

Faculty of Engineering and Architecture

Master of Science in Sustainable Materials Engineering

Language of instruction: English

Programme version 12

## 1 General Courses 60 credits

| Nr | Course  | CRDT | Ref | MT1 | Session | Study |
|----|---|------|-----|-----|---------|-------|
| 1  | E042740 Fracture and Deformation Behaviour of Materials<br><i>Leo Kestens -- Department of Electromechanical, Systems and Metal Engineering</i><br><a href="#">Indicative price: unknown</a>                    | 6    |     | 1   | B:1     | 180   |
| 2  | E068900 Structure and Dynamics of Polymers<br><i>Karen De Clerck -- Department of Materials, Textiles and Chemical Engineering</i><br><a href="#">Indicative price: € 0</a>                                     | 6    |     | 1   | B:1     | 180   |
| 3  | E069041 Bio-based and Synthetic Fibres<br><i>Karen De Clerck -- Department of Materials, Textiles and Chemical Engineering</i><br><a href="#">Indicative price: € 0</a>   | 6    |     | 1   | A:1     | 180   |
| 4  | E065340 Micro-analysis and Structure Determination in Materials Science<br><i>Hossein Beladi -- Department of Electromechanical, Systems and Metal Engineering</i><br><a href="#">Indicative price: unknown</a> | 6    |     | 1   | A:2     | 180   |
| 5  | E900069 Composites<br><i>Wim Van Paepegem -- Department of Materials, Textiles and Chemical Engineering</i><br><a href="#">Indicative price: € 20</a>   | 6    |     | 1   | A:1     | 180   |
| 6  | E065472 Metal Extraction and Recycling<br><i>Inge Bellemans -- Department of Materials, Textiles and Chemical Engineering</i><br><a href="#">Indicative price: € 0</a>  | 6    |     | 1   | A:2     | 180   |
| 7  | E071400 Computer Aided Materials Engineering<br><i>Lode Daelemans -- Department of Materials, Textiles and Chemical Engineering</i><br><a href="#">Indicative price: € 0</a>                                    | 6    |     | 1   | A:1     | 180   |
| 8  | E064221 Design and Manufacturing of Textile Structures<br><i>Lieva Van Langenhove -- Department of Materials, Textiles and Chemical Engineering</i><br><a href="#">Indicative price: unknown</a>                | 6    |     | 1   | A:2     | 180   |
| 9  | E066230 Microstructure-Property Control of Metals<br><i>Hossein Beladi -- Department of Electromechanical, Systems and Metal Engineering</i><br><a href="#">Indicative price: unknown</a>                       | 6    |     | 1   | A:2     | 180   |
| 10 | E066662 Environmentally Assisted Degradation of Materials<br><i>Kim Verbeken -- Department of Materials, Textiles and Chemical Engineering</i><br><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<br><i>Leo Kestens -- Department of Electromechanical, Systems and Metal Engineering</i><br><a href="#">Indicative price: unknown</a> | 6    |     | 2   | A:2     | 180   |
| 2  | E066170 Physical Materials Science<br><i>Leo Kestens -- Department of Electromechanical, Systems and Metal Engineering</i><br><a href="#">Indicative price: unknown</a>      | 6    |     | 2   | C:1     | 180   |

