Programme specifics
MASTER OF SCIENCE
CHEMICAL ENGINEERING

2023-2024

DELFT UNIVERSITY OF TECHNOLOGY

table

Administrative data

Nomenclature in CROHO	**MSc Chemical Engineering**
CROHO registration number	**60437**
Orientation and level of the programme:	**Higher education, Academic Master level**
Number of credits	**120 EC, 2 years**
Mode(s) of study	**Fulltime**
Period of NVAO accreditation	**1 January 2019 until 31 December 2024**

THIS DOCUMENT

This document is part of the Teaching and Examination Regulations and applies for the Master's degree programme in Chemical Engineering.

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Article 1 – The programme's final attainment levels

The Chemical Engineering MSc programme at Delft University of Technology is intended to educate students with knowledge, insights and skills to become independent and responsible researchers or engineers in the field of Chemical Engineering.

In addition to the general attainment levels described in article 4 of the teaching and examination regulations, and in line with the EFCE Bologna recommendations of the European Federation of Chemical Engineering (http://efce.info/Bologna_Recommendation.html), MSc Chemical Engineering graduates should fulfil the following qualifications:

1. Knowledge and Understanding
   - The graduates have acquired the fundamental principles of chemical engineering for the modelling and simulation of chemical reactions and molecular processes, of energy, mass and momentum transport processes, and of separation processes.
   - They are familiar with the principles of experimental measurement techniques and control thereof.
   - The graduates have acquired extensive and profound knowledge of a selected area of chemical engineering and related sciences, which enable them to carry out scientific work and to act responsibly in their professions and in society.
   - They are aware of new developments in their field.

2. Engineering Analysis
   The graduates are able to:
   - identify and analyse chemical engineering problems scientifically, even if the definitions are incomplete or are formulated in an unusual way and show competing specifications;
   - abstract and formulate complex problems from a new or a developing field;
   - select and apply suitable, innovative, methods of analysis, modelling, simulation and optimisation, based on fundamental principles and taking into account economic and environmental aspects.

3. Engineering Design
   The graduates are able to:
   - develop concepts and solutions to chemical engineering problems based on fundamental principles but also to problems which are posed in an unusual way, possibly involving other fields;
   - understanding of design methods and the ability to apply them;
   - develop new products, equipment, processes or methods;
   - use library and web resources for the acquisition of information regarding equipment characteristics and design methods, chemical and physical properties and data;
   - use their powers of judgment as engineers in order to work with complex and possibly incomplete information, to recognise discrepancies or feasibility concerns and to deal with them.

4. Investigations/Research
   The graduates are able to:
   - tackle a real chemical engineering problem by a scientific approach;
   - recognise the need for information, to find and critically assess information;
   - make an appropriate safety assessment before starting experimental work;
   - formulate, plan and carry out theoretical or experimental research at the forefront of a specific chemical engineering area;
   - evaluate data critically and to draw conclusions from it;
   - examine and evaluate the application of new and emerging technologies.

5. Engineering Practice
   The graduates are able to:
   - combine theory and practice in order to analyse and solve problems of engineering science using methods based on fundamental principles;
   - apply their knowledge in different areas, taking safety measures and ecological and economic demands into account;
   - classify knowledge from various fields methodically and draw systematic conclusions from it and also to deal with the complexity of different demands and boundary conditions;
   - think systematically about the non-technical effects of an engineer's job and to include these aspects responsibly in what they do.

6. Transferable Skills
   The graduates are able to:
   - present the results of their work in written and oral form in a scientifically sound and effective manner;
   - organise and carry out projects;
   - function effectively as a member of a multicultural team composed of different disciplines and/or levels;
   - work and communicate effectively in national and international contexts, with specialists and non-specialists;
   - understand professional and ethical responsibility, and act accordingly;
   - learn on their own and recognise the need for life-long learning.

Article 2 – Admission to the programme

2.1 The general admission criteria are set by the executive board in the “Policy on fees and enrolment” document, in Appendix 1 of the Student Charter (central part) and are clarified in Part 1.2 “Entrance and admission” of the mentioned Student Charter.

