

Faculty of Engineering and Architecture

Master of Science in Chemical Engineering

Language of instruction: English

Programme version 14

1 General Courses

60 credits

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E071200 Unit Operations in Chemical Industry <i>Geraldine Heynderickx -- Department of Materials, Textiles and Chemical Engineering</i>	6		1	B:1	180
2	E071131 Sustainable Chemical Production Processes <i>Kevin Van Geem -- Department of Materials, Textiles and Chemical Engineering</i>	6		1	A:1	180
3	E068900 Structure and Dynamics of Polymers <i>Karen De Clerck -- Department of Materials, Textiles and Chemical Engineering</i>	6		1	B:1	180
4	E072110 Chemical Reactors: Fundamentals and Applications <i>Paul Van Steenberghe -- Department of Materials, Textiles and Chemical Engineering</i>	6		1	B:1	180
5	E028700 Thermal Installations <i>Michel De Paepe -- Department of Electromechanical, Systems and Metal Engineering</i>	6		1	A:2	180
6	E073760 Chemical Process Design <i>Georgios Bellos -- Department of Materials, Textiles and Chemical Engineering</i>	6		1	B:2	180
7	E071170 Process Control <i>Dana Copot -- Department of Electromechanical, Systems and Metal Engineering</i>	6		1	A:2	180
8	E071140 Catalysis and Kinetics <i>Mark Saeys -- Department of Materials, Textiles and Chemical Engineering</i>	6		1	A:2	180
9	E073720 Industrial Project <i>Kevin Van Geem -- Department of Materials, Textiles and Chemical Engineering</i>	6		2	B:1	180
10	E072303 Safety, Health, Environment and Quality in the Chemical Industry [en, nl] <i>Paul Van Steenberghe -- Department of Materials, Textiles and Chemical Engineering</i>	3		2	A:2	90
11	E071190 Process Intensification <i>Yi Ouyang -- Department of Materials, Textiles and Chemical Engineering</i>	3		2	A:2	90

2 Elective Courses

36 credits

Subscribe to 36 credit units from 2 modules from the following list. Subject to approval by the faculty.

- 12 credit units in year 1
- 24 credit units in year 2.

2.1 In-Depth Elective Courses

18 credits

Subscribe to no less than 18 credit units from the following list. Subject to approval by the faculty.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E073770 Process Safety: Reactor Technology, Intrinsic Hazards and Process Safety Hazard Analysis <i>Paul Van Steenberghe -- Department of Materials, Textiles and Chemical Engineering</i>	3			A:1	90
2	E021525 Statistical Physics [nl] <i>Louis Vanduyfhuys -- Department of Applied Physics</i>	3			A:2	90
3	E071230 Advanced Catalysts Characterisation <i>Hilde Poelman -- Department of Materials, Textiles and Chemical Engineering</i>	3			A:1	90
4	E064950 Polymer Reaction Engineering <i>Dagmar D'hooge -- Department of Materials, Textiles and Chemical Engineering</i>	6			A:2	180
5	E074200 Kinetic Modelling and Simulation <i>Joris Thybaut -- Department of Materials, Textiles and Chemical Engineering</i>	6			A:1	180

6	E071181	Chemistry of Industrial Processes	6	B:2	180
7	E071341	Molecular Modelling of Industrial Processes <i>Veronique Van Speybroeck -- Department of Applied Physics</i>	6	A:2	180
8	E040533	Computational Fluid Dynamics in Chemical Technology <i>Geraldine Heynderickx -- Department of Materials, Textiles and Chemical Engineering</i>	3	A:2	90

2.2 Broadening Elective Courses

18 credits

Subscribe to at most 18 credit units from no less than 1 and no more than 9 modules from the following list. Subject to approval by the faculty.

