

# Improvement Plan for the Recovery Period Master's Degree Programme Energy and Environmental Sciences, University of Groningen.

Board of the Faculty  
7<sup>th</sup> April 2014

## 1. Preface

The external Assessment Committee Environmental Sciences has evaluated the EES Master's Programme during her visit of 5 and 6 September 2013 (Project number: Q0419). The main conclusion of the committee, formulated in its report of December 13, 2013 was that the quality of the CIO track is satisfactory, while the quality of the IVEM track was unsatisfactory in Standard 2: teaching-learning environment. The overall programme assessment outcome was also: unsatisfactory. This means that the EES programme as a whole does not meet the requirements necessary for accreditation.

### **Programme Overview**

The EES master's degree programme was launched in September 2002. It is a result of joint efforts and common fields of interest of two research groups; the Centre of Energy and Environment Studies (IVEM) and the Centre for Isotope Research (CIO). The master's programme is open to students with a bachelor degree in mathematics or natural sciences. Until 2012 the programme offered two specializations (tracks):

- System Studies on Energy and Environment (embedded in the IVEM research group);
- Experimental Studies of Energy and Climate (embedded in the CIO research group).

### **Current Programme Revision and Committee Findings**

The EES programme has been thoroughly redeveloped during 2012 and 2013 and has started in this new set-up in September 2013. The main goal of the revision was to match the profile of the master's programme with the research scope of the new Energy and Sustainable Research Institute Groningen (ESRIG). In 2010 ESRIG was founded with, next to CIO and IVEM, 4 research groups and another 3 associated research groups.

The Assessment Committee has judged the innovations very positively, but due to the fact that EES had just started this new curriculum during the week of the Assessment visit, the Committee could not base its judgement on the new programme of EES.

### **Preliminary Improvement Strategy**

In response to the visit and preliminary conclusions of the Assessment Committee, the Board of the University and the Board of the Faculty of Mathematics and Natural Sciences (FMNS) have decided that a new research group with strong focus on integrated energy system analysis will replace the present IVEM group. This new Energy Systems Study Group is indispensable to study energy needs from a synthesis point of view, next to the several research groups within FMNS that have an analytical approach of studying energy issues, often in the international forefront. The new Energy Systems Group will be led by the newly appointed full professor (Prof. dr.ir. G.P.J. Dijkema). It will consist of the current staff of the former IVEM group, and two new tenure track assistant professors. The first will be appointed in 2014 as soon as possible, the second in the next year. One of the present IVEM staff members will retire in 2016.

The Committee concludes in the summary of their final report that the "constructive reaction of the Faculty Board and the programme management, the implementation of the new curriculum and the other intended measures of improvement create confidence that the programme can be improved in a reasonable time span". The current Improvement Plan is based on this constructive reaction of the Faculty Board and describes in detail the actions that will be, or already have been taken, to improve the EES programme adequately and sufficiently.

### **Content of the Improvement Plan**

Chapter 2 contains the assessments of the Assessment Committee with respect to standards 1, 2 and 3 for the Master's Degree Programme EES. We have summarized the comments on elements of the master's programme that need to be improved.

The reaction of the Board of FMNS and the Management team of the Programme on the conclusions of the Assessment Committee is presented in Chapter 3. In chapter 4 the detailed Improvement Plan is presented; the goal, action, owner, planning and control is described for all proposed improvement steps. The implementation of all improvements will be completed in 2015.

## **2. Findings of the Assessment Committee**

### **Standard 1: Intended learning outcomes**

The committee verified that the intended learning outcomes conform to the demands for an academic master's level. In its opinion the learning outcomes of the Experimental Studies on Energy and Climate specialization are clearly articulated, while those of the System Studies on Energy and Environment are satisfactory, but generic. It realises that it is difficult to formulate specific and testable learning outcomes for such a broad specialization.