2.2 The criteria for admission the MSc programme are described in the table below:

BSc diploma	Admission	Remarks
MST major Technology	Direct admission	No additional requirements
MST major Materials	Direct admission	Homologation courses (art. 2.3)
MST major Chemistry	No direct admission	Bridging Programme (art. 5)
Chemical Engineering 4TU or Groningen University	Direct admission	No additional requirements
Chemical Engineering (foreign university)	No direct admission	International admission procedure* (also see art. 2.5)
HBO Chemical Engineering	No direct admission	Bridging Programme (art. 5) and additional requirements (art. 2.5)
Other BSc programmes from Dutch University	No direct admission	Bridging Programme (art. 5)
Other BSc programmes from foreign University	No direct admission	Bridging Programme (art. 5) and International admission procedure* (also see art. 2.5)

* https://www.tudelft.nl/en/education/admission-and-application/bsc-international-diploma

2.3 **Homologation courses**

In certain cases (art. 2.2), it is required that the student completes the homologation courses that are shown in the table below. The homologation courses can be completed prior to the start of the MSc program, or as electives within the MSc programme. An Advanced Chemical Engineering module or Chemical Engineering Elective module may have one or both homologation courses listed as prerequisites for participation, meaning that the homologation course needs to be successfully completed before the student can participate in the course and the exam.

Code	Homologation courses	Credits (ECTS)
4052CHREKY	Chemische Reactorkunde	6
4052SCHTEY	Scheidingstechnologie	6
or	or	
CH3073	Separation Processes, Design and Operation	3

The courses can only be followed as homologation courses. If they are completed as homologation courses as part of the MSc programme, CH3073 is considered a Chemical Engineering elective and 4052CHREKY and 4052SCHTEY are considered free electives.

2.4 In order to obtain proof of admission, the student must meet or, as the case may be, possess:

a. The general relevant criteria set by the executive board in the “Policy on fees and enrolment”, laid down in Appendix 1 of the Student Charter (central part), and clarified in Part 1.2 “Entrance and admission” of the mentioned Student Charter.
b. A certificate, together with the accompanying list of marks, proving that he/she possesses knowledge of a sufficiently high level and broad scope to successfully complete the MSc programme within the allocated period.

2.5 **Additional admission criteria**

a. Students in possession of a BSc degree in Chemical Engineering or equivalent from a foreign university can be admitted to the programme provided he/she has a minimum Grade Point Average of 75%.
b. Students with a diploma from India are considered for admission if they have a (minimum) four year BSc degree in Chemical Engineering or equivalent from a mainstream university (state / federal or 'deemed' institution) passed with First Class with Distinction - or First Class from one of the Indian Institutes of Technology, Birla Institute of Technology & Science (Pilani), or Institute of Chemical Technology (Mumbai).
c. Students admitted to and having passed the TU Delft Chemical Engineering bridging programme will be admitted to the programme. Official admission by the programme management to the Bridging programme is required as laid out in article 5.
d. Students in possession of a Bachelor of Engineering degree in Chemical Technology or equivalent from a Dutch university of Applied Sciences (HBO), not having passed the TU Delft Chemical Engineering required bridging course as part of their degree, can be admitted to the bridging programme provided they have a minimum Grade Point Average of 75% and no delay of study.
e. Students who do not possess the degree requirements mentioned above are required to obtain proof of admission to the programme from the dean, who will seek the advice of the admissions officer on this matter.

Article 3 – Structure of the programme.

3.1 The MSc Chemical Engineering is a two-year programme comprising 120 EC. The programme has a core-orientation-thesis structure. The core programme comprises 60 EC and has the same structure for all students. Combining the core programme with one of the following combinations of Professional and Societal Orientation completes the program:
- a 30EC Professional and Societal Orientation and a 30EC Master Thesis Project
- an 18EC Professional and Societal Orientation and a 42EC Master Thesis Project

3.2 **Professional Societal Orientations**

Students can choose one of the following Professional and Societal Orientations:
- Research and Development (R&D, either 18EC or 30EC)
- Science and Engineering (S&E, either 18EC or 30EC)
- Education (Ed1/Ed2, 30EC only)
- Management of Technology (MoT, 30EC only)
- Study Abroad (SA, 30EC only).

