

2f: Programme-specific appendix to the TER 2014-2015

for the post-graduate Master of Science programme

Environmental and Energy Management (MEEM)

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1. Objectives

1a Profile of the programme

The aims and final attainment targets of the MEEM are derived from those needed to function effectively at an academic level in the public and /or private sector, or to conduct (applied) academic research in the area of environmental, water or energy management.

The MEEM has an orientation as a postgraduate and academic programme that aims at preparing for jobs in companies, government and non-governmental organisations as internal and external consultants / environmental or energy (project) team members, civil servants and researchers in the domain of environmental science, specialized in environmental and energy management. It thus can be categorized as a postgraduate, professional and academic master programme.

The content of the program is characterized by:

- Attention for both the private and the public sector with respect to environmental, water and energy management;
- Multidisciplinary:
 - insights are derived from various disciplines in the domain of environmental sciences (e.g. policy science, economics, legal sciences, (basic) natural / technical sciences and (organizational) sociology) as well as social science research methods and techniques, specialized in environment, water and energy management;
 - the ability to apply disciplinary knowledge and insights in mutual connection on questions of environmental, water and energy management and sustainable development in a broad sense;
- Scientific nature;
- High quality;
- Stimulating the interaction between participants with their insights and experiences, in line with the postgraduate character of the programme;
- A postgraduate, professional and academic master programme.

1b Final attainment targets of the programme

The aim of the programme is reflected in its final attainment targets. The final attainment targets for the Master of Environmental and Energy Management are:

Domain Specific Final attainment targets

1. Graduates have knowledge of and insight in the relevant key concepts and theories of policy studies and law and can describe and categorize relevant policy instruments, describe the legal basis of common policy instruments used in environmental, water and energy management and are able to assess their usefulness and feasibility in various contexts.
2. Graduates have basic knowledge of and insight in a variety of clean(er) and treatment technologies relevant for environmental, water and energy management, and tools that can be used for assessing the options for improving the environmental and energy impacts of products and production processes. They are able to make basic calculations for some of these tools and to make judgements about what technological solutions are appropriate for specific situations.
3. Graduates have knowledge of and insight in relevant key terms and concepts of organizational theory, operations management and financial analysis. They are able to apply these to analyze (energy, water and environmental projects in) an organization, define needs for change and advise about implementation.
4. Graduates have knowledge of and insight in the relevant key concepts, theories and tools, strategies and management systems for corporate environmental, water and energy management, including Corporate Social Responsibility. Graduates are able to

analyze an existing situation and design solutions for (a specific issue in) environmental, water or energy management.

Integration / multidisciplinary related Final attainment targets

5. Graduates understand the concept of sustainable development and the relationships between resource utilization, production processes, societal processes and environmental pressure and are able to apply combinations of concepts and theories in environmental, water and energy management to the situation in the home country or other specific real life situations.
6. Graduates are able to integrate knowledge from various disciplines and to understand interrelationships in sustainable development processes, and are capable of formulating an action programme, policy, project or recommendations for environmental, water or energy management issues in their context based on this integrated knowledge.

Academic and Professional Final attainment targets

7. Graduates have academic and research skills like critically reflecting on literature, designing a research proposal and executing and reporting on an (applied) research project.
8. Graduates are able to independently access relevant scientific literature to obtain additional knowledge and apply this to the problem at hand.
9. Graduates take the responsibility for the continuous development of their own knowledge and skills.
10. Graduates are able to make a relevant contribution as an individual or as a member of a multi-disciplinary team to analyzing and solving complex environmental or energy problems in an organization or region. They are able to function in an international team, with English as the language of communication.
11. Graduates are able and willing to recognize the ethical aspects related to their activities.
12. Graduates are able to give a structured written and oral presentation in English about individual or team work. They also adhere to existing academic traditions, such as providing proper credits and references.
13. Graduates are able to reflect on matters and issues in the domain, are able to form an opinion and to contribute to both scientific and practitioners' discussions and e.g. to critically reflect on the role of technology in the process towards sustainable development
14. Graduates have knowledge of the principles of relevant professional skills, like communication, management and consulting skills, and have some basic experiences in applying these

1c. Level of the programme

Table 1: Dublin Descriptors and final attainment targets of MEEM

Descriptor	levels
Descriptor 1: Knowledge and understanding Have demonstrated knowledge and understanding that is founded upon and extends and/or enhances that typically associated with Master's level, and that provides a basis or opportunity for originality in developing and/or applying ideas, often within a research context	1,2,3,4,5,6,14
Descriptor 2: Applying knowledge and understanding Can apply their knowledge and understanding and problem solving abilities in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study; have the ability to integrate knowledge and handle complexity	1,2,3,4,5,6,7,8 11,12,13,14
Descriptor 3: Making judgments Can formulate judgments with incomplete or limited information, including reflections on social and ethical responsibilities linked to the application of their knowledge and judgments	1,5,6,7,10,11,13
Descriptor 4: Communication Can communicate their conclusions, and the knowledge and rationale underpinning these, to specialist and non-specialist audiences clearly and unambiguously	7,10,12,13,14
Descriptor 5: Learning skills Have the learning skills to allow them to continue to study in a manner that may be largely self-directed or autonomous	7,9

