Assessment Policy Department of Mechanical Engineering

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Contents

1. Introduction

The Mechanical Engineering Department Board has responsibility for five degree programs:

- BSc Mechanical Engineering
- MSc Mechanical Engineering
- MSc Sustainable Energy Technology
- MSc Systems and Control
- MSc Automotive Technology

	Graduate program	Interdepartmental
BSc BW	Not applicable	No
MSc MW	Mechanical Engineering	No
MSc SET		Yes
MSc S&C		Yes
MSc AT	Automotive Systems	Yes

Figure 1: Status of the degree programs

This assessment policy applies to these five programs.

In 2019, the University's exam framework was revised. The Education Board requested the Department Boards to incorporate the exam framework into the department assessment policy. This prompted a rewriting of the Mechanical Engineering department assessment policy. The rewriting of the policy is an opportunity to do justice to the dynamics of the policy and to incorporate the latest insights gained in assessment practice.

A project group consisting of Hans Kuerten (GPD Mechanical Engineering), Camilo Rindt (Program Director MSc Automotive Technology, MSc Sustainable Energy Technology and MSc Systems and Control), Dione van Noort (Manager ESA) and Mariëtte Heijman (policy advisor) prepared a draft. This draft was discussed with the Examination Committees and the Program Committees. On July 12, 2022 the Dean of the Department of Mechanical Engineering adopted the assessment policy.

In addition to the Assessment Framework, the Assessment Policy is based on the existing Assessment Policy of the department. It provides an overview of how the departmental assessment is ensured and safeguarded (“zorgen en borgen”). Furthermore, it explains how assessment has been organized within the department. The Program- and Examination Regulations and the Regulations of the Examinations Committee elaborate on the policy.

In the Assessment Policy, many referrals are being made to the mentioned regulations and other documents that are updated regularly, most of them annually. On top of the updates in policy and documents, education is a living matter. Innovations are made, programs are updated and courses and assessment of them are altered. As a result of the setup of this document and the flexibility of education and policy, this document can only be a snapshot of the current state of affairs.

At all points in time, the department will work according to the intentions of the Assessment Policy of the Department of Mechanical Engineering and according to the most recent versions of the documents it refers to. If any relevant and permanent changes are being made in the departmental assessment policy, additions will be made to this document. A complete update of the departmental assessment policy will be made when the university’s Assessment Framework is updated.[1]

[1] Usually with a frequency of 5 years.

2. Vision on Education and Assessment

2.1 Vision on education

In the academic year 2017-2018 the board of the TU/e, in consultation with the TU/e community, has set up a new education and research strategy for the next decade, as expressed in their 'TU/e Strategy 2030'[2]. Based on this TU/e strategy the program directors and the manager ESA WTB have laid down, in consultation with the Department Board and a significant number of lecturers of the department, a vision about the course of actions to realize the TU/e strategy in 'Towards Mechanical Engineering Education in 2030'. The Department Board has decided on this vision in November 2019. It has been updated and decided upon in March, 2022.

The general learning outcomes of the programs are included in the model Program and Examination Regulations. For the BW bachelor's program and the MW, AT, SET and S&C master's programs, these general learning outcomes have been maintained in the Program and Examination Regulations of those programs[3].
For each program, the Program and Examination Regulations describe the learning outcomes for the domain-specific disciplines.

2.2. Vision on testing

Context

We conform to the TU/e Exam Framework 2019. Furthermore, we base our assessment policy on documents that have been established at central level[4]: Guidelines BC, Guidelines GS, the model Regulations of the Examination Committee and the model Program and Examination Regulations BSc and MSc, the Central Examination Regulations and the Fraud Policy.
The program-specific implementation of the model Program and Examination Regulations and the model Regulations of the Examination Committee complies with the testing policy.

Levels of testing

Testing takes place at the level of the degree program, the program of examinations and at the level of the study components.

Testing documents

Consistency of testing is achieved by developing the following documents in line with each other:

a. Assessment policy of the department.
b. Assessment plan of the degree program.
c. Assessment plan of the study components
d. Test(s) of the study components

If there are several tests, they will together meet the requirements for an examination. This is laid down in the assessment plan.

Tests can have multiple purposes:[5]

- Tool of learning (summative assessment): Has the student achieved the learning objectives of the study component or the intended learning outcomes of the degree program? and

[2] 20191129 Onderwijsstrategie 2030 WTB
[3] The most recent PER and ER for each program can be found in the Educationguide for each program.
[4] On these websites most central rules and regulations are published: Rules and Regulations (tue.nl) and Testing and assessment (tue.nl)
[5] Wherever reference is made to a formative test in the remainder of this document, 'tool for learning' is meant. Where reference is made to a summative test, 'tool of learning' is meant.

- Tool for learning (formative assessment): Students gain insight into their own learning process through feedback, which enables them to study in a more targeted manner. Formative testing thus promotes studyability and encourages studying.

The assessment of professional skills is done within the context of the study components.

Departmental vision on assessment

The department has developed a vision on assessment which is partially reflected in 'Towards Mechanical Engineering Education in 2030'. The most important aspects of this vision are:

1. During their study, students should gradually become independent learners. By independent learners, based upon the TU/e Vision 2030, we mean students that will learn how to learn, students that are able to shape their profile in a personal and flexible way, and take up ownership of their learning and development. Especially in the first years of their bachelors program, students need support in this path to independence. A good method for support is formative assessment with active feedback that it is not voluntary. It is expected that master students have already developed sufficiently in their path to independent learners. Therefore, master courses do not require many interim assignments and tests.
2. In order to improve student learning, feedback on learning is very important. The interim tests, as introduced with the introduction of Bachelor College in 2012, have some negative implications and appeared not to be the optimal way to provide feedback. Therefore, the department has introduced digital progress tests in a number of bachelor courses, that replace the interim tests. Progress tests have a purely formative character, since they do not count for the final grade of the course, but are obligatory. They are given in digital form and automatic feedback is provided on wrong answers. It is the intention to increase the number of courses with this form of assessment. Also in DBL ways to increase the role of feedback are investigated, for example by replacing preliminary reports by posters. A number of educational innovation projects are and have been carried out to develop progress tests for a number of courses.
3. The policy of the department is to use the principle of constructive alignment in the setup of all courses. This means that learning objectives, form of education and form of assessment are aligned. If the learning objectives are well formulated, it is clear what a student needs to know after the course and which knowledge and skills are required to achieve this. The form of education should be chosen in such a way that the student is able to acquire this knowledge and skills and is able to practice them in order to reach the learning objectives. The form of assessment should be chosen in such a way that the student is able to show that the learning objectives are reached. Constructive alignment plays an important role in the courses new staff members follow to obtain their UTQ certificate.
4. In order to decrease the time required for grading exams, there is a gradual shift toward digital assessment. This is both in the form of a completely digital test, which can be graded automatically, and in the form of scanning exams to enable digital grading. Completely digital tests are not possible to assess all learning objectives of almost all courses, but are an important means to decrease the time required for grading. All forms of digital assessment have had an enormous boost as a result of unforeseen circumstances. We expect a lasting effect. Moreover, in some educational innovation projects forms of digital testing have been developed.
5. It is the vision of the department that the assessment plan of the program is the combination of the assessment plans of all individual study components that constitute the program and the table that gives the relationship between the courses and the intended learning outcomes of the program, and is shown in the appendices. This implies that if a course is changed or replaced, it should be verified that all intended learning outcomes of the program are still sufficiently covered.
6. The Examination Committees of the department each appoint an assessment committee (toetscommissie or borgingscommissie in Dutch) that has two functions. The committee checks

the quality of assessment plans of all courses systematically, and of all new courses in particular. The second function is to check the implementation of the assessment plan by comparison with the assessment of the course.

Testing processes

Within the testing processes, the following levels are distinguished:

a. Test as (part of) an examination
b. Examination (at the level of the study component)
c. Final examination (at the level of the degree program).

These processes must be aligned with each other.

Responsible persons

a. Dean
b. Examination Committee
c. Examiner
d. Program Director

For an elaboration, see Appendix 1: Roles and Powers.

