

Faculty of Engineering and Architecture

Master of Science in Industrial Engineering and Operations Research -- Manufacturing and Supply Chain Engineering

Language of instruction: English

Programme version 3

## 1 General Courses 36 credits

| Nr | Course   | CRDT | Ref | MT1 | Session | Study |
|----|--|------|-----|-----|---------|-------|
| 1  | E004255 Operations Research Models and Methods<br>El-Houssaine Aghezzaf -- Department of Industrial Systems Engineering and Product Design<br><a href="#">Indicative price: € 0</a>        | 6    |     | 1   | A:1     | 180   |
| 2  | E005741 Simulation of Stochastic Systems<br>Stijn De Vuyst -- Department of Industrial Systems Engineering and Product Design<br><a href="#">Indicative price: € 0</a>                     | 6    |     | 1   | A:1     | 180   |
| 3  | E018321 Algorithmic Programming<br>Pieter Leyman -- Department of Industrial Systems Engineering and Product Design<br><a href="#">Indicative price: € 0</a>                               | 6    |     | 1   | A:1     | 180   |
| 4  | E076951 Engineering Economy<br>Sofie Verbrugge -- Department of Information Technology<br><a href="#">Indicative price: € 60</a>   | 6    |     | 1   | A:1     | 180   |
| 5  | E004241 Industrial Systems Modelling and Optimization<br>El-Houssaine Aghezzaf -- Department of Industrial Systems Engineering and Product Design<br><a href="#">Indicative price: € 0</a> | 6    |     | 1   | A:2     | 180   |
| 6  | E076341 Information Technology for Industrial Engineering<br>Michiel Vlaminck -- Department of Telecommunications and Information Processing<br><a href="#">Indicative price: € 0</a>      | 3    |     | 1   | A:2     | 90    |
| 7  | E004153 Heuristics and Search Methods<br>Sidharta Gautama -- Department of Industrial Systems Engineering and Product Design<br><a href="#">Indicative price: € 0</a>                      | 3    |     | 2   | A:1     | 90    |

## 2 Courses Related to the Main Subject 30 credits

| Nr | Course   | CRDT | Ref | MT1 | Session | Study |
|----|--|------|-----|-----|---------|-------|
| 1  | E076221 Manufacturing Planning and Control<br>Birger Raa -- Department of Industrial Systems Engineering and Product Design<br><a href="#">Indicative price: € 0</a>                 | 6    |     | 1   | A:1     | 180   |
| 2  | E076380 Methods Engineering and Work Measurement<br>Dieter Claey's -- Department of Industrial Systems Engineering and Product Design<br><a href="#">Indicative price: € 50</a>      | 6    |     | 1   | A:2     | 180   |
| 3  | E060240 Quality Engineering and Industrial Statistics<br>Stijn De Vuyst -- Department of Industrial Systems Engineering and Product Design<br><a href="#">Indicative price: € 50</a> | 6    |     | 1   | A:2     | 180   |
| 4  | E004701 Design of Manufacturing and Service Operations<br>Dieter Claey's -- Department of Industrial Systems Engineering and Product Design<br><a href="#">Indicative price: € 0</a> | 6    |     | 2   | A:1     | 180   |
| 5  | E076251 Supply Chain Engineering<br>Birger Raa -- Department of Industrial Systems Engineering and Product Design<br><a href="#">Indicative price: € 0</a>                           | 6    |     | 2   | A:1     | 180   |

## 3 Elective Courses 30 credits

Subscribe to 30 credit units from no less than 1 and no more than 2 modules from the following list. Subject to approval by the faculty.

Divided as:

- 9 credit units in year 1
- 21 credit units in year 2

### 3.1 In-depth Elective Courses and Minor

15 credits

Subscribe to at least 15 credit units from 1 module from the following list. Subject to approval by the faculty. Students take either 15 credit units from module 3.1.1 (elective courses) or 1 minor of at least 18 credit units (Minor Artificial Intelligence or Minor Automotive Production Engineering).