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

|    |         |   |   |     |     |
|----|---------|---|---|-----|-----|
| 12 | E070650 | Advanced Instrumental Techniques for Chemical Analysis<br><i>Laszlo Vincze -- Department of Chemistry</i><br><a href="#">Indicative price: unknown</a>                            | 3 | A:1 | 90  |
| 13 | C003122 | Nuclear Methods in Material Research<br><i>Stefaan Cottenier -- Department of Electromechanical, Systems and Metal Engineering</i><br><a href="#">Indicative price: € 0</a>       | 6 | A:2 | 180 |
| 14 | E042910 | Mechanical Material Modelling<br><i>Wim Van Paepegem -- Department of Materials, Textiles and Chemical Engineering</i><br><a href="#">Indicative price: € 20</a>                  | 3 | A:1 | 90  |
| 15 | C004144 | Topics in Nanoscience<br><i>Pieter Geiregat -- Department of Chemistry</i><br><a href="#">Indicative price: € 0</a>   | 4 | A:2 | 120 |
| 16 | E064950 | Polymer Reaction Engineering<br><i>Dagmar D'hooge -- Department of Materials, Textiles and Chemical Engineering</i><br><a href="#">Indicative price: € 0</a>                      | 6 | A:2 | 180 |
| 17 | C004126 | Advanced Macromolecular Chemistry<br><i>Filip Du Prez -- Department of Organic Chemistry</i><br><a href="#">Indicative price: € 0</a>   | 6 | A:1 | 180 |
| 18 | E024730 | Complex Materials and Rheology<br><i>Flavio Marchesini de Oliveira -- Department of Materials, Textiles and Chemical Engineering</i><br><a href="#">Indicative price: unknown</a> | 6 | A:2 | 180 |
| 19 | E099400 | Research Internship<br><i>Patrick Segers -- Department of Electronics and Information Systems</i><br><a href="#">Indicative price: unknown</a>                                    | 6 | A:J | 180 |
| 20 | E099400 | Research Internship<br><i>Patrick Segers -- Department of Electronics and Information Systems</i><br><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).

| Nr | Course   | CRDT | Ref | MT1 | Session | Study |
|----|--|------|-----|-----|---------|-------|
| 1  | E099300 Industry Internship Engineering and Architecture [en, nl]<br><i>Patrick Segers -- Department of Electronics and Information Systems</i><br><a href="#">Indicative price: unknown</a>               | 6    |     |     | A:J     | 180   |
| 2  | E098010 Integrated Portfolio [en, nl]<br><i>Hiep Luong -- Department of Telecommunications and Information Processing</i><br><a href="#">Indicative price: € 50</a>  | 6    |     |     | A:J     | 180   |
| 3  | E098010 Integrated Portfolio [en, nl]<br><i>Hiep Luong -- Department of Telecommunications and Information Processing</i><br><a href="#">Indicative price: € 50</a>  | 3    |     |     | B:J     | 90    |
| 4  | E037810 Safety of Electrical and Mechanical Installations [nl]<br><i>Jos Knockaert -- Department of Electromechanical, Systems and Metal Engineering</i><br><a href="#">Indicative price: € 30</a>         | 3    |     |     | A:2     | 90    |
| 5  | E039060 Sustainable Energy and Rational Use of Energy<br><i>Filip Strubbe -- Department of Electronics and Information Systems</i><br><a href="#">Indicative price: € 7</a>                                | 4    |     |     | A:2     | 120   |
| 6  | E078310 Sustainable Use of Materials: Metals [nl]<br><i>Kim Verbeken -- Department of Materials, Textiles and Chemical Engineering</i><br><a href="#">Indicative price: € 8</a>                            | 3    |     |     | A:1     | 90    |
| 7  | E078320 Sustainable Use of Materials: Plastics and Derived Materials [nl]<br><i>Lode Daelemans -- Department of Materials, Textiles and Chemical Engineering</i><br><a href="#">Indicative price: € 15</a> | 3    |     |     | A:2     | 90    |
| 8  | E078010 Technology and Environment<br><i>Luc Martens -- Department of Information Technology</i><br><a href="#">Indicative price: € 0</a>  | 3    |     |     | A:1     | 90    |
| 9  | E078752 Water and Air Quality Management<br><i>Joris Thybaut -- Department of Materials, Textiles and Chemical Engineering</i><br><a href="#">Indicative price: € 0</a>                                    | 4    |     |     | A:2     | 120   |