3.3 **Programme additions**

- Honours programme. This is an additional challenging individual programme for students with clearly above average performance (>7.50 weighted average and having passed all the Obligatory Core modules, 12EC of the Advanced Chemical Engineering modules, and the Ethics Engineering and Risks (TPM330A) at the first exam possibility).
- Double degree programme Chemical Engineering – Management of Technology.
- Other additions must be approved by the board of examiners.

Article 4 – Composition of the programme

4.1 – Overview

4.1.1 The Core Programme of each track comprises 60 credits (60EC) and is the same for all students. The Core Programme consist of the following modules:

- Obligatory Core modules (14EC)
- Advanced Chemical Engineering modules (12EC)
- Chemical Engineering Elective modules (12EC)
- Design modules (22EC)

The modules comprising the Core Programme are described in section 4.2 .

4.1.2 The Core Programme (60EC) is combined with one of the following combinations of Professional and Societal Orientation completes the program:

- a 30EC Professional and Societal Orientation and a 30EC Master Thesis Project
- an 18EC Professional and Societal Orientation and a 42EC Master Thesis Project .

The Professional and Societal Orientations the students can choose from are described in section 4.3 . The Master Thesis Project is described in section 4.4 .

4.1.3 The first year consists of the Core program, and the second year consists of the MSc thesis project module, and modules belonging to the Professional and Societal Orientation part of the programme.

4.2 – The Core Programme

4.2.1 **Obligatory Core modules**

The following Obligatory Core modules are obligatory to all students:

Code	Course Module	Credits
	Obligatory Core Modules	**14**
CH3153	Molecular Transport Phenomena	4
CH3044a	Process Dynamics and Control	4
CH3133	Computational Practicum	6

4.2.2 Advanced Chemical Engineering modules

Students successfully complete three course modules (totalling to 12 credits) selected from the list below:

Code	Course Module	Credits
	Advanced Chemical Engineering modules	**12**
CH3682A	Reactors and Kinetics	4
CH3051	Applied Transport Phenomena	4
CH3143	Advanced Thermodynamics	4
CH3013	Interfaces and Particles	4
CH3175	Solid State Materials	4
CH3373	Soft Materials Engineering	4

4.2.3 Chemical Engineering Elective modules

Students successfully complete three or four course modules with a total study load of preferably but at least 12 credits, selected from the list below:

	Course Name	EC	Circularity	Energy	Health	Nuclear
	Circularity Profile					
CH3092	Sustainable Supply Chains	3	√			
ME45230	Separation techniques for renewable processes	5	√	√	√	√
CH3543	Inorganic Materials for Energy and Circulairity	3	√	√		
CH3921	Sustainable Polymer Materials	3	√			
CH3102	Catalysis for Energy and Circularity	3	√	√		
	Energy Profile					
CH3513	Electrochemistry for renewable energy	4	√	√		
CH3622	Process Intensification	3	√	√		
CH3502	Materials for the Energy Transition	4	√	√	√	√
CH3612	Thermo- (Bio-)Chemical Technologies	3	√	√		
	Health Profile					
CH3564	Particle Technology for Health and Energy	3		√	√	
CH3382	Molecular engineering of soft materials in health care	4			√	
CH3412	Biological Transport Phenomena	4			√	
	Nuclear Profile					
CH3764	Nuclear medicine	4			√	√
CH3771	Nuclear chemistry	6				√
CH3783	Materials chemistry for the nuclear fuel cycle	3				√
CH3765	Advanced Materials Characterisation	3		√		√
	Other (Specialisation or general)					
CH3181	Scale Up / Scale Down	3	√	√		
CH3061	Multiphase Reactor Engineering	4	√	√	√	√
CH3673	Computational Approaches for Chemistry and Materials	4		√		√
CH3421	Computational Transport Phenomena	6	√	√	√	√
CH3112	Artificial Intelligence in (Bio)-Chemical Engineering	3	√	√	√	√

4.2.4 Design module

The Design module consists of the following course modules obligatory for all students:

Code	Course Module	Credits
	Design modules	**22**
TPM330	Ethics and Risks	4
CH3803	Product and Process Design	6

CH3843	Design project	12

4.3 Professional and Societal Orientation (PSO)

The programme includes 18EC or 30 EC of 'Professional and Societal Orientation'. The student can choose from one of the following Professional and Societal Orientation:

