

Faculty of Engineering and Architecture

Master of Science in Sustainable Materials Engineering

Language of instruction: English

Programme version 11

## 1 General Courses 60 credits

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E042740 Fracture and Deformation Behaviour of Materials Leo Kestens -- Department of Electromechanical, Systems and Metal Engineering	6		1	B:1	180
2	E068900 Structure and Dynamics of Polymers Karen De Clerck -- Department of Materials, Textiles and Chemical Engineering	6		1	B:1	180
3	E069041 Bio-based and Synthetic Fibres Karen De Clerck -- Department of Materials, Textiles and Chemical Engineering	6		1	A:1	180
4	E065340 Micro-analysis and Structure Determination in Materials Science Roumen Petrov -- Department of Electromechanical, Systems and Metal Engineering	6		1	A:1	180
5	E900069 Composites Wim Van Paepegem -- Department of Materials, Textiles and Chemical Engineering	6		1	A:1	180
6	E065472 Metal Extraction and Recycling Inge Bellemans -- Department of Materials, Textiles and Chemical Engineering	6		1	A:2	180
7	E071400 Computer Aided Materials Engineering Lode Daelemans -- Department of Materials, Textiles and Chemical Engineering	6		1	A:2	180
8	E064221 Design and Manufacturing of Textile Structures Lieva Van Langenhove -- Department of Materials, Textiles and Chemical Engineering	6		1	A:2	180
9	E066230 Microstructure-Property Control of Metals Leo Kestens -- Department of Electromechanical, Systems and Metal Engineering	6		1	A:2	180
10	E066662 Environmentally Assisted Degradation of Materials Kim Verbeke -- Department of Materials, Textiles and Chemical Engineering	6		1	A:2	180

## 2 Majors 18 credits

Subscribe to 1 major from the following list. Subject to approval by the faculty.

### 2.1 Major Metal Science and Engineering 18 credits

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E066270 Metal Processing and Technology Tuan Nguyen Minh -- Department of Electromechanical, Systems and Metal Engineering	6		2	A:2	180
2	E066170 Physical Materials Science Leo Kestens -- Department of Electromechanical, Systems and Metal Engineering	6		2	C:1	180
3	E024122 Computational Materials Physics Stefaan Cottenier -- Department of Electromechanical, Systems and Metal Engineering	6		2	A:2	180

### 2.2 Major Polymer and Fibre Engineering 18 credits

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E064761 Textile Functionalization Karen De Clerck -- Department of Materials, Textiles and Chemical Engineering	6		2	A:2	180
2	E064201 Technical Textiles Lieva Van Langenhove -- Department of Materials, Textiles and Chemical Engineering	6		2	A:1	180
3	E064961 Polymer Processing and Circularity Dagmar D'hooge -- Department of Materials, Textiles and Chemical Engineering	6		2	A:2	180

## 3 Elective Courses 18 credits

Subscribe to 18 credit units from 1 path from the following list. Subject to approval by the faculty.

### 3.1 Elective Courses: Path 1

18 credits

Subscribe to 18 credit units from no less than 1 and no more than 3 modules from the following list. Subject to approval by the faculty.

#### 3.1.1 Elective Courses Materials Science

Subscribe to no less than 6 credit units from the following list. Subject to approval by the faculty.

- The courses with reference 'M' are from the major Metal Science and Engineering
- The courses with reference 'P' are from the major Polymer and Fibre Engineering