|    |         |  |   |     |     |     |
|----|---------|--|---|-----|-----|-----|
| 10 | E092100 | Biosystems [nl]<br><i>Pascal Verdonck -- Department of Electronics and Information Systems</i><br><a href="#">Indicative price: unknown</a>  | 3 |     | A:1 | 90  |
| 11 | E075310 | Ethics, Engineering and Society [nl]<br><i>Seppe Segers -- Department of Philosophy and Moral Sciences</i><br><a href="#">Indicative price: unknown</a>  | 3 |     | A:2 | 90  |
| 12 | C004009 | History and Philosophy of Sciences [nl]<br><i>Maarten Van Dyck -- Department of Philosophy and Moral Sciences</i><br><a href="#">Indicative price: € 0</a>                                     | 3 |     | B:2 | 90  |
| 13 | E076320 | The Information Society and ICT [nl]<br><i>Erik Mannens -- Department of Electronics and Information Systems</i><br><a href="#">Indicative price: unknown</a>                                  | 3 |     | A:2 | 90  |
| 14 | A001900 | Introduction to Psychology [nl]<br><i>Wim Notebaert -- Department of Experimental Psychology</i><br><a href="#">Indicative price: unknown</a>  | 3 |     | A:1 | 90  |
| 15 | H001977 | Coaching and Diversity [nl]<br><i>Elisabeth De Schauwer -- Department of Special Education</i><br><a href="#">Indicative price: € 0</a>  | 3 | UKV | A:J | 90  |
| 16 | A005503 | Context and Nuance. A Critical Reflection on Current Topics [nl]<br><i>July De Wilde -- Department of Translation, Interpreting and Communication</i><br><a href="#">Indicative price: € 0</a> | 6 | UKV | A:1 | 180 |
| 17 | F001021 | Basic Entrepreneurship [nl]<br><i>Evy Van Lancker -- Department of Marketing, Innovation and Organisation</i><br><a href="#">Indicative price: € 0</a>   | 3 | UKV | A:1 | 90  |
| 18 | A005646 | Introduction to Business Law [nl]<br><i>Diederik Bruloot -- Department of Interdisciplinary Study of Law, Private Law and Business Law</i><br><a href="#">Indicative price: unknown</a>        | 3 |     | A:1 | 90  |
| 19 | F001022 | Dare to Venture<br><i>Johan Verrue -- Department of Marketing, Innovation and Organisation</i><br><a href="#">Indicative price: unknown</a>  | 4 |     | A:2 | 120 |
| 20 | E076471 | Dare to Start<br><i>Wouter Haerick -- Department of Information Technology</i><br><a href="#">Indicative price: unknown</a>  | 3 |     | A:2 | 90  |
| 21 | E076621 | Principles of Law and Construction Law [nl]<br><i>Jelle Laverge -- Department of Architecture and Urban Planning</i><br><a href="#">Indicative price: € 341</a>                                | 3 |     | A:1 | 90  |
| 22 | E076951 | Engineering Economy<br><i>Sofie Verbrugge -- Department of Information Technology</i><br><a href="#">Indicative price: € 60</a>  | 6 |     | A:1 | 180 |
| 23 | F001020 | Introduction to Entrepreneurship<br><i>Petra Andries -- Department of Marketing, Innovation and Organisation</i><br><a href="#">Indicative price: € 33</a>                                     | 3 |     | A:1 | 90  |
| 24 | H002476 | Powerful Learning Environments [nl]<br><i>Bram De Wever -- Department of Educational Studies</i><br><a href="#">Indicative price: € 50</a>   | 6 |     | A:1 | 180 |
| 25 | H002477 | The Teacher within Class, School and Society [nl]<br><i>Melissa Tuytens -- Department of Educational Studies</i><br><a href="#">Indicative price: € 50</a>                                     | 6 |     | A:2 | 180 |
| 26 | H002478 | The Student: Development and Motivation [nl]<br><i>Wim Beyers -- Department of Developmental, Personality and Social Psychology</i><br><a href="#">Indicative price: € 75</a>                  | 6 |     | A:1 | 180 |
| 27 | F000083 | Macroeconomics [nl]<br><i>Freddy Heylen -- Department of Economics</i><br><a href="#">Indicative price: € 65</a>   | 6 |     | A:1 | 180 |
| 28 | H001010 | Introduction Industrial Psychology [nl]<br><i>Bart Wille -- Department of Developmental, Personality and Social Psychology</i><br><a href="#">Indicative price: € 55</a>                       | 5 |     | C:1 | 150 |
| 29 | F000551 | Business Skills<br><i>Mieke Audenaert -- Department of Marketing, Innovation and Organisation</i><br><a href="#">Indicative price: € 46</a>  | 4 |     | C:2 | 120 |