As can be seen from table 1, the final attainment targets of the MEEM match those of the Dublin Descriptors for master's programmes. Also, in developing the final attainment targets, the Criteria for Academic Bachelor's and Master's Curricula of the 3TU were used to check consistency and comprehensiveness.

2. Composition of the programme

The MEEM has a total study load of 65 EC, and is divided into three components: a course work period, a case study period and the research project. The course work can be categorized around three main themes:

- Management (business administration)
- Governance and Law (public administration)
- Technology (albeit technology is not taught at academic master level, but in a contextual sense).

The program has a MSc accreditation in the domain of "social science oriented environmental science".

Next to the courses on the three themes, courses or course elements are included that are more integrative in nature, and also workshops / courses concerned with academic research and professional skills. In general, there are many interlinks between courses.

The course work period is common for all students. After this, for the case studies and research project, students choose a specialization:

- 1) Environmental Management
- 2) Water Governance
- 3) Energy Management.

Parts of the course work are offered in the form of a short course (EMSI), in which also non-MEEM students participate. Further, the programme has a certain degree of flexibility in execution, to match the timetables of both students and lecturers.

Table 2: The MEEM program for 2013-2014

<i>Educational Items</i>	<i>ECs</i>	<i>Contact hours (appr.)</i>	<i>Exam format</i>
Courses (joint programme)			
Policy Strategies and Implementation for Water Governance and other Sustainability Issues	4	30	PS + PG
Environmental Law	2	18	S + PS
Energy Management, Policy and Technology *	4	54	S + GP
Management: operations, organizations and financial analysis **	4	56	S + PG / PGR
Environment and Technology (incl. Water Technologies*)	4	36	S + PS
Environmental Management and Corporate Social Responsibility	4	24	S + PS
Ecology, Society and Sustainable Development	2	18	PGR / PG + AP + PS
Total	24		
Academic Research Skills			
Academic Research Skills: Methodology, effective writing & Research Proposal	4	30	PR + PS
Communication, management and consulting skills **	2	30	AP + PS / PR
Total	6		
Case study period			
Case study period Environmental Management specialisation	12	~48 (variable)	PGI / PGR
OR			
Case study period Energy Management specialisation	12	~ (variable)	PGI / PGR
OR			
Case study period Water Governance specialisation	12	~ (variable)	PGI / PGR

	Total	12		
Research project (specialised programme)				
Research project		23	~8 (variable)	BAM
	Grand total	65		

*: offered as part of the short course EMSI

** : partly offered as part of the short course EMSI

This structure is foreseen for students who begin the program in September 2013. The following abbreviations are used under the 'Exam format' column:

- S = written exam
- M = oral exam
- PGI = group assignment, including a written group report and (in so far as possible) individual assessment of the manner in which the student participated in the group exercise
- PG = group assignment, including a written group report and the assessment of this report for the group
- PS = individual assignment, including a written report
- PGR = group assignment and oral report of this through a presentation
- PR = individual assignment and oral report of this through a presentation
- AP = active participation is obligatory
- BAM = reviewed in accordance with the procedures laid down in the regulations applicable to the Master's assignment.

The student's work must be eligible for review. More specific details are made known in a timely manner by the examiner and / or programme manager in accordance with the provisions of art. 4 of the Rules and Regulations of the Examination Board (part C of this charter).

The procedures for the part of the exam called Research project (master's thesis) are outlined in the specific manual 'Guidelines for the Research project'. The procedures described in this manual are assumed to be part of the Students' charter.

Specific regulations, procedures and requirements with respect to MEEM exams are laid down in the 'exam regulations' in the study guide. For example, these regulations specify that the duration of the programme is one year. With regard to the course work (that is, all the items except the case study and research project), during this year there will be in principle two opportunities offered to pass an exam. There will be an exam and a re-exam or an assignment and a repeat assignment. Students are automatically registered for the exams and, if needed, the re-exams. When a student does not enter an (re-)exam or does not hand in an (re-)assignment without informing the lecturer beforehand, then this (re-) exam or (re-) assignment will still be classified as a valid exam opportunity.