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E066270 Metal Processing and Technology Tuan Nguyen Minh -- Department of Electromechanical, Systems and Metal Engineering	6	M		A:2	180
2	E066170 Physical Materials Science Leo Kestens -- Department of Electromechanical, Systems and Metal Engineering	6	M		C:1	180
3	E024122 Computational Materials Physics Stefaan Cottenier -- Department of Electromechanical, Systems and Metal Engineering	6	M		A:2	180
4	E064961 Polymer Processing and Circularity Dagmar D'hooge -- Department of Materials, Textiles and Chemical Engineering	6	P		A:2	180
5	E064761 Textile Functionalization Karen De Clerck -- Department of Materials, Textiles and Chemical Engineering	6	P		A:2	180
6	E064201 Technical Textiles Lieva Van Langenhove -- Department of Materials, Textiles and Chemical Engineering	6	P		A:1	180
7	C004145 Functional Ceramics Klaartje De Buysser -- Department of Chemistry	3			B:2	90
8	E063671 Biomaterials and Tissue Engineering Peter Dubrueel -- Department of Organic Chemistry	5			A:1	150
9	C002965 Advanced Polymer Chemistry Filip Du Prez -- Department of Organic Chemistry	3			A:1	75
10	E006800 Modelling and Engineering of Nanoscale Materials Louis Vanduyfhuys -- Department of Applied Physics	6			A:1	180
11	C004140 Nanomaterials Chemistry Pascal Van Der Voort -- Department of Chemistry	6			A:1	180
12	E070650 Advanced Instrumental Techniques for Chemical Analysis Laszlo Vincze -- Department of Chemistry	3			A:1	90
13	C003122 Nuclear Methods in Material Research Stefaan Cottenier -- Department of Electromechanical, Systems and Metal Engineering	6			A:2	180
14	E042910 Mechanical Material Modelling Wim Van Paepegem -- Department of Materials, Textiles and Chemical Engineering	3			A:1	90
15	C004144 Topics in Nanoscience Pieter Geiregat -- Department of Chemistry	4			A:2	120
16	E064950 Polymer Reaction Engineering Dagmar D'hooge -- Department of Materials, Textiles and Chemical Engineering	6			A:2	180
17	C004126 Advanced Macromolecular Chemistry Filip Du Prez -- Department of Organic Chemistry	6			A:1	180
18	E024730 Complex Materials and Rheology Flavio Marchesini de Oliveira -- Department of Materials, Textiles and Chemical Engineering	6			A:2	180
19	E099400 Research Internship Patrick Segers -- Department of Electronics and Information Systems	6			A:J	180
20	E099400 Research Internship Patrick Segers -- Department of Electronics and Information Systems	3			B:J	90

#### 3.1.2 Elective Social Courses

Subscribe to no less than 6 credit units from the following list. Subject to approval by the faculty.

Students may apply for another elective social course, given a clear motivation and after approval by the faculty (exceptionally, as a rule a course from the list below is followed).

Students who take the Research Internship (E099400) from the elective module 3.1.1, subscribe to at least 3 ECTS elective social courses.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E099300 Industry Internship Engineering and Architecture [en, nl] Patrick Segers -- Department of Electronics and Information Systems	6			A:J	180
2	E098010 Integrated Portfolio [en, nl] Hiep Luong -- Department of Telecommunications and Information Processing	6			A:J	180