2.2.1 Cluster Analytical Chemistry

Nr	Course	CRDT	Ref	MT1	Session	Study
1	I003079 Chemical Structure Determination <i>Christian Stevens -- Department of Green Chemistry and Technology</i>	4			A:1	120
2	E070650 Advanced Instrumental Techniques for Chemical Analysis <i>Laszlo Vincze -- Department of Chemistry</i>	3			A:1	90
3	C004159 Advanced X-ray Spectroscopy <i>Laszlo Vincze -- Department of Chemistry</i>	3			A:2	90
4	C004157 Principle and Applications of Stable Isotope Analysis <i>Pascal Boeckx -- Department of Green Chemistry and Technology</i>	3			A:2	90

2.2.2 Cluster Artificial Intelligence

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E016350 Artificial Intelligence <i>Aleksandra Pizurica -- Department of Telecommunications and Information Processing</i>	3			B:2	90
2	E061331 Machine Learning: Learning from Data <i>Joni Dambre -- Department of Electronics and Information Systems</i>	6			A:1	180
3	I001280 Experimental Design <i>Stijn Luca -- Department of Data Analysis and Mathematical Modelling</i>	3			A:2	75
4	E005220 Linear Systems <i>Gert De Cooman -- Department of Electronics and Information Systems</i>	6			A:1	180

2.2.3 Cluster Energy Engineering

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E051540 Explosions and Industrial Fire Safety <i>Filip Verplaetsen -- Department of Structural Engineering and Building Materials</i>	6			A:1	180
2	E045930 Modelling of Turbulence and Combustion <i>Bart Merci -- Department of Structural Engineering and Building Materials</i>	3			A:1	90
3	E038321 Nuclear Reactor Technology <i>Matthias Vanderhaegen -- Department of Electromechanical, Systems and Metal Engineering</i>	3			A:2	90
4	E035421 Sustainable Energy <i>Jan Mertens -- Department of Electromechanical, Systems and Metal Engineering</i>	3			A:2	90
5	E039110 Technical Thermodynamics [nl] <i>Michel De Paepe -- Department of Electromechanical, Systems and Metal Engineering</i>	6			A:1	180
6	E073771 Sustainable Technology Transition in the Antwerp Industry	3			A:2	90

2.2.4 Cluster Environmental Engineering

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C004164 Chemical Risk Assessment <i>Marc Elskens -- Vrije Universiteit Brussel</i>	3			A:2	90
2	I002752 Advanced Wastewater Treatment Process Design <i>Eveline Volcke -- Department of Green Chemistry and Technology</i>	3			A:1	90
3	I003060 Sustainable Systems Engineering <i>Sophie Huysveld -- Department of Green Chemistry and Technology</i>	5			A:1	150
4	I002754 Environmental Chemistry: Organic Polluents [nl] <i>Christophe Walgraeve -- Department of Green Chemistry and Technology</i>	3			A:1	90
5	C002275 Environmental Law [nl] <i>Hendrik Schoukens -- Department of European, Public and International Law</i>	5			A:1	125
6	I002682 Environmental Technology: Air [nl] <i>Christophe Walgraeve -- Department of Green Chemistry and Technology</i>	5			A:1	150

7	I002683	Environmental Technology: Soil [nl] <i>Ellen Van De Vijver -- Department of Environment</i>	5		A:1	150
8	I002507	Environmental Technology: Solid Waste Streams [nl] <i>Steven De Meester -- Department of Green Chemistry and Technology</i>	4		A:2	120
9	E065472	Metal Extraction and Recycling <i>Inge Bellemans -- Department of Materials, Textiles and Chemical Engineering</i>	6		A:2	180
10	I002677	Thermochemical Conversion of Biomass [nl] <i>Stef Ghysels -- Department of Green Chemistry and Technology</i>	4		A:2	120