2.3 Vision on educational innovation

The vision for innovation is laid out in the previously mentioned strategy document: Towards Mechanical Engineering Education in 2030. In it the educational innovation projects are mentioned. Some of these projects have renewal of assessment as their goal, some others have implications for assessment. The introduction of E-assessment has been accelerated by an unforeseen outside influence.[6] Pilots in the field of educational innovation that deviate from the rules in the Program and Examination Regulations are included in an appendix of the Program and Examination Regulations.

2.4 Vision on fraud

We conform to the TU/e fraud policy.[7]
Rules and procedures for preventing, detecting, and sanctioning fraud are laid down in the Program and Examination Regulations and Regulations of the Examination Committees. The model Program and Examination Regulations state at what point students declare that they will comply with the TU/e Code of Conduct for Scientific Integrity or have complied with this code.
Rules have been drawn up to prevent fraud by teacher assistants and teaching assistants. These can be found in Appendix 2: Teacher and teaching assistants.

[6] This refers to the guidelines issued by the government in the context of the Corona outbreak in 2020.
[7] TU/e Educational fraud policy, March 2015

3. Testing at the level of the degree program

3.1 Assessment plan

According to the guideline BC, the BSc programs must have an assessment plan.
According to the guideline GS, the MSc programs must have an assessment plan.

Learning outcomes have been formulated for the degree programs as a whole. In the most recent self-evaluation reports the intended learning outcomes of each of the five programs are compared with Meijers' Criteria. The comparisons in the self-evaluation reports show that the learning outcomes of the programs fit within and cover all of Meijers' Criteria, thus ensuring appropriate focus on engineering as well as academic level and scientific orientation. At least when preparing for educational reviews (self-evaluation) and when major curriculum changes are made, these schedules are reviewed and updated as necessary.

Learning objectives have been formulated for the study components. Students have some freedom in putting together their program of examinations. The learning objectives of the study components that together form a program of examinations lead to the intended learning outcomes of the program. This has been demonstrated in the most recent self-evaluations. These schedules are also evaluated during the preparation of educational reviews and in the case of major curriculum changes and updated as necessary.

Together with the assessment plans of the study components, this information forms the assessment plan of the respective degree programs.

[8]	**Responsible**	**Accountable**	**Consulted**	**Informed**
Assessment policy	Program Director	Dean	Examination Committee, Program Committee, Manager ESA	Executive Board[9], Department Council, Examiner, Student
Program assessment plan	Program Director	Program Director	Dean, Examination Committee, Program Committee	Executive Board, Examiner, Student

Figure 2: RACI Assessment policy and program assessment plan

3.2 Safeguarding the final attainment level of students

Securing the final attainment level of the students is done by securing the quality of the program of examinations and the quality of the Bachelor's Final Project (BFP) (see section 4.4) and the Master's Final Project (MFP) (see section 4.6) respectively.

3.3 Safeguarding the quality of a Bachelor student's program of examinations

A BSc program of examinations consists of basic study components (25 ECTS), mandatory study components belonging to the major BW (95 ECTS), a USE learning trajectory (15 ECTS) and elective study components (45 ECTS). This is laid down in the Program and Examination Regulations.

[8] Derived from the TU/e Exam Framework 2019, Appendix 3.
[9] Executive Board

The Executive Board determines which basic study components belong to the program of examinations. This is laid down in the Program and Examination Regulations.
The Department Board determines which major study components belong to the program of examinations. This is also laid down in the Program and Examination Regulations. The Program Committee has the right of approval.

The student may choose the USE learning trajectory and elective study components, within conditions. The conditions are determined by the BC and recorded in the Program and Examination Regulations. The Program Committee has the right of approval to the USE-learning trajectory offered by the department.

Basic study components, major study components, and the conditions that apply to the selection of a USE learning trajectory and the elective study components are established so that students can construct a program of examinations that leads to the intended learning outcomes of the degree program.

The Examination Committee will assess whether the course choices of the students are coherent, are of the proper level and do not overlap, as referred to in Article 3.4, paragraph 8[10], and approves it if the program of examinations complies. (Safeguarding.)

The Examination Committee will determine the outcome of the final examination after the student has made an application and the Examination Committee has verified that the student has met the requirements of the program of examinations.

Internal double diplomas

The program of examinations of a bachelor student who wants to qualify for internal double diplomas meets at least the requirements of the program of examinations of a regular BSc BW student. The additional requirements that apply are laid down in the Regulations of the MECH Examination Committee and in the BSc BW Program and Examination Regulations. From 2022-2023 the additional requirements will be part of the Program and Examination Regulations.

The program of examinations of a master student who wants to qualify for internal double diplomas meets at least the requirements of the program of examinations of a regular MSc MW, AT, SET or S&C student. The additional requirements that apply are laid down in the Regulations of both Examination Committees and in the Program and Examination Regulations of the various programs.

3.4 Safeguarding the quality of a Master student's program of examinations

An MSc program of examinations consists of mandatory study components, specialization elective study components and free elective study components.

The Program and Examination Regulations specifies that a graduation project is among the mandatory study components of a program of examinations.

The Department Board determines which other compulsory study components belong to the program of examinations. In the case of the Master MW this is, in addition to an internship, a list of courses from which the student must choose. In the case of the IMs, [11]the Department Board establishes a list of compulsory study components. This is laid down in the Program and Examination Regulations. The Program Committees have right of approval.

[10] Model Program and Examination Regulations BSc 2020-2021 art. 3.7 lid 3.

[11] The abbreviation "IMs" refers to the interdepartmental master programs; MSc AT, MSc SET and MSc S&C

The Department Board determines which specialization elective study components may belong to the program of examinations. This is laid down in the Program and Examination Regulations. The Program Committees have right of approval.

The student may choose the free elective study components. For the IMs, the Department Board sets criteria that the free elective study components must meet. The criteria that the free elective study components must meet are laid down in the Program and Examination Regulations.

The decisions of the Department Board are based on proposals prepared by the Program Directors in consultation with the Program Coordinators and Program Committees.

The rules in the Program and Examination Regulations are designed to enable students to put together a program of examinations that leads to the intended learning outcomes of the degree program. The student consults with his/her mentor on the choices to be made and the mentor advises the Examination Committee on the choice.

The Examination Committee checks the program of examinations for coherence and quality as well as to ensure it meets the requirements for a Master's program. This involves the advice of the mentor and approves it if the program of examinations complies. (Safeguarding.)

The Examination Committee will determine the outcome of the final examination after the student has made an application and the Examination Committee has verified that the student has met the requirements of the program of examinations.

Internal double diplomas

The program of examinations of a student who wants to qualify for internal double diplomas meets at least the requirements of the program of examinations of a regular MSc MW, AT, SET or S&C student. The additional requirements that apply are laid down in the MSc Directive internal double diplomas, the Regulations of both Examination Committees and in the Program and Examination Regulations of the various programs.

3.5 The Examination Committee

[12]	Responsible	Accountable	Consulted	Informed
Composition and appointment of the Examination Committee	Dean	Dean	Program Director, Examination Committee	Program Committee, Department Council, Examiner, Manager ESA, Student, DB's other programs (IM's)

Figure 3: RACI Composition and appointment of the Examination Committee

The roles and powers of the Examination Committee can be found in Appendix 1.
The roles/powers of appointing examiners, safeguarding the quality of testing, and degree certificate are discussed further here.

[14] Derived from the TU/e Exam Framework 2019, Appendix 3.

Appointing examiners

Appendix 1 of the Regulations of the Examination Committees sets out the procedure for appointment of examiners. Although the examination regulations do not exclude Teachers[13] as examiners, they are only appointed as examiners upon the recommendation of the supervisor and/or the Program Director.

Safeguarding the quality of testing

Article 2.1 of the Regulations of the Examination Committees lays down the further rules that the various Examination Committees use to safeguard the quality of the exams and final examinations. The Examination Committees are advised by an assessment committee.

Article 2.2 of the Regulations of the Examination Committees lays down the further rules that the various Examination Committees use to safeguard the quality of the organization and procedures concerning the exams and final examinations.

Degree certificate

Article 1.3 of the Regulations of the Examination Committees states that one of the tasks/authorities of the Examination Committee is to issue degree certificates, with the diploma transcript attached, as proof that the final examination has been passed.

Article 6.1. of the model Program and Examination Regulations 2020/21 of the master programs stipulates that the Examination Committee determines whether the student has met the requirements of the program of examinations. Article 6.1. of the model Program and Examination Regulations 2020/21 of the bachelor's programs includes a corresponding provision for the bachelor's programs.