#### 3.1.1 Elective Courses Manufacturing and Supply Chain

Subscribe to at least 15 credit units from the from the following list.

| Nr | Course   | CRDT | Ref | MT1 | Session | Study |
|----|--|------|-----|-----|---------|-------|
| 1  | E003710 Game Theory and Multiagent Systems<br>Heidi Steendam -- Department of Telecommunications and Information Processing<br><a href="#">Indicative price: € 0</a>                 | 6    |     |     | A:1     | 180   |
| 2  | E007920 Computer Control of Industrial Processes<br>Clara-Mihaela Ionescu -- Department of Electromechanical, Systems and Metal Engineering<br><a href="#">Indicative price: € 0</a> | 6    |     |     | A:1     | 180   |
| 3  | E061330 Machine Learning<br>Joni Dambre -- Department of Electronics and Information Systems<br><a href="#">Indicative price: € 0</a>  | 6    |     |     | B:1     | 180   |
| 4  | E003422 Fundamentals of Statistical Sensor Processing<br>Hiep Luong -- Department of Telecommunications and Information Processing<br><a href="#">Indicative price: € 0</a>          | 6    |     |     | A:1     | 180   |
| 5  | E084390 Traffic Flow Modelling<br>Dieter Fiems -- Department of Telecommunications and Information Processing<br><a href="#">Indicative price: € 0</a>                               | 6    |     |     | A:1     | 180   |
| 6  | E084470 Computational Aspects of Transport and Mobility<br>Pieter Audenaert -- Department of Information Technology<br><a href="#">Indicative price: € 20</a>                        | 4    |     |     | A:1     | 120   |
| 7  | E011320 Queueing Theory<br>Joris Walraevens -- Department of Telecommunications and Information Processing<br><a href="#">Indicative price: € 10</a>                                 | 6    |     |     | A:1     | 180   |
| 8  | E019331 ICT and Mechatronics<br>Guillaume Crevecoeur -- Department of Electromechanical, Systems and Metal Engineering<br><a href="#">Indicative price: unknown</a>                  | 6    |     |     | A:2     | 180   |
| 9  | E004720 Network Modelling and Design<br>Mario Pickavet -- Department of Information Technology<br><a href="#">Indicative price: € 30</a>   | 4    |     |     | B:2     | 120   |
| 10 | E003110 Applied Probability [nl]<br>Sabine Wittevrongel -- Department of Telecommunications and Information Processing<br><a href="#">Indicative price: € 8</a>                      | 3    |     |     | A:2     | 90    |
| 11 | E007120 Modelling and Control of Dynamic Systems [nl]<br>Mia Loccufier -- Department of Electromechanical, Systems and Metal Engineering<br><a href="#">Indicative price: € 12</a>   | 6    |     |     | A:2     | 180   |
| 12 | E018240 Big Data Technology<br>Dieter De Witte -- Department of Electronics and Information Systems<br><a href="#">Indicative price: € 0</a>   | 4    |     |     | A:1     | 120   |
| 13 | E084460 Design of Urban Services<br>Sidharta Gautama -- Department of Industrial Systems Engineering and Product Design<br><a href="#">Indicative price: unknown</a>                 | 6    |     |     | A:2     | 180   |

#### 3.1.2 Minor Artificial Intelligence

Subscribe to no less than 18 and no more than 22 credit units from the following list. Subject to approval by the faculty.

| Nr | Course  | CRDT | Ref | MT1 | Session | Study |
|----|---|------|-----|-----|---------|-------|
| 1  | E061330 Machine Learning<br>Joni Dambre -- Department of Electronics and Information Systems<br><a href="#">Indicative price: € 0</a>                                 | 6    |     |     | B:1     | 180   |
| 2  | E016340 Probabilistic Graphical Models<br>Aleksandra Pizurica -- Department of Telecommunications and Information Processing<br><a href="#">Indicative price: € 0</a> | 4    |     |     | A:2     | 120   |
| 3  | E018230 Recommender Systems<br>Toon De Pessemier -- Department of Information Technology  | 6    |     |     | A:2     | 180   |