2.2.5 Cluster Materials and Nanochemistry

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C002965 Advanced Polymer Chemistry <i>Filip Du Prez -- Department of Organic Chemistry</i>	3			A:1	75
2	C004155 Analytical Methods for Material Characterization <i>Mieke Adriaens -- Department of Chemistry</i>	9			A:1	270
3	E066662 Environmentally Assisted Degradation of Materials <i>Kim Verbeken -- Department of Materials, Textiles and Chemical Engineering</i>	6			A:2	180
4	C004145 Functional Ceramics <i>Klaartje De Buysser -- Department of Chemistry</i>	4			A:2	110
5	C004141 Materials Physics <i>Zeger Hens -- Department of Chemistry</i>	6			A:1	180
6	E065340 Micro-analysis and Structure Determination in Materials Science <i>Hossein Beladi -- Department of Electromechanical, Systems and Metal Engineering</i>	6			A:2	180
7	C004140 Nanomaterials Chemistry <i>Iwan Moreels -- Department of Chemistry</i>	6			A:1	180
8	E064961 Polymer Processing and Circularity <i>Dagmar D'hooge -- Department of Materials, Textiles and Chemical Engineering</i>	6			A:2	180
9	C004142 Surface Topology, Internal Structure and Composition <i>Mieke Adriaens -- Department of Chemistry</i>	6			A:1	180
10	E064761 Textile Functionalization <i>Karen De Clerck -- Department of Materials, Textiles and Chemical Engineering</i>	6			A:2	180
11	C004144 Topics in Nanoscience <i>Pieter Geiregat -- Department of Chemistry</i>	4			A:2	120
12	E024730 Complex Materials and Rheology <i>Flavio Marchesini de Oliveira -- Department of Materials, Textiles and Chemical Engineering</i>	6			A:2	180
13	E900069 Composites <i>Wim Van Paepegem -- Department of Materials, Textiles and Chemical Engineering</i>	6			A:1	180

2.2.6 Cluster Operations Management

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E076221 Manufacturing Planning and Control <i>Birger Raa -- Department of Industrial Systems Engineering and Product Design</i>	6	a		A:1	180
2	E004255 Operations Research Models and Methods <i>El-Houssaine Aghezzaf -- Department of Industrial Systems Engineering and Product Design</i>	6			A:1	180
3	F000707 Project Management <i>Mario Vanhoucke -- Department of Business Informatics and Operations Management</i>	6			B:2	180
4	E060240 Quality Engineering and Industrial Statistics <i>Stijn De Vuyst -- Department of Industrial Systems Engineering and Product Design</i>	6			A:2	180
5	E773770 Maintenance and Shutdown in the Process Industry <i>Paul Van Steenberghe -- Department of Materials, Textiles and Chemical Engineering</i>	3			A:1	90

2.2.7 Cluster Research Internship

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E099400 Research Internship <i>Patrick Segers -- Department of Electronics and Information Systems</i>	6			A:J	180
2	E099400 Research Internship <i>Patrick Segers -- Department of Electronics and Information Systems</i>	3			B:J	90

