Rotterdam University of Applied Science / CMI

Graduation Project

INFAFS04 / INFAFS25

Credits:	29 European Credits (EC)
Course coördinator:	M. Slingerland
Date:	October 2024

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Glossary of terms

Assignment second opportunity	The assignment the examiners formulate (for the failing competence or competencies) to graduate with a sufficient result during the second opportunity.
Company Supervisor	The (contact) person within the Graduation Company, who guides, helps and provides feedback to the student.
Course Coördinator	The contact person within school regarding the process of all Graduation Projects.
Course Description	Brief summary of facts about the course.
European Credits (EC)	Study points that are recognized by all higher education institutes in Europe. 1 EC is equivalent to 28 study hours.
Examination	Different components of the assessment regarding the Graduation Project
Examination Board	A Committee consisting of company supervisor, school supervisor, an independent teacher (a teacher without prior involvement during the graduation project) and an external IT professional (Dutch: gecommitteerde).
Examination Committee	Committee that objectively and competently determines whether a student meets the requirements of the education and examination regulations with respect to knowledge, understanding and skills required to obtain a degree.
Examiners	Teachers who are designated as examiners by the CMI examination committee and are allowed to grade the Graduation Project.
Graduation Company	The company you are working for on a Graduation Project.
Graduation Folder	Complete set of deliverables: all professional products (exhibits), README file and the evaluation form of the company supervisor.
Graduation Project	The assignment / project from the Graduation Company to demonstrate that you can act at the defined final level of the competencies.
Graduation Session	The meeting with you and the Examination Board to give you the opportunity to present and defend your work and to make the final examination.
PraktijkLink	Platform to keep track of your progress and submissions (make sure you keep PraktijkLink up to date).
README file	Text file that contains information about the other files in the Graduation Folder and can be used as a guide that gives the reader a detailed description of what to expect.
School supervisor	The first point of contact from school; This teacher is involved in the complete process of the Graduation Project.
Second opportunity	Second opportunity to finish the Graduation Project with a sufficient result.

1. Description of the course

Course name: **Course code:**	Graduation Project INFAFS04 (VT) / INFAFS25 (DT)
Study points and workload:	This course provides you with 29 EC, which corresponds to a workload of 812 hours. The recommended distribution of these 812 hours during the study weeks is as follows: Preparation before the start 52 hours Graduation Project from the start 760 hours **Total hours 812 hours**
Prior knowledge:	- All courses from the second year must be completed successfully - The third year internship must be completed successfully - A minimum of 120 credits from the main phase must be obtained
Working method:	Graduation Project at a company with guidance from a school supervisor, and additional workshops and/or consults upon request or recommendation
Examination:	Graduation Folder and a presentation
Learning materials:	Self-selected and recommended literature appropriate to the context
Tooling:	Documents, feedback, etc. related to this module are entered and maintained on PraktijkLink (https://praktijklink.hr.nl)
Contributes to competence:	This course contributes to all the competencies of the study (professional skills & manage and control, analysis, advise, design, realisation).
Learning goals:	The student will master the competencies at the level of a beginning ICT professional, as articulated in the final qualifications for the program
Content:	The Graduation Project is the final phase of the program. Through an independent project at a company (of your own choice) you demonstrate that you can act at the defined final level of the competencies.
Course coordinator: **Date:**	Marian Slingerland October 2024

2. Introduction

The last part of the program is the Graduation Project, where you work on an assignment given by a company. Now you can show that you have mastered the required competencies required in a realistic environment. At a company where you want to graduate, you will discuss a graduate project that fits you and the requirements of the program. You will be supervised by someone from the company (company supervisor) and someone from school (school supervisor), but for the most part you will work independently.

2.1 Vision on graduation

The Computer Science program is responsible for delivering students who are competent and the professional field wants to be sure that students meet the entry level requirements for work practice. Professional competence should be demonstrated by your performance at this stage. Performance is measured by your project and assessed by expert examiners. An assessment model has been developed (see Figure 1.1) and will be used as the basis for an integrated assessment (Andriessen, 2017).

