also focused on evaluating, giving feedback on and modifying the Action Plan (if necessary). The practical work is the placement supervisor's responsibility. The practical work is one of the three products on which students are assessed on the basis of assessment criteria for items 1-3 (see Appendix IX).

4.2.3 Guided tour and supervision on orientation day

It's important to allow students to come into contact with a potential future placement at an early stage. Second-year bio-informatics students have to spend half a day shadowing a final-year student during an orientation day. The orientation days take place in period 3 and last half a day (morning or afternoon). Final arrangements can't be made until the schedule for period 3 is known.
The second-year students will be supervised by the final-year student, subject, of course, to receiving permission from the placement management or the placement supervisor.
During the second return day final year student will inform second-year students about their graduation project and placement provider. This will allow second-year students to make a choice which student they want to shadow during the orientation day. For this they make an A4 with personal details and those of the placement provider (see Appendix IV), which can be distributed among second year students. During this return day the second-year students have to make a choice for one of the placements.

What is the final-year student expected to do?
First of all, he has to ask the placement supervisor whether he agrees to two-five second-year students visiting during the orientation day.
If second-year students have chosen "your" placement, the intention is that they "shadow" you. This means observing and hearing from you what your work involves. Perhaps you can also arrange a guided tour of the placement. In this way, your placement supervisor is not burdened with additional work and it is instructive and a pleasure for you to be able to pass on what you have learned thus far.
Possible activities during the orientation day:
• Presentation by graduation student
• Attend workmeeting / presentation
• Guided tour through the company / institution
• Working on a short assignment that is derived from the graduation assignment (students should take laptop with them)

4.2.4 Project lecture
During return day 3, the student gives a presentation on the graduation project for second and third-year bio-informatics students. This mainly focuses on the placement provider and/or department where the graduation project is taking place. The objective of the graduation project and the approach to be adopted are discussed during the presentation. Attention is also focused on the results obtained thus far and what remains to be done during the remaining time of the graduation project.

4.2.5 Written interim report
The student produces a written interim report in week 25 and delivers it via email to the academic supervisor. This written interim report will include at least the (final) introduction, materials and methods, initial results and part of the discussion of the final thesis. The interim report can be written either in Dutch or in English. The intention is that the interim report should be written in the same language as the final graduation report.
The written interim report must be approved by the placement supervisor before it is submitted.

4.2.6 Interim presentation at placement
The student will give at least one interim presentation for colleagues at the placement in the course of the graduation placement. The objective of the graduation project and the approach to be adopted are discussed during the presentation. Attention is also focused on the results obtained thus far and what remains to be done during the follow-up to the graduation project. This interim presentation is planned by the placement supervisor.

4.2.7 Poster presentation

The student makes a poster (size: A0 or A1) about his/her placement and presents it on return day 4 for first-year bio-informatics students, lecturers and placement supervisors. The poster is also submitted via email. The poster can be written either in Dutch or in English.
The poster must have been approved by the placement provider before it is submitted and presented.
At the end of the poster presentation a poster award will be presented to the best poster(s).

4.2.8 Final presentation at placement

During this final presentation, the student gives a presentation of about 20-30 minutes for placement colleagues and explains the work described in the thesis. The greater part of this presentation can be the same as the graduation presentation that the student will give during the graduation session. The final presentation at the placement must have been given before the graduation presentation takes place.

4.2.9 Thesis (graduation report)

The thesis is one of the three products on which students are assessed. The thesis can be written either in Dutch or in English. The thesis is a substantial piece of work, the guidelines for which can be found in Appendix V. The Action Plan actually constitutes the beginning of the thesis as it describes the objective of the project and the analysis of the problem (with references to the literature).
As soon as the layout of the thesis is more or less fixed, a start can be made on, for example, writing the experimentation section (Materials and Methods and Results) in the course of the graduation project. Once written, the documents must be submitted to the placement supervisor.

A digital version of the thesis must be submitted via Gradework in week 35. Submitting any appendices to the graduation report also takes place via Gradework. The exact deadline by which the above documents must be submitted can be found in appendix I.
If the thesis is not submitted by the specified deadline in week 35, the bafstu module will be graded as a fail (F).
The thesis may not be submitted unless it has been approved by the placement supervisor.

The placement supervisor gives the student a maximum of two times feedback on the entire thesis (this is the guideline). The thesis may only be submitted once it has been approved by the placement supervisor

A postponement of the submission of the thesis can be requested by emailing the academic supervisor and graduation coordinator. If you wish to postpone the submission of the thesis, you must request this one week before the specified deadline at the latest. A postponement may be granted up to not more than two months after the end date of the graduation project.
If the thesis has not been submitted two months after the end date of the graduation project, the bafstu module will be graded as a fail (F).

The thesis has the structure of a scientific article, i.e.:
1) Titlepage
2) Abstract (this must be written in English);
3) Introduction (including goal/research question);
4) Materials and Methods;
5) Results;
6) Conclusion and Discussion;
7) References.

Appendix V contains a detailed description of requirements which the thesis must meet. If desired by the student and placement supervisor, the thesis can be written in English. Just as with a thesis written in Dutch, the thesis must be grammatically correct.

The thesis may be accompanied by appendices. However, the thesis must be easy to read without constantly having to refer to the appendices.

The thesis is assessed, as set out in detail in Appendix IX. Depending on the result of the thesis, the academic supervisor and examiner 2 will give a "Go" or "No Go" for the graduation session. If a "Go" is given, this means that the thesis has been graded as satisfactory, or that the thesis has been graded as dissatisfactory but can easily be improved to satisfactory. In both cases, the provisionally scheduled graduation session can go ahead. If a "No Go" is given, this means that the thesis has been graded as dissatisfactory. In this case, the student has to improve the thesis and resubmit it for the resit. The result of a "No Go" is that the provisionally scheduled graduation session will not go ahead and a new date will have to be scheduled for the graduation session. The date for submitting the thesis for the resit is set by agreement between the academic supervisor and the placement supervisor.

4.2.10 Graduation presentation and defence of thesis

The graduation presentation is one of the three products on which students are assessed (see Appendix IX).

During the graduation session, the student gives a presentation of 20 to a maximum of 30 minutes in which he explains the work described in the thesis. The maximum presentation time of 30 minutes is strictly enforced. The part of the presentation that takes place after the 30-minute deadline does not count for the assessment of the presentation. This presentation can be given either in Dutch or in English. In addition, the student spends approximately 20 minutes answering questions from the placement supervisor, examiner 1, examiner 2 and any external expert(s) present concerning the presentation and the thesis. The external expert may be someone from the bioinformatics programme advisory committee or a bioinformatics lecturer from another university. The external expert provides the university with feedback on the procedure for the graduation session, the standard of the graduation project and the assessment of the graduation project. This information is used by the bio-informatics programme to improve matters, if necessary, with a view to obtaining accreditations for the programme in future.

The external expert is not an examiner, which means that he/she does not determine the grade for the graduation session and/or the thesis. This grade is determined by the two examiners (lecturers from our programme), with the placement supervisor in an advisory role.

5   Assessment of bafstu

5.1.1   Interim assessment

The interim assessment of the bafstu module takes place in week 16-19. Examiner 1 and the placement supervisor will jointly complete the interim assessment form (see Appendix VIII). During the interim assessment, the practical work (implementation graduation project) is assessed.

If the result of the interim evaluation is dissatisfactory (<5,5) the graduation project has to be extended by four months. During the remainder of the extended graduation project, the student will have to improve the implementation of the graduation project to satisfactory to be able to complete the bafstu module with a pass. The graduation project can only be extended by agreement with and subject to the approval of the placement supervisor.

5.1.2   Final assessment

The final assessment of bafstu consists of the following three items (see also Appendix IX):

1. Implementation of the graduation project;
2. Graduation report;
3. Thesis defence.

The final grade for bafstu is rounded off to half points. The study unit "Afstuderen (bafstu)" has been passed if each of the three above assessment criteria has obtained a pass (at least 5.5). If one or more of the assessment criteria are graded as dissatisfactory (grade less than 5.5 or D), dissatisfactory (D) will be entered for bafstu in Osiris. A detailed list of assessment criteria is included in Appendix IX.

6   Resits

If an item (see section 5.1.2) is graded as dissatisfactory (grade less than 5.5 or D) during the final assessment, the student is entitled to one resit for each item (= the second opportunity). If one or more of the items is still graded as a dissatisfactory (grade less than 5.5 or D) during the second opportunity, the whole graduation project must be repeated in a different environment (i.e. different placement).