[14]	Responsible	Accountable	Consulted	Informed
Appointing examiners	Examination Committee	Dean	Program Director	Examiner Manager ESA
Safeguarding the quality of testing	Examination Committee	Examination Committee	Program Director, Program Committee, Examiner	Executive Board, Dean, Program Director, Program Committee, Examiner, Manager ESA
Degree certificate	Examination Committee	Examination Committee		Program Director, Student

Figure 4: RACI Key responsibilities of the Examination Committee

Other topics for which the Examination Committee is responsible and/or accountable: Regulations of the Examination Committee, annual report of the Examination Committee, fraud prevention and handling, exemptions, internal double diplomas, advice on the Program and Examination Regulations and complaint handling appeal testing.

[13] This is one of the roles that can be assigned in Canvas.

[14] Derived from the TU/e Exam Framework 2019, Appendix 3.

4 Testing at the study component level

4.1 Generic

Testing process

The testing process at the study component level consists of the following steps:

1. Developing the assessment plan and test

In the assessment plan of a study component, the following is recorded:

- Per learning objective: the test format, the level to be tested and the weighting factor.
- Per test: whether it is an interim or a final test, the test method and the weighting.
- For each test: whether the test has been previously reviewed by a co-assessor, whether there is coordination between the assessors and what the rules are for resits.

The examiner is responsible for the development of the assessment plan and the test.
A format for the assessment plan has been developed. See Appendix 3: Format assessment plan.

2. Execution of the test

The examiner is responsible for the execution of the test. Execution means: administering, assessing and determining the result.
The examiner follows the guidelines as laid down in the Program and Examination Regulations and the Regulations of the Examination Committee. For centrally scheduled tests, the Central Examinations Regulations[15] also apply.

3. Aftercare

Aftercare means, among other things, allowing inspection of the assessment, the analysis and the archiving of the tests taken. The examiner is responsible for this.

The Examination Committee safeguards the quality of testing..

Examiner

An examiner[16] is an official who is responsible for an individual study component at the TU/e and has been appointed by the Examination Committee to assess students by organizing examinations on the study component and to determine their result.

[17]	Responsible	Accountable	Consulted	Informed
Appointing the examiners	Examination Committee	Dean	Program Director	Examiner Manager ESA
Quality of the examiners	Program Director Examiner	Dean	Examination Committee	Program Committee Department Council

Figure 5: RACI Appointing and quality examiners

Appendix 1 of the Regulations of the Examination Committees stipulates the following:

- The profile and definition of an examiner at TU/e.
- The knowledge, skills and personal qualities of an examiner.

[15] TU/e Central Examination Regulations, September 2019
[16] Model Regulations of the Examination Committee 2020/21, Appendix 1, black text.
[17] Derived from the TU/e Exam Framework 2019, Appendix 3.

We conform to the TU/e rules that apply to the use of Teacher Assistants B and M and to the use of Teaching Assistants. There are also rules for assigning roles in Canvas to Teacher Assistants and Teaching Assistants. These rules are summarized in Appendix 2.

Test methods

Tests can be classified in different ways. They can be divided into parts of the examination (interim test and final test), goals (formative or summative), centrally scheduled or not, but also into the way in which the test is organized. For this last classification we use the term 'test method'.
The most common test methods used by the Department W are :

- Written test
- Oral test
- Written report
- Presentation

Digital means are also used in testing; both to administer and assess the test and to process the results. Digital resources for administration and assessment are mainly used for written tests.

These test methods can be used in conjunction with each other. If they have a summative purpose, the tests together form the examination. One test method can also occur several times within a study component. The test methods written exam, oral exam and presentation also occur as the only, summative, test method. In that case, the test is also the examination.

In modes of teaching such as DBL, BFP, Internship and MFP, students are also assessed on the execution of the study component. This form of assessment is made possible by supervising the student during the execution of the study component. Other forms of assessment are also used in these modes of teaching. The various tests together form the examination. In the context of the assessment policy, we call these four modes of teaching and thus their concrete study components ‘special’. All other study components are called 'regular' in this context.

Bachelor students work within the major study components to develop six professional skills. Assessment of these professional skills takes place within the context of the respective major study components.

Criteria

Tests meet the following criteria:
Transparency, Validity, and Reliability.

- Transparent: prior to the test, it has been clearly communicated to students, how and on what they will be assessed.
- Valid: the test covers the learning objectives. For validity both content (congruent with the learning objectives), level (the degree of difficulty) and representativeness play a role.
- Reliable: the test makes a meaningful distinction between students who master the learning objectives well or less well. The quality of the test plays a role here (distinctiveness, minimal guessing, unambiguousness), the circumstances under which the test is taken (standardization and objectivity) and the way in which the results are assessed (objective, not random, accurate).

Ensuring the quality of the testing at the study component level

The TU/e Exam Framework states the following about this:

[18]	Responsible	Accountable	Consulted	Informed
Learning objectives	Examiner	Program Director	Program Committee	Executive Board, Manager ESA, student
Assessment plan	Examiner	Examiner	Program Director	Examination Committee, Program Committee, Manager ESA, student
Test and test quality	Examiner	Examiner	Peers	Program Director, Examination Committee, student
Assessment procedures/ model	Examiner	Examiner		Examination Committee, student
Assessment	Examiner	Examiner		Examination Committee, student
If applicable:				
Making sample exams available	Examiner	Examiner		Examination Committee, student
Exam matrix/ schedule	Examiner	Examiner		Examination Committee, student
Determining the pass mark/ guess correction	Examiner	Examiner		Examination Committee, student

Figure 6: RACI Ensuring the quality of testing at study component level

For additional roles and powers in the holding of scheduled exams, see 4.2 Written Tests.

Safeguarding the quality of testing at study component level

The quality of testing is ensured in two ways:

1. The assessment of a study component is part of the regular process of course evaluations. The following principle is used:

   'The quality assurance system for courses is based on the basic principle that the lecturer follows the Plan-Do-Check-Act cycle in his teaching activities.
   - Plan: lecturer prepares the course (teaching activities, course material, assessment)
   - Do: the course is executed (teaching activities, assessment)
   - Check: evaluation of the course (evaluation results, assessment results)
   - Act: reflection and determination of actions based on conclusions of check-phase.

[18] Derived from the TU/e Exam Framework 2019, Appendix 3.

In a new cycle the plan-phase includes evaluation of the actions of the previous act-phase. The actual action is the responsibility of the lecturer.'[19]

2. Also, quality is ensured and safeguarded in the following manner:

	Tool	Ensuring	Safeguarding
Transparent	Course description		Program Committee
Valid	Assessment plan		Examination Committee[20]
Reliable	Success rate between 60 and 90% indicates distinctiveness.		Examination Committee

Figure 7: Ensuring and safeguarding the quality of testing at the study component level:
In the following sections, this schema is completed for each test method/study component.

Ensuring the provision of information about testing at the study component level

We distinguish between rules, procedures and forms. These are ideally laid down in documents in accordance with the overview below and published in various bodies. It is also indicated who the responsible parties are (who establish and/or publish the documents and forms).

Type of information	Document	Responsible	Published in
Rules	Program and Examination Regulations	Dean	Education guide
	Regulations of the Examination Committee	Examination Committee	Education guide
	Course description	Examiner	Osiris[21]
	Study guide	Examiner	Canvas[22]
Procedures for[23]			
Student	Study guide	Examiner	
Examiner			
Forms			

Figure 8: Provision of information on rules, procedures and forms at the study component level
In the following sections, this schema is completed for each test method/study component. The rules section is so generic that it will be omitted in the following sections.

[19] Quality assurance plan Department of Mechanical Engineering 2020/21
[20] Annual report EC IM's 2017/18
[21] This is the education information system used in 2020. Where this document says Osiris, education information system should be read.
[22] This is the learning management system used in 2020. Where this document says Canvas, learning management system should be read.
[23] This refers only to procedures that are not in the Program and Examination Regulations or Regulations of the Examination Committee.