|    |         |   |   |     |          |    |
|----|---------|---|---|-----|----------|----|
| 30 | A003001 | Academic English<br><i>Geert Jacobs -- Department of Linguistics</i><br><a href="#">Indicative price: € 0</a>   | 3 | UKV | B:1, A:2 | 90 |
| 31 | E075800 | Communication [nl]<br><i>Leen Pollefliet -- Department of Information Technology</i><br><a href="#">Indicative price: € 68</a>  | 3 |     | A:1      | 90 |
| 32 | E037830 | Basics of Health and Safety at Work for Engineers [nl]<br><i>Sofie Van Volsem -- Department of Industrial Systems Engineering and Product Design</i><br><a href="#">Indicative price: € 0</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<br><i>Birger Raa -- Department of Industrial Systems Engineering and Product Design</i><br><a href="#">Indicative price: € 0</a>                 | 6    | a   |     | A:1     | 180   |
| 2  | E004255 Operations Research Models and Methods<br><i>El-Houssaine Aghezzaf -- Department of Industrial Systems Engineering and Product Design</i><br><a href="#">Indicative price: € 60</a> | 6    |     |     | A:1     | 180   |
| 3  | E060240 Quality Engineering and Industrial Statistics<br><i>Stijn De Vuyst -- Department of Industrial Systems Engineering and Product Design</i><br><a href="#">Indicative price: € 50</a> | 6    |     |     | A:2     | 180   |
| 4  | E076951 Engineering Economy<br><i>Sofie Verbrugge -- Department of Information Technology</i><br><a href="#">Indicative price: € 60</a>   | 6    |     |     | A:1     | 180   |

### 3.2.2

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]<br><i>Hendrik Schoukens -- Department of European, Public and International Law</i><br><a href="#">Indicative price: € 0</a>                         | 5    |     |     | A:1     | 125   |
| 2  | I003060 Sustainable Systems Engineering<br><i>Sophie Huysveld -- Department of Green Chemistry and Technology</i><br><a href="#">Indicative price: € 0</a>                          | 5    |     |     | A:1     | 150   |
| 3  | E065460 Rational Use of Materials<br><i>Tom Depover -- Department of Materials, Textiles and Chemical Engineering</i><br><a href="#">Indicative price: unknown</a>                  | 5    |     |     | A:1     | 150   |
| 4  | E078752 Water and Air Quality Management<br><i>Joris Thybaut -- Department of Materials, Textiles and Chemical Engineering</i><br><a href="#">Indicative price: € 0</a>             | 4    |     |     | A:2     | 120   |
| 5  | E039060 Sustainable Energy and Rational Use of Energy<br><i>Filip Strubbe -- Department of Electronics and Information Systems</i><br><a href="#">Indicative price: € 7</a>         | 4    |     |     | A:2     | 120   |
| 6  | E078061 Introduction to Environmental Risk Assessment<br><i>Karel De Schampelaere -- Department of Animal Sciences and Aquatic Ecology</i><br><a href="#">Indicative price: € 0</a> | 3    |     |     | A:1     | 90    |
| 7  | I002606 Environmental Risk Assessment<br><i>Karel De Schampelaere -- Department of Animal Sciences and Aquatic Ecology</i><br><a href="#">Indicative price: € 0</a>                 | 5    |     |     | A:1     | 150   |

## 4 Master's Dissertation

24 credits

| Nr | Course | CRDT | Ref | MT1 | Session | Study |
|----|--------|------|-----|-----|---------|-------|
|----|--------|------|-----|-----|---------|-------|

## 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 2026-2027     | f: annually, from 2027-2028     | i: annually, from 2028-2029     |
| b: tri-annually | d: bi-annually, from 2026-2027  | g: bi-annually, from 2027-2028  | j: bi-annually, from 2028-2029  |
|                 | e: tri-annually, from 2026-2027 | h: tri-annually, from 2027-2028 | k: tri-annually, from 2028-2029 |

### 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.