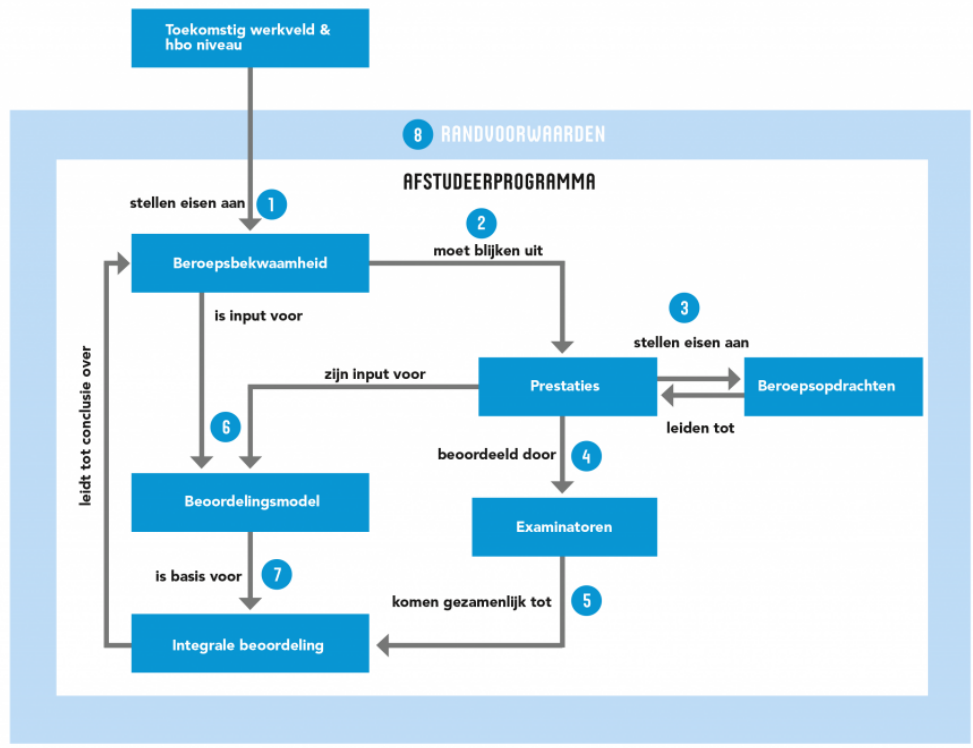

Figure 2.1: Conceptual model for graduation according to Andriessen (2017)

2.2 Relation with other courses

All the knowledge and experience you have gained during your studies will be useful when you graduate. In addition, you have also learned a critical, investigative attitude towards (for you) new information. This attitude is also very important when you graduate (and of course afterwards). In this way you can master new material, independently investigate and make choices that are not immediately obvious but are based on factual research and solid argumentation.

2.3 Learning materials

We expect you to use the materials of the past year, for extra learning material or for material on specific topics ask your school supervisor. If you need material on research in ICT you can visit: https://www.researchgate.net/publication/272421605_De_methodenkaart_praktijkonderzoek.

2.4 Reading guide

The course manual starts with the process of preparing for graduation, followed up with the implementing and successfully completing of the project. It also names the milestones and mandatory activities and documents that need to be uploaded on PraktijkLink. Chapter 5 explains the process concerning a second opportunity. An appendix A contains the form used to administer the examination during the session and appendix B contains an *example* of what a Graduation Folder can contain of.

3. Preparation for the Graduation Project

To start the Graduation Project you must meet the following requirements:

- All courses from the second year must be completed successfully
- The third year internship must be completed successfully
- A minimum of 120 credits from the main phase must be obtained

(*Please note that you can start the Graduation Project in any OP, only when starting in OP4 the summer vacation falls in between. You will have no school supervision during those weeks. You can only start in consultation with the company supervisor. You may also take a vacation in consultation with the Graduation Company).