*Findings of the Assessment Committee on standard 1: Master's Programme EES: satisfactory.*

### **Standard 2: Teaching-learning environment**

- The committee is not convinced that all intended learning outcomes are met in the programme. It misses a course that addresses the theories and research matters of social sciences and a methodology course that serves as a foundation for scientific research in the broad scope of the programme. The committee gained the impression the programme has a strong focus on academic research, but provides too little practical training of skills and competences required in the professional field.
- Judging by the lecture notes, books and PowerPoints used, the committee feels that the content of some courses of the System Studies on Energy and Environment specialization, is too weak and does not meet the required academic level.
- The committee noted that the didactic concept is in line with the learning outcomes of the modules and is by and large supported by the working methods. However, it is of the opinion that the interaction between research and education could and should be strengthened.
- The committee is of the opinion that the programme currently lacks a good methodology course that serves as a foundation for scientific research in the broad scope of the programme. Particularly important is a course on various qualitative methods in the social sciences. During the site visit the programme management explained that until a few years the programme offered such a methodology course and that there are thoughts of reintroducing it. The committee strongly supports this proposal and believes such a course offers a good opportunity to bring more cohesion to the broad scope of methodology issues in the programme.
- The committee noted that the programme is taught by a highly motivated staff that participates in highly appreciated research groups. However, it is concerned about the fact that none of the lecturers has obtained a basic teaching qualification (BKO). The committee advises staff members to obtain their basic teaching qualification as soon as possible. Another of the committee's concern is that the programme was forced to operate understaffed. The committee gained the impression that due to a high teaching load, the lecturers could not always provide sufficient supervision to the students during their master thesis.

- The committee established that the programme had a dangerously low intake during the years 2007 - 2010. More recently, the number of students entering the programme has increased. Due to several promising developments, the programme management expects a further increase in student numbers up to 40 - 50 students. At the time of the site visit, it could not be confirmed whether this expectation will be realised.
- During the interview with the students, it became clear that they don't feel part of the research culture of ESRIG, and it is not always clear to them how the lecturers' research fits in with what they are teaching. Some students stated that they miss having a research community, where they can have a critical dialogue about the methods used or about work done elsewhere by the staff involved in the programme.

*Findings of the Assessment Committee on standard 2: Master's Programme EES: unsatisfactory.*

### **Standard 3: Assessment and achieved learning outcomes**

- The committee noted that the Board of Examiners is aware of their new tasks and recently started implementing the faculty testing and assessment policy. It appreciates the recent initiatives taken by the Board, like obtaining a course unit assessment overview and revising the guidelines and assessment protocol regarding the research projects.
- The committee established that the written exams and assignments related well to the content of the courses they assessed. Regarding the assessments of the theses, it is of the opinion that the feedback provided by staff members is sometimes too limited. It gained the impression that this is a consequence of the supervisors being overloaded with work. It advises the programme to ensure that the revision of the assessment protocol for the master thesis incorporates a proper justification of the grades given.
- The committee read and assessed a selection of fifteen theses and established that some were of very high quality. However, it also noted that a couple of theses had some flaws ranging from limited referencing to a weak description of the concepts, theories and research methodology. Overall, the committee would have graded eleven theses somewhat lower than the grade given by the supervisor. Nevertheless, none of the theses was considered to be unsatisfactory.
- The committee thinks it is laudable that students have the opportunity to conduct their research for their master thesis at an external location. The committee appreciates that most graduates find a job immediately after their graduation and always in a relevant field. However, it noted that several students struggle with the different expectations from the professional field on the one hand and the academic field on the other. It advises making this distinction more explicit to both students and the hosting organizations.

*Findings of the Assessment Committee on standard 3: Master's Programme EES: satisfactory.*

## **The new EES curriculum: preliminary remarks of the Assessment Committee**

The EES programme management has thoroughly redesigned the curriculum, and the new format was implemented at the start of the 2013/14 academic year. The essentials of the learning outcomes and the general outline of the curriculum remain the same, but they now reflect all research activities within ESRIG. The overall scope of the programme has been broadened to cover four main themes:

- 1 energy systems,
- 2 physical/chemical,
- 3 bio-energy/resources
- 4 socio-economic aspects of energy, environment, and sustainability.

