



## 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 <i>Leo Kestens -- Department of Electromechanical, Systems and Metal Engineering</i> <a href="#">Indicative price: unknown</a>	6		1	B:1	180
2	E068900	Structure and Dynamics of Polymers <i>Karen De Clerck -- Department of Materials, Textiles and Chemical Engineering</i> <a href="#">Indicative price: € 0</a>	6		1	B:1	180
3	E069041	Bio-based and Synthetic Fibres <i>Karen De Clerck -- Department of Materials, Textiles and Chemical Engineering</i> <a href="#">Indicative price: € 0</a>	6		1	A:1	180
4	E065340	Micro-analysis and Structure Determination in Materials Science <i>Roumen Petrov -- Department of Electromechanical, Systems and Metal Engineering</i> <a href="#">Indicative price: unknown</a>	6		1	A:1	180
5	E900069	Composites <i>Wim Van Paepengem -- Department of Materials, Textiles and Chemical Engineering</i> <a href="#">Indicative price: € 20</a>	6		1	A:1	180
6	E065472	Metal Extraction and Recycling <i>Inge Bellemans -- Department of Materials, Textiles and Chemical Engineering</i> <a href="#">Indicative price: € 0</a>	6		1	A:2	180
7	E071400	Computer Aided Materials Engineering <i>Lode Daelemans -- Department of Materials, Textiles and Chemical Engineering</i> <a href="#">Indicative price: € 0</a>	6		1	A:2	180
8	E064221	Design and Manufacturing of Textile Structures <i>Lieva Van Langenhove -- Department of Materials, Textiles and Chemical Engineering</i> <a href="#">Indicative price: unknown</a>	6		1	A:2	180
9	E066230	Microstructure-Property Control of Metals <i>Leo Kestens -- Department of Electromechanical, Systems and Metal Engineering</i> <a href="#">Indicative price: unknown</a>	6		1	A:2	180
10	E066662	Environmentally Assisted Degradation of Materials <i>Kim Verbeken -- Department of Materials, Textiles and Chemical Engineering</i> <a href="#">Indicative price: € 10</a>	6		1	A:2	180

2 Majors						18 credits
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Subscribe to 1 major from the following list. Subject to approval by the faculty.

2.1 Major Metal Science and Engineering						18 credits
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Nr	Course		CRDT	Ref	MT1	Session	Study
1	E066270	Metal Processing and Technology <i>Leo Kestens -- Department of Electromechanical, Systems and Metal Engineering</i> <a href="#">Indicative price: unknown</a>	6		2	A:2	180
2	E066170	Physical Materials Science <i>Leo Kestens -- Department of Electromechanical, Systems and Metal Engineering</i> <a href="#">Indicative price: unknown</a>	6		2	C:1	180

3	E024122	Computational Materials Physics <i>Stefaan Cottenier -- Department of Electromechanical, Systems and Metal Engineering</i> <a href="#">Indicative price: unknown</a>	6	2	A:2	180
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## 2.2 Major Polymer and Fibre Engineering 18 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E064761	Textile Functionalization <i>Karen De Clerck -- Department of Materials, Textiles and Chemical Engineering</i> <a href="#">Indicative price: € 0</a>	6		2	A:2	180
2	E064201	Technical Textiles <i>Lieva Van Langenhove -- Department of Materials, Textiles and Chemical Engineering</i> <a href="#">Indicative price: unknown</a>	6		2	A:1	180
3	E064961	Polymer Processing and Circularity <i>Dagmar D'hooge -- Department of Materials, Textiles and Chemical Engineering</i> <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 <i>Leo Kestens -- Department of Electromechanical, Systems and Metal Engineering</i> <a href="#">Indicative price: unknown</a>	6	M		A:2	180
2	E066170	Physical Materials Science <i>Leo Kestens -- Department of Electromechanical, Systems and Metal Engineering</i> <a href="#">Indicative price: unknown</a>	6	M		C:1	180
3	E024122	Computational Materials Physics <i>Stefaan Cottenier -- Department of Electromechanical, Systems and Metal Engineering</i> <a href="#">Indicative price: unknown</a>	6	M		A:2	180
4	E064961	Polymer Processing and Circularity <i>Dagmar D'hooge -- Department of Materials, Textiles and Chemical Engineering</i> <a href="#">Indicative price: € 0</a>	6	P		A:2	180
5	E064761	Textile Functionalization <i>Karen De Clerck -- Department of Materials, Textiles and Chemical Engineering</i> <a href="#">Indicative price: € 0</a>	6	P		A:2	180
6	E064201	Technical Textiles <i>Lieva Van Langenhove -- Department of Materials, Textiles and Chemical Engineering</i> <a href="#">Indicative price: unknown</a>	6	P		A:1	180
7	C004145	Functional Ceramics <i>Klaartje De Buysser -- Department of Chemistry</i> <a href="#">Indicative price: € 7</a>	3			B:2	90
8	E063671	Biomaterials and Tissue Engineering <i>Peter Dubrule -- Department of Organic Chemistry</i> <a href="#">Indicative price: unknown</a>	5			A:1	150
9	C002965	Advanced Polymer Chemistry <i>Filip Du Prez -- Department of Organic Chemistry</i> <a href="#">Indicative price: unknown</a>	3			A:1	75
10	E006800	Modelling and Engineering of Nanoscale Materials <i>Louis Vanduyfhuys -- Department of Applied Physics</i> <a href="#">Indicative price: € 0</a>	6			A:1	180
11	C004140	Nanomaterials Chemistry <i>Pascal Van Der Voort -- Department of Chemistry</i> <a href="#">Indicative price: € 100</a>	6			A:1	180