4.2 Written test

Ensuring the quality of the (scheduled) written test

[24]	Responsible	Accountable	Consulted	Informed
Registration	Student	CM Study progress		Examiner, Manager ESA, Invigilator, Examplanner
Delivering the exam for holding tests	Examiner	Program Director		Manager ESA, Exam-coordinator
The actual holding tests	Examiner, Invigilator, Student Exam-coordinator	Head ESA		Examination Committee
Organization for the purpose of holding tests	Exam-coordinator	Head ESA	Program Director, Examination Committee, CM Exam planning	Program Committee, Examination Committee, Examiner, CM Exam planning, Invigilator
Scheduling of tests	Executive Board Exam planner	Head ESA	Program Director, Examination Committee, Examiner, CM Exam planning, Exam-coordinator	CM Exam planning, CM Study progress, Student, Invigilator, Exam-coordinator

Figure 9: RACI Ensuring the quality of scheduled (written) tests (in addition to figure 6)

Ensuring and safeguarding the quality of the written test

	Tool	Ensuring[25]	Safeguarding
Transparent	Course description	Examiner	Program Committee
	Study guide	Examiner	
	Sample exams	Examiner	Course evaluation
	Distribution of point on test form	Examiner	Examination Committee
Valid	Assessment plan	Examiner	Examination Committee
	Test prepared in collaboration with co-teacher	Examiner	Examination Committee
Reliable	Success rate between 60 and 90% indicates distinctiveness.	Examiner	Examination Committee

[24] Derived from the TU/e Exam Framework 2019, Appendix 3.

[25] If a study component has multiple examiners, this column should read 'responsible lecturer' for 'examiner'.

	Test prepared in collaboration with co-lecturer	Examiner	Examination Committee
	Combination analysis interim/final test	Examiner	Examination Committee
	Surveillance, exam room, length of time	Exam coordinator	Education Board
	Multi-lecturer assessment using response model	Examiner	Examiner and Examination Committee

Figure 10: Ensuring and safeguarding: written test

Provision of information on the written test[26]

Type of information	**Document**	**Responsible**	**Published in**
Procedures for[27]			
Student	Study guide	Examiner	Canvas
Examiner	Central Examination Regulations	Institute board	Education guide

Figure 11: Provision of information on procedures: written test

[26] How the information about the rules takes place can be found in section 4.1, figure 8.

[27] This refers only to procedures that are not in the Program and Examination Regulations or Regulations of the Examination Committee.

4.3 Design Based Learning

Summary of assessment DBL:

DBLs have different types of learning goals :	Group/Individual assessment
1. Application of knowledge	Group
2. Mastery of design skills	Group
3. Carrying out a self-study assignment	Individual
4. Fulfilling roles in a DBL team	Individual
5. Mastery of technical skills (not always)	Individual
6. Mastery of professional skills (not always)	Individual

DBLs have different tests and test times.

Group assessment:

Learning objectives to be tested:	
	At least 1 and 2.
Test method:	May include: report, presentation, model, etc.
Test time:	At least a final test, there may be an interim test.
Status of the test:	The final test is summative; any interim test is formative and/or summative.
Assessor:	Project coordinator
Verdict:	The test must be graded ‘ sufficient’, may be retaken.

Individual assessment, always:

Learning objectives to be tested:	
	At least 3 and 4.
Test method:	3: self-study assignment
	4: participation in the process
Test time:	An interim test and a final test will take place.
Status of the test:	The interim test is formative, the final test is summative.
Assessor:	Interim test: the tutor.
	Final test: the tutor, from DBL 1.3 combined with peer review.
Verdict:	The test must be graded ‘sufficient’, (at least 6.0), may not be retaken.

Students receive peer review training in Q 1.3, as part of the PRV Collaboration. During some DBLs, they put this skill into practice. Tutors themselves have already experienced 7-9 DBLs as students. During these DBLs, they have also seen how a tutor acts. During the tutor training (3 hours), attention is also paid to assessing the students. Furthermore, the DBL coordinator informs the tutors on what they should assess.

Individual assessment (not always):

Depending on the DBL.	
Learning objectives to be tested:	
	5 and 6, if applicable.
Verdict:	A training in technical skills needs not to be sufficient.
	Professional Skills must be sufficient, may not be retaken.

Ensuring and safeguarding the quality of testing DBL's

	Tool	Ensuring	Safeguarding
Transparent	Course description	Project coordinator[28]	Program Committee
	Study guide, including: test formats, criteria, and standards, available in advance	Project coordinator: content DBL coordinator: availability	Program Management
Valid	Assessment plan	Project coordinator	Examination Committee
Reliable	Combination of tutor and peer assessment	Project coordinator	Examination Committee
	Assessment using rubrics	Project coordinator	Examination Committee
	Deployment of authorized examiners	Section	Examination Committee

Figure 12: Ensuring and safeguarding: DBL

Provision of information on testing DBL's[29]

Type of information	Document	Responsible	Published in
Procedures for[30]			
Student	Study guide	Project coordinator: content DBL coordinator: placing	Canvas
Tutor	Manual for tutors and kick-off meeting	DBL coordinator	To be handed out
	Rules for TA's	Employer[31]	See Appendix 2
Forms			
Rubric		Examiner, depending on the person responsible for the training.	Canvas
Rubrics peer review and self study assessment		Project coordinator	Canvas

Figure 13: Provision of information on procedures and forms: DBL's

Remark:
Both the course description and the study guide define the learning objectives. For the DBLs, the generic learning objectives are determined by the Program Director, the content learning objectives by the project coordinator.

[28] For the DBL 4GA00 the project coordinator is not the responsible lecturer, for the other DBLs he/she is.
[29] How the information about the rules takes place can be found in section 4.1, figure 8.
[30] This refers only to procedures that are not in the Program and Examination Regulations or Regulations of the Examination Committee.
[31] This has been agreed upon in a formal arrangement by TU/e board and EUFlex. TA's receive a booklet informing them of several matters, including mentioned rules.

4.4 Bachelor's Final Project

Ensuring and safeguarding the quality of testing Bachelor's final project

	Tool	Ensuring	Safeguarding
Transparent	Course description	Program Director: content, BFP coordinator implements	Program Committee
	Manual	Program Director: content, BFP coordinator implements and ensures procedures	Quality assurance
Valid	Assessment plan	Not applicable	
	Rubric	Program Director: content, BFP coordinator implements	Examination Committee
	Public presentation (colloquium)	Student/Lecturer/ Group	Examination Committee
Reliable	Deployment of authorized examiners	Research section	Examination Committee

Figure 14: Ensuring and safeguarding: Bachelor's final project

Provision of information on testing Bachelor's final project[32]

Type of information	Document	Responsible	Published in
Procedures for[33]			
Student	Manual	Program Director: content, BFP coordinator implements	Education guide
Examiner	Manual	Program Director: content, BFP coordinator implements	Education guide
	Regulations of the Examination Committee W appendix 7a	Examination Committee	Education Guide
Forms			
Rubric and assessment form in manual		Program Director: content, BFP coordinator implements	Education guide

Figure 15: Provision of information on procedures and forms: Bachelor's final project

The assessment form and rubric are included in Appendix 4.

[32] How the information about the rules takes place can be found in section 4.1, figure 8.
[33] This refers only to procedures that are not in the Program and Examination Regulations or Regulations of the Examination Committee.

4.5 Internship

Summary assessment internships

The internship is in its form and size (15 EC) a compulsory study component for the students of all four master programs of the department ME. The internship can be extended by 5 EC.

In terms of assessment, all internships have the following commonalities:

- The internship is assessed based on the 'approach and execution of the internship', the 'quality of the report', and the 'quality of the presentation'.
- The 'external supervisor' assesses the 'approach and execution of the internship'. The TU/e supervisor assesses the quality of the report and the quality of the presentation.
- The TU/e supervisor determines the partial marks and the final mark on the basis of these three assessments.

For each test method, a number of criteria have been established on the basis of which the assessment can be made. Not all criteria need to be used.

These rules are laid down in two 'assessment forms' and a 'result form'. The result form is attached as Appendix 7b to the Regulations of the Examination Committee of W and the Regulations of the Examination Committee of the IMs.

The assessment forms were created under the responsibility of the Graduate Program Director in consultation with the full-time professors and the Program Committees. The Examination Committees have given their approval.

