

Faculty of Engineering and Architecture

Master of Science in Industrial Engineering and Operations Research -- Transport and Mobility 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 <i>El-Houssaine Aghezzaf -- Department of Industrial Systems Engineering and Product Design</i>	6		1	A:1	180
2	E005741 Simulation of Stochastic Systems <i>Stijn De Vuyst -- Department of Industrial Systems Engineering and Product Design</i>	6		1	A:1	180
3	E018321 Algorithmic Programming <i>Pieter Leyman -- Department of Industrial Systems Engineering and Product Design</i>	6		1	A:1	180
4	E076951 Engineering Economy <i>Sofie Verbrugge -- Department of Information Technology</i>	6		1	A:1	180
5	E004241 Industrial Systems Modelling and Optimization <i>El-Houssaine Aghezzaf -- Department of Industrial Systems Engineering and Product Design</i>	6		1	A:2	180
6	E076341 Information Technology for Industrial Engineering <i>Michiel Vlamincx -- Department of Telecommunications and Information Processing</i>	3		1	A:2	90
7	E004153 Heuristics and Search Methods <i>Sidharta Gautama -- Department of Industrial Systems Engineering and Product Design</i>	3		2	A:2	90

## 2 Courses Related to the Main Subject 30 credits

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E084390 Traffic Flow Modelling <i>Dieter Fiems -- Department of Telecommunications and Information Processing</i>	6		1	A:1	180
2	E084460 Design of Urban Services <i>Sidharta Gautama -- Department of Industrial Systems Engineering and Product Design</i>	6		1	A:2	180
3	E084480 Advanced Topics in Traffic and Logistics <i>Ivana Semanjski -- Department of Industrial Systems Engineering and Product Design</i>	4		1	A:2	120
4	C004177 Spatiotemporal Analysis and Modelling <i>Nico Van de Weghe -- Department of Geography</i>	5		2	A:1	150
5	C003534 Urban Mobility and Logistics <i>Giovanni Circella -- Department of Geography</i>	5		2	A:1	150
6	E084470 Computational Aspects of Transport and Mobility <i>Pieter Audenaert -- Department of Information Technology</i>	4		2	A:1	120

## 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:

- 11 credit units in year 1
- 19 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 Transport and Mobility

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

Nr	Course	CRDT	Ref	MT1	Session	Study
1	E003710 <b>Game Theory and Multiagent Systems</b> <i>Heidi Steendam -- Department of Telecommunications and Information Processing</i>	6			A:1	180
2	E007920 <b>Computer Control of Industrial Processes</b> <i>Clara Ionescu -- Department of Electromechanical, Systems and Metal Engineering</i>	6			A:1	180
3	E061330 <b>Machine Learning</b> <i>Joni Dambre -- Department of Electronics and Information Systems</i>	6			B:1	180
4	E003422 <b>Fundamentals of Statistical Sensor Processing</b> <i>Hiep Luong -- Department of Telecommunications and Information Processing</i>	6			A:1	180
5	E019331 <b>ICT and Mechatronics</b> <i>Guillaume Crevecoeur -- Department of Electromechanical, Systems and Metal Engineering</i>	6			A:2	180
6	E004720 <b>Network Modelling and Design</b> <i>Mario Pickavet -- Department of Information Technology</i>	4			B:2	120
7	E011320 <b>Queueing Theory</b> <i>Joris Walraevens -- Department of Telecommunications and Information Processing</i>	6			A:1	180
8	E003110 <b>Applied Probability [nl]</b> <i>Sabine Wittevrongel -- Department of Telecommunications and Information Processing</i>	3			A:2	90
9	E076221 <b>Manufacturing Planning and Control</b> <i>Birger Raa -- Department of Industrial Systems Engineering and Product Design</i>	6			A:1	180
10	E076380 <b>Methods Engineering and Work Measurement</b> <i>Dieter Claeys -- Department of Industrial Systems Engineering and Product Design</i>	6			A:2	180
11	E060240 <b>Quality Engineering and Industrial Statistics</b> <i>Stijn De Vuyst -- Department of Industrial Systems Engineering and Product Design</i>	6			A:2	180
12	E007120 <b>Modelling and Control of Dynamic Systems [nl]</b> <i>Mia Loccupier -- Department of Electromechanical, Systems and Metal Engineering</i>	6			A:2	180
13	E018240 <b>Big Data Technology</b> <i>Dieter De Witte -- Department of Electronics and Information Systems</i>	4			A:1	120