7   Supervisors' tasks

Each student has two supervisors during his final year, i.e. the academic supervisor from the University and the placement supervisor in the company or institution where the student completes his graduation project. The tasks of the various supervisors are described in this section.
On completion of the final year, the placement supervisor will be asked to complete a questionnaire to evaluate the content and standard of the bio-informatics programme.

7.1   Tasks of the placement supervisor

As a rule, each student has one person who acts as a point of contact and a responsible supervisor during the graduation project. As well as supervising the student, the placement supervisor keeps in regular touch with the academic supervisor to update the latter on the student's performance. The placement supervisor and the two examiners meet to discuss the student's final assessment. The placement supervisor has an advisory role. The placement supervisor must be a subject expert, which means having at least a bachelor qualification.

General tasks of and priorities for the placement supervisor
- To meet potential interns and provide them with information on the placement provider and the graduation project;
- To make arrangements with the student about the start of the graduation project;
- To maintain communication with the competent authority within the placement with regard to formalities such as the placement contract (this is initially a matter between the placement provider and the student); to act as an intermediary between the authority concerned and the student;
- To familiarise himself with the structure and contents of the brochure "The Final Year" published by the bio-informatics programme;
- To introduce the student to the placement provider, show him the ropes and go through the rules;
- To see to it that the student adheres to safety and other rules in force at the placement;
- To supervise the student during the graduation project and assist with looking for information (with declining intensity, so that the student can work independently in the fullness of time); the student may work at home for a maximum of one day a week;
- To give the student sufficient opportunity to keep in touch with Leiden University of Applied Sciences (via return days, etc.), especially with the academic supervisor;
- To inform the student about the interim and final assessments of his performance and to suggest improvements where necessary. Contact the academic supervisor in the event of problems;
- Discuss how things are going in discussions with the academic supervisor, including the student's performance. If necessary, make arrangements about the confidentiality of reports;
- To provide the student with the necessary startup information and assist with writing an Action Plan. The Action Plan must be approved by the placement supervisor before it is submitted;
- To schedule the student's interim presentation and final presentation for fellow researchers at the placement;

- To reach agreement with the student and academic supervisor at an early stage about the general form and layout of the thesis;
- To give the student the opportunity to write a thesis and supervise him when doing so. To supervise the student when correcting or adding to the thesis (if necessary). Any reports submitted by the student to Leiden University of Applied Sciences must first have been approved by the placement supervisor;
- To participate in the defence of the thesis and to advise and provide the two examiners with information that is necessary to assess the graduation project (see Appendix IX);
- To supervise the student when making a poster. The poster must have been approved by the placement supervisor before it is presented at Leiden University of Applied Sciences;
- The bio-informatics programme really appreciates the placement supervisor's presence at the poster presentation.

Table 2: Chronological overview of placement supervisor's activities

Week	What	Tasks
1	Graduation project begins	
2-4	• Academic supervisor visits placement (if graduation project is in the Netherlands). • Academic supervisor phones placement supervisor and student (if graduation project is abroad).	interview
4	Student sends Action Plan to academic supervisor	Help student to draw up Action Plan. Approve the Action Plan.
16-19	• Academic supervisor visits placement (if graduation project is in the Netherlands). • Academic supervisor phones placement supervisor and student (if graduation project is abroad).	Jointly complete interim assessment form with academic supervisor.
25	Student submits written interim report.	Help student to write the interim report.
27-29	• Academic supervisor visits placement (if graduation project is in the Netherlands). • Academic supervisor phones placement supervisor and student (if graduation project is abroad).	Meeting based on the written interim report.
35	Student submits the thesis.	Offer help with writing thesis. Approve the thesis.
38-42	Graduation session.	Attend graduation session at Leiden University.

7.2 Tasks of the academic supervisor

- Visits the student at the placement at least three times;
- Discusses the progress of the graduation project and indicates when the various parties involved are expected to perform specific actions. The academic supervisor also paints a clear picture of what is expected of the placement supervisor. This brochure serves as a starting point;
- Maintains contact with the placement supervisor and the student through placement visits, return days, email and telephone;
- One important task of the academic supervisor is to ascertain whether a student feels comfortable in the new situation and whether the graduation project is suitable for the student

concerned. In the event of problems, he will try to find a solution in consultation with the student and placement supervisor;

- He is the direct point of contact for all kinds of issues during the graduation project phase.
- While the thesis is being written, the academic supervisor can ask to see specific sections before a final version goes to the placement supervisor for assessment. The academic supervisor can then ascertain whether the thesis is being written in accordance with the guidelines of the bio-informatics programme. It is also important for the academic supervisor to monitor whether the student is keeping to his own time schedule;
- Acts as first examiner and is ultimately responsible, along with a second examiner, for awarding a grade for the graduation project and the modules forming part of it. The academic supervisor is responsible for administering the grades (the grades must be entered in Osiris by the academic supervisor personally);
- The academic supervisor has a peer-sharing meeting during the return days with students he supervises;
- The academic supervisor attends the poster presentation;
- By keeping in touch with the professional field, the academic supervisor is expected to introduce into the programme new knowledge from the professional field which is relevant to the University. In addition, he maintains contact with the placement supervisor to ensure that this placement supervisor remains part of his network;
- The academic supervisor also keeps an eye on whether theses are eligible for nomination for awards and reports this to the Examination Board.

8   Various matters relating to the graduation project

- Working hours and days off during the graduation project are determined by the placement provider. School vacations do not apply. If the student is off sick, he must make arrangements with the academic supervisor and the placement supervisor to make up the lost time.

- Return days are held at Leiden University of Applied Sciences during the graduation project (see Appendix I): the student is required to participate in return day activities;

- A placement contract has to be signed for each graduation project. The responsibility for entering into a placement contract rests with the student and the placement provider. An example of a placement contract is available from DLO in the study group "Studiewijzer bio-informatica" under "Stages en afstuderen". If you use a different placement contract and have any questions, please contact the graduation coordinator;

- Students are regularly confronted with confidential information during their graduation project. Arrangements must be made in advance between the placement and Leiden University of Applied Sciences to account for this. The academic supervisor will usually have to sign a confidentiality agreement.

- Some placement providers will not employ a student until he has undergone a medical examination. This examination is arranged and paid for by the placement provider.

9   Degree award and registration for the degree ceremony

Two degree ceremonies will be held in academic year 2019-2020: one in March and one in August. If you started your graduation project in September this year, only the last ceremony this year will apply to you.

<u>In order to take part in a degree ceremony, your list of grades must be in order well in advance and all the assessments confirmed.</u>

You should therefore check your list of grades as early as possible for the problems discussed in Section 9.1 and discuss any questions you have with your mentor. If your list is not correct, refer to the deadline for correcting lists of grades in Table 3.

If you want to take part in one of the ceremonies in Table 3 and your list of grades is completely correct, you have to register for the degree ceremony by email. You do this by sending an email to

Karin Baak (baak.k@hsleiden.nl) and the Examination Board Science & Technology (st.examencommissie@hsleiden.nl) stating your course (=Bio-informatica) and the date on which you would like to receive your degree.

Table 3. Deadlines and dates for degree ceremonies 2019-2020

Degree ceremony	Last date for submitting corrections to the list of grades and for registering for degree ceremony
19-3-20	27-2-20 9:00
27-8-20	9-7-20 9:00

Please note! This also means that you CANNOT take part in a degree ceremony if you have still to receive grades after the last date for registering for that ceremony.

9.1   What do you do if your list of grades is not correct?

There may be things about your list of grades that are not correct. Below is a number of common problems and their solutions.

Problem: There are grades on my list which have not been finalised.

Solution: Contact the lecturer who entered the grade and ask him to finalise this grade.

Problem: There are grades that I definitely obtained which do not yet appear on my study progress report.

Solution: Contact the lecturer you did the subject with and ask him to enter the grade and finalise it.

Problem: I passed one part of a subject in one year and another part in another year. Now there are two subject codes for this subject on my list and I haven't got any points for this subject.

Solution: Send an email to the Examination Board Science & Technology stating the subjects involved. Note the last deadline for this, which can be found in Table 3.

Problem: I passed a subject in a later year than I intended and now it is at the bottom of my list under the heading "Other".

Solution: Send an email to the Examination Board Science & Technology stating the subject(s) involved. Note the last deadline for this, which can be found in Table 3.