4.3.1 Research and Development (R&D)

This programme is especially tailored for students who will work in industry after completing their MSc education. The main module in the Research and Development PSO is a regular (18EC) or extended (24EC) Industrial Internship, which may be complemented with 6 or 12EC, respectively, of free electives.
The student can choose from three variants RD1-RD3. In case of the RD3 variant, the 12EC free electives are used to do an extended (42EC) Master Thesis Project instead of the regular 30EC Master Thesis project, in which case the Research and Development PSO is limited to 18EC. Hence, the RD3 variant can only be chosen in combination with the extended Master Thesis Project (42EC)

Code	Course Module	Credits
RD1 (30EC, only in combination with CH3930)		
CH3702	Industrial Internship	18
	Free electives	12
RD2 (30EC, only in combination with CH3930)		
CH3724	Extended Industrial Internship	24
	Free electives	6
RD3 (18EC, only in combination with CH3942)		
CH3702	Industrial Internship	18

Example free elective modules are:

Code	Course Module	Credits
AS3111	ATHENS	2
AS3121	Scientific Writing and Argumentation	3
AS3131	Art, Empathy & Ethics	4
CH3301	Foreign Excursion Tour TG	3
CH3291	International Design Contest	3
CH3375	Soft Matter Analytically Relevant Techniques	3-5
SET3085	Hydrogen Technology	4
LM3311	Green Chemistry and Sustainable Technology	3
WM0203TU-Eng	Oral Presentations	2
WM1101TU	English for Academic Purposes-3	3
WM1102TU	Written English for Technologists-2	3
WM1112TU	Spoken English for Technologists-2	3
WM1115TU	Dutch Elementary 1	3
WM1116TU	Dutch Elementary 2	3
WM1117TU	Dutch Intermediate 1	3
WM1135TU	English for Academic Purposes-4	3
WM1136TU	Written English for Technologists-1	3
WM1137TU	Spoken English for Technologists-1	3
	All Advanced Chemical Engineering and Chemical Engineering Elective courses from 4.2.2 and 4.2.3	

4.3.2 Science and Engineering (S&E)

This programme is especially tailored for students who will work in research institutes or academia after completing their MSc education. The main module in the Science and Engineering PSO is a second Research Project of 15EC, complemented with free electives. The second research project can be an External Research Project or the Joint Interdisciplinary project. The student can choose from three variants SE1-SE2. In case of the SE2 variant, 12EC of the free electives are used to do an extended Master Thesis Project instead of the regular 30EC Master Thesis project, in which case the Science and Engineering PSO is limited to 18EC. Hence, the SE2 variant can only be chosen in combination with the extended Master Thesis Project (42EC).

Code	Course Module	Credits
SE1 (30EC, only in combination with CH3930)		
CH3715 TD4040	External Research Project (15EC) Or Joint Interdisciplinary Project (15EC)	15
	Free electives	15
SE2 (18EC, only in combination with CH3942)		
CH3715 TD4040	External Research Project (15EC) Or Joint Interdisciplinary Project (15EC)	15
	Free electives	3

Example free elective modules are:

Code	Course Module	Credits
AS3111	ATHENS	2
AS3121	Scientific Writing and Argumentation	3
AS3131	Art, Empathy & Ethics	4
CH3301	Foreign Excursion Tour TG	3
CH3291	International Design Contest	3
WM0203TU-Eng	Oral Presentations	2
CH3375	Soft Matter Analytically Relevant Techniques	3-5
SET3085	Hydrogen Technology	4
WM1101TU	English for Academic Purposes-3	3
WM1102TU	Written English for Technologists-2	3
WM1112TU	Spoken English for Technologists-2	3
WM1115TU	Dutch Elementary 1	3
WM1116TU	Dutch Elementary 2	3
WM1117TU	Dutch Intermediate 1	3
WM1135TU	English for Academic Purposes-4	3
WM1136TU	Written English for Technologists-1	3
WM1137TU	Spoken English for Technologists-1	3
	All Advanced Chemical Engineering and Chemical Engineering Elective courses from 4.2.2 and 4.2.3	

4.3.3 **Education** (taught in Dutch)