[Indicative price: € 0](#)

|   |         |  |   |  |  |     |     |
|---|---------|--|---|--|--|-----|-----|
| 4 | E003710 | Game Theory and Multiagent Systems<br>Heidi Steendam -- Department of Telecommunications and Information Processing<br><a href="#">Indicative price: € 0</a> | 6 |  |  | A:1 | 180 |
| 5 | E061370 | Data Visualization for and with AI<br>Jefrey Lijffijt -- Department of Electronics and Information Systems<br><a href="#">Indicative price: € 0</a>          | 3 |  |  | A:1 | 90  |
| 6 | E018240 | Big Data Technology<br>Dieter De Witte -- Department of Electronics and Information Systems<br><a href="#">Indicative price: € 0</a>                         | 4 |  |  | A:1 | 120 |
| 7 | E018250 | Big Data Algorithms<br>Dieter De Witte -- Department of Electronics and Information Systems<br><a href="#">Indicative price: € 0</a>                         | 3 |  |  | A:2 | 90  |

### 3.1.3 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 b,
- no less than 6 credit units from the courses with reference c.

Subject to approval by the faculty.

Only subscribe to courses with reference b or c.

| Nr | Course  | CRDT  | Ref | MT1 | Session | Study |     |
|----|---------|---|-----|-----|---------|-------|-----|
| 1  | E076221 | Manufacturing Planning and Control<br>Birger Raa -- Department of Industrial Systems Engineering and Product Design<br><a href="#">Indicative price: € 0</a>                                | 6   | a   |         | A:1   | 180 |
| 2  | E076380 | Methods Engineering and Work Measurement<br>Dieter Claeys -- Department of Industrial Systems Engineering and Product Design<br><a href="#">Indicative price: € 50</a>                      | 6   | a   |         | A:2   | 180 |
| 3  | E060240 | Quality Engineering and Industrial Statistics<br>Stijn De Vuyst -- Department of Industrial Systems Engineering and Product Design<br><a href="#">Indicative price: € 50</a>                | 6   | a   |         | A:2   | 180 |
| 4  | E066662 | Environmentally Assisted Degradation of Materials<br>Kim Verbeke -- Department of Materials, Textiles and Chemical Engineering<br><a href="#">Indicative price: € 10</a>                    | 6   | b   |         | A:2   | 180 |
| 5  | E066270 | Metal Processing and Technology<br>Tuan Nguyen Minh -- Department of Electromechanical, Systems and Metal Engineering<br><a href="#">Indicative price: unknown</a>                          | 6   | b   |         | A:2   | 180 |
| 6  | E900069 | Composites<br>Wim Van Paepegem -- Department of Materials, Textiles and Chemical Engineering<br><a href="#">Indicative price: € 20</a>  | 6   | b   |         | A:1   | 180 |
| 7  | E043070 | Materials Selection in Mechanical Design<br>Stijn Hertelé -- Department of Electromechanical, Systems and Metal Engineering<br><a href="#">Indicative price: unknown</a>                    | 6   | b   |         | B:2   | 180 |
| 8  | E061322 | Machine Design<br>Dieter Fauconnier -- Department of Electromechanical, Systems and Metal Engineering<br><a href="#">Indicative price: unknown</a>  | 6   | c   |         | A:1   | 180 |
| 9  | E037121 | Displacement Pumps, Compressors and IC Engine Fundamentals<br>Sebastian Verhelst -- Department of Electromechanical, Systems and Metal Engineering<br><a href="#">Indicative price: € 0</a> | 6   | c   |         | A:1   | 180 |
| 10 | E037221 | IC Engines: advanced design and research<br>Sebastian Verhelst -- Department of Electromechanical, Systems and Metal Engineering<br><a href="#">Indicative price: € 0</a>                   | 3   | c   |         | A:2   | 90  |
| 11 | E061621 | Automotive Technology<br>Sebastian Verhelst -- Department of Electromechanical, Systems and Metal Engineering<br><a href="#">Indicative price: € 0</a>                                      | 3   | c   |         | A:2   | 90  |
| 12 | E007920 | Computer Control of Industrial Processes<br>Clara-Mihaela Ionescu -- Department of Electromechanical, Systems and Metal Engineering<br><a href="#">Indicative price: € 0</a>                | 6   | c   |         | A:1   | 180 |
| 13 | E008420 | Servo Systems and Industrial Robots<br>Frederik Ostin -- Department of Electromechanical, Systems and Metal Engineering<br><a href="#">Indicative price: € 0</a>                            | 3   | c   |         | A:1   | 90  |
| 14 | E030520 | Power Electronics<br>Hendrik Vansompel -- Department of Electromechanical, Systems and Metal Engineering  | 3   | c   |         | A:2   | 90  |