Problem: I chose a "Free Minor" which is made up of subjects from the bio-informatics programme and subjects from another programme. But these subjects are listed in the "minor" section in my package.

Solution: Send an email to the Examination Board Science & Technology stating the subject(s) involved. Note the last deadline for this, which can be found in Table 3.

9.2   Requesting a degree outside a degree ceremony

If you want to receive your degree outside a degree ceremony, you can do so. Once a month (on the 1st), the student affairs department checks whether there are any students who meet all the criteria for receiving a degree. If so, these students are notified automatically.

If there are things about your list of grades which are not correct, you must report them yourself. Check the list in Section 9.1. If you have to notify the Examination Board that there are things that need to be changed, do so <u>four weeks before the 1st of the month in which you would like to receive your degree</u>.

10 Offering new graduation projects

If you would like to offer a graduation project, please send your name, email address and a few keywords relating to your research to klein.an@hsleiden.nl. Your details will then be added to the list of potential internship and graduation project providers. If a student is interested in completing a graduation project with you, he will contact you.

If you have any questions, please contact the academic supervisor or graduation coordinator André Klein, klein.an@hsleiden.nl, telephone number 06-48134070.

Appendix I: Programme for final year 2019-2020

In academic year 2019-2020, four return days will be held for all fourth-year (Bin4) students working on their graduation project as part of bslb4. Each return day will consist of a joint component, followed by a peer-to-peer session with your academic supervisor and other students doing their graduation project.

Date	Activity
Tuesday 27-8-2019	**Return Day 1** - Kick-off meeting for new fourth-year students: - Information on the graduation project - Placement presentations by late starters for their peer group - Peer-to-peer session with academic supervisors
Friday 27-9-2019	**Action Plan submission**
Thursday 21-11-2019	**Return Day 2** - Provide second-year students with information about orientation day - Peer-to-peer session with academic supervisors
Thursday 13-2-2020	**Return Day 3** - Placement presentations for Bin2 and Bin3 students - Peer-to-peer session with academic supervisors - Lunch (communal) or refreshments
Thursday 19-3-2020	**Degree ceremony**
Wednesday 6-5-2020	**Thesis submission** For students who started the graduation process in September
Thursday 28-5-2020	**Return Day 4** - Poster presentations for Bin1 students - Placement presentations by late starters for their peer group - Peer-to-peer session with academic supervisors - Refreshments
25-5-2020 - 26-6 2020	**Graduation sessions** For students who started their graduation project in September
Thursday 27-8-2020	**Degree ceremony**

Uniforme jaarindeling 2019-2020

Periode 1

Kalenderweek	35	36	37	38	39	40	41	42	43	44	45	46
Periodeweek	0	1	2	3	4	5	6	7		8	9	10
Bafstu week		1	2	3	4	5	6	7	8	9	10	11
Datum	26-8	2-9	9-9	16-9	23-9	30-9	7-10	14-10	21-10	28-10	4-11	11-11
maandag		ST							RV			
dinsdag									RV			
woensdag									RV			
donderdag						LO			RV			
vrijdag									RV			

Periode 2

Kalenderweek	47	48	49	50	51	52	1	2	3	4	5	6
Periodeweek	1	2	3	4	5			6	7	8	9	10
Bafstu week	12	13	14	15	16		17	18	19	20	21	22
Datum	18-11	25-11	2-12	9-12	16-12	23-12	30-12	6-1	13-1	20-1	27-1	3-2
maandag						RV	RV					
dinsdag						RV	RV					
woensdag						Kerst	RV					
donderdag						Kerst	RV					
vrijdag						RV	RV					

Periode 3

Kalenderweek	7	8	9	10	11	12	13	14	15	16	17	18
Periodeweek	1	2		3	4	5	6	7	8	9	10	
Bafstu week	23	24	25	26	27	28	29	30	31	32	33	34
Datum	10-2	17-2	24-2	2-3	9-3	16-3	23-3	30-3	6-4	13-4	20-4	27-4
maandag			RV							P		RV
dinsdag			RV									RV
woensdag			RV									RV
donderdag			RV									RV
vrijdag			RV						GV			RV

Periode 4

Kalenderweek	19	20	21	22	23	24	25	26	27	28	29
Periodeweek	1	2	3	4	5	6	7	8	9	10	11
Bafstu week	35	36	37	38	39	40	41	42			
Datum	4-5	11-5	18-5	25-5	1-6	8-6	15-6	22-6	29-6	6-7	13-7
maandag	RV				PK						
dinsdag	RV										
woensdag											
donderdag			HV								
vrijdag			RV								

ST = Start studiejaar
LO = Leidens ontzet (3 oktober)
RV = Roostervrij
GV = Goede Vrijdag
P = Pasen
KO = Koningsdag
HV = Hemelvaart
PK = Pinksteren
S = Suikerfeest

Toelichting bij Suikerfeest:
Op de dag waarop het Suikerfeest valt worden
bij voorkeur geen activiteiten gepland waarbij aanwezigheid van studenten verplicht
of noodzakelijk is.

Appendix II Competences of a Bachelor of Applied Science

Level to be attained by the student in the graduation project

The information in this appendix is partly based on the document "Bachelor of Applied Science: *A competence-oriented profile description*", version 1.0 (June 2013).

In 1999, European accords on higher education were struck in Bologna, which have resulted in major changes to the education system in recent years. In order to create flexible, international learning pathways, the Bachelor/Master (BA/MA) structure used in the English-speaking world was introduced and it was decided to provide a clear nomenclature for all the member states. A clear nomenclature and recognisable qualifications should make it easier for graduates to find employment in a globalising economy. A single European academic credit system, the European Credit Transfer System was also introduced, which means that, in Europe, one ECTS credit is equivalent to 28 study hours for a student.

In the Netherlands, a start was made on introducing the BA/MA structure in 2002, both in higher professional education (HBO) and in university education (WO). This change was also seized on as an opportunity to modernise the existing programmes and simplify the structure. In the technical HBO system, where there were 40 different qualifications, the HTNO Sector Council and the HTNO Sector Advisory Board looked for options to expand existing programmes. On the advice of the working group on expanding HTNO Bachelor degree programmes, the Netherlands Association of Universities of Applied Sciences introduced four Bachelor domains in 2003 and asked the universities of applied sciences to transfer their programmes to one of the four Bachelor domains: Bachelor of Engineering, Bachelor of Built Environment, Bachelor of Information and Communication Technology of Bachelor of Applied Science.

The Bio-informatics programme of Leiden University of Applied Sciences falls within the scope of the Bachelor of Applied Science. The competences for the Applied Science domain [*Domein Applied Science* – DAS] have been formulated on the basis of existing national professional and programme profiles. The profile of the Applied Science domain contains eight competences, seven of which apply to a bio-informatics specialist. The seven DAS competences are described below, together with the related detailed competences.

1. Competence: Research

The Bachelor of Science performs research in the Applied Science domain which either helps to solve a problem or develop a method, or provides greater insight into a subject within his specific working environment.

	Level I	Level II	Level III	Level IV
	The student performs simple research in response to a problem statement provided. He demonstrates this by:	The student translates a problem provided into specific problem statements, chooses a research strategy under supervision and performs the research. He demonstrates this by:	The student translates a problem into a research strategy and performs the research. He demonstrates this by:	Experienced professional (see description of competence above). He demonstrates this by:
A	communicating with the client on the substance of the assignment (e.g. internal or external client); analysing a given case, formulating a research question and dividing it into sub-questions.	Analysing the problem based on relevant sub-questions and accounting for the chosen research strategy.	Accounting for the chosen research strategy.	Having sufficient expertise and initiative to identify and analyse problems in the field of applied science.
B	Clarifying the problem statement (if necessary) in consultation with the client. Setting objectives in consultation with the client on the basis of a simple objective provided.	Formulating sub-questions regarding the research to be carried out. Analysing objectives in consultation with the client and converting them into the required research.	Making proposal(s) on the strategy and implementation to be followed.	Setting the objectives for a required piece of research on the basis of the problem statement.