The educational programme is taught in Dutch and is oriented towards the Dutch school system, including an internship at a Dutch secondary school. The programme consists of Basisdeel/Ed1 (30 EC) and Verdiepingsdeel/Ed2 (30 EC).
The minor Education (Basisdeel/Ed1) can be done during the BSc programme and leads to qualification as a tweedegraads secondary school teacher with limited qualification (beperkte bevoegdheid). If a student has done the minor Education, only the Verdiepingsdeel/Ed2 of 30 EC remains for the MSc programme orientation. The combination of the minor Education and Ed2orientation leads to qualification as a fully-qualified eerstegraads (grade-one) secondary school teacher.
Students that didn't take the minor Education can follow the Basisdeel/Ed1 orientation as part of their MSc programme and then do the Verdiepingsdeel/Ed2 as a post-master course in order to become fully qualified. The programme has to be approved by coordinator of Science Education and Communication.

Code	Course Module	Credits
	Basisdeel/Ed1 (30EC)	
SL3462	Educational Services	6
SL4202	Professional Learning Community	1
SL4200	Introduction to STEM Teaching Methodology	4
SL4230	Chemistry Teaching Methodology	4
SL4235	Chemistry Foundation Teaching Placement	15
	Verdiepingsdeel/Ed2 (30EC)	
SL3012	Personal Professional Development	3
SL4301	Research of Science Education	9
SL4205	Advanced Professional Learning Community	1
SL4330	Advanced Chemistry Teaching Methodology	5
SL4335	Advanced Chemistry Teaching Placement	12

4.3.4 Management of Technology

This orientation is offered by the faculty of Technology, Policy and Management. The programme consists of either the first semester or the second semester of the MSc Management of Technology. A mixture of courses from both semesters is only permitted if it is a coherent set of modules that is approved by the MoT programme coordinator in advance.

Code	Course Module	Credits
	1st SEMESTER MoT Modules (30 EC)	
MOT111a	Financial Management	5
MOT112a	Economic Foundations	5
MOT121a	Leadership and Technology Management	5
MOT131a	Emerging Breakthrough Technologies	5
MOT141a	Research Methods	5
MOT142a	Social and Scientific Values	5
	2nd SEMESTER MoT Modules (30 EC)	
MOT113a	Technology Dynamics	5
MOT122a	Digital Business Process Management	5
MOT123a	Inter- and intra-organisational decision making	5
MOT132a	Technology, Strategy and Entrepreneurship	5
MOT133a	High-tech Marketing	5
MOT143a	Business Analytics	5

4.3.5 Study Abroad

This programme consists of one semester of studies at a foreign university. A package of 30 EC of courses (optionally including a research project of a maximum of 20 EC) must be completed. The International Office and the Programme Management are responsible for admission taking into account the average grade, feasibility of study plan, availability of exchange placements and prevention of study delay. After admission, the contents of the Study Abroad programme must be approved by the board of examiners.

4.4 Master Thesis Project

4.4.1 The Master Thesis project consist of a research project carried out in one of the TU Delft Chemical Engineering research groups. Students can do either the regular Master Thesis project of 30EC (CH3930, only in combination with a 30EC PSO) or an extended Master Thesis project of 42 EC (CH3942, only in combination with a 18EC PSO, see section 4.3).

Students can perform their thesis research project in one of the following TU Delft Chemical Engineering research groups:

- Advanced Soft Matter,
- Catalysis Engineering,
- Materials for Energy Conversion and Storage,
- Optoelectronic Materials,
- Product and Process Engineering,
- Transport Phenomena
- Inorganic Systems Engineering
- Engineering Thermodynamics (P&E, 3mE)
- Complex Fluid Processing (P&E, 3mE)
- Radiation Science & Technology (RST)

4.4.2 In addition to the list mentioned under 4.4.2, the student may choose another option for his/her thesis work. However, this choice has to be approved by the board of examiners before the start of the project.

4.5 – Honours Programme

The Honours Programme consists of at least 20 EC in addition to the regular MSc programme of 120 EC. The individual programme contains a 5-EC course for all TU Delft honours track students plus a coherent package of at least 15 EC of challenging courses or projects composed by the student.