12	E070650	Advanced Instrumental Techniques for Chemical Analysis <i>Laszlo Vincze -- Department of Chemistry</i> <a href="#">Indicative price: unknown</a>	3	A:1	90
13	C003122	Nuclear Methods in Material Research <i>Stefaan Cottelier -- Department of Electromechanical, Systems and Metal Engineering</i> <a href="#">Indicative price: € 0</a>	6	A:2	180
14	E042910	Mechanical Material Modelling <i>Wim Van Paepengem -- Department of Materials, Textiles and Chemical Engineering</i> <a href="#">Indicative price: € 20</a>	3	A:1	90
15	C004144	Topics in Nanoscience <i>Pieter Geiregat -- Department of Chemistry</i> <a href="#">Indicative price: € 0</a>	4	A:2	120
16	E064950	Polymer Reaction Engineering <i>Dagmar D'hooge -- Department of Materials, Textiles and Chemical Engineering</i> <a href="#">Indicative price: € 0</a>	6	A:2	180
17	C004126	Advanced Macromolecular Chemistry <i>Filip Du Prez -- Department of Organic Chemistry</i> <a href="#">Indicative price: € 0</a>	6	A:1	180
18	E024730	Complex Materials and Rheology <i>Flavio Marchesini de Oliveira -- Department of Materials, Textiles and Chemical Engineering</i> <a href="#">Indicative price: unknown</a>	6	A:2	180
19	E099400	Research Internship <i>Patrick Segers -- Department of Electronics and Information Systems</i> <a href="#">Indicative price: unknown</a>	6	A:J	180
20	E099400	Research Internship <i>Patrick Segers -- Department of Electronics and Information Systems</i> <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] <i>Patrick Segers -- Department of Electronics and Information Systems</i> <a href="#">Indicative price: unknown</a>	6			A:J	180
2	E098010	Integrated Portfolio [en, nl] <i>Hiep Luong -- Department of Telecommunications and Information Processing</i> <a href="#">Indicative price: € 50</a>	6			A:J	180
3	E098010	Integrated Portfolio [en, nl] <i>Hiep Luong -- Department of Telecommunications and Information Processing</i> <a href="#">Indicative price: € 50</a>	3			B:J	90
4	E037810	Safety of Electrical and Mechanical Installations [nl] <i>Jos Knockaert -- Department of Electromechanical, Systems and Metal Engineering</i> <a href="#">Indicative price: unknown</a>	3			A:2	90
5	E039060	Sustainable Energy and Rational Use of Energy <i>Jeroen Beeckman -- Department of Electronics and Information Systems</i> <a href="#">Indicative price: € 7</a>	4			A:2	120
6	E078310	Sustainable Use of Materials: Metals [nl] <i>Kim Verbeken -- Department of Materials, Textiles and Chemical Engineering</i> <a href="#">Indicative price: € 8</a>	3			A:1	90
7	E078320	Sustainable Use of Materials: Plastics and Derived Materials [nl] <i>Lode Daelemans -- Department of Materials, Textiles and Chemical Engineering</i> <a href="#">Indicative price: € 0</a>	3			A:2	90
8	E078010	Technology and Environment <i>Luc Martens -- Department of Information Technology</i> <a href="#">Indicative price: € 0</a>	3			A:1	90
9	E078752	Water and Air Quality Management <i>Joris Thybaut -- Department of Materials, Textiles and Chemical Engineering</i> <a href="#">Indicative price: € 0</a>	4			A:2	120