3.1 Search for a Graduation Company

The company and the project you are searching for, needs to meet the following requirements:

1. The company has at least 5 employees
2. The company has at least 2 technical engineers (e.g. Software Engineer, DevOp Engineer, Data Engineer, Data Scientist), with a minimum of a bachelor's degree and one of them is your company supervisor
3. The company has inhouse standards for the software development process (e.g. requirements capturing, design requirements, coding conventions, code reviews, testing, preferably also continuous integration and deployment)
4. The company offers you the possibility of acquiring all ICT competencies (analysis, advice, design, realization) and professional skills (communication, collaboration) and management and control at final level within one project
5. The company also offers you the opportunity to display or further develop the required professional attitude of a starting professional

3.2 Graduation Proposal

After finding the right company for your Graduation Project you must update PraktijkLink and write a Graduation Proposal, that consists of:

1. Student name and student number
2. Company name and name company supervisor
3. Start and end date of the internship
4. Company introduction (description company)
5. Graduation Project description
    a. Keep the desired level of final competencies in mind (Appendix A). The Graduation Proposal is meant to make sure the Graduation Project has the potential to achieve all competencies at the end level.
6. Graduation Folder. You describe what exhibits you will deliver at the end of the Graduation Project to eventually demonstrate that you can act at the defined final level of the competencies (see Appendix B for an example)
7. Global planning

You will upload your Graduation Proposal on PraktijkLink ("afstudeervoorstel"). Please note: the deadline is on **Monday by 9:00 am, week 9 in the previous quarter (OP)**. Late submission means you must start one OP later.

3.3 Graduation Project abroad

Students who wish to do the Graduation Project abroad may follow the same procedure, but will receive remote supervision. For this purpose, they can contact Annette van Rooij-Peiman peiac@hr.nl.
Also, students pursuing a minor prior to the Graduation Project abroad may submit their Graduation Proposal in the same manner as described above. Preparation for the Graduation Project with the assigned school supervisor can also be done remotely.

3.4 Examination Graduation Proposal

The Graduation Proposal in week 9 of the previous quarter will be evaluated in week 10, in week 1 you will receive the feedback in the first meeting with your school supervisor. The Graduation Proposal will be evaluated based on the following criteria:

- the suitability of the company,
- the knowledge and function of the company supervisor,
- the possibility offered by the project to work largely independently,
- the complexity of the project, in terms of context (e.g. many stakeholders, clarity of the given project),
- the complexity of the content (the combination of basic concepts and more in-depth concepts), and
- the potential to achieve the five competencies at the required level.

Based on the feedback you will adjust the Graduation Proposal and upload it on PraktijkLink. The school supervisor will reevaluate. If the school supervisor has doubts about one of the criteria, you and your school supervisor will discuss this with the company supervisor to see if the project can be adjusted (company visit week 2).

After the company visit, at the end of week 3 you will hear whether the Graduation Proposal is sufficient: “GO” the student is allowed to proceed the Graduation Project at the company, or the proposal is insufficient: “NO GO” the course coordinator and the school supervisor will consult with the curriculum committee. They decide whether the Graduation Project can proceed (“GO”) or to stop the Graduation Project (“NO GO”).

4. The Graduation Project

The Graduation Projects begins from the time you start working at the company. The period consists of twenty weeks. The following paragraphs describe the components of the process, from starting to finally being invited to the Graduation Session at the end.

4.1 The process of the Graduation Project

Week 1 - Make arrangements
Immediately in the first week you will make an appointment with your school supervisor. You and your school supervisor will discuss the next points:

- **The Graduation Proposal.** The school supervisor will give feedback on your Graduation Proposal and discuss whether the Graduation Project has the potential to achieve all competencies at the end level. Based on the feedback adjust the Graduation Proposal (consult your company supervisor) and upload the new version on PraktijkLink. In week 3 you will get a GO / NO GO on the proposal.
- **PraktijkLink.** To successfully go through the process of the Graduation Project, it is important to update the information on PraktijkLink, check PraktijkLink frequently and point out to your school supervisor to keep PraktijkLink up to date.
- **Contact moments**. You will plan with your school supervisor the contact moments and in what way you will have contact.
- **Company visit**. In week 2 or 3, you will make an appointment with your school supervisor to 'visit' the company. This can be on site or online via Teams, for example. Make sure that your company supervisor is also present!