2.2.8 Elective Social Courses

Nr	Course	CRDT	Ref	MT1	Session	Study
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1	E099300	Industry Internship Engineering and Architecture [en, nl] <i>Patrick Segers -- Department of Electronics and Information Systems</i>	6		A:J	180
2	E098010	Integrated Portfolio [en, nl] <i>Hiep Luong -- Department of Telecommunications and Information Processing</i>	6		A:J	180
3	E098010	Integrated Portfolio [en, nl] <i>Hiep Luong -- Department of Telecommunications and Information Processing</i>	3		B:J	90
4	E037810	Safety of Electrical and Mechanical Installations [nl] <i>Jos Knockaert -- Department of Electromechanical, Systems and Metal Engineering</i>	3		A:2	90
5	E039060	Sustainable Energy and Rational Use of Energy <i>Filip Strubbe -- Department of Electronics and Information Systems</i>	4		A:2	120
6	E078310	Sustainable Use of Materials: Metals [nl] <i>Kim Verbeken -- Department of Materials, Textiles and Chemical Engineering</i>	3		A:1	90
7	E078320	Sustainable Use of Materials: Plastics and Derived Materials [nl] <i>Lode Daelemaans -- Department of Materials, Textiles and Chemical Engineering</i>	3		A:2	90
8	E078010	Technology and Environment <i>Luc Martens -- Department of Information Technology</i>	3		A:1	90
9	E078752	Water and Air Quality Management <i>Joris Thybaut -- Department of Materials, Textiles and Chemical Engineering</i>	4		A:2	120
10	E092100	Biosystems [nl] <i>Pascal Verdonck -- Department of Electronics and Information Systems</i>	3		A:1	90
11	E075310	Ethics, Engineering and Society [nl] <i>Seppe Segers -- Department of Philosophy and Moral Sciences</i>	3		A:2	90
12	C004009	History and Philosophy of Sciences [nl] <i>Maarten Van Dyck -- Department of Philosophy and Moral Sciences</i>	3		B:2	90
13	E076321	Digital Innovation for People and Society [nl] <i>Erik Mannens -- Department of Electronics and Information Systems</i>	3		A:2	90
14	A001900	Introduction to Psychology [nl] <i>Wim Notebaert -- Department of Experimental Psychology</i>	3		A:1	90
15	H001977	Coaching and Diversity [nl] <i>Elisabeth De Schauwer -- Department of Special Education</i>	3	UKV	A:J	90
16	A005503	Context and Nuance. A Critical Reflection on Current Topics [nl] <i>Katrijn Maryns -- Department of Translation, Interpreting and Communication</i>	6	UKV	A:1	180
17	F001021	Basic Entrepreneurship [nl] <i>Evy Van Lancker -- Department of Marketing, Innovation and Organisation</i>	3	UKV	A:1	90
18	A005646	Introduction to Business Law [nl] <i>Diederik Bruloot -- Department of Interdisciplinary Study of Law, Private Law and Business Law</i>	3		A:1	90
19	F001022	Dare to Venture <i>Johan Verrue -- Department of Marketing, Innovation and Organisation</i>	4		A:2	120
20	E076471	Dare to Start <i>Wouter Haerick -- Department of Information Technology</i>	3		A:2	90
21	E076621	Principles of Law and Construction Law [nl] <i>Jelle Laverge -- Department of Architecture and Urban Planning</i>	3		A:1	90
22	E076951	Engineering Economy <i>Sofie Verbrugge -- Department of Industrial Systems Engineering and Product Design</i>	6		A:1	180
23	F001020	Introduction to Entrepreneurship <i>Petra Andries -- Department of Marketing, Innovation and Organisation</i>	3		A:1	90
24	H002476	Powerful Learning Environments [nl] <i>Bram De Wever -- Department of Educational Studies</i>	6		A:1	180
25	H002477	The Teacher within Class, School and Society [nl] <i>Melissa Tuytens -- Department of Educational Studies</i>	6		A:2	180
26	H002478	The Student: Development and Motivation [nl] <i>Wim Beyers -- Department of Developmental, Personality and Social Psychology</i>	6		A:1	180
27	F000083	Macroeconomics [nl] <i>Freddy Heylen -- Department of Economics</i>	6		A:1	180
28	H002668	Introduction Industrial Psychology [nl] <i>Bart Wille -- Department of Developmental, Personality and Social Psychology</i>	4		A:1	120
29	F000551	Business Skills <i>Mieke Audenaert -- Department of Marketing, Innovation and Organisation</i>	4		C:2	120

30	A003001	Academic English <i>Geert Jacobs -- Department of Linguistics</i>	3	UKV	B:1, A:2	90
31	E037830	Basics of Health and Safety at Work for Engineers [nl] <i>Sofie Van Volsem -- Department of Industrial Systems Engineering and Product Design</i>	3		A:1	90

2.2.9 Elective Courses Ghent University

Credits to be selected from the UGent study programs or university-wide electives. Subject to approval by the faculty.
[List of Ghent University Elective Courses](#)

3 Master's Dissertation 24 credits

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E091103 Master's Dissertation	24		2	B:J	720

Teaching

When a course is not taught (solely) in the programme's language of instruction, the effectively used languages are indicated in square brackets following the course name, using the following ISO codes:

bg: Bulgarian	de: German	es: Spanish	ja: Japanese	pl: Polish	sh: Croatian/Serbian	zh: Chinese
cs: Czech	el: Greek	fr: French	nl: Dutch	pt: Portuguese	sl: Slovene	
da: Danish	en: English	it: Italian	no: Norwegian	ru: Russian	sv: Swedish	

Semester

Semesters are indicated by their number (1 or 2); semester 3 represents the summer period and J indicates a course spanning semesters 1 and 2. When a capital letter precedes a semester number, the course has multiple offerings. The letter indicates the offering concerned. When a semester is shown in brackets, the course is not offered this year in the specific offering. The offering frequency and first year of offering are indicated by the following codes:

a: bi-annually	c: annually, from 2027-2028	f: annually, from 2028-2029	i: annually, from 2029-2030
b: tri-annually	d: bi-annually, from 2027-2028	g: bi-annually, from 2028-2029	j: bi-annually, from 2029-2030
	e: tri-annually, from 2027-2028	h: tri-annually, from 2028-2029	k: tri-annually, from 2029-2030