Ensuring and safeguarding the quality of testing Internship

	Tool	**Ensuring**	**Safeguarding**
Transparent	Information in the Education guide	Program Director: content, Program coordinator implements	Program Committee
	Assessment forms	Program Director	Examination Committee
	Result form	Program Director	Examination Committee
Valid	Assessment forms	Program Director	Examination Committee
Reliable	Assessment forms	Program Director	Examination Committee
	Result form	Program Director	Examination Committee
	Deployment of authorized examiners	Section	Examination Committee

Figure 16: Ensuring and safeguarding: Internships

Provision of information on testing Internship[34]

Type of information	Document	Responsible	Published in
Procedures for[35]			
Student	To do list	Program coordinator and Manager ESA	Education guide
Examiner	Regulations of the Examination Committees appendix 6a	Examination Committee	Education guide
Forms			
Registration Internship		Manager ESA	Education guide
Assessment form TU/e supervisor		Manager ESA	Canvas 4Docent
Assessment form External supervisor		Examiner	To be handed out
Result form		Manager ESA	Canvas 4Docent

Figure 17: Provision of information on procedures and forms: Internship

[34] How the information about the rules takes place can be found in section 4.1, figure 8.
[35] This refers only to procedures that are not in the Program and Examination Regulations or Regulations of the Examination Committee.

4.6 Master's graduation project

Guidelines Master's graduation project

For the assessment of the Master's graduation project we conform to the TU/e Exam Framework (as we do for all study components) and to what is said in the Guideline for TU/e Graduate School Master's programs[36] about the assessment procedure of the Master's graduation project.

Summary assessment Master's graduation project

The Master's graduation project is in its form and size (45 EC) a compulsory study component for the students of all four master's programs of the department ME.

The graduation projects differ from each other. This is due to the specific master's program in which the student is enrolled and to the research group in which the student is doing his/her graduation project.

The graduation project consists of two phases: the preparation phase and the project phase. The preparation phase is concluded with a report. The project phase is concluded with a report, a presentation and a defense.

The requirements for the preparation phase report are defined in the Program and Examination Regulations. There is a format for this preparation phase report, which is published in the education guide. This report is assessed by the thesis supervisor. Possible outcomes are: 'sufficient' and 'failed'.

The grading criteria for the project phase and therefore for the graduation project are established by the Program Directors and laid down in the Regulations of the Examination Committees. They are published in the education guide and are listed on the assessment form. The assessment of the graduation project is expressed in half numbers accurately on the assessment scale 0 to 10. The assessment is done by the authorized examiners of the graduation committee.

The graduation committee is composed by the supervisor. The Examination Committee must approve the graduation committee. The requirements for the graduation committee are set forth in the Regulations of the Examination Committees and are published through the To-do list in the education guide.

The student must sign and attach a statement to their report indicating that they have conducted the graduation project in accordance with the TU/e Code of Scientific conduct. This rule is published in the To-do list in the education guide.

The rules governing the graduation project in the case of internal double diplomas are set out in the Regulations of the Examination Committees.

[36] Guideline for TU/e Graduate School Master's programs modified April 30, 2020

Ensuring and safeguarding the quality of testing Master's graduation project

	Tool	Ensuring	Safeguarding
Transparent	Description in the Education guide	Program Director: content, Program coordinator implements	Program Committee
	Assessment form	Program Director	Examination Committee
Valid	Assessment form (with criteria)	Program Director	Examination Committee
	Presentation and defense	Graduation committee	Examination Committee
Reliable	Composition Graduation committee	Supervisor	Examination Committee
	Standard conditions for presentation and questioning	Chair Graduation committee	Chair Graduation committee

Figure 18: Ensuring and safeguarding: Master's graduation project

Provision of information on testing Master's graduation project[37]

Type of information	Document:	Responsible:	Published in:
Procedures for[38]			
Student	To-do list	Program coordinator and Manager ESA	Education guide
Examiner	Regulations of the Examination Committee IM's appendix 7a Regulations of the Examination Committee W appendix 7b	Examination Committee	Education guide
Forms			
Registration graduation project		Manager ESA	Education guide
Registration final exam/presentation		Manager ESA	Will be sent
Assessment form		Program Director	Will be sent

Figure 19: Provision of information on procedures and forms: Master's graduation project

[37] How the information about the rules takes place can be found in section 4.1, figure 8.
[38] This refers only to procedures that are not in the Program and Examination Regulations or Regulations of the Examination Committee.

Appendix 1 Roles and powers

Dean[39]

Responsible and accountable		Together with
	Composition, appointment Examination Committee	
Accountable		
	Appointing examiners	
	Annual Report Examination Committee	
	Program and Examination Regulations	
	Assessment policy department (content)	
	Quality examiners	
	Intended learning outcomes program	
Consulted		
	Model Program and Examination Regulations	Many
	University wide assessment policy	Many
	Program assessment plan	Examination Committee, Program Committee
Informed	Safeguarding the quality of testing	Executive Board, Program Director, Program Committee, Examiner, Manager ESA
	Handling cases of suspicion of fraud	Program Director, Examiner, Student

Examination Committee[40]

Responsible		Together with
	Appointing examiners	
	Annual Report Examination Committee	
	Preventing fraud	Program Director, Examiner, Manager ESA, Students, Exam coordinator
	Dealing with complaints in relation to exams	Examinations Appeals Board
Responsible and accountable		
	Regulations of the Examination Committee	
	Safeguarding the quality of testing	
	Dealing with cases of suspicion of fraud	
	Exemptions	Student requests
	Degree certificate	Student requests
	Internal double diplomas	Student requests
Accountable		
	-	

[39] Derived from the TU/e Exam Framework 2019, Appendix 3.

[40] Derived from the TU/e Exam Framework 2019, Appendix 3.

Consulted		
	Composition, appointment Examination Committee	Program Director
	Program and Examination Regulations	Program Committee, Department Council
	University wide assessment policy	Dean, Program Director, Program Committee, Department Council, University Council, Joint Program Committee, Head ESA,
	Assessment policy department (content)	
	Quality examiners	
	Intended learning outcomes opleiding	Program Committee
	Program assessment plan	Dean, Program Committee
	Learning objectives per study component	Program Committee
	Organization for the purpose of holding tests	Program Director, CM Exam planning
	Dealing with complaints in relation to exams	Student
	Scheduling of tests	Program Director, Examiner, CM Exam planning, Exam coordinator
Informed	Assessment plan study component	Program Committee, Manager ESA, Student
	Making sample exams available	Student
	Exam matrix/schedule	Student
	Test and test quality	Program Director, Student
	Assessment procedures/model	Student
	Determining the pass mark/ guess correction	Student
	Assessment	Student
	The actual holding of tests	-
	Organization for the purpose of holding tests	Program Director, Examiner, CM Exam planning, Student
	Detection of cases of suspicion of fraud	CM Exam planning, Student

Program Director[41]

Responsible		Together with
	Program and Examination Regulations	Manager ESA
	Assessment policy department (content)	
	Quality examiners	Examiner
	Assessment policy Program (content)	
Responsible and accountable		
	Program assessment plan	
	Preventing fraud	
Accountable		

41 Derived from the TU/e Exam Framework 2019, Appendix 3.

	Learning objectives per study component	
	Delivering the exam for holding tests	
Consulted		
	Composition, appointment Examination Committee	Examination Committee
	Appointing examiners	
	Model Program and Examination Regulations	Many
	University wide assessment policy	Many
	Assessment plan study component	
	Organization for the purpose of holding tests	Examination Committee, CM Exam planning
	Scheduling of tests	Examination Committee, Examiner, CM Exam planning, Exam coordinator
Informed	Annual Report Examination Committee	Program Committee, Department Council, Manager ESA, Student
	Regulations of the Examination Committee	Executive Board, Program Committee, Department Council, Examiner, Manager ESA, Student, Invigilator, Exam planner, Exam coordinator
	Safeguarding the quality of testing	Executive Board, Dean, Program Committee, Examiner, Manager ESA
	Test and test quality	Examination Committee, Student
	Organization for the purpose of holding tests	Examination Committee, Examiner, CM Exam planning, Student
	Dealing with cases of suspicion of fraud	Dean, Examiner, Student
	Exemptions	Manager ESA, Student
	Degree certificate	Student

Examiner[42]