The last two themes are the main changes in comparison to the current programme. Since the Ocean Ecosystems group conducts experimental research as well, the experimental specialization is no longer accessible to bachelor graduates in Physics, Astronomy, and Chemistry only, but for bachelor graduates in Biology as well. The general outline of the new curriculum is as follows: the first year consists of a core programme (20 EC) for all students and a specialization part (40 EC), while the second year is dedicated to individual research and contains two research projects.

### Comments of the Assessment Committee

- The committee noted that the compulsory general courses have been redesigned and feels that this may remediate the problems regarding, for example, the Resources and Sustainable Development course. At the time of the site visit, it could not confirm whether this expectation will be realised.
- Since the new curriculum has only just been implemented, the committee was not able to judge whether these improvements will solve the established concerns sufficiently. Moreover, the committee gained the impression that the programme did not yet effectively address all the concerns.
- Since the new curriculum does not contain an integrating methodology course, the committee strongly supports the intention of reintroducing such a course.

## 3. Remedial action in response to the assessments of the Assessment Committee

### Standard 1: Intended learning outcomes

*The committee verified that the intended learning outcomes conform to the demands for an academic master's level. In its opinion the learning outcomes of the Experimental Studies on Energy and Climate specialization are clearly articulated, while those of the System Studies on Energy and Environment are satisfactory, but generic. It realises that it is difficult to formulate specific and testable learning outcomes for such a broad specialization (p.13).*

Our new master programme, started September 2013, does not have separate tracks anymore. For students the option remains, however, to specialize in system or experimental oriented studies. The upcoming transformation of IVEM into the new Energy Systems Studies Group will further enhance the quality of the systems studies. At present the intended learning outcomes of the systems studies are being upgraded and will be further redefined; (see Chapter 4 for the detailed plan). The Programme Management, Programme Committee and the Board of Examiners are all actively involved in this process.

### Standard 2: Teaching-learning environment

*The committee is not convinced that all intended learning outcomes are met in the programme. It misses a course that addresses the theories and research matters of social sciences and a methodology course that serves as a foundation for scientific research in the broad scope of the programme. The committee gained the impression the programme has a strong focus on academic research, but provides too little practical training of skills and competences required in the professional field. The interaction between research and education could and should be strengthened (p. 8,9,16).*

As to the first point, we admit that theories and research matters of social sciences have not been mentioned explicitly in our learning outcomes. At the same time we do agree that for many of our students such content is of importance. Our students have, therefore, ample possibilities to take courses in other faculties. For example, about 80% of the EES graduates choose Environmental Psychology, 65% of them Development Studies, 50% Environmental Economics, and about 35% Environmental Planning and also 35% Water Management. In the new curriculum, the students can choose electives with advice of their tutor.

We share the impression voiced by the committee that our programme is primarily a scientific one, connected to academic research. In fact we think that it should be so. The new design of the EES programme strengthens the connection between education and research due to the link with all

ESRIG groups. The new programme also has more explicit learning paths with regard to practical skills and competences throughout the programme. Once more, through electives students can tune their specific study route to their talents, needs and wishes, and in the new tutor system this will lead to well-balanced individual package choices, all explicitly achieving the learning outcomes of the programme.

*Judging by the lecture notes, books and PowerPoints used, the committee feels that the content of some courses of the System Studies on Energy and Environment specialization, is too weak and does not meet the required academic level (p. 9).*

The main part of the course material the committee reviewed, is no longer in use (since September 2013), because of the full renewal of the programme. We feel confident that these weaknesses have been redressed in the new programme. The first students' evaluations of the new programme are positive. Next to this members of the Programme Committee and the Board of Examiners have carefully reviewed the new study material during its first year of implementation. As a result suggestions for further improvement will be implemented next academic year (like eliminating minor overlap of individual lectures, and more standardization in the design of lecture assignments (see also Improvement Plan, chapter 4).