10	E092100	Biosystems [nl] <i>Pascal Verdonck -- Department of Electronics and Information Systems</i> <a href="#">Indicative price: unknown</a>	3	A:1	90	
11	E075310	Ethics, Engineering and Society [nl] <i>Seppe Segers -- Department of Philosophy and Moral Sciences</i> <a href="#">Indicative price: unknown</a>	3	A:2	90	
12	C004009	History and Philosophy of Sciences [nl] <i>Maarten Van Dyck -- Department of Philosophy and Moral Sciences</i> <a href="#">Indicative price: € 0</a>	3	A:1 <sup>a</sup>	90	
13	E076320	The Information Society and ICT [nl] <i>Erik Mannens -- Department of Electronics and Information Systems</i> <a href="#">Indicative price: unknown</a>	3	A:2	90	
14	A001900	Introduction to Psychology [nl] <i>Wim Notebaert -- Department of Experimental Psychology</i> <a href="#">Indicative price: unknown</a>	3	A:1	90	
15	H001977	Coaching and Diversity [nl] <i>Elisabeth De Schauwer -- Department of Special Education</i> <a href="#">Indicative price: € 0</a>	3	UKV	A:J	90
16	A005503	Context and Nuance. A Critical Reflection on Current Topics [nl] <i>Stef Craps -- Department of Literary Studies</i> <a href="#">Indicative price: € 0</a>	6	UKV	A:1	180
17	E076450	Basic Entrepreneurship [nl] <i>Yannick Dillen -- Department of Marketing, Innovation and Organisation</i> <a href="#">Indicative price: unknown</a>	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> <a href="#">Indicative price: unknown</a>	3	A:1	90	
19	E076460	Dare to Venture <i>Johan Verruet -- Department of Marketing, Innovation and Organisation</i> <a href="#">Indicative price: unknown</a>	4	A:2	120	
20	E076471	Dare to Start <i>Wouter Haerick -- Department of Information Technology</i> <a href="#">Indicative price: unknown</a>	3	A:2	90	
21	E076621	Principles of Law and Construction Law [nl] <i>Jelle Laverge -- Department of Architecture and Urban Planning</i> <a href="#">Indicative price: unknown</a>	3	A:1	90	
22	E076951	Engineering Economy <i>Sofie Verbrugge -- Department of Information Technology</i> <a href="#">Indicative price: € 60</a>	6	A:1	180	
23	E076431	Introduction to Entrepreneurship <i>Petra Andries -- Department of Marketing, Innovation and Organisation</i> <a href="#">Indicative price: € 33</a>	3	A:1	90	
24	H002169	Powerful Learning Environments [nl] <i>Bram De Wever -- Department of Educational Studies</i> <a href="#">Indicative price: € 50</a>	6	A:1	180	
25	H002196	Classroom Management and Reflection [nl] <i>Tijis Rotsaert -- Department of Educational Studies</i> <a href="#">Indicative price: € 50</a>	4	A:2	120	
26	H002197	The Teacher within School and Society [nl] <i>Melissa Tuytens -- Department of Educational Studies</i> <a href="#">Indicative price: € 50</a>	4	A:1	120	
27	H002198	Psychology of Adolescence [nl] <i>Wim Beyers -- Department of Developmental, Personality and Social Psychology</i> <a href="#">Indicative price: € 51</a>	4	A:1	120	
28	F000083	Macroeconomics [nl] <i>Freddy Heylen -- Department of Economics</i> <a href="#">Indicative price: € 65</a>	6	A:1	180	
29	H001010	Introduction Industrial Psychology [nl] <i>Bart Wille -- Department of Developmental, Personality and Social Psychology</i> <a href="#">Indicative price: € 45</a>	5	A:2	150	