## 3.2 Broadening Elective Courses

15 credits

Subscribe to at most 15 credit units from no less than 1 and no more than 2 modules from the following list. Subject to approval by the faculty.

## 3.2.1 Broadening Elective Courses

| Nr | Course   | CRDT | Ref | MT1 | Session | Study |
|----|--|------|-----|-----|---------|-------|
| 1  | E099300 Industry Internship Engineering and Architecture [en, nl]<br>Patrick Segers -- Department of Electronics and Information Systems<br><a href="#">Indicative price: unknown</a>          | 6    |     |     | A:J     | 180   |
| 2  | E099400 Research Internship<br>Patrick Segers -- Department of Electronics and Information Systems<br><a href="#">Indicative price: unknown</a>  | 6    |     |     | A:J     | 180   |
| 3  | E099400 Research Internship<br>Patrick Segers -- Department of Electronics and Information Systems<br><a href="#">Indicative price: unknown</a>  | 3    |     |     | B:J     | 90    |
| 4  | E098010 Integrated Portfolio [en, nl]<br>Hiep Luong -- Department of Telecommunications and Information Processing<br><a href="#">Indicative price: € 50</a>                                   | 6    |     |     | A:J     | 180   |
| 5  | E098010 Integrated Portfolio [en, nl]<br>Hiep Luong -- Department of Telecommunications and Information Processing<br><a href="#">Indicative price: € 50</a>                                   | 3    |     |     | B:J     | 90    |
| 6  | E076820 Project Management<br>Mario Vanhoucke -- Department of Business Informatics and Operations Management<br><a href="#">Indicative price: € 75</a>  | 6    |     |     | A:2     | 180   |
| 7  | E037810 Safety of Electrical and Mechanical Installations [nl]<br>Jos Knockaert -- Department of Electromechanical, Systems and Metal Engineering<br><a href="#">Indicative price: unknown</a> | 3    |     |     | A:2     | 90    |
| 8  | E076320 The Information Society and ICT [nl]<br>Erik Mannens -- Department of Electronics and Information Systems<br><a href="#">Indicative price: unknown</a>                                 | 3    |     |     | A:2     | 90    |
| 9  | F000627 Transport Economics [nl]<br>Jochen Maes -- Department of Economics<br><a href="#">Indicative price: € 69</a>   | 6    |     |     | A:2     | 180   |
| 10 | F000892 Innovation Management<br>Katrien Verleye -- Department of Marketing, Innovation and Organisation<br><a href="#">Indicative price: € 55</a>   | 3    |     |     | A:2     | 90    |
| 11 | E076460 Dare to Venture<br>Johan Verrue -- Department of Marketing, Innovation and Organisation<br><a href="#">Indicative price: unknown</a>   | 4    |     |     | A:2     | 120   |
| 12 | F000224 Labour and Employment [nl]<br>Stijn Baert -- Department of Economics<br><a href="#">Indicative price: € 9</a>  | 5    |     |     | A:1     | 150   |
| 13 | F000083 Macroeconomics [nl]<br>Freddy Heylen -- Department of Economics<br><a href="#">Indicative price: € 65</a>  | 6    |     |     | A:1     | 180   |
| 14 | H001010 Introduction Industrial Psychology [nl]<br>Bart Wille -- Department of Developmental, Personality and Social Psychology<br><a href="#">Indicative price: € 45</a>                      | 5    |     |     | A:2     | 150   |
| 15 | A005646 Introduction to Corporate Law [nl]<br>Diederik Bruloot -- Department of Interdisciplinary Study of Law, Private Law and Business Law<br><a href="#">Indicative price: unknown</a>      | 3    |     |     | A:1     | 90    |
| 16 | F000551 Business Skills<br>Mieke Audenaert -- Department of Marketing, Innovation and Organisation<br><a href="#">Indicative price: € 46</a>   | 4    |     |     | C:2     | 120   |
| 17 | F000132 Corporate Finance<br>Virginie Mataire -- Department of Accounting, Corporate Finance and Taxation<br><a href="#">Indicative price: € 59</a>  | 6    |     |     | A:2     | 180   |
| 18 | F000683 Investment Analysis<br>Michael Frömmel -- Department of Economics  | 6    |     |     | A:1     | 180   |