*The committee noted that the programme is taught by a highly motivated staff that participates in highly appreciated research groups. However, it is concerned about the fact that none of the lecturers has obtained a basic teaching qualification (BKO). Another of the committee's concern is that the programme was forced to operate understaffed. The committee gained the impression that due to a high teaching load, the lecturers could not always provide sufficient supervision to the students during their master thesis (p. 9).*

As mentioned before, most vacant positions will be filled this year. Therefore the programme will not be understaffed anymore. For the new EES programme, with staff now from all groups of ESRIG, the BKO/UTQ situation is as follows: The staff members of over 60 years old are exempted from BKO/UTQ (seven persons). Two tenured, and two non-tenured staff members have obtained their BKO/UTQ, and also the new head of IVEM has obtained his BKO/UTQ already at another university. Four more staff members have started their BKO/UTQ entrance assessments, and at least two more staff will start before summer 2014. In 2014-2015, two new tenure track staff in the new Energy Systems Study Group will be appointed: they will start their BKO/UTQ soon after their arrival. Our programme coordinator, who also has a strong commitment to teaching and curriculum development, and has a first degree secondary school teaching qualification, is also aiming at obtaining a University Teaching Qualification.

*The committee established that the programme had a dangerously low intake during the years 2007 - 2010. More recently, the number of students entering the programme has increased (p. 18).*

The minimum required intake of students established by the Faculty Board for a master's programme is now 20 per year. Courses of the first year have at least 5 extra students in the guise of exchange students and students of other master programmes taking individual courses. Between 2010- 2012 more than 20 regular EES students have enrolled in the programme. Given the substantial increase in student intake in the FMNS bachelor degree programmes, we are confident that we will be able to increase the EES intake in the coming years. Also the recently started more active participation in the RUG Erasmus Mundus programmes has already payed off: in this academic year 4 Erasmus Mundus master students started in the new programme. This number is likely to further grow as the RUG i.c. FMNS participates in more Erasmus Mundus programmes.

*During the interview with the students, it became clear that they don't feel part of the research culture of ESRIG, and it is not always clear to them how the lecturers' research fits in with what they are teaching. Some students stated that they miss having a research community, where they can have a critical dialogue about the methods used or about work done elsewhere by the staff involved in the programme. The Assessment committee concludes that the interaction between research and education could and should be strengthened (p. 17).*

The new EES programme is designed to link education to the research of all ESRIG groups. During the first courses students are introduced to all ESRIG groups and their research. In the first semester students have to choose a tutor from one of the ESRIG groups. This tutor will discuss the career and programme options with the student. Next to this, students are now obliged to attend ESRIG colloquia. The recent introduction of the research working group method has been welcomed by the Assessment Committee. Several participating ESRIG groups are applying this method for a long time. In the new EES programme all master students who are performing a research project regularly have to present their progress, receive feedback on their research from their peers and staff, and discuss general aspects of conducting research, like finding and evaluating the relevant literature and data. This method has been implemented in September 2013 for all students and the first positive results are already witnessed (like more progress in research). In our Improvement Plan (chapter 4) the details of the functioning of the working groups are described and how the effects will be monitored.

The relation education-research is also strengthened by adding Ph.D. students and staff presentations to the weekly student colloquium. Starting September 2014, this new colloquium series will be incorporated in the curriculum.

*The committee feels that some students would benefit from a more intensive supervision process during the master thesis and advises the programme to reconsider the relation between the training thesis and the master thesis (p. 25).*

The Programme management team has decided to limit the institutions where a Master thesis can be carried out to those with demonstrable involvement of qualified academic staff, thereby safeguarding academic standards of research. Furthermore, contact between the external student and the supervisor will be regularized and intensified.