C	Using supplied literature to clarify the question.	Selecting sources and using them to study the research question in depth.	Using relevant criteria to gauge the reliability of sources.	Selecting and obtaining without assistance scientific and other literature in order to study the problem in depth, thereby validating the reliability of the different sources of information.
D	Making a business plan/action plan for the assignment in accordance with a supplied protocol (stating goal, organisation, duration and schedule, taking account of safety and environmental rules).	Making a work plan in consultation with the client, designing on his own an approach to the conduct of the research, taking account of QSE.	Drafting a work plan on his own and giving reasons for the constraints it contains.	Preparing a workable and sustainable business plan (with budget) that takes account of quality control, safety, welfare, the environment, sustainability and ethics.
E	Working in accordance with the business plan/ action plan when carrying out the assignment.	Working in accordance with the business plan when carrying out the assignment. Implementing the business plan efficiently and updating it as necessary in between times.	Implementing the business plan effectively and efficiently and updating it as necessary in between times.	Systematically implementing the business plan, using relevant methods, techniques and apparatus.
F	Playing an active part in a team.	Acting as a full team member in his own work environment (through reflection and feedback).	Depending on the nature of the assignment, acting as a full member and collaborating in a team which also contains staff from other professional field(s).	Collaborating in a results-oriented way in a multidisciplinary setting.
G	Processing and summarising the result of the assignment arithmetically/statistically as necessary, structuring in the light of the research question and presenting it clearly.	Summarising and interpreting the full or partial results in relation to the assignment/research question.	Logically and clearly combining the full or partial results and drawing conclusions in relation to the research question.	Summarising, structuring and interpreting the results in relation to the research question.
H	Reporting orally and/or in writing on the assignment in accordance with specified guidelines.	Combining the full or partial results into one report in accordance with the applicable guidelines/ standard.	Reporting on the research in accordance with the standard applicable in the professional field.	Reporting results in accordance with the standard applicable in the professional field.
I	Formulating conclusions from the research results and if necessary submitting a proposal for improving the implementation of the assignment/the research.	Making a proposal for follow-up steps based on the combination of partial results.	Formulating a strategy for follow-up research; making a proposal for follow-up steps based on an analysis of results.	Making proposals based on the results obtained for following up the research.

2. Competence: experimentation

The Bachelor of Science conducts experiments in the Applied Science domain in a way that ensures that demonstrably reliable results are obtained.

	Level I	Level II	Level III	Level IV
	The student conducts an experiment according to a protocol. He demonstrates this by:	The student chooses a suitable protocol, adjusts it as necessary and carries it out.	The student sets up experiments under supervision and conducts them unsupervised in a systematic way. He demonstrates this by:	Experienced professional (see description of competence above). He demonstrates this by:

		He demonstrates this by:		
A	Explaining, when asked, the purpose of the experiment.	By choosing a protocol and explaining why it is suitable for the experiment.	By translating a general procedure or predetermined synthesis objective into (a) work instruction(s) and combining multiple methods into a test setup.	Translating a research question into a suitable experimental setup, including work instructions.
B	By explaining, when asked, the principle of the method used.	Assessing the suitability of methods and protocols and resolving experimental problems (troubleshooting).	Choosing methods and techniques and anticipating possible experimental problems.	Demonstrating such knowledge, insight and skill that it is possible to carry out the work in a responsible, safe and critical way using the correct methods, techniques and equipment.
C	Operating equipment according to instructions.	Assessing the suitability of available equipment and, if necessary, making adjustments.	Taking account of possibilities and limitations of the equipment to be used when setting up and conducting experiments.	Studying in depth methodologies and background information (including the possibilities and limitations of the equipment).
D	Properly preparing an experiment on the basis of a protocol, conducting it and obtaining a result within the specified time in accordance with safety and environmental rules.	Preparing a work schedule for carrying out a protocol to assess safety and environmental aspects and implementing it and obtaining reproducible results within the specified time.	Preparing a schedule for a number of experiments, conducting them and obtaining reproducible results within the specified time.	Following work instructions to the letter and adjusting them if necessary, thereby obtaining demonstrably reliable and reproducible results.
E	Carrying out a protocol in accordance with safety requirements.	Assessing the environmental and safety aspects of a protocol.	Taking account of environmental and safety aspects in the test setup and communicating with his colleagues about it.	Taking account of HSE and hygiene aspects and conducting the experiments in the most sustainable way possible.
F	Processing measurement results properly and correctly and assessing whether a result obtained is realistic.	Assessing the reliability of a result on the basis of statistical considerations.	Choosing a statistical or other method for assessing the reliability of the result obtained.	Using statistical and other techniques to process and/or validate the results and guarantee their quality.
G	Keeping an accurate and well-organised lab journal.	Keeping an accurate and well-organised lab journal and recording proper conclusions from the experimental results in the report.	Keeping an accurate and well-organised lab journal with proper conclusions and substantiating the reliability of the results obtained in the report.	Reporting results in accordance with the standard applicable in the professional field.
H	Making a proposal if necessary to improve the performance of a protocol.	Making proposals to improve the protocol.	Making proposals to improve the protocol and if necessary proposing methods for follow-up experiments.	Making proposals for follow-up experiments based on the research results.
I	Scheduling the work to be done out on a lab day or part-day to ensure that it can be performed efficiently.	Scheduling the experimental work to be performed within a specific project which is time-limited (a few weeks).	Scheduling the setting up and performance of experimental work within a project of longer duration (at least six months, as stated in the graduation project), where regular adjustment of the schedule is required in line with progress.	Achieving the objective set quickly and efficiently through the use of project planning.

For 'equipment', a bio-informatician could read 'software/computer/control platform'; for 'experiment', a bio-informatician can often substitute 'analysis'. For 'lab journal', a bio-informatician can substitute 'logbook'.

3. Competence: development

N/A

4. Competence: Management | coordination

The Bachelor of Science develops, implements and maintains a management system or parts thereof to ensure that the system conforms to the relevant legislation and quality standards and the organisation's norms and values.

	Level I	Level II	Level III	Level IV
	The student checks the work against the requirements of different management systems. He demonstrates this by:	The student makes a contribution to one or more management systems within the organisation. He demonstrates this by:	The student implements and maintains a management system. He demonstrates this by:	Experienced professional (see description of competence above). He demonstrates this by:
A	Identifying and noting actual or potential problems in implementing a management system.	Making proposals for solving problems connected with the implementation and maintenance of a management system.	Anticipating possible problems in implementing and maintaining a management system.	Analysing any problems relating to the development, implementation and maintenance of a data or other management system.
B	Reviewing the options for improving the implementation of a management system.	Making proposals for improving a management system.	Preparing an improvement plan for a management system and implementing it or arranging its implementation.	Preparing, implementing and assessing an improvement plan that will solve the problems in a creative, structured and economically viable way.
C	Showing that he is familiar with relevant legislation.	Applying in practice elements of legislation when updating a management system.	Incorporating new legislation or socially desirable developments into an existing management system.	Taking account of legislation and national and international standards and values, particularly in the area of sustainability and reliability.
D	Fitting his activities into the management system used at his place of employment.	Verifying compliance with the guidelines for generally applicable management systems.	To maintain and/or improve the management systems used at his place of employment and implementing a new system if required.	Coordinating activities relating to the development, implementation and maintenance of the data or other management system (or parts thereof).
E	Reporting on compliance with the guidelines for the management systems used when carrying out his activities.	Reporting on the implementation of one or more management systems at his place of employment.	Reporting on and presenting changes in one or more management systems.	Reporting and presenting information in accordance with the standard applicable in the professional field.
F	Providing, on request, information for employees on the implementation of the management system used.	Keeping employees fully informed of the contents of a management system and alerting them to any changes.	Helping employees to use a management system.	Keeping employees fully informed of the contents and use of the data management system and any changes.
G	Managing development on the basis of suitable process descriptions.	Adjusting the schedule in an ongoing development process to take account of	Making proposals for follow-up development	Making proposals for developing new

		the results of the first development steps.	steps in an ongoing development process.	products, processes or methods.

5. Competence: Advice | procurement and sales

The Bachelor of Science provides properly substantiated advice on the design, improvement or use of products, processes and methods and effects profitable transactions involving products or services within the Applied Science domain.