Week 2 - Company visit and GO/NO GO
Start thinking from your first day at the company about what your Graduation Folder is going to look like and keep track of all the exhibits. Your school supervisor can answer questions about this, of course, but remember that it is your responsibility.
In the second week the school supervisor will visit the company and discuss about:

- **The Graduation Company**. Make sure you can tell something about the company, the culture, how you work (will work) and that your company supervisor also tells something about the Graduation Project and the competencies.
- **The (adjusted) Graduation Proposal**. You, your company supervisor and the school supervisor will have to agree on the Graduation Proposal. If all parties agree, you will get a GO. If there is a NO GO, the course coordinator and the school supervisor will consult with the curriculum committee. They decide whether the Graduation Project can proceed ("GO") or to stop the Graduation Project ("NO GO").

Week 7/8 – First draft
Around week 7 you send the first draft of the Graduation Folder to your school supervisor. Make sure you send a well structured Graduation Folder, so the school supervisor can provide valuable feedback.

Week 9/10 – Halfway Presentation
Around week 9, you will give a presentation to your school supervisor about the progress and, if possible, your company supervisor will also be present at this session. The presentation will (almost certainly) take place via Teams. The presentation will contain of:

- What you have already done, what you have encountered (challenges, successes, etc.) and what you still plan to do: what does your planning look like, what are you going to do, where are new challenges to be expected, etc.

- The purpose of the presentation is on the one hand to get a picture of your work, reflection on your plans and for you a good opportunity to practice for the presentation at the end.

The school supervisor, and if possible, your company supervisor, will provide feedback and/or feedforward on your presentation.

Week 11 - Plan contact moments

- Your contact with your school supervisor will continue or you will make new arrangements for contact moments.

Week 16 - Concept version

- At the beginning of week 16 your Graduation Folder will be ready for you to submit a concept version (the unwritten rule is that your concept should be about 90% finished before you submit it). You will make agreements about this with your school supervisor and with your company supervisor.

End week 18 - Final delivery

- *Before Monday 9:00 am of week 18* you hand in the final version of the The Graduation Folder on PraktijkLink, this contains:
  1. All professional products that were made during the Graduation Project. Together these products provide evidence that all five competencies are mastered at a minimum level or better. Note: it depends on your Graduation Project and Graduation Company what exhibits you will produce.
     - You should use the procedures, tools and document formats that are standard at the Graduation Company.
  2. Furthermore you should provide a README file that describes the contents of the Graduation Folder.
  3. The evaluation of your company supervisor (the form is available on PraktijkLink via "Documents").
     - *Please note:* without the statement of your company supervisor, your Graduation Project cannot be approved!
- If you are delayed in doing so, in most cases this also means that your Graduation Session may be at least 10 weeks later, a "ND" will be entered in Osiris and you will automatically enter the “Herkansing” (also on PraktijkLink).
- If the documents you submitted are sufficient (individual examination is “sufficient”), you will be invited to the Graduation Session. Needless to say: **an invitation to a Graduation Session is no guarantee for a pass!**

4.2 Admissibility

The Graduation Folder will be evaluated for admissibility with consideration of the following criteria:

- The completeness of the submitted
- The processing of the feedback on the draft
- The possibility to give an examination on all five competencies

If the criteria are met, the Examination Board can assess the final work and the Graduation Session can be scheduled.

4.3 The Graduation Session

Graduation Sessions are only scheduled in weeks 19 and 20.

Preparation:

- In preparation for the Graduation Session, you still have time to carry out any final work at the company and, of course, to make and practice your presentation.
- If you have additional information as a result of the final work, be open and clear about it before and during the Graduation Session. For example, a final test result might be missing from your documentation, but it can then be included in the session.