30	F000551	Business Skills <i>Mieke Audenaert -- Department of Marketing, Innovation and Organisation</i> <a href="#">Indicative price: € 46</a>	4		C:2	120
31	A003001	Academic English <i>Geert Jacobs -- Department of Linguistics</i> <a href="#">Indicative price: € 0</a>	3	UKV	B:1, A:2	90
32	E075800	Communication [nl] <i>Leen Pollefliet -- Department of Information Technology</i> <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 <i>Birger Raa -- Department of Industrial Systems Engineering and Product Design</i> <a href="#">Indicative price: € 0</a>	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> <a href="#">Indicative price: € 0</a>	6			A:1	180
3	E060240	Quality Engineering and Industrial Statistics <i>Stijn De Vuyst -- Department of Industrial Systems Engineering and Product Design</i> <a href="#">Indicative price: € 50</a>	6			A:2	180
4	E076951	Engineering Economy <i>Sofie Verbrugge -- Department of Information Technology</i> <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 <i>Birger Raa -- Department of Industrial Systems Engineering and Product Design</i> <a href="#">Indicative price: € 0</a>	6	a		A:1	180
2	E076380	Methods Engineering and Work Measurement <i>Dieter Claeys -- Department of Industrial Systems Engineering and Product Design</i> <a href="#">Indicative price: € 50</a>	6	a		A:2	180
3	E060240	Quality Engineering and Industrial Statistics <i>Stijn De Vuyst -- Department of Industrial Systems Engineering and Product Design</i> <a href="#">Indicative price: € 50</a>	6	a		A:2	180
4	E066662	Environmentally Assisted Degradation of Materials <i>Kim Verbeken -- Department of Materials, Textiles and Chemical Engineering</i> <a href="#">Indicative price: € 10</a>	6	b		A:2	180
5	E066270	Metal Processing and Technology <i>Leo Kestens -- Department of Electromechanical, Systems and Metal Engineering</i> <a href="#">Indicative price: unknown</a>	6	b		A:2	180
6	E900069	Composites <i>Wim Van Paepengem -- Department of Materials, Textiles and Chemical Engineering</i> <a href="#">Indicative price: € 20</a>	6	b		A:1	180
7	E043070	Materials Selection in Mechanical Design <i>Stijn Hertelé -- Department of Electromechanical, Systems and Metal Engineering</i> <a href="#">Indicative price: unknown</a>	6	b		B:2	180
8	E061322	Machine Design <i>Dieter Fauconnier -- Department of Electromechanical, Systems and Metal Engineering</i>	6	c		A:1	180

[Indicative price: unknown](#)

9	E037121	Displacement Pumps, Compressors and IC Engine Fundamentals <i>Sebastian Verhelst -- Department of Electromechanical, Systems and Metal Engineering</i> <a href="#">Indicative price: € 0</a>	6	c	A:1	180
10	E037221	IC Engines: advanced design and research <i>Sebastian Verhelst -- Department of Electromechanical, Systems and Metal Engineering</i> <a href="#">Indicative price: € 0</a>	3	c	A:2	90
11	E061621	Automotive Technology <i>Sebastian Verhelst -- Department of Electromechanical, Systems and Metal Engineering</i> <a href="#">Indicative price: € 0</a>	3	c	A:2	90
12	E007920	Computer Control of Industrial Processes <i>Clara Ionescu -- Department of Electromechanical, Systems and Metal Engineering</i> <a href="#">Indicative price: € 0</a>	6	c	A:1	180
13	E008420	Servo Systems and Industrial Robots <i>Frederik Ostyn -- Department of Electromechanical, Systems and Metal Engineering</i> <a href="#">Indicative price: € 0</a>	3	c	A:1	90
14	E030520	Power Electronics <i>Hendrik Vansompel -- Department of Electromechanical, Systems and Metal Engineering</i> <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] <i>Hendrik Schoukens -- Department of European, Public and International Law</i> <a href="#">Indicative price: € 0</a>	5			A:1	125
2	I002700	Clean Technology <i>Sophie Huysveld -- Department of Green Chemistry and Technology</i> <a href="#">Indicative price: unknown</a>	5			A:1	150
3	E065460	Rational Use of Materials <i>Tom Depover -- Department of Materials, Textiles and Chemical Engineering</i> <a href="#">Indicative price: unknown</a>	5			A:1	150
4	E078752	Water and Air Quality Management <i>Joris Thybaut -- Department of Materials, Textiles and Chemical Engineering</i> <a href="#">Indicative price: € 0</a>	4			A:2	120
5	E039060	Sustainable Energy and Rational Use of Energy <i>Jeroen Beeckman -- Department of Electronics and Information Systems</i> <a href="#">Indicative price: € 7</a>	4			A:2	120
6	E078061	Introduction to Environmental Risk Assessment <i>Karel De Schampheleire -- Department of Animal Sciences and Aquatic Ecology</i> <a href="#">Indicative price: € 0</a>	3			A:1	90
7	I002606	Environmental Risk Assessment <i>Karel De Schampheleire -- Department of Animal Sciences and Aquatic Ecology</i> <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.