	Level I	Level II	Level III	Level IV
	The student familiarises himself with users' problems and/or requirements. He demonstrates this by:	The student helps to solve a user's technical problem. He demonstrates this by:	The student gives practical advice on a specific issue. He demonstrates this by:	Experienced professional (see description of competence above). He demonstrates this by:
A	Listening to the customer.	Asking pertinent open questions.	Dealing flexibly with the customer's changing requirements.	Adopting a service-oriented attitude.
B	Describing the assignment clearly and unambiguously.	Reporting/presenting the customer's requirements which have been identified.	Making a reasoned recommendation.	Clarifying the issue raised by the client.
C	Analysing market research data.	Interpreting market research data.	Identifying market trends and responding to them.	Preparing and implementing market and other research.
D	Specifying actions to follow a piece of market research.	Preparing an action plan for a piece of market research.	Preparing an advice plan, taking account of his employer's competitive position.	Preparing (parts of) a recommendation.
E	Acknowledging the requirements of the customer/client or user as a relevant technical problem.	Identifying the customer's requirement.	Devising creative solutions for specific problems or developments.	Translating customers' wishes and questions into feasible solutions or recommendations in consultation with researchers and developers.
F	Knowing the customer/client or user.	Forming a relationship based on trust.	Taking account of the customer's environment.	Maintaining relationships with customers in an appropriate manner.
G	Identifying different negotiating techniques.	Using suitable negotiating techniques.	Persuading stakeholders in order to be able to implement desirable activities.	Using negotiating techniques when buying and selling.

6. Competence: Instruction | supervision | teaching | coaching

The Bachelor of Science instructs and supervises employees and customers while teaching new knowledge and skills within the Applied Science domain.

	Level I	Level II	Level III	Level IV
	The student: passes his own knowledge and skills, on request, to employees (by demonstrating and explaining). He demonstrates this by:	The student: takes the initiative to instruct employees who are lacking in knowledge and skills. He demonstrates this by:	The student: transfers knowledge and skills to employees using appropriate teaching methods. He demonstrates this by:	Experienced professional (see description of competence above). He demonstrates this by:
A	Helping to provide fellow employees, students or trainees with instructions/	Providing fellow employees, students or trainees with instructions/ demonstrations with	Independently providing fellow employees, students, trainees or course participants with	Independently providing employees, trainees, students or course participants with

	demonstrations with regard to a practical test, etc.	regard to a practical test, etc.	a theoretical introduction incl. instructions/ demonstrations with regard to a practical test, etc.	theoretical introductions, instructions and demonstrations with regard to practical experiments, the use of equipment, materials, etc.
B	Helping to supervise employees, trainees, students or course participants in the use of methods and equipment, etc.	Participating in the supervision of employees, trainees, students or course participants in the use of methods and equipment, etc.	Providing part of the supervision of employees, trainees, students or course participants in the use of methods and equipment, etc.	Supervising employees, trainees, students or course participants in the use of methods and equipment as well as in conducting desk research for practical assignments.
C	Explaining things clearly.	Transferring information tailored to the target group.	Transferring complex information tailored to the target group.	Applying teaching skills in different educational settings.
D	Being aware of the importance of continuously developing his expertise.	Initiating activities to develop his own expertise and that of others.	Helping to coach employees on the basis of his own experience.	Coaching employees and teams on the development of expertise.
E	Providing feedback, on request, on the evaluation/ assessment of the results of instructions, etc.	Providing a substantiated evaluation/assessment of the results of instructions, etc.	Helping to draw up assessment criteria and making suggestions for further development.	Evaluating and assessing the results of instructions, training and/or courses.

7. Competence: Leadership | managing people

The Bachelor of Science provides direction and guidance for organisational processes and the employees
involved in them in order to achieve the goals of the division/department or the project which he is managing.

	Level I	Level II	Level III	Level IV
	The student provides employees with assistance and guidance when asked to do so. He demonstrates this by:	The student provides employees with assistance and guidance in order to improve performance. He demonstrates this by:	The student: ensures that team members' goals and roles have been defined and helps the members to achieve the team goals. He demonstrates this by:	Experienced professional (see description of competence above). He demonstrates this by:
A	Showing that he understands the place and role of his part of the organisation (internship/graduation project)	Bringing his own knowledge and understanding to bear in approaching new activities in the organisation.	Ensuring that employees are clear about what their role is in achieving the organisation's goals and supervising them in this regard.	Having a vision for his part of the organisation and communicating it.
B	Helping to allocate tasks and work.	Providing assistance in solving problems in scheduling and prioritising work.	Specifying how tasks should be allocated when scheduling work, as well as providing a timetable, setting priorities and listing other constraints in terms of time, money, quality, information and organisation.	Working on the basis of a project and according to a plan.
C	Being approachable and accessible for employees, fellow students and lecturers.	Motivating employees by addressing their qualities.	Delegating tasks to employees according to their job and qualities.	Coaching employees by inspiring, persuading and motivating them, showing them respect, encouraging collaboration and delegating.

D	Being honest and reliable towards employees, fellow students and lecturers.	Calling employees to account for the way they deal with colleagues.	Being open and clear about his own position and helping to resolve conflicts.	Acting as a role model for employees.
E	Supporting others in their initiatives.	Encouraging employees to develop new initiatives themselves.	Helping employees to develop their initiatives.	Giving employees a feeling of shared responsibility.
F	Contributing to staff and progress meetings on the basis of his own work.	Sharing ideas with other employees at staff and progress meetings and taking the initiative to solve problems.	Allowing participants at the meeting to make a specific contribution based on their role in the team.	Chairing meetings, including progress meetings.
G	Giving a clear and unambiguous explanation or instructions about a task to be performed.	Consulting with other employees to reach a common goal.	Managing employees' progress to achieve the specified goals.	Communicating in a task- and process-oriented way.
H	Giving employees an insight into the importance of the constraints of the project.	Adjusting an existing schedule by agreement to remain within the stated constraints.	Allocating tasks to those participating in the project so as to achieve the best possible results within the constraints.	Managing a project in terms of time, money, quality, information and organisation.

8. Competence: self-management

The Bachelor of Science manages himself in performing his duties and in his development and ensures that he is up to date with the latest developments in terms of knowledge and skills and in terms of ethical dilemmas and socially accepted norms and values.

	Level I	Level II	Level III	Level IV
	The student reflects on his own performance. He demonstrates this by:	The student reflects on his own performance and development. He demonstrates this by:	The student manages himself in his own work. He demonstrates this by:	Experienced professional (see description of competence above). He demonstrates this by:
A	Working towards an established learning objective. Discussing the learning strategy and the ensuing results; being aware of the function of a learning objective and how to use it in his learning strategy.	Determining his own learning objective and learning strategy in consultation/without assistance and reflecting on the result.	Making a career development plan and setting his own new learning objectives.	Setting and implementing a learning objective and a learning strategy without assistance and feeding the result back into the learning objective.
B	Identifying any need to adjust his own performance in the academic environment.	Using feedback on his own performance to adapt to the working environment.	Adjusting his performance to meet the requirements of the different working environments.	Quickly adapting to changing working environments.
C	Communicating with others about professional and ethical dilemmas and stating professional and ethical dilemmas.	Taking note of any professional and ethical dilemmas and giving his opinion on them.	Taking a position based on socially accepted professional and ethical norms and values.	Weighing up professional and ethical dilemmas and taking a decision in accordance with socially accepted norms and values.
D	Seeking information in order to improve his own performance.	Taking on board criticism of work delivered and discussing his own performance with colleagues.	Adapting his own performance on the basis of experience.	Giving and receiving feedback.
E	Critically evaluating his own actions and thinking.	Drawing conclusions on his actions and if	Accounting to others for his own actions and	Critically evaluating his own actions and thinking,

Being aware of the effect of his own attitude to work on others and on group members in the case of a project.	necessary articulating them to others.	giving reasons for choices to be made.	and accepting responsibility for them and taking this on board.

During the graduation project, a student must meet the following requirements with regard to level:

	Competence						
	1. Research	2. Experimentation	4. Management	5. Advice	6. Instruction	7. Providing leadership	8. Self-management
Level required	III	III	II	II	II	II	II

Appendix III: Placement application form

Graduation Project Placement Application Form

Name   **:**

Student No.   **:**

ALL PLACEMENTS MUST BE APPROVED BY YOUR ACADEMIC GUIDANCE COUNSELLOR ON THIS FORM.
ONCE IT HAS BEEN APPROVED AND SIGNED, HAND THIS FORM TO THE GRADUATION COORDINATOR.

STUDENT'S DETAILS:

Name   :
Address   :
Domicile   :
Telephone number   :
Mobile   :
University email   :
Personal email   :
Class   :
Student No.   :

DETAILS OF PLACEMENT:

Placement provider   :
Name of placement supervisor :
Name of contact person *)   :
Department/Section   :
Address   :
Postal code and town/city   :
P.O. Box   :
Postal code and town/city   :
Telephone number   :
Mobile   :
Placement supervisor's email :
URL   :
Country   :

*) if different from placement supervisor

THE PLACEMENT:
Start date   :
Finishing date   :
Hours per week   :
Place of the work :
Placement email address   :

The student may only start the graduation internship if the necessary research data (if applicable), which will not be generated by the student, is available.

