

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 <a href="#">Indicative price: unknown</a>	6		1	B:1	180
2	E068900 Structure and Dynamics of Polymers Karen De Clerck -- Department of Materials, Textiles and Chemical Engineering <a href="#">Indicative price: € 0</a>	6		1	B:1	180
3	E069041 Bio-based and Synthetic Fibres Karen De Clerck -- Department of Materials, Textiles and Chemical Engineering <a href="#">Indicative price: € 0</a>	6		1	A:1	180
4	E065340 Micro-analysis and Structure Determination in Materials Science Roumen Petrov -- Department of Electromechanical, Systems and Metal Engineering <a href="#">Indicative price: unknown</a>	6		1	A:1	180
5	E900069 Composites Wim Van Paepegem -- Department of Materials, Textiles and Chemical Engineering <a href="#">Indicative price: € 20</a>	6		1	A:1	180
6	E065472 Metal Extraction and Recycling Inge Bellemans -- Department of Materials, Textiles and Chemical Engineering <a href="#">Indicative price: € 0</a>	6		1	A:2	180
7	E071400 Computer Aided Materials Engineering Lode Daelemans -- Department of Materials, Textiles and Chemical Engineering <a href="#">Indicative price: € 0</a>	6		1	A:2	180
8	E064221 Design and Manufacturing of Textile Structures Lieva Van Langenhove -- Department of Materials, Textiles and Chemical Engineering <a href="#">Indicative price: unknown</a>	6		1	A:2	180
9	E066230 Microstructure-Property Control of Metals Leo Kestens -- Department of Electromechanical, Systems and Metal Engineering <a href="#">Indicative price: unknown</a>	6		1	A:2	180
10	E066662 Environmentally Assisted Degradation of Materials Kim Verbeken -- Department of Materials, Textiles and Chemical Engineering <a href="#">Indicative price: € 10</a>	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 <a href="#">Indicative price: unknown</a>	6		2	A:2	180
2	E066170 Physical Materials Science Leo Kestens -- Department of Electromechanical, Systems and Metal Engineering <a href="#">Indicative price: unknown</a>	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 <a href="#">Indicative price: € 0</a>	6		2	A:2	180
2	E064201 Technical Textiles Lieva Van Langenhove -- Department of Materials, Textiles and Chemical Engineering <a href="#">Indicative price: unknown</a>	6		2	A:1	180
3	E064961 Polymer Processing and Circularity Dagmar D'hooge -- Department of Materials, Textiles and Chemical Engineering <a href="#">Indicative price: € 0</a>	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 <a href="#">Indicative price: unknown</a>	6	M		A:2	180
2	E066170 Physical Materials Science Leo Kestens -- Department of Electromechanical, Systems and Metal Engineering <a href="#">Indicative price: unknown</a>	6	M		C:1	180
3	E024122 Computational Materials Physics Stefaan Cottenier -- Department of Electromechanical, Systems and Metal Engineering <a href="#">Indicative price: unknown</a>	6	M		A:2	180
4	E064961 Polymer Processing and Circularity Dagmar D'hooge -- Department of Materials, Textiles and Chemical Engineering <a href="#">Indicative price: € 0</a>	6	P		A:2	180
5	E064761 Textile Functionalization Karen De Clerck -- Department of Materials, Textiles and Chemical Engineering <a href="#">Indicative price: € 0</a>	6	P		A:2	180
6	E064201 Technical Textiles Lieva Van Langenhove -- Department of Materials, Textiles and Chemical Engineering <a href="#">Indicative price: unknown</a>	6	P		A:1	180
7	C004145 Functional Ceramics Klaartje De Buysser -- Department of Chemistry <a href="#">Indicative price: € 7</a>	3			B:2	90
8	E063671 Biomaterials and Tissue Engineering Peter Dubruel -- Department of Organic Chemistry <a href="#">Indicative price: unknown</a>	5			A:1	150
9	C002965 Advanced Polymer Chemistry Filip Du Prez -- Department of Organic Chemistry <a href="#">Indicative price: unknown</a>	3			A:1	75
10	E006800 Modelling and Engineering of Nanoscale Materials Louis Vanduyfhuys -- Department of Applied Physics <a href="#">Indicative price: € 0</a>	6			A:1	180
11	C004140 Nanomaterials Chemistry Pascal Van Der Voort -- Department of Chemistry <a href="#">Indicative price: € 100</a>	6			A:1	180
12	E070650 Advanced Instrumental Techniques for Chemical Analysis Laszlo Vincze -- Department of Chemistry <a href="#">Indicative price: unknown</a>	3			A:1	90