|    |  |   |     |     |     |
|----|--|---|-----|-----|-----|
|    | <a href="#">Indicative price: unknown</a>  |   |     |     |     |
| 19 | F000778 Business Process Management<br>Frederik Gailly -- Department of Business Informatics and Operations Management<br><a href="#">Indicative price: € 0</a>                                    | 4 |     | A:2 | 120 |
| 20 | H001977 Coaching and Diversity [nl]<br>Elisabeth De Schauwer -- Department of Special Education<br><a href="#">Indicative price: € 0</a>   | 3 | UKV | A:J | 90  |
| 21 | E078310 Sustainable Use of Materials: Metals [nl]<br>Kim Verbeke -- Department of Materials, Textiles and Chemical Engineering<br><a href="#">Indicative price: € 8</a>                            | 3 |     | A:1 | 90  |
| 22 | E078320 Sustainable Use of Materials: Plastics and Derived Materials [nl]<br>Lode Daelemans -- Department of Materials, Textiles and Chemical Engineering<br><a href="#">Indicative price: € 0</a> | 3 |     | A:2 | 90  |
| 23 | E078010 Technology and Environment<br>Luc Martens -- Department of Information Technology<br><a href="#">Indicative price: € 0</a>   | 3 |     | A:1 | 90  |
| 24 | A001900 Introduction to Psychology [nl]<br>Wim Notebaert -- Department of Experimental Psychology<br><a href="#">Indicative price: unknown</a>   | 3 |     | A:1 | 90  |
| 25 | D002354 Movement and Sports: Now and Later [nl]<br>Veerle Segers -- Department of Movement and Sports Sciences<br><a href="#">Indicative price: € 50</a>   | 3 | UKV | A:2 | 90  |
| 26 | K001298 Sustainable Development<br>Bernard Mazijn -- Department of Conflict and Development Studies<br><a href="#">Indicative price: unknown</a>   | 5 |     | A:2 | 150 |
| 27 | C004545 Bayesian Statistics<br>Koen De Turck -- Department of Telecommunications and Information Processing<br><a href="#">Indicative price: € 0</a>   | 5 |     | A:2 | 150 |

### 3.2.2 Elective Courses Faculty

Subscribe to no more than 15 credit units of technical courses from the study programmes Master of Science in Engineering (with the exception of Architecture) of the Faculty of Engineering and Architecture. Subject to approval by the faculty.

## 4 Master's Dissertation 24 credits

| Nr | Course   | CRDT | Ref | MT1 | Session | Study |
|----|--|------|-----|-----|---------|-------|
| 1  | E091103 Master's Dissertation<br><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.