In special circumstances, students may be allowed an extra opportunity to take an exam. To apply for this, the student must make a request, in writing, to the Examination Board of the programme. For practical exercises and projects, e.g. the case study period and research project, there is no second opportunity to repeat these elements of the course. In cases of serious illness or accidents or other situations beyond control of the student, the Examination Board and programme management will try to find a solution.

The procedures and rules described in the study guide are assumed to be a part of the Students' charter.

3. Organization of the programme

3a Coherence and didactic concept

The Master of Environmental and Energy Management is a coherent study programme. This coherence is anchored in the basic structure and set up of the programme, as well as in its organization. More specific, coherence is reached through the following four mechanisms:

1. Strong and clear basic structure of programme
2. Coherence between courses
3. Working towards research project
4. Organization

Structure of programme – the MEEM has three parts: course work, case study, and research project. The course work is common to all students; the case study and research project are based on the specialization streams. The build up throughout the programme takes place in three areas: from stand-alone courses in the course-work period, via integration subject and pre-structured work in the case period, towards the final individual research project. During the course work period, the core courses are structured around the themes of Management, Governance and Technology. They provide the (mainly) disciplinary knowledge in the different environmental and energy management areas. Besides, there are integrative courses (e.g. Ecology, Society and Sustainable Development) that bring together various elements, and skills courses like Academic Research Skills and communication. The program has a MSc accreditation in the domain of “social science oriented environmental science”.

Coherence between courses - The lecturers know which courses connect to theirs (indicated in course descriptions) and where there is a potential risk of overlap or benefit of additionally. They take this into account when preparing and planning their contributions.

Working towards research project - The preparations for the research project already start during the course work period:

- In the course Academic Research Skills students learn how to design a research project.
- After about 4 months of course work students are asked to indicate their choice for specialization and (initial) research theme.
- Based on the specializations and themes chosen, students are assigned with tutors.
- Both the tutors and the students receive the reader ‘Guidelines for the research project’ which provides information and guidelines.
- By month 5 or 6 of the programme, the research project preparations start. First by writing a research proposal, and when approved the execution of the research project starts.
- Given the often unpredictable conditions under which the research takes place in students’ home countries, MEEM has a separate student monitoring system and individualized policy to support finalizing the programme and preventing drop out.

Organization - The MEEM programme has a relatively small scale and the programme manager and programme coordinators have good relationships with both students and lecturers and supervisors. Lecturers regularly discuss their course contents, materials and set up with the programme manager or programme coordinators.

Didactic concept

The aim of the MEEM is to develop the professional knowledge and skills of participants through active learning at an academic level, taking into account the (educational, professional, and geographical) backgrounds of the participants.

The primary focus of the MEEM programme is to prepare graduates for a professional career for which academic education is important. As such, it aims to equip its participants with the necessary knowledge and skills to be able to work on and design solutions for multi-disciplinary problems in environmental, water or energy management. This is reflected in the final attainment levels, which show a focus on application and integration of models, theories and tools, a critical attitude towards the appropriateness of potential solutions in their specific context, and attention for assignments and project work focused on analysis and design of solutions. At the same time, graduates are also equipped to work in (applied) academic research in the area of environmental, water and energy management.

Thus, the didactic approach can thus be summarized as:

Academic education for (future) professionals (connections with actual practice in the professional field)
Multi-disciplinary
Innovative approach
Learning-by-doing
Training of skills (e.g. teamwork)

3b Elective options

Not applicable, because the programme does not have a 'vrije ruimte', except for the choice of specialization and research project topic.

3c Requirements related to electives and student's individual choices

Not applicable, because the programme does not have a 'vrije ruimte', except for the choice of specialization and research project topic.

3d Content of practical exercises

A characteristic of the instructional approach in the MEEM programme is a strong link between theory and practice. This calls for active learning, and teaching methods that enable this. Thus, in most courses practice-oriented application of concepts is used to teach participants (how) to use them in practice and to reflect upon the context in which tools and concepts are or can be used. This, in turn, gives rise to discussion in class, in which participants learn from each other and from the situation and solution strategies used in various countries. Active learning by students is promoted by including e.g. assignments, workshops/interactive classes, short courses, case study and the research project. In view of the international postgraduate nature of MEEM, many programme elements specifically use this application of theory and concepts to provide a link to the home region/country of students.

4. General information

4a. Admission to the programme

Admission requests for the program are assessed by an admission committee that consists of:

- Prof. dr J.Th.A. Bressers
- Dr. M.L. Franco Garcia
- Dr. C.L. de Boer
- Dr. T. Hoppe
- Support: Ms. R. Koster, BA. & Mrs. H. van Meerendonk-Obinna, BA

The standard admission criteria are as follows:

- have at least a Bachelor's degree in a related discipline in the natural, technical, environmental or social sciences¹. For more details, see next section.
- work experience is recommended or, depending on disciplinary background, required (see next section)
- have a basic understanding of chemistry (high school level)

¹ Second class lower and third class bachelors provide access to the MEEM programme only when complemented with respectively 2 years of relevant work experience or ample (5 yrs) relevant work experience and a convincing motivation.