Responsible		Together with
	Quality examiners	Program Director
	Learning objectives per study component	
	Delivering the exam for holding tests	
	The actual holding of tests	Student, Invigilator, Exam coordinator
	Preventing fraud	Program Director, Examination Committee, Manager ESA, Student, Exam coordinator
Responsible and accountable		
	Assessment plan study component	
	Making sample exams available	
	Exam matrix/schedule	

42 Derived from the TU/e Exam Framework 2019, Appendix 3.

	Test and test quality	
	Assessment procedures/model	
	Determining the pass mark/ guess correction	
	Assessment	
	Detection of cases of suspicion of fraud	
Accountable		
	-	
Consulted		
	Exemptions	
Informed	Composition, appointment Examination Committee	Program Committee, Department Council, Manager ESA, CM Study progress, Student
	Appointing examiners	Manager ESA
	Annual Report Examination Committee	Program Director, Program Committee, Department Council, Manager ESA, Student
	Program and Examination Regulations	Student
	University wide assessment policy	CM Exam planning, CM Study progress
	Assessment policy department (content)	Executive Board, Department Council, Student
	Regulations of the Examination Committee	Executive Board, Program Director, Program Committee, Department Council, Manager ESA, Student, Invigilator, Exam planner, Exam coordinator
	Safeguarding the quality of testing	Executive Board, Dean, Program Director, Program Committee, Manager ESA
	Intended learning outcomes program	Executive Board, Student
	Program assessment plan	Executive Board, Student
	Registration scheduled examinations	Manager ESA, Invigilator, Exam planner
	Organization for the purpose of holding tests	Program Director, Examination Committee, CM Exam planning, Invigilator
	Dealing with cases of suspicion of fraud	Dean, Program Director, Student, Invigilator

Appendix 2 Teacher and Teaching assistants

Teacher and teaching assistants in Canvas[43]

Canvas has four different roles you can assign to bachelor students, master students and/or post-graduates. (PhD, PdEng and Post-Doc).

1. **'Basic course TA':** The role is aimed for support in the basic/big courses.
2. **'TA'**: The role is aimed for support in other courses than the basic courses.
3. **'Grading TA':** The role is aimed for assisting in grading.
4. **'Course Designer':** The role is aimed for supporting with the preparations of a course.

Which type of assistant may participate in which Canvas role?

Canvas roles that can be assigned to assistants	Teacher assistant, bachelor student*	Teacher assistant, master student	Teaching assistant, post-graduates
Basic course TA	yes	yes	yes
TA	For bachelor courses	For all courses	For all courses
Grading TA			For all courses
Course designer	For all courses	For all courses	For all courses

It is the responsibility of the teacher to assign the necessary roles to the TA's. Role assignment has to be carried out in alignment with the Regulations of the Examination Committee's 2020-2021, art 2.2.3

Which role has which functionalities within Canvas?

	Basic course TA	TA	Grading TA	Course Designer
Announcements				
View	√	√	√	√
Create		√	√	
Assignments & Quizzes				
Create			√	√
View submissions			√	
Feedback and grade			√	
Grades				
Edit			√	
View all grades	√		√	
Discussions				
View	√	√	√	√
Moderate		√	√	
Create		√	√	√
Post		√	√	√
Groups				
View all groups	√	√	√	√

[43] Derived from an e-mail to lecturers September 2020.

Create		√	√	√
Web Conferences				
Create		√	√	√

Course preparation functionalities in Canvas for each role

	Basic course TA	**TA**	**Grading TA**	**Course Designer**
Import template from Commons		√	√	√
Import previous courses using the Course Import Tool *Note: Teachers can only copy content from a course that they can currently access. This includes any past or future courses that allow instructor access outside active term dates.*		√	√	√
Managing modules (create, add items, edit settings, publish/unpublish)		√	√	√
Publish courses *Note: only teachers will be able to publish courses.*				

Requirements[44]

Appointment	Teacher Assistent B	Teacher Assistant M	Teaching Assistant
Profile			
Level			
BSc students	At least second year Positive BSA		
Pre-Master students	X		
MSc students		X	
MSc graduates			X
PDEng students			X
PhD students			X
Must have			
demonstrable experience with and/or affinity with teaching	X	X	X
Must approach			
the responsibilities (…) with professionalism and integrity	X	X	X
Must be very proficient			
in written and spoken English (C1)	X	X	X
in written and spoken Dutch	if the TA is used for Dutch-language education		

Contract

Specifies			
the rights and obligations of the student and the university	X	X	
Includes			
Non-disclosure agreements (NDA)	X	X	X

Points of interest

Authorizations in the systems must be			
in accordance with the NDA's in accordance with prevailing privacy regulations	X	X	X

[44] 71731998_Regulations for Teaching and Teacher Assistants_24 Sept2018.pdf

Inappropriate access to data must be prevented	X	X	X
Academic progress of the TA	X	X	

Appendix 3 Format assessment plan

Course:
Responsible teacher:
Other teachers/ assessors:

Measurable Learning Goals: - Use at least one of the following verbs in each goal: remember, understand, apply, analyze, evaluate, create - Use at least one of the following knowledge dimensions: facts, concepts, procedures, reflections	
After passing the course, the student is able to:	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

State for each goal: - **How to test this goal:** open questions / multiple choice / report / presentation etc. - **Level:** (repeat the verb from the goal description above) - **Weight of aim:** % of final mark, sum of all goals is 100%.		
Goal 1	**Short name goal**	
	How tested	
	Level	
	Weight	%
Goal 2	**Short name goal**	
	How tested	
	Level	
	Weight	%
Goal 3	**Short name goal**	
	How tested	
	Level	
	Weight	%
Goal 4	**Short name goal**	
	How tested	
	Level	
	Weight	%
Goal 5	**Short name goal**	
	How tested	
	Level	
	Weight	%
Goal 6	**Short name goal**	
	How tested	
	Level	
	Weight	**%**

Goal 7	**Short name goal**	
	How tested	
	Level	
	Weight	%
Goal 8	**Short name goal**	
	How tested	
	Level	
	Weight	%
Goal 9	**Short name goal**	
	How tested	
	Level	
	Weight	%
Goal 10	**Short name goal**	
	How tested	
	Level	
	Weight	%

Assessment 1
Percentage of final grade: %
□ Midterm assessment □ Final assessment
Goals tested in this assessment **□ Goal 1 □ Goal 2 □ Goal 3 □ Goal 4 □ Goal 5** **□ Goal 6 □ Goal 7 □ Goal 8 □ Goal 9 □ Goal 10 □ Goal …**
Assessment format: - **Kind of assessment:** written exam / oral exam/ report / presentation / peer assessment
Quality Assurance
The assessment will always be pre-scanned by an extra assessor? **□ Yes □ No** **Explanation:**
There will always be fine-tuning between evaluators? **□ Yes □ No** **Explanation:**
Rules for resit:
Assessment 2

Percentage of final grade: …%
□ Midterm assessment □ Final assessment
Goals tested in this assessment **□ Goal 1 □ Goal 2 □ Goal 3 □ Goal 4 □ Goal 5** **□ Goal 6 □ Goal 7 □ Goal 8 □ Goal 9 □ Goal 10 □ Goal …**
Assessment format: - **Kind of assessment:** written exam / oral exam/ report / presentation / peer assessment
Quality Assurance
The assessment will always be pre-scanned by an extra assessor? **□ Yes □ No** **Explanation:**
There will always be fine-tuning between evaluators? **□ Yes □ No** **Explanation:**
Rules for resit:

Assessment 3
Percentage of final grade: …%
□ Midterm assessment □ Final assessment

Goals tested in this assessment

□ **Goal 1** □ **Goal 2** □ **Goal 3** □ **Goal 4** □ **Goal 5**
□ **Goal 6** □ **Goal 7** □ **Goal 8** □ **Goal 9** □ **Goal 10** □ **Goal …**

Assessment format:

- **Kind of assessment:** written exam / oral exam/ report / presentation / peer assessment

Quality Assurance

The assessment will always be pre-scanned by an extra assessor?