The Graduation Session:

- The Examination Board will be present at the Graduation Session.
- The examiners take care of the examination (the company supervisor and the external IT professional have an advisory role in the examination).
- The Graduation Session starts with a short discussion between the Examination Board about how the process of the Graduation Project went and what the impression is of the work handed in. Here the final work and the individual examinations of the school supervisor and teacher are used. (The template can also be found on PraktijkLink under "Documents").
- After the short discussion you will be called into the session and after a short introduction you can start your presentation. You will present for 15-20 minutes.
- After your presentation there will be an opportunity for 15-20 minutes to ask substantive questions; here you defend your Graduation Project.
- After the defense, you, including any audience, will be asked to leave.
- The Examination Board then discuss your work, your presentation and the defense. The company supervisor and the external IT professional have an advisory role. After the advice given on all the competencies, the examiners together determine the grade. For this the “Form Final examination Graduation Project” Program Computer Science CMI is completed. This form is also available at PraktijkLink.
- After the discussion you will be invited to the meeting again and you will immediately receive the result including an argumentation and feedback.
- If there is a second opportunity needed, you will be told what assignment goes with it and you will also discuss the time you will need or will be given for it (standard 10 weeks, excluding vacation weeks).
- On PraktijkLink, the “Form Final examination Graduation Project” is posted as soon as possible after the Graduation Session and, in the case of a second opportunity, the assignment is officially confirmed in the "Herkansing" phase.

4.4 Examination final qualifications – the final examination

The examination of the Graduation Project in the Graduation Session will be based on:

- Result of the Graduation Folder
- Consultation of the statement from the company supervisor
- Result of the presentation during the Graduation Session
- Result of the defense after the presentation during the Graduation Session
- Consultation of the individual examinations of the examiners
- Consultation of the company supervisor and/or the external IT professional during the session.

The examination is conducted by the school supervisor and a teacher who both are designated as "examiners" by the CMI examination committee. Prior to the session, they both independently review the Graduation Folder and prepare questions, for during the defense in the Graduation Session.

The individual examinations and the final examination are based on the degree of compliance with the final qualifications of the program. These final qualifications are grouped by competence (or 'activity') and are cited from the domain description of the HBO-I.

Based on the input from the above components (§4.3) and the final qualifications, a common grade is given for each competence by the examiners (consensus) during the Graduation Session. The examiners can only give whole grades between 1 (very poor) and 10 (very excellent) for the grading.

If one or more competencies results in a grade < 6 then an assignment must be prepared for that competence or competencies and you may not yet pass. The examination will then be held until the second opportunity has been assessed. See also Chapter 5 “Second Opportunity”.

If all competencies are assessed with a grade >= 6, the final grade will be the arithmetic average, rounded to tenths, of the individual grades. An Assignment Opportunity is then no longer applicable and is not allowed.

4.5 No consensus final grade

If there is no consensus on the final grade, the final grade will not be given (also for the second opportunity). You will be informed that further investigation is required before a final grade can be shared.

As soon as possible after the session, the examiners will write an email message to the course coordinator stating the reasoning for not being able to reach the final grade. In consultation with and under the direction of the course coordinator, with any independent other examiners, the final judgment is determined. An addendum of this exercise is attached to the examination form.

If you do not agree with the grade, you may indicate in writing specific points on which you disagree. Then both examiners will go through these points and describe for each point what they think of the objection and whether this has any impact on the grade. If you still do not agree with the (revised) examination, you can file a complaint with the “bureau klachten en geschillen”.

4.6 Summary process Graduation Project

Table 4.1 shows a schematic representation of the schedule. Please note that you may deviate from this at certain points in consultation with your school supervisor. The week numbers are approximate.