Honours programme	Credits
Collective Part – obligatory	
UD2010, Critical Reflection on Technology	5
or	
UD2012, Business Leadership for Engineers	5
Individual Part	
Examples:	
Company Oriented HPM	
AS1011HPM Applied Sciences Company Project	12
AS1021HPM Applied Sciences Honours Classes	3
Research Oriented HPM	
AS1031HPM Applied Sciences Research Project	9-15
AS1031HPM Applied Sciences Research Project	0-6
Design Oriented HPM	
PDEng courses (ST6xxx)	15
Courses	
Coherent package of courses	15

4.6 – Double Degree Programme

Students opting for a double degree (second MSc) after having obtained permission from the programme directors of both MSc programmes are allowed to dedicate the Scientific and Social Orientation (30 EC) of Chemical Engineering on modules from the second MSc programme. Double degree programmes are always subject to the restrictions imposed by the university and have to be approved by the board of examiners (in case it deviates from the standard programmes e.g. double degree with MoT). In line with the university's restrictions, the double degree programme has to comprise~~s~~ at least 180 EC of which at least 60 EC must be unique for each programme. The student should produce two thesis projects with two distinct thesis reports for each programme (thesis requirements apply). In case of a joint thesis project (combined thesis project for both programmes), the student hands in two separate reports, one per programme, or one final report where the (non)overlapping parts per programme are clearly indicated. Joint projects need to be approved by the board of examiners based on the content and scope of the project.

4.6.1 Double degree programme Chemical Engineering– Management of Technology

This is a three year programme Chemical Engineering – Management of Technology of the Faculties of Applied Sciences (AS) and Technology, Policy and Management (TPM).
Students finishing a MSc Chemical Engineering degree with orientation MoT may decide to do an additional year of MSc MoT courses and thesis in order to obtain a double degree in both ChE and MoT. Access to this double degree programme is decided upon by the programme directors of the MSc Chemical Engineering and the MSc Management of Technology. The programme consists of:

Programme	Credits
The Chemical Engineering Core Programme	60
Chemical Engineering Master Thesis project (CH3930)	30
The Chemical engineering orientation MoT / 1st semester MoT modules (list of modules in art. 4.3.4)	30
The Chemical engineering orientation MoT / 2nd semester MoT modules (list of modules in art. 4.3.4)	30
MOT201a, Preparation for the MSc Thesis	5
MoT MSc Thesis Project (MOT2910)	30

The 120 EC Chemical engineering part of the programme consists of the 60 EC Chemical Engineering Core Programme, the 30EC Chemical Engineering Master Thesis Project (CH3930) and the 30 EC first or second semester MoT modules.

4.7 – The free study programme

Students may compile a free curriculum concluded by a final exam. Such a curriculum– must consist entirely or mainly of modules given in conjunction with the programme. It has to comply with the final attainment levels of the programme. The curriculum must be acompanied by a justified request and submitted to the Board of Examiners for approval.

Article 5 – Bridging programmes

5.1 Students who have been admitted on the basis of a Dutch institute of Higher Education (HBO) BSc of Engineering degree Chemical Technology (or equivalent) have to complete a bridging programme consisting of the following modules, taught in Dutch, before they can enrol in the MSc programme:

Code	Course Module	Credits
	Dutch	**35**
IFEEMCS011100	Calculus for Science, deel 1	3
IFEEMCS012100	Calculus for Science, deel 2	3
IFEEMCS010400	Lineaire Algebra	5
WI1909TH	Differentiaal Vergelijkingen	3
4052FYSTRY	Fysische Transportverschijnselen	6
4052CHREKY	Chemische Reactorkunde	6
4052SCHTEY	Scheidingstechnologie	6
4052NUMT3	Numerieke Technieken	3

5.2 Students who have been admitted on the basis of a BSc diploma MST with the major Chemistry or a BSc diploma in Chemistry from a Dutch university (not HBO) have to complete a bridging programme consisting of the following modules before they can enrol in the MSc programme:

Code	Course Module	Credits
IFEEMCS010400	Lineaire Algebra	5
WI1909TH	Differentiaal Vergelijkingen	3
4052FYSTRY	Fysische Transportverschijnselen	6
4052CHREK	Chemische Reactorkunde	6
4052SCHTEY	Scheidingstechnologie	6
4052NUMT3	Numerieke Technieken	3
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MST-students with the major Chemistry are eligible for direct admission if they have completed these technology courses (or the equivalent minor Technology) as part of their BSc degree.