□ **Yes** □ **No**

Explanation:

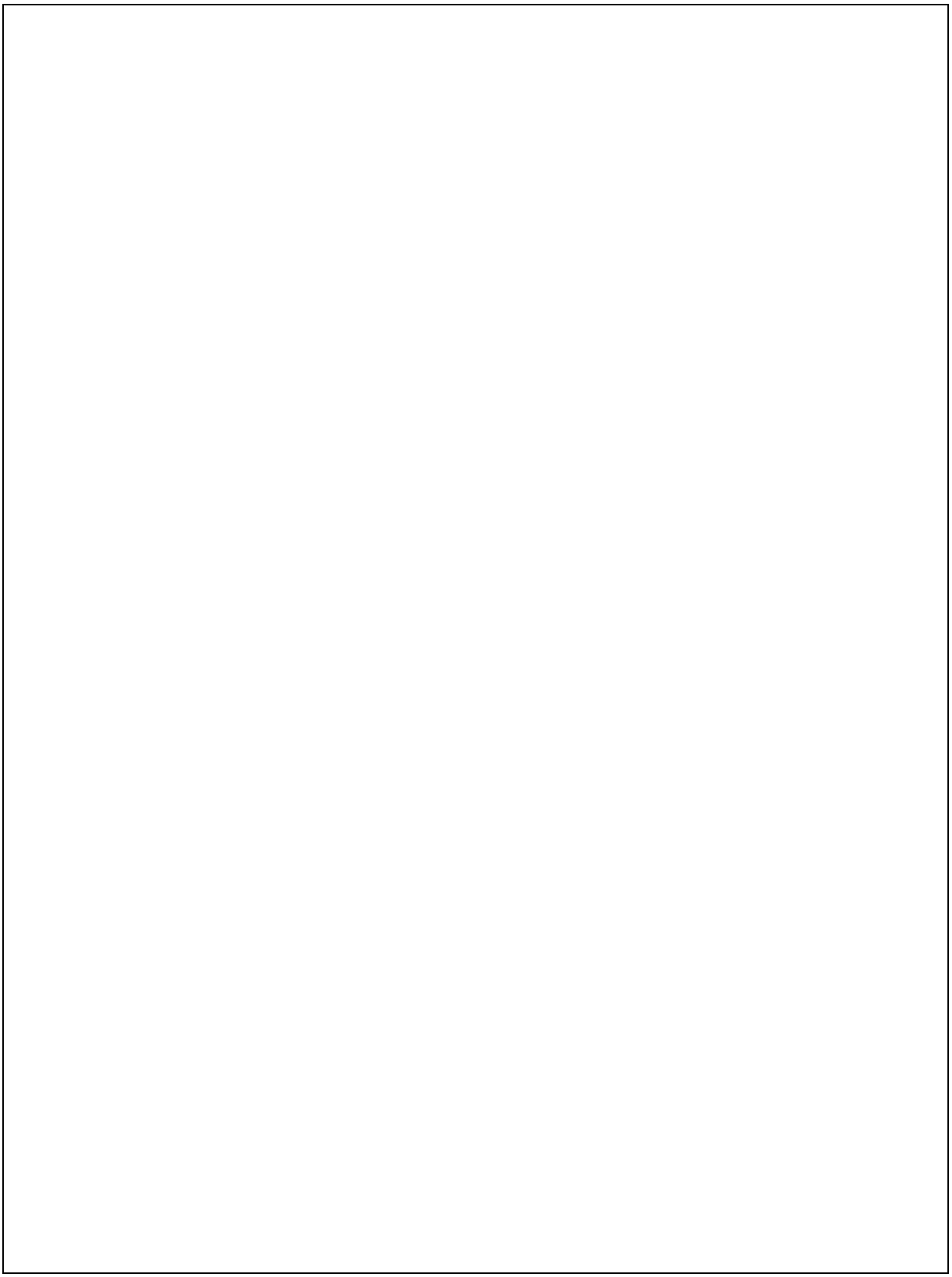
There will always be fine-tuning between evaluators?

□ **Yes** □ **No**

Explanation:

Rules for resit:

Cesuur and conditions to pass the course



Appendix 4 Assessment form and rubric BFP

Assessment form

Name Student: E-mail:	Student number:

☐ 4WC01 Polymer Technology
☐ 4WC02 Mechanics of Materials
☐ 4WC04 Microsystems
☐ 4WC07 Energy Technology
☐ 4WC09 Dynamics & Control
☐ 4WC10 Control Systems technology
☐ 4WC13 Power and Flow

Start date: …… End date: ……	Name Coach / 1st Assessor: Name 2nd Assessor (optional)* :

Title Project:

Remarks:

Assessment:

Aspects	**Mark**	**Coach / 1st Assessor:***
Planning and organization (PRV53)		
Independence, professional behavior (PRV13)		**Date:**
Capacity of analysis and reflection (PRV43)		**2nd Assessor:***
Written report (PRV33)		
Colloquium (PRV23)		**Date:**
Final mark		**Education Office:** Arrival date:
		IV002

*) The form should be signed by at least one exam authorized assessor.

Hand in the signed form with the completed rubric attached, at the Education Office, Gemini-Zuid 1.10

Rubric

Planning and organization (PRV53) **Grade …….**

	Excellent	**Good**	**Sufficient**	**Insufficient**
SMART Project plan	Plan made independently and project executed accordingly.	Plan made with support of coach and project executed accordingly.	Plan made with much support of coach, some items SMART. Execution not according to the plan.	No plan made or coach makes plan.
Urgencies and importance of aspects, priorities	Urgencies recognized and priorities set.	Urgencies and importance of aspects not always recognized. Coach needs to address some priorities.	Urgencies and importance of aspects recognized after coach repeatedly addressed them.	Urgencies and importance of aspects not recognized despite coach repeatedly addressed them.
Adaptation of planning due to changing circumstances / priorities.	Plan adapted on own initiative in cooperation with coach.	Plan adapted with help of coach.	Plan adapted after coach asked.	Plan not adapted. / Unnecessary work is done due to no or unchanged plan.
Finished in time	Project is finished well within the agreed period of time.	The project is finished just in time.	The project is barely finished in time or exceeds the deadline by a few days	Project is not finished in time.
Explanation/comments:				

Self-reliance and professional behavior (in numerical, experimental, theoretical work) (PRV13)

Grade……

	Excellent	**Good**	**Sufficient**	**Insufficient**
Independence	Works independently, needs little support to master the project.	Works independently, needs support to master the project.	Needs intensive support during parts of the project.	Does not work independently. Relies continuously on support of coach.
Initiative	Shows proactive attitude to solve problem	Solves problems after small incentives.	Needs lot of encouragement to solve problem.	Takes no own initiatives to solve problem.
Dealing with feedback	Open for feedback and always acts accordingly.	Open for feedback, but does not always act on it.	Not open for feedback, sometimes acts upon it.	Feedback is ignored.
Explanation/comments:				

Capacity of analysis (PRV43) **Grade …….**

	Excellent	**Good**	**Sufficient**	**Insufficient**
Problem analysis	Clear analysis and translation into the matching mathematical concepts or experiments.	Partial analysis and translation into matching concepts / experiments.	Problem analyzed but poorly translated.	Problem is poorly analyzed and barely translated.
Results in relation to project goal	Results are innovative and bring research and development a step forward.	Results do contribute to the field of research and development.	Results only improve understanding of the problem.	Results do not contribute to the field of research and development.
Evaluation of results	Results evaluated on meaning and validity. Critical questions asked and acted upon.	Results evaluated on validity. Questions asked but not acted upon.	Results partly evaluated on validity.	Results are not evaluated on validity and not analyzed critically.
Conclusions and recommendations	High level. Related to results and main problem.	Conclusions related to results and main problem.	Some conclusions related to the results and main problem.	Conclusions are not related to results or main problem.
Critical attitude	Recognizes own mistakes and acts accordingly.	Recognizes and addresses own mistakes, does not fully act upon them.	Recognizes own mistakes in the research but does not address them or act upon them.	Does not recognize own mistakes.
Explanation/comments:				

Report (PRV33) **Grade …….**

		Excellent	**Good**	**Sufficient**	**Insufficient**
Content	Contribution to the field of work	Own scientific and technical contribution (innovative / transcending) has been realized	A technical contribution has been made	Application of theory has been put in appropriate technical context	Wrong or inappropriate theoretical concepts were used
	Review of literature	Appropriate sources were selected (scientific journals/patents etc.), critically discussed and cited appropriately to	Appropriate sources were generally selected (scientific journals/patents etc.) and cited but not necessarily in specific context to	Only few appropriate sources were selected to support the technical context or sources are too general.	Too few or too low quality sources (e.g. google/wiki) were used.