Table 4.1 Schematic representation process Graduation Project

	Week	Activity	
Preparation on Graduation Project			
		“Bedrijvenmarkt”	
	-4	Explanation Graduation Project (SLC)	
	-3		
	-2	Upload Graduation Proposal on PraktijkLink (§3.2)	
	-1	Assign school supervisor	
The Graduation Project	1	Work on the Graduation Project at the Graduation Company	Make arrangements (§4.1)
	2		Company visit (online) “GO/NO GO” (§4.1)
	3		Feedback meeting with school supervisor*
	4		
	5		
	6		First draft (§4.1)
	7		
	8		
	9		Halfway presentation (§4.1)
	10		
	11		Feedback meeting with school supervisor*
	12		
	13		
	14		
	15		
	16		Feedback concept (§4.1)
	17		
	18		Final delivery on PraktijkLink (§4.1)
	19	Graduation Session (§4.3)	
	20		

* If you have specific questions about your Graduation Project, you may contact any other teacher in the program at any time. All teachers are very happy to answer specific questions, so don't be discouraged. If you do not know who could answer a particular question, please discuss it with your school supervisor.

5. Second opportunity

5.1 Second opportunity in case of inadmissibility

If the Graduation Project is not admissible, an "ND" will be registered in Osiris for that opportunity. If there is a right for a second opportunity you can resubmit based on the feedback and a described assignment, in the "Herkansing" phase on PraktijkLink. For the resubmission a period is agreed upon in consultation with you, the school supervisor and the course coordinator. By default, that period is 10 weeks. After admissibility of the new hand-in, a Graduation Session will be scheduled. A fail on one or more competencies will be handled in the same way as another second opportunity (see §5.2).

5.2 Second opportunity in case of insufficient grade

If after the session one or more competencies is assessed with a failing grade (grade < 6) then there is a second opportunity for that competence or competencies. This is formulated in an Assignment Second Opportunity on PraktijkLink (in the phase "Herkansing"). The arithmetic average of the insufficiently scored competencies is registered in Osiris at the first opportunity. In consultation with the school supervisor a period is agreed upon for fulfilling the Second Opportunity Assignment and handing and registered on PraktijkLink. By default, this is a period of 10 weeks.

Table 5.1 Example period of second opportunity

1		
2		
3		
4		
5		
6		Feedback concept (if nessesary) (§4.1)
7		Final delivery on PraktijkLink (§4.1)
8		
9	Graduation Session (if nessesary) (§4.3)	
10		

After submission, the second opportunity is assessed by (preferably) the original examiners per competence and they again come to a common result (consensus). If all the re-examined competencies result in a pass (grade >= 6), the final grade is still calculated as the arithmetic average of all the grades of the competencies. If one or more of the competencies involved in the second opportunity again score(s) an insufficient grade, the arithmetic average of the insufficient grades becomes the final grade of the second opportunity.

If the deadline is not met (late handing in), an "ND" will be registered in Osiris for the second opportunity.

Table 5.2 Examples of grading

First opportunity		Osiris	Second opportunity	Osiris	Result
Professional Skills: Analysis: Advise: Design: Realisation:	6 6 6 7 7	6,4	-	-	The final grade is calculated as the arithmetic average of the **five** (sufficient) competencies.

Inadmissible	ND	Professional Skills: 6 Analysis: 6 Advise: 7 Design: 5 Realisation: 8	5	The Graduation Project must be completely redone; no second opportunity is possible anymore. The final grade is determined by the 5 (design).
Professional Skills: 6 Analysis: 6 Advise: 4 Design: 5 Realisation: 7	4,5	- - Advise: 7 Design: 6 -	6,4	The student failed two competencies at the first opportunity. At the second opportunity these were scored as sufficient and the final grade is calculated as the arithmetic average of all the **five** (sufficient) competencies.
Professional Skills: 7 Analysis: 3 Advise: 8 Design: 8 Realisation: 5	4	- Analysis: 4 - - Realisation: 5	4,5	The student again received a failing grade on the second opportunity for analysis. The Graduation Project must be completely redone. The final grade is determined by the arithmetic average of the failing grades; the 4 (analysis) and 5 (realisation).

