

## **Attachment Master Programme CHEMICAL ENGINEERING**

### **1 Objective of the MSc Programme Chemical Engineering (OER Article 3)**

The objectives of the Master programme in Chemical Engineering are to develop the knowledge, skills and understanding in chemical technology at such a level that graduates have the competencies for professional, autonomous practice in chemical engineering and related fields and/or can successfully continue their study in areas like professional teaching, scientific research, or process and product development in chemistry and chemical engineering.

### **2 Final Qualifications of the MSc Programme Chemical Engineering (OER Article 4)**

General Academic skills.

Graduates of the Master of Science in Chemical Engineering will:

1. be capable of being analytical in their work on the basis of a broad and deep scientific knowledge;
2. be able to synthesise knowledge and to solve problems in a creative way dealing with complex issues;
3. have the qualities needed for employment in circumstances requiring sound judgement, personal responsibility and initiative, in complex and unpredictable professional environments;
4. be able to assume leading roles, including management roles, in companies and research organisations, and be able to contribute to innovation;
5. be able to work in an international environment, helped by their social and cultural sensitivity and language and communication abilities, partly acquired through experience of team work and any study periods abroad;
6. have awareness of possible ethical, social, environmental, aesthetic and economic implications of their work and to act accordingly;
7. have an awareness of their need to update their knowledge and skills.

Domain and subject specific skills:

The Master of Science in Chemical Engineering:

8. has obtained core knowledge, skills and understanding in the field of chemistry and/or chemical engineering on an advanced academic level i.e. has followed advanced modules, specialised core modules, has made a process or product design and/or has performed a MSc research project;
9. is able to read and understand the relevant international literature;
10. has obtained in-depth knowledge of at least one specialized topic in the field of chemical engineering;
11. be able to work independently on an academic level in industry or other places in the society where the knowledge and skills of a chemical engineer are essential;
12. be able to work on the development and/or research of (industrial) processes and products;
13. be able to make a realistic process or product design, including economic and environmental as well as aspects of sustainability;
14. be able to solve a wide variety of different chemical and/or chemical engineering problems varying from fundamental research to practical applications;
15. have thorough experience with research and complete awareness of the applicability of research into technological developments;
16. be able to work in a interdisciplinary and/or multicultural team of experts;
17. be able to present his/her results in English by means of a presentation to a professional audience and/or report/publication.

### **3 Admission Regulations (OER Article 6)**

The following candidates can be admitted to the Master of Science in Chemical Engineering:

1. those who obtained a bachelor degree in Chemical Engineering or in Chemistry at a Dutch University;
2. those who obtained another degree (Dutch or international) that is judged at least equivalent to an academic bachelor degree in Chemical Engineering or Chemistry by the Executive Board of the University of Twente;
3. those who obtained a bachelor degree in Chemical Engineering or Chemistry at one of the Dutch "Hogescholen" and followed an additional premaster programme defined by the Examination Committee;
4. those who obtained another degree that is regarded appropriate by the Director of Education; additional

demands may be defined by the Examination Committee; these have to be complied with before starting or while following the programme;

5. those who are judged capable of following the programme by the Director of Education.

#### 4 Flexible start (OER Article 7)

When sufficient education capacity is available within the master programme, the Director of Education may allow a student who is still subscribed as a bachelor student Chemical Engineering of the University of Twente, to start with the Master programme before being graduated as a bachelor. But only when this student obtained the propaedeutic diploma and has no more than 30 EC's of remaining study load to complete before graduating as a bachelor. Such a student is not allowed to start with the internship or the master assignment though.

#### 5 Master Programme (OER Article 12.2)

Two 'tracks' are distinguished:

1. Chemistry and Technology of Materials (CTM);
2. Process Technology (PT).

Each track comprises a study load of 120 EC:

1. four compulsory courses of 5 EC each (total 20 EC);
2. one compulsory course/assignment of max.10 EC;
3. two courses of 5 EC (total 10 EC) associated with the master assignment;
4. two elective scientific or technical courses of 5 EC each (total 10 EC) on master level;
5. other elective courses of 5 EC to complete the study load to 120 EC;
6. an internship of 20 EC;
7. a master assignment of 40 EC (PT-track) or 45 EC (CTM-track).

Elective courses have to be selected in consultation with the head of the research group where the master assignment is carried out. The Examination Committee has to approve the overall curriculum.

<i>Compulsory courses within the CTM-track</i>		
Coursenr.	Course	EC
376001	Advanced Materials Science: Chemistry and Synthesis	5
373002	Advanced Materials Science: Characterisation	5
377002	Advanced Materials Science: Properties	5
373502	Advanced Materials Science: Applications	5
377001	Chemistry of Materials (homologation course)	5 or 10

<i>Compulsory courses within the PT-track</i>		
Coursenr.	Course	EC
372001	Advanced Transport Phenomena	5
371501	Reactor and Microreactor Engineering	5
373501	Thermodynamics and Flowsheeting	5
375001	Advanced Molecular Separations, or ...	5
375003	Process Equipment Design	5
379001	Process Plant Design	10

The Examination Committee may allow a student, who followed a so-called free programme differing from the abovementioned programme, also to pass the master exam according to Dutch law (WHW art. 7.3 sub 4).