

# Guidelines for Master's Assignment Assessment Sustainable Energy Technology

June 21, 2012

## Introduction

The individual Master's assignment is the completion of the Master's program. The main objective of the MSc.-assignment is that the student learns and proves that (s)he is able to define, perform, complete and reflect a research project at a large degree of independence. The assignment is performed in one of the energy related research chairs of the UT under the supervision of a mentor and the responsibility of a Master's Assignment Committee. Conditionally, the assignment can be done (partially) at an external institute or organization.

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The student has to perform a substantial research or design project that meets scientific criteria. The level of profundity and complexity is defined by the chairman of the MSc.-assignment committee. The student completes the assignment with a written report (the MSc.-thesis) and an oral public presentation.

## Duration

The MSc.-assignment takes 40 - 45 ECTS (credits), which agrees with the duration of 3 quarters of 10 weeks of 42 hours.

## Educational objectives

The main objective of the MSc.-assignment is that *the student learns and proves that (s)he is able to define, perform, complete and reflect a research project at a large degree of independence*. A detailed list of the learning objectives of the MSc.-program is defined in the SET-Program and the Exam Regulation (the "OER"). In relation to the MSc.-assignment, the student is able to:

1. Perform Sustainable Energy Technology research at MSc level:
  - Formulate a research problem statement based on a global problem in a specialization of the Sustainable Energy Technology (problem analysis),
  - Define the theoretical and experimental research plan and has the skills to execute the experimental work (planning and execution),
  - Analyze and interpret research results and draw conclusions (result analysis),
  - Has a scientific approach and possesses intellectual skills, (handle complexity)
2. Collaborate and communicate with specialists in the chosen track and other stakeholders:
  - Can write an English report of the research,
  - Can give an oral presentation and discussion of the research in English<sup>1</sup>.
3. Integrate insights in the context of energy technologies and systems, as well as in a socio-economic context and in a system-oriented framework into his or her scientific work.
4. Work independently: The assignment should be done with a high degree of independence, creativity, dedication, pace, commitment and in co-operation with the "problem owner" and with co-workers. The student himself is responsible for the progress, planning and consultation of his supervisors.

## MSc.-assignment Committee<sup>2</sup>

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<sup>1</sup> The sheets must be in English. The presentation should be given in English. Exceptions can be made by chairman of the MSc.-assignment committee.

The MSc. Assignment Committee is the same as the Graduate committee. The MSc.-assignment Committee consists at least of the three following members:

- Chairman: the professor of the chair in which the student graduates. The course list of the student has to fulfill the requirements of the MSc.-assignment and the concerning scientific field and needs the approval of the above-mentioned professor.
- The daily supervisor who is a member of the scientific staff.
- A member of the permanent scientific staff of a UT-chair different from the graduation chair.

This member is added to committee to:

- i. ensure that committees assess MSc.-assignments correspondingly,
  - ii. add additional knowledge and views from other scientific fields,
  - iii. exchange ideas between chairs.
- When the supervisor is a PhD-student, then preferably the staff member who is the supervisor of the PhD-student should be added to the committee. He can monitor the interests of the master student concerned.
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The MSc.-assignment has to take place in one of the -chairs of the university that is involved in sustainable energy related research. An external assignment is only possible by exception, to be judged by the Board of Examiners. In case of an external assignment:

- a UT-chair professor has to take the responsibility for the assignment and should officiate as the professor in the MSc.-assignment committee
- the research should ally with the energy research field and subjects of the chair.

The MSc. Assignment committee functions also as the Graduate committee and assigns a grade to the student for his or her assignment. All members should be consulted (otherwise the grade is not valid).

Scientific experts from outside the -program in which the assignment takes place may be part of the MSc.-assignment Committee in addition to the above group of three persons.

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<sup>2</sup> The MSc.-assignment committee needs the approval of the Board of Examiners.

## Assessment Checklist MSc.-assignment SET

<b>Assessment research qualities</b>	
<ul style="list-style-type: none"> <li>• Problem analysis:             <ul style="list-style-type: none"> <li>○ Definition of the research goals and research questions,</li> <li>○ Use of relevant scientific literature,</li> <li>○ Applying a multidisciplinary framework to put the problem in the proper energy related context</li> </ul> </li> <li>• Execution of the MSc.-assignment:             <ul style="list-style-type: none"> <li>○ Application of research methodology,</li> <li>○ Theoretical skills,</li> <li>○ Experimental skills,</li> </ul> </li> <li>• Analysis of the results:             <ul style="list-style-type: none"> <li>○ Application of data analysis,</li> <li>○ Complexity of the research,</li> <li>○ Feedback to the research goals,</li> </ul> </li> <li>• Accessibility and usefulness of the results:             <ul style="list-style-type: none"> <li>○ The most important indicator is the degree of publishability<sup>3</sup> the results.</li> </ul> </li> </ul>	
<b>Assessment of the reporting and general aspects</b>	
<ul style="list-style-type: none"> <li>• Report (thesis):             <ul style="list-style-type: none"> <li>○ Contents and structure,</li> <li>○ Design and lay-out,</li> <li>○ Language,</li> <li>○ Discussion of results, conclusions and recommendations,</li> <li>○ Literature references, list of symbols, description of laboratory set-up, etc.</li> </ul> </li> <li>• Colloquium:             <ul style="list-style-type: none"> <li>○ Contents,</li> <li>○ Message, and connection to public<sup>4</sup>,</li> <li>○ Explanation about methods and results (clearness),</li> <li>○ Style of presenting and use of audio-video support tools,</li> <li>○ Discussion and response to questions.</li> </ul> </li> <li>• General aspects:             <ul style="list-style-type: none"> <li>○ Independence of student,</li> <li>○ Originality and creativity,</li> <li>○ Attitude, effort, pace, dedication, commitment,</li> <li>○ Co-operation with “problem owner” and with co-workers.</li> </ul> </li> </ul>	

<sup>3</sup> Degrees of publishability: independent article by student / with additional results / as a part of other work / non-publishable.

<sup>4</sup> The level of the colloquium has to be adjusted to the fellow students in the same study phase.