3	E098010	Integrated Portfolio [en, nl] Hiep Luong -- Department of Telecommunications and Information Processing	3		B:J	90
4	E037810	Safety of Electrical and Mechanical Installations [nl] Jos Knockaert -- Department of Electromechanical, Systems and Metal Engineering	3		A:2	90
5	E039060	Sustainable Energy and Rational Use of Energy Jeroen Beeckman -- Department of Electronics and Information Systems	4		A:2	120
6	E078310	Sustainable Use of Materials: Metals [nl] Kim Verbeken -- Department of Materials, Textiles and Chemical Engineering	3		A:1	90
7	E078320	Sustainable Use of Materials: Plastics and Derived Materials [nl] Lode Daelemans -- Department of Materials, Textiles and Chemical Engineering	3		A:2	90
8	E078010	Technology and Environment Luc Martens -- Department of Information Technology	3		A:1	90
9	E078752	Water and Air Quality Management Joris Thybaut -- Department of Materials, Textiles and Chemical Engineering	4		A:2	120
10	E092100	Biosystems [nl] Pascal Verdonck -- Department of Electronics and Information Systems	3		A:1	90
11	E075310	Ethics, Engineering and Society [nl] Seppe Segers -- Department of Philosophy and Moral Sciences	3		A:2	90
12	C004009	History and Philosophy of Sciences [nl] Maarten Van Dyck -- Department of Philosophy and Moral Sciences	3		A:1	90
13	E076320	The Information Society and ICT [nl] Erik Mannens -- Department of Electronics and Information Systems	3		A:2	90
14	A001900	Introduction to Psychology [nl] Wim Notebaert -- Department of Experimental Psychology	3		A:1	90
15	H001977	Coaching and Diversity [nl] Elisabeth De Schauwer -- Department of Special Education	3	UKV	A:J	90
16	A005503	Context and Nuance. A Critical Reflection on Current Topics [nl] Stef Craps -- Department of Literary Studies	6	UKV	A:1	180
17	E076450	Basic Entrepreneurship [nl]	3	UKV	A:1	90
18	A005646	Introduction to Corporate Law [nl] Diederik Bruloot -- Department of Interdisciplinary Study of Law, Private Law and Business Law	3		A:1	90
19	E076460	Dare to Venture Johan Verrue -- Department of Marketing, Innovation and Organisation	4		A:2	120
20	E076471	Dare to Start Frank Gielen -- Department of Information Technology	3		A:2	90
21	E076621	Principles of Law and Construction Law [nl] Jelle Laverge -- Department of Architecture and Urban Planning	3		A:1	90
22	E076951	Engineering Economy Sofie Verbrugge -- Department of Information Technology	6		A:1	180
23	E076431	Introduction to Entrepreneurship Petra Andries -- Department of Marketing, Innovation and Organisation	3		A:1	90
24	H002169	Powerful Learning Environments [nl] Bram De Wever -- Department of Educational Studies	6		A:1	180
25	H002196	Classroom Management and Reflection [nl] Melissa Tuytens -- Department of Educational Studies	4		A:2	120
26	H002197	The Teacher within School and Society [nl] Melissa Tuytens -- Department of Educational Studies	4		A:1	120
27	H002198	Psychology of Adolescence [nl] Wim Beyers -- Department of Developmental, Personality and Social Psychology	4		A:1	120
28	F000083	Macroeconomics [nl] Freddy Heylen -- Department of Economics	6		A:1	180
29	H001010	Introduction Industrial Psychology [nl] Bart Wille -- Department of Developmental, Personality and Social Psychology	5		A:2	150
30	F000551	Business Skills Mieke Audenaert -- Department of Marketing, Innovation and Organisation	4		C:2	120
31	A003001	Academic English Geert Jacobs -- Department of Linguistics	3	UKV	B:1, A:2	90

32	E075800	Communication [nl] Leen Pollefliet -- Department of Information Technology	3			A:1	90
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### 3.1.3 Elective Courses Ghent University

Subscribe to no more than 6 credit units from the programmes of Ghent University, including the [Ghent University Elective Courses](#).  
Subject to approval by the faculty.

## 3.2 Elective Courses: Path 2

18 credits

Subscribe to 18 credit units from 1 minor from the following list. Subject to approval by the faculty.

### 3.2.1 Minor Operations Management

18 credits

Subscribe to 18 credit units from the following list, with no less than 6 credit units with reference a. Subject to approval by the faculty.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E076221 Manufacturing Planning and Control Birger Raa -- Department of Industrial Systems Engineering and Product Design	6	a		A:1	180
2	E004255 Operations Research Models and Methods El-Houssaine Aghezzaf -- Department of Industrial Systems Engineering and Product Design	6			A:1	180
3	E060240 Quality Engineering and Industrial Statistics Stijn De Vuyst -- Department of Industrial Systems Engineering and Product Design	6			A:2	180
4	E076951 Engineering Economy Sofie Verbrugge -- Department of Information Technology	6			A:1	180

### 3.2.2 Minor Automotive Production Engineering

Subscribe to no less than 18 and no more than 24 credit units from the following list, with

- no less than 6 credit units from the courses with reference a,
- no less than 6 credit units from the courses with reference c.