*Another of the committee's concern is that the programme was forced to operate understaffed as a consequence of the departure of several staff members in the past few years and a general freeze on appointments at the FMNS. In combination with the relatively high intake of students during the last two years, this has led to an undesirably high teaching load. The committee gained the impression that due to this high teaching load, the lecturers could not provide sufficient supervision to the students during their master thesis (p.21).*

We share this view of the Assessment Committee. However, the situation has recently improved considerably. As of 2013 a tenure track and a part-time professor in the field of Atmospheric Modelling have been appointed, and another tenure track staff member has just started (March 2014). And most importantly, Prof.dr.ir. G.P.J. Dijkema has accepted the position of head of the new Energy Systems Study Group. He will immediately take action to enrol a Tenure Track candidate into his group.

With the start of the new curriculum all research groups within ESRIG participate in the EES master's programme. The possibility for students to conduct their second research project at other research groups of ESRIG besides CIO and IVEM has further balanced the programme in a better way.

### **Standard 3: Assessment and achieved learning outcomes**

*Regarding the assessments of the theses, it is of the opinion that the feedback provided by staff members is sometimes too limited. It gained the impression that this is a consequence of the supervisors being overloaded with work. It advises the programme to ensure that the revision of the assessment protocol for the master thesis incorporates a proper justification of the grades given (p.23).*

The Board of Examiners has taken immediate formal actions to revise existing assessment protocols for the learning thesis, master thesis and colloquia. Procedures for justification of grades have been redefined and subjected to more intensive control by the Board of Examiners. In this way objective grading is achieved. Furthermore, the control of progress of external master student projects is intensified by organising 'come back' meetings, in which students present their progress and discuss their results with supervisors and students. The arrival of very experienced staff members during the next few years will significantly reduce the work overload of the present supervisors.

## **4. Improvement Plan during the recovery period**

The assessment of the master's programme EES by the Assessment Committee has initiated the following plan to improve the master's programme, in particular in the context of standard 2 (teaching-learning environment), which was unsatisfactory, and in the context of standard 3 (assessment and achieved learning outcomes) which was satisfactory, but received several critical comments that require addressing during the recovery period.

The improvement plan is a more detailed scheme of the improvement points mentioned already in chapter 3. It is an action plan for the period January 2014 - June 2015. For each step the table indicates:

- what is the subject?
- what is the goal, why is it necessary?
- which action is required?
- who is responsible (owner)?
- in which period is the action planned, and finally
- who will check the result (evaluation), and when?

The University of Groningen i.c. the Faculty of Mathematics and Natural Sciences sincerely believes that the Improvement Plan will considerably contribute to the quality of the EES master's programme.

<b>Improvement Plan Master's Degree Programme Energy and Environmental Sciences</b>						
<b>Subject</b>	<b>Goal</b>	<b>Action (what)</b>	<b>Result (measurable)</b>	<b>Owner (who)</b>	<b>Planning</b>	<b>Evaluation (who, when)</b>
<i>Standard 1: Intended learning outcomes</i>						
<b>Programme</b>						
<b>Learning outcomes</b>	Learning outcomes match programme objectives	Reformulate learning outcomes	Clear reformulation of learning outcomes in the Teaching and Examination Regulations (OER)	Programme Management	June 2014	Programme Committee, Faculty Board (FB), Each year
<i>Standard 2: Teaching-learning environment</i>						
<b>Staff</b>						
<b>Basic teaching qualification</b>	All staff younger than 60 years old have BKO	Oblige staff to participate in BKO training days	>90% of staff has BKO or participates in trajectory	Programme Management / FB	Sept 2014	FB, Each year
<b>Strengthening of Systems Group</b>	Achieve balanced staff level commensurate with educational work load	Appoint new head of Systems Group and two more Tenure Track staff members	Student /staff ratio < 4	FB	July 2014 July 2015 July 2016	FB, 2015, 2016
<b>Student numbers</b>						
<b>Intake of students</b>	Increase enrolment of master students	Active participation in: Erasmus Mundus programmes; and Foreign educational fairs; Harness the energy tracks in Physics and Chemistry Bachelor programmes	Student enrolment > 30 within 3 years	Programme Management / FB	Sept 2017	FB, Each year
<b>Courses</b>						
<b>Methodology</b>	Improve scientific methodology knowledge	Incorporate compulsory course on advanced statistics	Advanced Statistics course obligatory, starting with the 2013-2014 curriculum year	Programme Management / Programme Committee	2013-2014	Programme Committee, Each year
<b>Social Science content of the EES curriculum</b>	Adequate coverage of societal aspects of Energy and Environmental Education	Establish obligatory course in the new curriculum: "Society and Sustainability"	Implemented in the 2013-2014 academic year	Programme Management / Programme Committee	2013-2014	Programme Committee, Each year
<b>Content of lectures</b>	Increase quality and coherence of lectures	Organize curriculum overhaul	Lectures are coherent and meet academic standards	Programme Management	First implementation 2013-2014; completion in 2014-2015	Programme Committee, Continuous Evaluation
<b>Tutor system</b>	Assist students to make	Students choose a tutor to help	Every semester students hand in	Board of	2013-2014	Programme