Appendix A - Form Final examination Graduation Project

Content:

1.1 General information

Student name:	
Student number:	
Title Graduation Project:	
Date Graduation Session:	
Company:	
Company supervisor:	
Examiner 1 (school supervisor):	
Examiner 2:	
External IT professional:	

1.2 Instructions for examiners

The form is completed during the Graduation Session, in the presence of all participants. In the case of an online meeting, it is recommended to share the document in the meeting. Additional information may be added after the hearing if all those present agree.

The examination form may be signed electronically, e.g. via Adobe “Fill and Sign”. The company supervisor does not have to sign the form, because he has already signed the evaluation form.

The signed form must be uploaded as a PDF at PraktijkLink at the “Examination” measuring point. After that, the final grade is registered on PraktijkLink.

- On PraktijkLink, if you pass, click on the button “Complete assignment”
- For a second opportunity, click on “Complete phase” and then fill in the Second Opportunity Assignment in the comment box under “Herkansingsopdracht” and indicate the agreed end date for the assignment. After this it is the student's turn again.

2.1 Examination “Professional Skills” and “Manage & Control”

	Final qualification	Explanation	Points to consider when assessing
Professional Skills and Manage & Control	*Communication* Attention to what people want to communicate with what impact, the most suitable form and actual implementation. *Collaborate* Attention for the various groups of cooperation partners, such as stakeholders, interest groups and own team members. Attention to one's own role in the context of the ICT assignment, recognizing and taking on tasks, addressing others, seeking enrichment, and building trust in an interdisciplinary and intercultural context. (PS# acting with purpose) *. *Manage & Control* Managing and using a development street to support software development in teams, which means, among other things, continuous integration the possibilities. Applying methods and techniques to manage a software development process and to guarantee its quality (Software#2).	The competencies of the professional skills are measured based on the observations of the company supervisor (and colleagues in the field), the graduation process, the presentation and finally also the reflection of you as a student. The way of planning the work and the flexible adjustment of a time schedule is part of Manage and Control. This also includes quality assurance, often according to a company's standards.	The critical investigative capacity is basic for the personal skills in which choices are made based on knowledge, experience, and feedback. You view ICT assignments critically from different perspectives, identify the problems and then look for an effective approach to arrive at appropriate solutions. Constructive collaboration with partners in ICT and appropriate (oral and written) communication aimed at the desired impact are also of great importance.

(fill in characteristics of the above, arguments on the qualification on the left)

Strong points	
Good points	
Weak points	

2.2 Examination “Analysis”

	Final qualification	Explanation	Points to consider when assessing
Analysis	Carrying out a requirements analysis for a software system with different stakeholders, considering the quality properties including security through a critical and investigative attitude to subsequently be able to research applied technologies in comparable contexts (Software #2).	Data Analysis, Framework/Infrastructure Analysis (libraries), Quality Analysis (data quality, code, design, user interface, ...), Algorithm Analysis (complexity, behaviour, boundaries), Tool Analysis (performance: time and space) , UX (analysis of the user regarding his experience with the software, data, visualization)	Goal orientation, choice of the right sub-questions that must be answered to arrive at a good professional product, depth of the analyses, critical use of sources, clearly determining the problems.

(fill in characteristics of the above, arguments on the qualification on the left)

Strong points	
Good points	
Weak points	

2.3 Examination “Advise”

	Final qualification	Explanation	Points to consider when assessing
Advise	Advising on the purchase and selection of software components when developing a software system in which the cost aspect can play a minor role. Advising on a part of an architecture or a limited software system. Advising on the use of prototypes when validating the requirements. (Software #2).	The student can provide (very) effective advice on the results of the keywords mentioned. On the one hand, the advice is in line with the customer's requirements, but also shows a critical view of alternatives.	Choices made and substantiation thereof, completeness (for example quality aspects, security, scalability, performance, privacy), presentation of the advice.