In the period running from week 5 in period 4 up to and including the end of period 5 it is not permitted to start with the graduation internship

Provide a brief description of the organisation where you wish to do your placement:

Provide a description of the graduation project, as formulated by the placement provider concerned:

Provide a description of the type of work you will be doing to bring this graduation project to a successful conclusion:

TO BE COMPLETED BY THE UNIVERSITY:

<u>**Academic guidance counsellor**</u>   <u>**Second lecturer**</u>
Name: **Name:**

Agreed: Yes/No   **Agreed:** Yes/No
Signature: **Signature:**

Date: **Date:**

Notes:

<u>**Graduation coordinator:**</u>

Assigned academic supervisor:

Signature:

Date:

Appendix IV: Information on A4 sheet for mini placement market

During the mini placement market, you give any foundation course students interested in a mini placement with you an A4 sheet with the most important information.
So make sure you have at least 20 copies, approx. 15 copies to hand out and 5 for the supervising foundation course mentors.

So what information should appear on that A4 sheet?

1.   **Information on the organisation where you have your placement:**

        Name of organisation   :

        Address   :

        Department/section   :

        Accessibility   :

        Maximum number of mini placement students   :

2.   **Your details**

        Name   :

        Address   :

        Home/lab telephone   :

        Home/lab email   :

3.   **Brief description of graduation project and your work**

Appendix V: Requirements for writing a report

Writing a report: a summary

General

Just like a presentation, a report is a means of communicating with others on the project/research you have done. A report has the same function as an article and so also has the same structure. The difference between a report and an article is that an article is not written until the research question has been answered, whereas a report is an account of an experiment or placement. For this reason, negative research results can also be described in reports.

As the purpose of the report is to be read by others, you have to try to make your report as accessible as possible for the reader. This can be accomplished by:
- keeping the report brief and concise, omitting any superfluous information. Consider each sentence/word and ask yourself if you need to write it;
- avoiding complicated sentence structures;
- guiding the reader through the report. Explain clearly links between pieces of text in your report and state your reasons for conducting experiments;
1. avoiding excessive use of passive sentence constructions. Use as many active sentence constructions as possible (i.e. NOT: the research is described in this report… BUT: this report describes the research in which ...);
2. avoiding spelling mistakes or grammatical errors, which distract the reader from the content of your report.

It is also unusual to use we/I/one in sentence constructions (i.e. NOT: I have conducted research, BUT: this report describes the research in which…).

Other tips:
- When you have written a piece of text, you no longer see your mistakes. You should therefore leave your report or piece of text for a day or two and then read through it again.
- Read your report aloud: you will then notice whether your sentences run smoothly;
- Let a fellow student read your report and make comments;
- Agree with your supervisor that he/she will look at a draft report.

Structure of a report

A report is made up of the following sections:
- Abstract
- Introduction
- Materials and Methods
- Results
- Discussion and Conclusion
- References

Diagrams and tables

Use diagrams and tables to illustrate results. You should therefore note the following:
- Number the diagrams and tables, give them a title and a short description (caption) of what they show;
- The caption for a diagram is below the diagram, while the caption for a table is above the table;
- Graphs are also diagrams. With graphs, you should be sure to label the axes and specify units.

Contents: details

The objective, contents and style of each part of the report are as stated below.

- Abstract

Objective: To give the reader an idea of the contents. Will he/she find it interesting? In other words, keep it short but powerful.
Contents: Describe the topic/background, goal/research question, how it was answered, results, conclusion.
Language: Write in the present tense.
Tip: Write the abstract last!

- Introduction

Objective: To state why the research was conducted.
Contents: The most important thing you have to describe here is the research question. To do so, provide a brief introduction to the subject and also mention any relevant literature.
Language: Write in the present tense.
Tip: Write the introduction first, so that you are aware of why you conducted the research and which results are relevant to your report.

- Materials and Methods

Objective: To describe how you tried to answer the research question.
Contents: Describe what you used for your analyses (which programs/tools and also which biological material and/or datasets) and how the analyses and experiments were performed. Don't turn it into a logbook, but describe the outlines in narrative form (not point by point). SO NOT: Opened Excel, selected data, then used auto filter to filter data with a log2 Cy3/Cy5 value above 2.5. Then selected all log2 Cy3/Cy5 values below -2.5. These data were then copied to a new file, BUT: Genes were regarded as differentially expressing if the log2 Cy3/Cy5 value was greater than 2.5 or less than -2.5.
Language: Write in the past tense.
Tip: Write the materials and methods section while conducting the experiments/analyses. This is the most efficient way of writing this section.

- Results

Objective: To show your results.
Contents: Write the results obtained from the experiments/analyses. You can also describe unsuccessful experiments in the results. If you have figures or tables, you can describe the data based on these figures and tables (you should therefore refer to these tables and figures in the text). DO NOT PROVIDE A CONCLUSION YET!
Language: Write in the past tense.
Tip: To guide the reader and obtain a flowing narrative, you should also mention frequently how the experiment was done or why the experiment was done.

- Discussion and Conclusion

Objective: To answer the research question.
Contents: Discuss the results of your experiments, linking them to conclusions. Make use of statistics, literature or benchmarking to describe the reliability of the results Discuss the "weaknesses" of your experiment that influence the conclusion. Compare your results with results of experiments mentioned in the literature. Does this strengthen your conclusion or actually raise new questions? If new experiments are needed to obtain an answer to the research question, describe them. In the event of negative results, discuss possible or actual reasons for them. Provide recommendations for follow-up research
Language: Use the present tense wherever possible.
Tip: Only write the discussion after the results, introduction and materials and methods sections. Any literature discussed in the introduction can now be used again.

- References

The references consist of all the scientific and other articles or books you have used when writing your report. You have referred to these articles in the text with numbers. The numbers are assigned based on the order in which references are used in the text. Follow the rules of the American Medical Association (AMA citation rules) to quote references correctly.

Appendix VI: Confidential Report Form (Graduation Project)

Leiden University of Applied Sciences
Faculty of Science & Technology   Programme: Bio-informatics

Name of student: ……………………………………………………………

Student number: ……………………. Date of graduation: …………………

Title of report: ……………………………………………………………

                         ……………………………………………………………

                         ……………………………………………………………

Assessment of report: ……………………………………………………………

First examiner: …………………………………………………………......

Second examiner: ……………………………………………………………

Placement provider: ……………………………………………………………

Contact person at placement: ……………………………………………………………

Telephone: ……………………………………………………………

 E-mail: ……………………………………………………………

The confidential report will be filed by the placement provider for at least seven years and will be available for inspection by members of an accreditation committee during this time.

Place, date: ……………………………………….......................................

Read and approved:

First examiner   Second examiner   Contact person at placement

Appendix VII: Procedure for graduation session

Procedure for graduation session
During the graduation session, the student gives a presentation on the work that he has done during the graduation project to a graduation committee consisting of the following people:
- Examiner 1 (academic supervisor and chair of the graduation session)
- Examiner 2 (second lecturer from Leiden University of Applied Sciences)
- Placement supervisor
- An external examiner, if applicable

The presence of an external examiner will depend on the availability of a suitable candidate. The confidentiality of a thesis may be a reason for not inviting an external examiner to the graduation session. This means that not every graduation session will be attended by an external examiner.