5.3 Students holding a BSc degree in Aerospace Engineering, Applied Earth Sciences, Applied Physics, Life Science and Technology, Nanobiology, or Mechanical Engineering from Delft University of Technology can be admitted to the bridging programme and complete the Chemical Engineering bridging programme for their respective BSc degrees as shown below and must do that before they can enroll in the MSc programme.

a) Bridging programme for BSc Aerospace Engineering contains at least:

Code	Course Module	Credits
4051ALACHY	Algemene en Anorganische Chemie	6
4051OCSTRY	Organische Chemie en Structuuranalyse	9
4051CHAN3Y	Chemische analysemethoden	3
4052CHREKY	Chemische Reactorkunde	6
4052SCHTEY	Scheidingstechnologie	6
		30

b) Bridging programme for BSc Applied Earth Sciences contains at least:

Code	Course Module	Credits
4051OCSTRY	Organische Chemie en Structuuranalyse	9
4051CHAN3Y	Chemische Analysemethoden	3
4052CHREKY	Chemische Reactorkunde	6
4052SCHTEY	Scheidingstechnologie	6
4052STEVMY	Structuur en Eigenschappen van Materialen	6
		30

c) Bridging programme for BSc Applied Physics contains at least:

Code	Course Module	Credits
4051ALACHY	Algemene en Anorganische Chemie	6
4051OCSTRY	Organische Chemie en Structuuranalyse	9
4051CHAN3Y	Chemische Analysemethoden	3
4052CHREKY	Chemische Reactorkunde	6
4052SCHTEY	Scheidingstechnologie	6
		30

d) Bridging programme for BSc Life Science and Technology contains at least:

Code	Course Module	Credits
IFEEMCS010400	Lineaire Algebra	5
WI1909TH	Differentiaal Vergelijkingen	3
4052CHREK	Chemische Reactorkunde	6
4052SCHTEY	Scheidingstechnologie	6
4052NUMT3	Numerieke Technieken	3
		23
	For a 30 EC bridging minor courses from the minor Advanced LST can be added; e.g. LB2801, LB2961, LB2971, LB2981	

It is recommended to replace LB2532 (Transport Phenomena in the Life Sciences) by 4052FYSTRY.

e) Bridging programme for BSc Mechanical Engineering contains at least:

Code	Course Module	Credits
4051ALACHY	Algemene en Anorganische Chemie	6
4051OCSTRY	Organische Chemie en Structuuranalyse	9
4051CHAN3Y	Chemische Analysemethoden	3
4052STEVMY	Structuur en Eigenschappen van Materialen	6
4052CHREKY	Chemische Reactorkunde	6
		30

f) Bridging programme for BSc Nanobiology contains at least:

Code	Course Module	Credits
4051OCSTRY	Organische Chemie en Structuuranalyse	9
4052STEVMY	Structuur en Eigenschappen van Materialen	6
4052FYSTRY	Fysische Transportverschijnselen	6
4052CHREKY	Chemische Reactorkunde	6
4052SCHTEY	Scheidingstechnologie	6
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5.4 Students with a BSc degree from a Bachelor programme not mentioned in art. 5.1-5.3 have to complete a bridging programme before they can enrol in the MSc programme. The content of the bridging programme will be determined by the Director of Studies of the MSc Chemical Engineering programme.

Article 6 – Examinations

6.1 The form of the examinations and the methods of assessment

The form of the examinations and the methods of assessment are described in the (digital) study guide, http://chem.msc.studyguide.tudelft.nl.

6.2 The order of exams

6.2.1 Design project **(CH3843)**

A proof of full participation in the preparatory PPD course (**CH3803**) is required and at least 12 EC of other Chemical Engineering MSc courses/electives must have been completed to be admitted to the Design Project. Presence, making assignments and sitting for the exam is considered as proof for full participation in the PPD course. Students doing homologation (bridging) courses as part of their MSc programme must have completed all (except at most one) of these courses.