- have excellent communication skills and a very good understanding of the English language
- demonstrate sufficient proficiency in English by means of a minimum score of 6.5 on the Academic IELTS test, or a score of at least 90 on the Internet based TOEFL-iBT test.

Further, for a positive assessment the following is required:

- A letter showing motivation and expectations that match with the programme
- Positive recommendation letter(s)
- CV
- Relevant diplomas and transcripts have to be certified.

- Requirements prior education and work experience

With respect to the disciplinary background and work experience mentioned above, the following criteria apply:

1. Admission based on relevant disciplinary background

Candidates with a Bachelor in the following fields can be admitted:

A. Natural, Technical and Environmental Sciences

Bachelors in the field of Engineering Sciences, Technical Sciences, Natural Sciences (chemistry, physics, geology, biology, ecology, etc.), Environmental Studies / Sciences, agricultural / forestry Sciences, Earth Sciences, natural resources management, Environmental Health Sciences

B. Social Sciences

Bachelors in the field of Business / Business Administration / Commerce, Policy Studies / Political Science, Economics, Law, Management / accounting sciences, Public Management, Environmental / Natural Resource / agriculture / forestry Management, Public Health, (physical, regional, economic) Planning sciences.

For applicants with an educational background in these areas, work experience is recommended.

2. Admission based on prior education plus expertise

Candidates with other Bachelors in the Natural, Technical, Environmental or Social Sciences can be admitted based on at least 3 years of work experience that includes some tasks related to knowledge / skills covered in the Master Programme, or when there are several relevant items in the prior education.

3. Admission based on work experience and Bachelor's degree

Applicants with a Bachelor that is not in the Natural, Technical, Environmental or Social Sciences (here referred to as Human Sciences) can be admitted when possessing at least 5 years of directly relevant work experience. That is, the experience entails many tasks that relate to the skills and knowledge covered in the MEEM programme.

The standard procedure includes finetuning, e.g. with respect to IELTS, potential over-qualification or potential mismatches.

In individual cases, programme management can deviate from the admission requirements. However, not with respect to the Bachelor's degree and only if management has good reasons to assume that the applicant has enough background and motivation to complete the programme successfully. In those cases, the situation is discussed with the applicant. Usually, the responsibility for the lacking item lies with the applicant.

- Other provisions

The management of the program may, in divergence from what is stated before, to persons that do not yet fulfill the requirements for admission, give the student the opportunity to follow certain parts of the master.

4b. Language of teaching and exams (Taal onderwijs en tentamens)

All courses and exams are given in the English language.

To safeguard the quality of teaching and examination in the English language, MG has taken the following measures:

- Assessment of all MG teaching staff and examiners as for their command of the English language. If their IELTS score is slightly below the established minimum level, they will be allowed a remediation period. Failing to meet the standard after this period will lead to exclusion of the English-language programme. The assessment process for existing staff and examiners is expected to be concluded before the end of 2010, newcomers will be assessed upon their entry.
- Inclusion in the admission requirements for the English language programmes of MG of specific demands as for the proficiency in the English language, wherever a sufficient command may not be warranted by the candidate's prior education.

4c. International cooperation

The MEEM programme has a positive attitude towards international cooperation and actively explores opportunities for this.

Starting 2009-2010, cooperation with the University of Padjadjaran (Bandung, Indonesia) in the form of a Double Degree programme, was launched. Further, many of the lecturers involved in the MEEM programme are internationals themselves, are part of international networks and / or participate in international research or educational activities.

4d. Programme Committee (OLC) and Examination Board

- Programme Committee

The tasks of the programme committee are:

- To give advice on the Teaching and Examination Regulations (OER)
- To assess yearly the execution of the Teaching and Examination Regulations (OER)
- To give advice - asked or unasked - to the management of the programme and to the Dean on all matters with respect to the concerned education.

The programme committee of MEEM consists of three of the lecturers and three students. The programme committee is supported by the two programme coordinators: Ms. Rinske Koster and Mrs. Hilde van Meerendonk-Obinna.

- Examination Board

The Dean has, in accordance with article 7.12 of the WHW established an Examination Board for the master programs in the faculty. The members are appointed from the personnel who are charged with providing education. For the latest composition of the Examination Board see the [website](#) of the Board.

Correspondence with the Examination Board goes through mastersgriffie@mb.utwente.nl.

5. Transitional arrangements

Not applicable.