		support arguments (theory or application) throughout the report.	the arguments discussed.		
	Connection	Parts of the report connect well to each other. Good cross-referencing to paragraphs and chapters elsewhere in report.	There is a clear connection between parts. Structure on chapter and paragraph level is good.	Connection of parts could be improved. Structure on chapter and paragraph level is sufficient.	Chapters are separate entities and are not connected to each other. Structure is missing, even on chapter and paragraph level.
	Assessment of main and side issues	Clear distinction and focus.	Clear distinction for large part of report.	Inconsistent distinction.	No distinction.
Form	Structure: introduction, main text, conclusions.	Overall clear structure.	Overall clear structure, some misplaced paragraphs.	Clear structure, but parts do not contain expected content.	Not structured.
	Layout	Consistent layout throughout entire report.	Consistent layout for main part of report.	Layout only inconsistent on chapter level.	Layout varies strongly throughout report.
	Symbols, captions, reference style	Consistent use throughout entire report.	Some inconsistencies in the report.	Many inconsistencies in the report.	Inconsistent or missing.
	Formulation, spelling/ grammar	Clear formulation and hardly any spelling/grammar errors.	Sometimes “spoken language” and some spelling/grammar errors.	A lot of “spoken language”, some grammar/spelling errors.	A lot of “spoken language”, many grammar / spelling errors.
Explanation/comments:					

Colloquium (PRV23) **Grade …….**

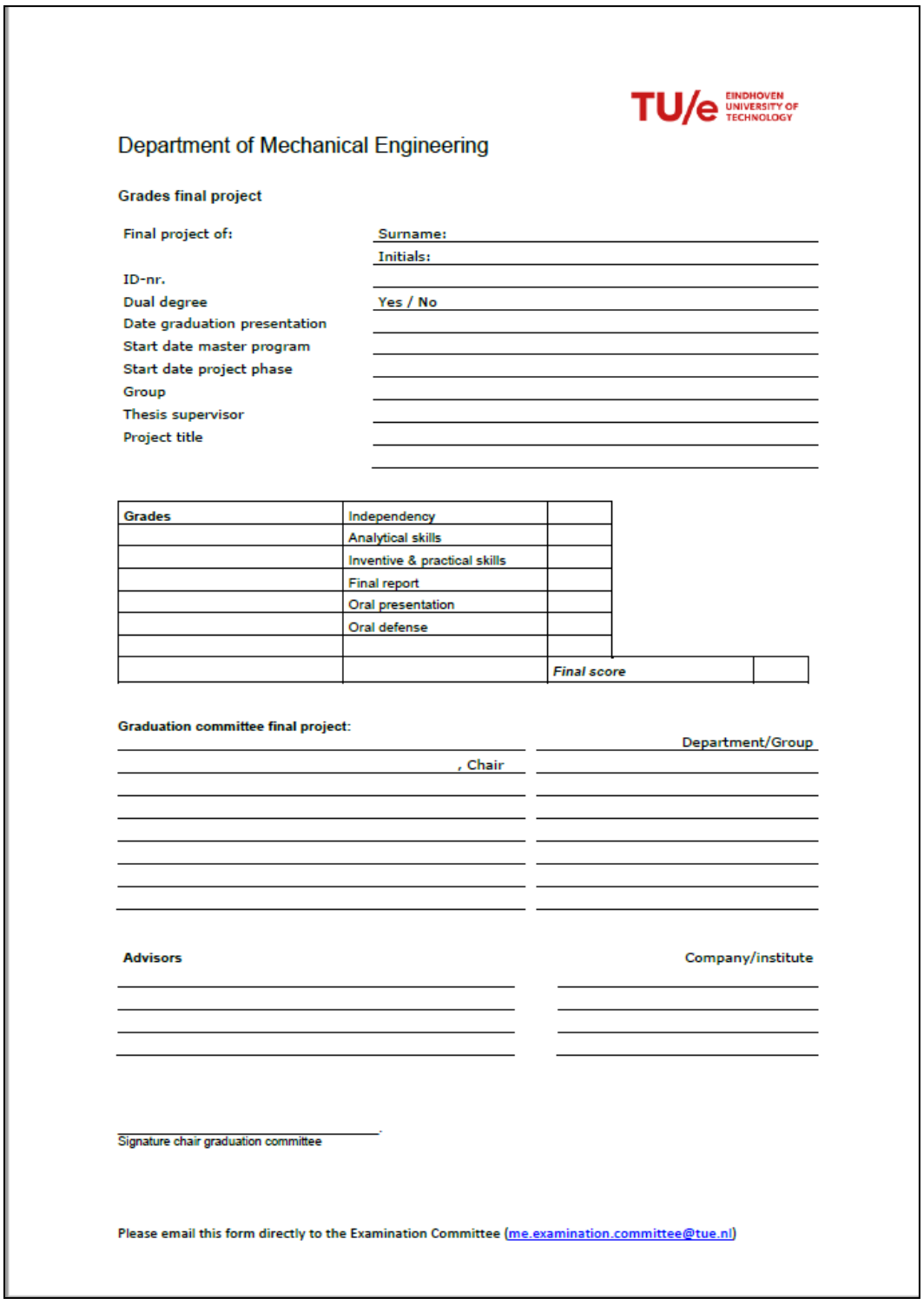
		Excellent	**Good**	**Sufficient**	**Insufficient**
Content	Preparation	Well prepared.	Lacks preparation in small parts.	Lacks preparation for most parts.	Not or badly prepared.
	Structure of content	Well structured.	Structured, not always logical.	Structured, not logical.	Not structured.
	Balance introduction/ core/results and conclusions	Well balanced (good proportions introduction/ core/results / conclusions).	Balanced: good proportions introduction/ core/results but conclusions are rushed.	Balance is off: little time for results / conclusions.	No balance: too much introduction, little results, no conclusions.
	Distinction main and side issues	Clear distinction,	Clear distinction, not	Clear distinction,	No distinction or insufficient

		main issues emphasized.	all main issues emphasized.	unbalanced emphasis.	emphasis on main issue.
	Conclusions + recommendation	Clear and logical, linked to main issue.	Linked to main issue.	Not clearly linked to main issue.	No conclusions/ recommendations.
Form	Visual aids	Supports message in a non-distracting way.	Provide too much or too little information. Supports message.	Distracting from or confusing message.	Poor support. Confusing or incorrect information.
	Contact with audience	Good eye-contact and interaction.	Eye-contact but little interaction.	Occasional eye-contact, no interaction.	No contact at all.
	Speaking	Speaks by heart, is confident in doing so.	Speaks by heart, occasional peak on notes.	Reads parts from notes.	Reads from notes all the time.
	Ownership	Questions are answered well and with confidence.	Questions are answered, not with confidence.	Questions are answered with a lot of hesitation.	Questions from the audience are not answered or in an insufficient way.
	Audience considered	Adapted to the knowledge level of audience.	A large part adapted to audience knowledge level	Only small part adapted to knowledge level of the audience.	Not adapted to knowledge level of the audience
	Timing	Finished in time, not rushed.	Finished in time, rushed at the end	Finished in time: rushed throughout, too many slides.	Not finished in time, no effort in timing, or too short
Explanation/comments:					

Date:…….. **Signature:…….**

Appendix 5 Assessment form final project Mechanical Engineering[45]

Assessment form



TU/e EINDHOVEN UNIVERSITY OF TECHNOLOGY

Department of Mechanical Engineering

Grades final project

Final project of:	**Surname:**
	Initials:
ID-nr.	
Dual degree	**Yes / No**
Date graduation presentation	
Start date master program	
Start date project phase	
Group	
Thesis supervisor	
Project title	

Grades	Independency	
	Analytical skills	
	Inventive & practical skills	
	Final report	
	Oral presentation	
	Oral defense	
		Final score

Graduation committee final project:

	Department/Group
, Chair	

Advisors	**Company/institute**

Signature chair graduation committee

Please email this form directly to the Examination Committee (me.examination.committee@tue.nl)

[45] For the master's program Sustainable Energy Technology, Automotive Technology and Systems and Control, the design of the form is similar.

Final project

Student Surname: _____ Idnr: _____

Please motivate grades

Independency
Analytical skills
Inventive & practical skills
Final report
Oral presentation
Oral defense