	better course choices	them with planning their course units and learning/master theses	a programme proposal form signed by the tutor. The BoE approves this form	Examiners (BoE)		Committee
<b>Research theses</b>						
<b>Study efficiency</b>	Students finish their training thesis within the assigned number of hours	Regular (mostly weekly) meetings with staff and fellow students	>80% of the students have finished their training thesis on time	Staff	2013-2014	Programme Committee, Each year
<b>Tutor system</b>	Improve guidance of students in their choice of research topics, and future career	Students discuss with their tutor the planning of their course units and subjects training/master theses	Every semester students hand in a programme proposal form signed by the tutor. The BoE approves this form	BoE	2013-2014	BoE
<b>External location master thesis</b>	Assure academic level of external master thesis	Establish requirements for host institutes and companies, regarding supervision and research subjects	Produce and maintain an inventory of qualifying institutes and companies	BoE	December 2014	BoE
		Organise regular %come back+ meetings during the master thesis period	All students have demonstrably attended at least one come back day during their external master thesis period	Staff	Pilot in 2013-2014	Programme Committee, Evaluation every 6 months
<b>Strengthen research education</b>						
<b>Involvement of students in research groups</b>	Increase student involvement with activities of research groups	Increase frequency of ESRIG symposia on research progress of PhD students and staff	At least two symposia per academic year.	Programme Management	May-June 2014	Programme Committee, Evaluation every 6 months
		Obligatory attendance of ESRIG/EES colloquia	Students have to attend at least 12 colloquia during their studies	Student	2014-2015	BoE
		Introduction to all ESRIG Research groups early in the curriculum	Presentations, research group visits	Programme Management	2014-2015	
<b>Standard 3: Assessment and achieved learning outcomes</b>						
<b>Assessment</b>						
<b>Assessment protocols</b>	proper justification of grades and feed back to student	Revise assessment protocols and instruct staff	Established assessment protocols + manual	BoE	June 2014, December 2014 (manual)	BoE

# Appendix 1

## MSc EES TRAINING THESIS ASSESSMENT FORM

### PART A: TO BE FILLED IN BY FIRST SUPERVISOR (in English)

Student number	
Student Name	
ESRIG Group	
Title Training Thesis	

<b>Final grade</b>		Grade not rounded:
Date		
Progress code	EM5RTH30E	
ECTS	30 EC	
1 <sup>st</sup> Supervisor		
Signature 1 <sup>st</sup> Supervisor + date		

Thesis available / present in repository      Yes/No (If not: why?):

#### 1. Scientific quality of Research 30%

	< 5.5	6-6.5	7-7.5	8-8.5	> 9
Problem analysis					
Literature research					
Research strategy and methods/techniques used					
Quality, validity and relevance of results					
Interpretation of results					
Discussion of results					
Conclusions					
<b>Grade (A)</b>	<b>30%</b>				
<i>Justification of Grade (including assessment of the process: how was the final product arrived at?)</i>					

## 2. Management of Research 25%

	< 5.5	6-6.5	7-7.5	8-8.5	> 9
Independence					
Initiative					
Motivation					
Planning					
Collaboration/Teamwork					
<b>Grade (B)</b>		<b>25%</b>			
<i>Justification of Grade (including assessment of the process: how was the final product arrived at?)</i>					