13	C003122	Nuclear Methods in Material Research Stefaan Cottenier -- Department of Electromechanical, Systems and Metal Engineering <a href="#">Indicative price: € 0</a>	6	A:2	180
14	E042910	Mechanical Material Modelling Wim Van Paepegem -- Department of Materials, Textiles and Chemical Engineering <a href="#">Indicative price: € 20</a>	3	A:1	90
15	C004144	Topics in Nanoscience Pieter Geiregat -- Department of Chemistry <a href="#">Indicative price: € 0</a>	4	A:2	120
16	E064950	Polymer Reaction Engineering Dagmar D'hooge -- Department of Materials, Textiles and Chemical Engineering <a href="#">Indicative price: € 0</a>	6	A:2	180
17	C004126	Advanced Macromolecular Chemistry Filip Du Prez -- Department of Organic Chemistry <a href="#">Indicative price: € 0</a>	6	A:1	180
18	E024730	Complex Materials and Rheology Flavio Marchesini de Oliveira -- Department of Materials, Textiles and Chemical Engineering <a href="#">Indicative price: unknown</a>	6	A:2	180
19	E099400	Research Internship Patrick Segers -- Department of Electronics and Information Systems <a href="#">Indicative price: unknown</a>	6	A:J	180
20	E099400	Research Internship Patrick Segers -- Department of Electronics and Information Systems <a href="#">Indicative price: unknown</a>	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 <a href="#">Indicative price: unknown</a>	6			A:J	180
2	E098010 Integrated Portfolio [en, nl] Hiep Luong -- Department of Telecommunications and Information Processing <a href="#">Indicative price: € 50</a>	6			A:J	180
3	E098010 Integrated Portfolio [en, nl] Hiep Luong -- Department of Telecommunications and Information Processing <a href="#">Indicative price: € 50</a>	3			B:J	90
4	E037810 Safety of Electrical and Mechanical Installations [nl] Jos Knockaert -- Department of Electromechanical, Systems and Metal Engineering <a href="#">Indicative price: unknown</a>	3			A:2	90
5	E039060 Sustainable Energy and Rational Use of Energy Jeroen Beeckman -- Department of Electronics and Information Systems <a href="#">Indicative price: € 7</a>	4			A:2	120
6	E078310 Sustainable Use of Materials: Metals [nl] Kim Verbeken -- Department of Materials, Textiles and Chemical Engineering <a href="#">Indicative price: € 8</a>	3			A:1	90
7	E078320 Sustainable Use of Materials: Plastics and Derived Materials [nl] Lode Daelemans -- Department of Materials, Textiles and Chemical Engineering <a href="#">Indicative price: € 0</a>	3			A:2	90
8	E078010 Technology and Environment Luc Martens -- Department of Information Technology <a href="#">Indicative price: € 0</a>	3			A:1	90
9	E078752 Water and Air Quality Management Joris Thybaut -- Department of Materials, Textiles and Chemical Engineering <a href="#">Indicative price: € 0</a>	4			A:2	120
10	E092100 Biosystems [nl] Pascal Verdonck -- Department of Electronics and Information Systems <a href="#">Indicative price: unknown</a>	3			A:1	90