- Examiner 1 receives all the forms from the graduation coordinator which are needed during the graduation session.
- The placement supervisor reports to reception at Leiden University and will be received by one of the examiners. The student proceeds directly to the room where the graduation session will be held and prepares everything for the presentation.
- Examiner 1 opens the session.
- The student gives a graduation presentation of 20 to a maximum of 30 minutes. (The maximum presentation time of 30 minutes is strictly enforced. The part of the presentation that takes place after the 30-minute deadline does not count for the assessment of the presentation. After 25 minutes, examiner 1 informs the student that the final 5 minutes of the presentation have started).
- The graduation committee asks questions about the presentation and thesis for 20 minutes.
- The student and any audience members leave the room.
- The graduation committee discusses the work handed in by the student during his graduation project and the student's presentation.
  Step-by-step procedure:
  o The graduation committee jointly completes the forms "bafstu uitvoering" and "bafstu verdediging" in Gradework. A note is made at each subsidiary question explaining how the grade for the subsidiary question concerned was arrived at.
  o For each subsidiary question, Examiner 1 lets the placement supervisor speak to indicate how satisfied the placement provider is with the student's performance. The two examiners then proceed to assess each subsidiary question.
  o Examiner 1 completes the "digital cover sheet bafstu".
  o The final grade is then calculated. The final grade is the weighted average of the grades for "implementation graduation project", "the graduation report (thesis), and the "thesis defence".
  o Examiner 2 checks whether the grade has been calculated correctly.
  o Examiner 1 and examiner 2 provide the "digital cover sheet bafstu" with a signature.
  o Examiner 1 discusses whether the thesis is confidential and, if so, the date when the confidentiality expires. If the thesis is not confidential, this means that it can be used to supply information to students, external monitors (OAC) and/or PR (open house, etc.).
  o Examiner 1 calls in the student.
  o Examiner 1 informs the student of the assessment and final grade.
  o The session is closed by Examiner 1.
  o Examiner 1 enters the preliminary grade for the graduation project (Bafstu) in Osiris.
  o Examiner 1 sends the completed assessment forms by email to the student for inspection.
  o Examiner 1 informs the student about the duration of inspection period. It is important that the confirmation of the grade is in time.
  o After the inspection period, examiner 1 confirms the grade in Osiris.

Appendix VIII: Interim evaluation bafstu

The graduation work must contain both a biology component and a computer science component. If this is not the case then the implementation part is insufficient.

	Poor	Insufficient	Below sufficient	Sufficient	Satisfactory	Good	Very good	Excellent
1. The student uses scientific and other sources to make an in-depth study of the background of the graduation project and adequately cover the research question. The student also seeks out relevant scientific sources autonomously.	1	4	5	6	7	8	9	10
2. Expert knowledge, which is relevant, current and adequate, is used during the graduation project.	1	4	5	6	7	8	9	10
3. When analysing and solving, relevant data has been sourced and subjected to a critical evaluation, systematically ordered and interpreted, while having opted for a suitable (statistical) method for processing the results.	1	4	5	6	7	8	9	10
4. The student makes his own contribution to the selection of experimental and other methods used.	1	4	5	6	7	8	9	10
5. The student is capable of assessing the reliability of the results found; draws logical conclusions from research results obtained.	1	4	5	6	7	8	9	10
6. Working methods and results obtained are properly documented to ensure that the research is reproducible.	1	4	5	6	7	8	9	10
7. Any software and/or scripts written by the student are logically arranged, modular and provided with sufficient commentary to ensure that the research is reproducible and others can continue working on it without problems.	1	4	5	6	7	8	9	10
8. The student monitors the progress of the graduation project using the planning as a guide or giving reasons for deviating from it.	1	4	5	6	7	8	9	10

9. The student strikes a good balance between working independently and asking for help in good time.	1	4	5	6	7	8	9	10
10. The student is target-oriented and continues until the result has been achieved.	1	4	5	6	7	8	9	10
11. Results are obtained in an efficient manner so that limited time is spent on irrelevant matters.	1	4	5	6	7	8	9	10
12. The student actively participates in progress meetings at which his/her own results are presented.	1	4	5	6	7	8	9	10
13. The student adapts to the organisation's culture.	1	4	5	6	7	8	9	10
14. The student deals professionally with received feedback. The feedback is processed, thereby performance is improved.	1	4	5	6	7	8	9	10
Total number of points:								

Grade (= total number of points / 14):   **(rounded to one decimal place)**

Appendix IX: Final level assessment

Assessment of first chance implementation (weight 60%)

The graduation project must contain both a biology component and an informatics component. If not, the implementation section will be graded as unsatisfactory.

	Poor	Insufficient	Below sufficient	Sufficient	Satisfactory	Good	Very good	Excellent
1. The student uses scientific and other sources to make an in-depth study of the background of the graduation project and adequately cover the research question. The student also seeks out relevant scientific sources autonomously.	1	4	5	6	7	8	9	10
2. Expert knowledge, which is relevant, current and adequate, is used during the graduation project.	1	4	5	6	7	8	9	10
3. When analysing and solving, relevant data has been sourced and subjected to a critical evaluation, systematically ordered and interpreted, while having opted for a suitable (statistical) method for processing the results.	1	4	5	6	7	8	9	10
4. The student makes his own contribution to the selection of experimental and other methods used.	1	4	5	6	7	8	9	10
5. The student is capable of assessing the reliability of the results found; draws logical conclusions from research results obtained.	1	4	5	6	7	8	9	10
6. Working methods and results obtained are properly documented to ensure that the research is reproducible.	1	4	5	6	7	8	9	10
7. Any software and/or scripts written by the student are logically arranged, modular and provided with sufficient commentary to ensure that the research is reproducible and others can continue working on it without problems.	1	4	5	6	7	8	9	10
8. The student monitors the progress of the graduation project using the plan as a guide or giving reasons for deviating from it.	1	4	5	6	7	8	9	10
9. The student strikes a good balance between working independently and asking for help in good time.	1	4	5	6	7	8	9	10

10. The student is target-oriented and continues until the result has been achieved.	1	4	5	6	7	8	9	10
11. Results are obtained in an efficient manner so that limited time is spent on irrelevant matters.	1	4	5	6	7	8	9	10
12. The student actively participates in progress meetings at which his/her own results are presented.	1	4	5	6	7	8	9	10
13. The student adapts to the organisation's culture.	1	4	5	6	7	8	9	10
14. The student deals professionally with received feedback. The feedback is processed, thereby performance is improved.	1	4	5	6	7	8	9	10
Total number of points:								

Grade (= total number of points / 14):   **(rounded to one decimal place)**

Notes on assessment of implementation:

Assessment of first chance graduation report (weight 25%)

It must be possible to assess all 8 components in the report. If one component is missing, the report is dissatisfactory.

In addition to these eight components, there are two conditional requirements that the report must meet. Both conditional requirements relate to the readability of the report. The report is dissatisfactory if the language and style make the report very hard to read or if the format and layout make the report very hard to read.

Component	Insufficient (1 point or 4 points)	Sufficient (6 points)	Good (8 points)	Excellent (10 points)	Points
1. Summary • What is the subject/background? • What is the goal? • What has the author done? • What are the results? • What is the conclusion? • Length of abstract	One or more of the points are missing or more than two points have not been clearly described. or The length of the text exceeds 500 words.	The five points are mentioned and at least three points have been clearly described. and The length of the text does not exceed 500 words.	The five points are mentioned and all the points have been clearly described. and The length of the text does not exceed 500 words.	All five points are mentioned and all five points have been clearly described and an excellent balance between concision and completeness has been achieved. and The length of the text does not exceed 500 words.	_____ p
Explanatory note:					

Component	Insufficient (1 point or 4 points)	Sufficient (6 points)	Good (8 points)	Excellent (10 points)	Points
2. **Introduction** • The research question/ objective has been clearly formulated in relation to the background. • Additional theoretical background to the research and principles of the relevant technologies used.	The research question/ objective is missing, or it is unclear what literature the research is based on or this is not clearly stated. **or** The relevant background and/or principles of technologies have not been stated, are incomplete or are inadequately explained.	The research question/ objective is clearly formulated and described, and it is clearly described what research and/or what recent literature this research is based on. **and** The relevant background and principles of technologies are complete and have been fully explained.	The research question/ objective is clearly formulated and described, it is clearly described what research and/or what recent literature this research is based on, and this is clearly stated in the context of the research. **and** Relevant background to research and principles of technologies have been fully and concisely explained.	The research question/ objective has been very clearly stated and extremely well placed within the context of current scientific research. **and** Relevant background to research and principles of technologies have been fully and concisely and coherently explained.	**(Weighting = 2, i.e. multiply points by 2)** **2 x _____ p** **= _____ p**
Explanatory note:					

Component	Insufficient (1 point or 4 points)	Sufficient (6 points)	Good (8 points)	Excellent (10 points)	Points
3. **Materials and methods** • Description of materials and methods and repeatability of methods.	The starting materials or one or more methods have not been described in full, so that they cannot be repeated.	The starting materials and the methods have been described in full, so that the methods can be repeated.	The starting materials and all the methods have been described in full, concisely and satisfactorily, so that the methods can be repeated.	The starting materials and all the methods have been described in full, concisely and in a very satisfactory and structured way, so that the methods can be repeated.	**(Weighting = 2, i.e. multiply points by 2)** **2 x _____ p**