## 3. The colloquium/final presentation 15%

	< 5.5	6-6.5	7-7.5	8-8.5	> 9
<b>Contents</b>					
Intro & problem analysis					
Goals & methods/techn.					
Quality, validity and relevance of results					
Discussion & conclusion					
<b>Presentation</b>					
Structure					
Clarity					
Presentation skills					
Response to questions					
<b>Grade (C)</b>		<b>15%</b>			
<i>Justification of Grade (including assessment of the process: how was the final product arrived at?)</i>					

## 4. The report /thesis 30%

	< 5.5	6-6.5	7-7.5	8-8.5	> 9
Structure and layout					
Writing skills					
Linguistic skills					
Reference/use of literature					
<b>Grade (D)</b>		<b>30%</b>			
<i>Justification of Grade (including assessment of the process: how was the final product arrived at?)</i>					

**Justification and final remarks on assessment:**

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\_\_\_\_\_

First assessor: \_\_\_\_\_

Date: \_\_\_\_\_ Signature: \_\_\_\_\_

**PART B: TO BE FILLED IN BY SECOND SUPERVISOR (in English)**

**Justification and final remarks on assessment:**

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\_\_\_\_\_

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Second assessor: \_\_\_\_\_

Date: \_\_\_\_\_ Signature: \_\_\_\_\_

# Appendix 2

## MSc EES MASTER THESIS ASSESSMENT FORM

PART A: TO BE FILLED IN BY FIRST SUPERVISOR (in English)

Student number	
Student Name	
ESRIG Group	
Company	
Title Master Thesis	

<b>Final grade</b>		Grade not rounded:
Date		
Progress code	EM5MTH30E	
ECTS	30 EC	
1 <sup>st</sup> Supervisor		
Signature 1 <sup>st</sup> Supervisor + date		

Thesis available / present in repository      Yes/No (If not: why?):

### 1. Scientific quality of Research 30%

	< 5.5	6-6.5	7-7.5	8-8.5	> 9
Problem analysis					
Literature research					
Research strategy and methods/techniques used					
Quality, validity and relevance of results					
Interpretation of results					
Discussion of results					
Conclusions					
<b>Grade (A)</b>		<b>30%</b>			
<i>Justification of Grade (including assessment of the process: how was the final product arrived at?)</i>					

## 2. Management of Research 25%

	< 5.5	6-6.5	7-7.5	8-8.5	> 9
Independence					
Initiative					
Motivation					
Planning					
Collaboration/Teamwork					
<b>Grade (B)</b>		<b>25%</b>			
<i>Justification of Grade (including assessment of the process: how was the final product arrived at?)</i>					

## 3. The colloquium/final presentation 15%

	< 5.5	6-6.5	7-7.5	8-8.5	> 9
<b>Contents</b>					
Intro & problem analysis					
Goals & methods/techn.					
Quality, validity and relevance of results					
Discussion & conclusion					
<b>Presentation</b>					
Structure					
Clarity					
Presentation skills					
Response to questions					
<b>Grade (C)</b>		<b>15%</b>			
<i>Justification of Grade (including assessment of the process: how was the final product arrived at?)</i>					

## 4. The report /thesis 30%

	< 5.5	6-6.5	7-7.5	8-8.5	> 9
Structure and layout					
Writing skills					
Linguistic skills					
Reference/use of literature					
<b>Grade (D)</b>		<b>30%</b>			
<i>Justification of Grade (including assessment of the process: how was the final product arrived at?)</i>					

**Justification and final remarks on assessment:**

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First assessor: \_\_\_\_\_

Date: \_\_\_\_\_ Signature: \_\_\_\_\_

**PART B: TO BE FILLED IN BY SECOND SUPERVISOR (in English)**

**Justification and final remarks on assessment:**

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Second assessor: \_\_\_\_\_

Date: \_\_\_\_\_ Signature: \_\_\_\_\_