11	E075310	Ethics, Engineering and Society [nl] Seppe Segers -- Department of Philosophy and Moral Sciences <a href="#">Indicative price: unknown</a>	3		A:2	90
12	C004009	History and Philosophy of Sciences [nl] Maarten Van Dyck -- Department of Philosophy and Moral Sciences <a href="#">Indicative price: € 0</a>	3		A:1	90
13	E076320	The Information Society and ICT [nl] Erik Mannens -- Department of Electronics and Information Systems <a href="#">Indicative price: unknown</a>	3		A:2	90
14	A001900	Introduction to Psychology [nl] Wim Notebaert -- Department of Experimental Psychology <a href="#">Indicative price: unknown</a>	3		A:1	90
15	H001977	Coaching and Diversity [nl] Elisabeth De Schauwer -- Department of Special Education <a href="#">Indicative price: € 0</a>	3	UKV	A:J	90
16	A005503	Context and Nuance. A Critical Reflection on Current Topics [nl] Stef Craps -- Department of Literary Studies <a href="#">Indicative price: € 0</a>	6	UKV	A:1	180
17	E076450	Basic Entrepreneurship [nl] Yannick Dillen -- Department of Marketing, Innovation and Organisation <a href="#">Indicative price: unknown</a>	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 <a href="#">Indicative price: unknown</a>	3		A:1	90
19	E076460	Dare to Venture Johan Verrue -- Department of Marketing, Innovation and Organisation <a href="#">Indicative price: unknown</a>	4		A:2	120
20	E076471	Dare to Start Frank Gielen -- Department of Information Technology <a href="#">Indicative price: unknown</a>	3		A:2	90
21	E076621	Principles of Law and Construction Law [nl] Jelle Laverge -- Department of Architecture and Urban Planning <a href="#">Indicative price: unknown</a>	3		A:1	90
22	E076951	Engineering Economy Sofie Verbrugge -- Department of Information Technology <a href="#">Indicative price: € 60</a>	6		A:1	180
23	E076431	Introduction to Entrepreneurship Petra Andries -- Department of Marketing, Innovation and Organisation <a href="#">Indicative price: € 33</a>	3		A:1	90
24	H002169	Powerful Learning Environments [nl] Bram De Wever -- Department of Educational Studies <a href="#">Indicative price: € 50</a>	6		A:1	180
25	H002196	Classroom Management and Reflection [nl] Melissa Tuytens -- Department of Educational Studies <a href="#">Indicative price: € 50</a>	4		A:2	120
26	H002197	The Teacher within School and Society [nl] Melissa Tuytens -- Department of Educational Studies <a href="#">Indicative price: € 50</a>	4		A:1	120
27	H002198	Psychology of Adolescence [nl] Wim Beyers -- Department of Developmental, Personality and Social Psychology <a href="#">Indicative price: € 51</a>	4		A:1	120
28	F000083	Macroeconomics [nl] Freddy Heylen -- Department of Economics <a href="#">Indicative price: € 65</a>	6		A:1	180
29	H001010	Introduction Industrial Psychology [nl] Bart Wille -- Department of Developmental, Personality and Social Psychology <a href="#">Indicative price: € 45</a>	5		A:2	150
30	F000551	Business Skills Mieke Audenaert -- Department of Marketing, Innovation and Organisation <a href="#">Indicative price: € 46</a>	4		C:2	120

31	A003001	Academic English Geert Jacobs -- Department of Linguistics <a href="#">Indicative price: € 0</a>	3	UKV		B:1, A:2	90
32	E075800	Communication [nl] Leen Pollefliet -- Department of Information Technology <a href="#">Indicative price: € 68</a>	3			A:1	90