(fill in characteristics of the above, arguments on the qualification on the left)

Strong points	
Good points	
Weak points	

2.4 Examination “Design”

	Final qualification	Explanation	Points to consider when assessing
Design	Drafting a software architecture for a software system, built from existing and new systems, considering multiple stakeholders and quality characteristics, including security and scalability. Drafting a test strategy for system testing. (Software#3).	Design does not necessarily mean UML/ database, it could also be new algorithm design, interaction design, visualization design, protocol (between digital components) etc.	Choice of relevant design techniques (FO, TO, UI, DB), quality of the designs, architecture, test strategy, review of the designs (prototyping, presentation to experts)

(fill in characteristics of the above, arguments on the qualification on the left)

Strong points	
Good points	
Weak points	

2.5 Examination “Realisation”

	Final qualification	Explanation	Points to consider when assessing
Realisation	Building and making available a scalable software system that connects to existing systems, possibly in the cloud, according to the designed architecture using existing frameworks. Applying test automation when performing tests. (Software#3).	In most cases, realization means programming according to the design(s), architecture and the requirements of the client (requirements). Making available means that (a form of) deployment of the professional product must be discussed. It must also be demonstrated that the building has been tested by means of (a form of) test automation.	Quality of the professional product and quality of the development process. Clean code, document, test, integrate, continuous integration deployment, use frameworks.

(fill in characteristics of the above, arguments on the qualification on the left)

Strong points	
Good points	
Weak points	

2.6 Assign grades by examiners

(Decide upon the arguments which grade matches best, circle that grade)

Professional skills & Manage and control	Only weak points		Mostly weak points			Mostly good points		Mostly strong points		Only strong points
	1	2	3	4	5	6	7	8	9	10
Summary arguments										

Analysis	Only weak points		Mostly weak points			Mostly good points		Mostly strong points		Only strong points
	1	2	3	4	5	6	7	8	9	10
Summary arguments										

Advise	Only weak points		Mostly weak points			Mostly good points		Mostly strong points		Only strong points
	1	2	3	4	5	6	7	8	9	10
Summary arguments										

Design	Only weak points		Mostly weak points			Mostly good points		Mostly strong points		Only strong points
	1	2	3	4	5	6	7	8	9	10
Summary arguments										

Realisation	Only weak points		Mostly weak points			Mostly good points		Mostly strong points		Only strong points
	1	2	3	4	5	6	7	8	9	10
Summary arguments										

3. Collective Statement Examination

Collective statement	**Grade**	**Second Opportunity?**	Brief general explanation (not mandatory)
Professional skills and Manage and control (A)		If yes, when grade < 6	
Analysis (B)		If yes, when grade < 6	
Advise (C)		If yes, when grade < 6	
Design (D)		If yes, when grade < 6	
Realisation (E)		If yes, when grade < 6	
Total score = (A+B+C+D+E) / 5 *(if all competencies are sufficient)*			*One or more competencies insufficient? Total score is average of the insufficient grades (see Table 5.2)*
End grade			
Write grade in letters (*):			
Possible comment company supervisor			
Possible comment external IT professional			
Argumentation for final grade:			
Name examiner:			Name examiner:
Signature:			Signature:

(*) If there is no consensus, leave this field empty and indicate at "write grade in letters" that the judgment is on hold.

4 Description of Assignment Second Opportunity (when applicable)

The Assignment Second Opportunity must also be described on PraktijkLink at the relevant measuring point (“Herkansing”)

Appendix B – Example Proposal Graduation Folder

Exhibit	Competencies				
	Professional Skills & Manage and Control	Analysis	Advise	Design	Realisation
Graduation proposal	check				
Planning (possibly multiple versions)	check				
Weekly Progress Reports	check				
Software Requirements Specification (SRS)		check		check	
Software Design (ERD, UML Class Diagram, …)				check	
Source Code					check
Unit Tests					check
Reflection Report	check				
Presentations for board or team			check		
Research report		check	check		
Scrum / Kanban board	check				
Dump from issues tracker	check				check
Usability Test Plan		check			check
Usability Test Report	check				check
Performance Test Plan		check			check
Performance Test Report	check				check
Security Test Plan		check			check
Security Test Report	check				check
Company supervisor feedback form	check	check	check	check	check