Explanatory note:

= _____ p

Component	Insufficient (1 point or 4 points)	Sufficient (6 points)	Good (8 points)	Excellent (10 points)	Points
4. Results (textual) • Results are logically and clearly described.	There are one or more results which do not have a brief introduction, discussion or reference to a figure/ graph/table, etc. and/or there are one or more results which are unclear or incorrect.	The majority of the results contain a brief introduction, discussion and reference to a figure/graph/table, etc. and these results have been clearly described.	Each result has a brief introduction, discussion and reference to a figure/ graph/table, etc. and these results have been described satisfactorily.	Each result has a brief introduction, discussion and reference to a figure/ graph/table, etc. The results have been described satisfactorily and there is a clear line in the discussion of the results.	_____ p
Explanatory note:					

Component	Insufficient (1 point or 4 points)	Sufficient (6 points)	Good (8 points)	Excellent (10 points)	Points
5. Results (figures, graphs and tables) • The results are presented in suitable figures/graphs/tables and these are clearly captioned.	There are one or more results in which no figures/graphs/tables have been used, despite the fact that this is a requirement. **or** Figures, graphs and tables have not been captioned or the captions do not provide sufficient explanation.	The results are presented in suitable figures/graphs/tables. **and** The captions of figures, graphs and tables provide sufficient explanation.	The results are well presented in suitable figures/graphs/tables, where relevant. **and** All figures, graphs and tables contain captions with sufficient explanation.	The results are very well presented in suitable figures/graphs/tables, where relevant. **and** All figures, graphs and tables contain captions that provide an independent, specific and sufficient explanation	**_____ p**

Explanatory note:

Component	Insufficient (1 point or 4 points)	Sufficient (6 points)	Good (8 points)	Excellent (10 points)	Points
6. Discussion • There is a critical review of the results and there is a clear link between the results. • The reliability of the results is described on the basis of statistics, literature or benchmarking.	The results are not discussed satisfactorily or not discussed at all. **or** The reliability of the results is not described where required.	The results are discussed satisfactorily. **and** The reliability of the results is described where required.	The results are discussed satisfactorily and critically and there is a clear link between the results. **and** The reliability of the results is described satisfactorily where required, and substantiated.	The results are discussed outstandingly and critically and there is a clear link between the results. **and** The reliability of the results is described satisfactorily, and substantiated.	**_____ p**

Explanatory note:

Component	Insufficient (1 point or 4 points)	Sufficient (6 points)	Good (8 points)	Excellent (10 points)	Points
7. Discussion (follow-up research) and Conclusion • Recommendations for follow-up research have been included. • Conclusions are concisely described, based on the results and relate to the research question/ objective, as described in the introduction.	No relevant follow-up research is recommended. **or** The conclusion does not contain an answer to the research question/ objective, as described in the introduction.	Relevant ideas are advanced for follow-up research. **and** Conclusions are drawn from the results and there is an answer to the research question/ objective, as described in the introduction.	Relevant and well-founded ideas are advanced for follow-up research. **and** Clear conclusions are drawn from the results and there is an answer to the research question/ objective, as described in the introduction	Relevant and well-founded proposals are advanced for follow-up research. **and** Clear conclusions are drawn from the results and there is an answer to the research question/ objective, as described in the introduction	**_____ p**
Explanatory note:					

Component	Insufficient (1 point or 4 points)	Sufficient (6 points)	Good (8 points)	Excellent (10 points)	Points
8. Language, format, layout and literature • Readability of report. • Format and layout of report. • References are in accordance with leading scientific literature • Title page and table of contents are present and complete.	Language and style make the report hard to read. (also see conditional requirement) **or** Format and layout make the report hard to read. (also see conditional requirement) **or** References have not been written in accordance with leading scientific standards. **or** Title page is missing or incomplete. **or** Table of contents is missing or incomplete.	Language and style do not make the report hard to read. **and** Format and layout do not make the report hard to read. **and** References have been written in accordance with leading scientific standards. **and** Title page is present and complete. **and** Table of contents is present and complete.	Language and style are good. **and** Format and layout support the readability of the report. **and** References have been written in accordance with leading scientific standards. **and** Title page is present and complete **and** Table of contents is present and complete.	Language and style are excellent. **and** Format and layout enhance the readability of the report. **and** References have been written in accordance with leading scientific standards. **and** Title page is present and complete **and** Table of contents is present and complete.	**_____ p**
Explanatory note:					

Conditional requirements	Dissatisfactory (D)	Satisfactory (S)		Result (S or D)
Readability of report	Language and style make the report very hard to read.	Language and style do not make the report very hard to read.		_____
Format and layout of report	Format and layout make the report very hard to read.	Format and layout do not make the report very hard to read.		_____
Explanatory note:				

Grade (= total number of points / 10): [   ] **(rounded to one decimal place)**

Explanatory note: Only if both conditional requirements are satisfactory, a grade will be filled out above. If one or both of the conditional requirements are dissatisfactory, a "D" (dissatisfactory) will be filled out above.

Assessment of first chance thesis defence (weight 15%)

The student gives a presentation lasting not more than 30 minutes.

Component	Insufficient (1 point or 4 points)	Sufficient (6 points)	Good (8 points)	Excellent (10 points)	Points
1. Introduction • The objective and relevance of the research is presented. • The theoretical background to the research and principles of the relevant methods used are presented.	The objective is not mentioned or is unclear. **or** The relevant background to and/or principles of methods are not mentioned or are inadequately explained.	The objective of the research is clearly presented. **and** The relevant background to and principles of methods are complete and have been fully explained.	The objective and relevance of the research are clearly presented. **and** The relevant background to research and principles of methods have been fully and concisely explained.	The objective and relevance of the research are clearly presented. **and** The relevant background to research and principles of methods have been fully and concisely and coherently explained.	**_____ p**
Explanatory note:					
2. Materials and methods • The way in which the research was conducted is presented.	The student does not explain the methods correctly or at all.	The student explains most of the methods correctly.	The student explains the methods correctly and well.	The student explains all the methods correctly, very well and to the point.	**_____ p**
Explanatory note:					

Component	Insufficient (1 point or 4 points)	Sufficient (6 points)	Good (8 points)	Excellent (10 points)	Points
3. Results • The results are clearly presented and explained.	The results are not clearly presented and/or inadequately explained.	The results are clearly presented and explained.	The results are clearly presented and properly explained.	The results are very clearly presented and very well explained.	_____ p
Explanatory note:					
4. Discussion and conclusion • A critical review of the results is given. • A proposal is made for follow-up research. • Conclusions are based on the results and relate to the objective **The rating for this component is the average of the three points**	The results are not discussed satisfactorily or at all.	The results are discussed satisfactorily.	The results are properly and critically discussed.	The results are extremely well and critically discussed.	_____ p
	No relevant follow-up research is recommended.	Relevant ideas are advanced for follow-up research.	Good ideas are advanced for follow-up research.	Very good and well-argued ideas are advanced for follow-up research.	
	The conclusion does not contain any feedback in terms of the objective.	Conclusions are drawn from the results and there is feedback in terms of the objective.	Clear conclusions are drawn from the results and there is good feedback in terms of the objective.	Clear conclusions are drawn from the results and there is very good feedback in terms of the objective.	
Explanatory note:					

Component	Insufficient (1 point or 4 points)	Sufficient (6 points)	Good (8 points)	Excellent (10 points)	Points
5. Presentation • The presentation is logically constructed. • The slides are clear and support the narrative. • Suitable figures, graphs and tables are used. • The student speaks without too many hesitations, is easy to understand, maintains a steady pace and has an energetic/enthusiastic way of speaking. • The student maintains eye contact with the audience	Two or more components are very weak. Explain	At least 4 of the 5 components are sufficient. Explain	At least 4 of the 5 components are good and the 5th is sufficient or better. Explain	At least 4 of the 5 components are excellent and the 5th is good or better. Explain	**_____ p**
Explanatory note:					
6. Answering questions • The student answers questions in a proper manner.	The answers given by the student are incomprehensible, illogical or incorrect.	The answers given by the student are comprehensible, logical and mostly correct.	The answers given by the student are comprehensible, logical and correct.	All the answers given by the student are correct and very to the point.	**_____ p**
Explanatory note:					
				Total number of points:	

Grade (= total number of points / 6):   **(rounded to one decimal place)**