### 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 <a href="#">Indicative price: € 0</a>	6	a		A:1	180
2	E004255 Operations Research Models and Methods El-Houssaine Aghezzaf -- Department of Industrial Systems Engineering and Product Design <a href="#">Indicative price: € 0</a>	6			A:1	180
3	E060240 Quality Engineering and Industrial Statistics Stijn De Vuyst -- Department of Industrial Systems Engineering and Product Design <a href="#">Indicative price: € 50</a>	6			A:2	180
4	E076951 Engineering Economy Sofie Verbrugge -- Department of Information Technology <a href="#">Indicative price: € 60</a>	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 <a href="#">Indicative price: € 0</a>	6	a		A:1	180
2	E076380 Methods Engineering and Work Measurement Dieter Claeys -- Department of Industrial Systems Engineering and Product Design <a href="#">Indicative price: € 50</a>	6	a		A:2	180
3	E060240 Quality Engineering and Industrial Statistics Stijn De Vuyst -- Department of Industrial Systems Engineering and Product Design <a href="#">Indicative price: € 50</a>	6	a		A:2	180
4	E066662 Environmentally Assisted Degradation of Materials Kim Verbeke -- Department of Materials, Textiles and Chemical Engineering <a href="#">Indicative price: € 10</a>	6	b		A:2	180
5	E066270 Metal Processing and Technology Tuan Nguyen Minh -- Department of Electromechanical, Systems and Metal Engineering <a href="#">Indicative price: unknown</a>	6	b		A:2	180
6	E900069 Composites Wim Van Paepegem -- Department of Materials, Textiles and Chemical Engineering <a href="#">Indicative price: € 20</a>	6	b		A:1	180
7	E043070 Materials Selection in Mechanical Design Stijn Hertelé -- Department of Electromechanical, Systems and Metal Engineering <a href="#">Indicative price: unknown</a>	6	b		B:2	180
8	E061322 Machine Design Dieter Fauconnier -- Department of Electromechanical, Systems and Metal Engineering <a href="#">Indicative price: unknown</a>	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

		<a href="#">Indicative price: € 0</a>				
10	E037221	IC Engines: advanced design and research Sebastian Verhelst -- Department of Electromechanical, Systems and Metal Engineering <a href="#">Indicative price: € 0</a>	3	c	A:2	90
11	E061621	Automotive Technology Sebastian Verhelst -- Department of Electromechanical, Systems and Metal Engineering <a href="#">Indicative price: € 0</a>	3	c	A:2	90
12	E007920	Computer Control of Industrial Processes Clara-Mihaela Ionescu -- Department of Electromechanical, Systems and Metal Engineering <a href="#">Indicative price: € 0</a>	6	c	A:1	180
13	E008420	Servo Systems and Industrial Robots Frederik Ostyn -- Department of Electromechanical, Systems and Metal Engineering <a href="#">Indicative price: € 0</a>	3	c	A:1	90
14	E030520	Power Electronics Hendrik Vansompel -- Department of Electromechanical, Systems and Metal Engineering <a href="#">Indicative price: unknown</a>	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 <a href="#">Indicative price: € 0</a>	5			A:1	125
2	I002700 Clean Technology Sophie Huysveld -- Department of Green Chemistry and Technology <a href="#">Indicative price: unknown</a>	5			A:1	150
3	E065460 Rational Use of Materials Tom Depover -- Department of Materials, Textiles and Chemical Engineering <a href="#">Indicative price: unknown</a>	5			A:1	150
4	E078752 Water and Air Quality Management Joris Thybaut -- Department of Materials, Textiles and Chemical Engineering <a href="#">Indicative price: € 0</a>	4			A:2	120
5	E039060 Sustainable Energy and Rational Use of Energy Jeroen Beeckman -- Department of Electronics and Information Systems <a href="#">Indicative price: € 7</a>	4			A:2	120
6	E078061 Introduction to Environmental Risk Assessment Karel De Schampelaere -- Department of Animal Sciences and Aquatic Ecology <a href="#">Indicative price: € 0</a>	3			A:1	90
7	I002606 Environmental Risk Assessment Karel De Schampelaere -- Department of Animal Sciences and Aquatic Ecology <a href="#">Indicative price: € 0</a>	5			A:1	150

## 4 Master's Dissertation

24 credits

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E091103 Master's Dissertation <a href="#">Indicative price: unknown</a>	24		2	B:J	720

### Programme related study costs

None

## 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

## Learning materials

The prices stated are indicative and subject to fluctuations.

The list of learning materials per course unit can be found in the course sheets.