Subject to approval by the faculty.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E076221 Manufacturing Planning and Control Birger Raa -- Department of Industrial Systems Engineering and Product Design	6	a		A:1	180
2	E076380 Methods Engineering and Work Measurement Dieter Claey's -- Department of Industrial Systems Engineering and Product Design	6	a		A:2	180
3	E060240 Quality Engineering and Industrial Statistics Stijn De Vuyst -- Department of Industrial Systems Engineering and Product Design	6	a		A:2	180
4	E066662 Environmentally Assisted Degradation of Materials Kim Verbeken -- Department of Materials, Textiles and Chemical Engineering	6	b		A:2	180
5	E066270 Metal Processing and Technology Tuan Nguyen Minh -- Department of Electromechanical, Systems and Metal Engineering	6	b		A:2	180
6	E900069 Composites Wim Van Paepegem -- Department of Materials, Textiles and Chemical Engineering	6	b		A:1	180
7	E043070 Materials Selection in Mechanical Design Stijn Hertelé -- Department of Electromechanical, Systems and Metal Engineering	6	b		B:2	180
8	E061322 Machine Design Dieter Fauconnier -- Department of Electromechanical, Systems and Metal Engineering	6	c		A:1	180
9	E037121 Displacement Pumps, Compressors and IC Engine Fundamentals Sebastian Verhelst -- Department of Electromechanical, Systems and Metal Engineering	6	c		A:1	180
10	E037221 IC Engines: advanced design and research Sebastian Verhelst -- Department of Electromechanical, Systems and Metal Engineering	3	c		A:2	90
11	E061621 Automotive Technology Sebastian Verhelst -- Department of Electromechanical, Systems and Metal Engineering	3	c		A:2	90
12	E007920 Computer Control of Industrial Processes Clara-Mihaela Ionescu -- Department of Electromechanical, Systems and Metal Engineering	6	c		A:1	180
13	E008420 Servo Systems and Industrial Robots Guillaume Crevecoeur -- Department of Electromechanical, Systems and Metal Engineering	3	c		A:1	90
14	E030520 Power Electronics Hendrik Vansompel -- Department of Electromechanical, Systems and Metal Engineering	3	c		A:2	90

### 3.2.3 Minor Environment and Sustainable Development

Subscribe to 18 credit units from the following list. Subject to approval by the faculty.

Nr	Course	CRDT	Ref	MT1	Session	Study
1	C002275 Environmental Law [nl] Hendrik Schoukens -- Department of European, Public and International Law	5			A:1	125

2	I002700	Clean Technology Sophie Huysveld -- Department of Green Chemistry and Technology	5	A:1	150
3	E065460	Rational Use of Materials Tom Depover -- Department of Materials, Textiles and Chemical Engineering	5	A:1	150
4	E078752	Water and Air Quality Management Joris Thybaut -- Department of Materials, Textiles and Chemical Engineering	4	A:2	120
5	E039060	Sustainable Energy and Rational Use of Energy Jeroen Beeckman -- Department of Electronics and Information Systems	4	A:2	120
6	E078061	Introduction to Environmental Risk Assessment Karel De Schamphelaere -- Department of Animal Sciences and Aquatic Ecology	3	A:1	90
7	I002606	Environmental Risk Assessment Karel De Schamphelaere -- Department of Animal Sciences and Aquatic Ecology	5	A:1	150

#### 4 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 2025-2026	f: annually, from 2026-2027	i: annually, from 2027-2028
b: tri-annually	d: bi-annually, from 2025-2026	g: bi-annually, from 2026-2027	j: bi-annually, from 2027-2028
	e: tri-annually, from 2025-2026	h: tri-annually, from 2026-2027	k: tri-annually, from 2027-2028