6.2.2 Graduation Project, MSc thesis **(CH3930 or CH3942)**

The student should at least have successfully completed the following modules before starting the Thesis Project:

1. all bridging/homologation modules required for admission to the programme,
2. the Obligatory Core and Advanced Chemical Engineering modules, as described in 4.2.1 and 4.2.2, respectively.
3. the design module (**CH3843, CH3803 and TPM330**) or the orientation part of the programme.

The student should make a project plan with the responsible thesis supervisor and hand in the completed registration form (MEP-form) before the start of the project.

The date and time of the MSc thesis defense is determined by the thesis supervisor in consultation with the student. In exceptional cases, the board of examiners may be involved in setting this date and time. The form has to be signed by the coordinator before it can be processed by the Thesis Office of Applied Sciences. Students are not allowed to start a thesis project without having received the approval from the coordinator or thesis office. Further rules governing the MSc graduation projects can be found in the Rules and Guidelines of the Board of Examiners

6.2.3 Other modules of the programme

Modules of the programme may have listed one or more other modules as prerequisite to participate in the course and participate in the exam. If such prerequisites are in place, there are listed in the study guide (http://chem.msc.studyguide.tudelft.nl.) entry for said module, and students need to have successfully completed such prerequisite modules not later than before the start of said module.

Article 7 – Transition ruling Chemical Engineering

7.1 Equivalences

2022-2023		2021-2022	Before	Change in 2022
Core courses		**Core courses**		
CH3133	<=>	CH3132A	CH3131A	credit change
none		CH3142	CH3141	discontinued
CH3153	<=>	CH3152	CH3151	credit change
		Proces track		
CH3044A	<=>	CH3043A	CH3041, SC4190CH, CH3042, CH3043	credit change
Adv.Chem.Eng.				
CH3051	<=>	CH3053	CH3051TU = CH3052	credit change
CH3682A	<=>	CH3681A		credit change
		Product track		
none		CH3162A	CH3162, CH3161	discontinued
none		CH3174A	CH3173A	discontinued
CH3373	<=>	CH3372A		credit change
CH3143		none		new course
CH3013	<=>	CH3012	CH3011	credit change
CH3175		none		new course
Design Module		**Design module**		
CH3803	<=>	CH3804		credit change
CH3843	=	CH3843	CH3842	no change
TPM330A	<=>	WM0320TU	WM0329TU	credit change
Master thesis		**Master thesis**		
CH3942	<=>	CH3901	CH3901	credit change
CH3930	>	CH3901		credit change
Electives		**Electives**		
new code(pending)		CH3563	CH3562	name change
AS3131	=	AS3131	CH3122	no change
none		CH3622PR	CH3622P	discontinued
CH3222	=	CH3222	CH3222SET	no change
SET3070	=	SET3070	CH3253SET	no change
		LM3261SET = SET3075	LM3261SET=SET3075	(code changed)
SET3085	=	SET3085	CH3232SET (code changed)	no change
AP3352	=	AP3352	CH3792 (code changed)	no change
CH3783	=	CH3783	CH3782 + CH3582 (merged)	no change
CH3061	<=>	CH3062	CH3061	?
none		CH3073+ WB4429	CH3071=ME1590CH = CH3072	combination obsolete
none		CH3622+CH3622PR	CH3621 = ME1592CH	combination obsolete

Differences in credits may be compensated in the Advanced Chemical Engineering courses (4.2.2) or Chemical Engineering electives (4.2.3).
For cohorts that have started in 2021-2022 and before:

- CH3042+CH3053 and CH3052+CH3043 always count as 9 credits (and not 6 or 12).
- The total number of credits obtained by passing the three different obligatory first-quarter courses (CH3132A or CH3131A, CH3152 or CH3151 and CH3142 or CH3141) are always equal to 15 EC.

7.2 Equivalences and alternatives for Bridging/Homologation modules:

4051CALC1Y = WI1708TH1 + WI1708TH2
4052DIFFVY = MSTTDIF = WI2149ST
4052LINEAY = MSTTLIN = WI2148ST
4052LADIFY = 4052LINEAY + 4052DIFFVY
4052LADIFY = WI1807TH1 + WI1909TH
4052FYSTRY = MSTTFTV = ST2122 = TN2785