### 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 <b>Machine Learning</b> <i>Joni Dambre -- Department of Electronics and Information Systems</i>	6			B:1	180
2	E016340 <b>Probabilistic Graphical Models</b> <i>Aleksandra Pizurica -- Department of Telecommunications and Information Processing</i>	4			A:2	120
3	E018230 <b>Recommender Systems</b> <i>Toon De Pessemier -- Department of Information Technology</i>	6			A:2	180
4	E003710 <b>Game Theory and Multiagent Systems</b> <i>Heidi Steendam -- Department of Telecommunications and Information Processing</i>	6			A:1	180
5	E061370 <b>Data Visualization for and with AI</b> <i>Jefrey Lijffijt -- Department of Electronics and Information Systems</i>	3			A:1	90
6	E018240 <b>Big Data Technology</b> <i>Dieter De Witte -- Department of Electronics and Information Systems</i>	4			A:1	120
7	E018250 <b>Big Data Algorithms</b> <i>Dieter De Witte -- Department of Electronics and Information Systems</i>	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 <b>Manufacturing Planning and Control</b> <i>Birger Raa -- Department of Industrial Systems Engineering and Product Design</i>	6	a		A:1	180
2	E076380 <b>Methods Engineering and Work Measurement</b> <i>Dieter Claeys -- Department of Industrial Systems Engineering and Product Design</i>	6	a		A:2	180
3	E060240 <b>Quality Engineering and Industrial Statistics</b> <i>Stijn De Vuyst -- Department of Industrial Systems Engineering and Product Design</i>	6	a		A:2	180
4	E066662 <b>Environmentally Assisted Degradation of Materials</b> <i>Kim Verbeken -- Department of Materials, Textiles and Chemical Engineering</i>	6	b		A:2	180

5	E066270	<b>Metal Processing and Technology</b> <i>Leo Kestens -- Department of Electromechanical, Systems and Metal Engineering</i>	6	b	A:2	180
6	E900069	<b>Composites</b> <i>Wim Van Paepegem -- Department of Materials, Textiles and Chemical Engineering</i>	6	b	A:1	180
7	E043070	<b>Materials Selection in Mechanical Design</b> <i>Stijn Hertelé -- Department of Electromechanical, Systems and Metal Engineering</i>	6	b	B:2	180
8	E061322	<b>Machine Design</b> <i>Dieter Fauconnier -- Department of Electromechanical, Systems and Metal Engineering</i>	6	c	A:1	180
9	E037121	<b>Displacement Pumps, Compressors and IC Engine Fundamentals</b> <i>Sebastian Verhelst -- Department of Electromechanical, Systems and Metal Engineering</i>	6	c	A:1	180
10	E037221	<b>IC Engines: advanced design and research</b> <i>Sebastian Verhelst -- Department of Electromechanical, Systems and Metal Engineering</i>	3	c	A:2	90
11	E061621	<b>Automotive Technology</b> <i>Sebastian Verhelst -- Department of Electromechanical, Systems and Metal Engineering</i>	3	c	A:2	90
12	E007920	<b>Computer Control of Industrial Processes</b> <i>Clara Ionescu -- Department of Electromechanical, Systems and Metal Engineering</i>	6	c	A:1	180
13	E008420	<b>Servo Systems and Industrial Robots</b> <i>Frederik Ostyn -- Department of Electromechanical, Systems and Metal Engineering</i>	3	c	A:1	90
14	E030520	<b>Power Electronics</b> <i>Hendrik Vansompele -- Department of Electromechanical, Systems and Metal Engineering</i>	3	c	A:2	90

### 3.2 Broadening Elective Courses

15 credits

Subscribe to 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 <b>Industry Internship Engineering and Architecture [en, nl]</b> <i>Patrick Segers -- Department of Electronics and Information Systems</i>	6			A:J	180
2	E099400 <b>Research Internship</b> <i>Patrick Segers -- Department of Electronics and Information Systems</i>	6			A:J	180
3	E099400 <b>Research Internship</b> <i>Patrick Segers -- Department of Electronics and Information Systems</i>	3			B:J	90
4	E098010 <b>Integrated Portfolio [en, nl]</b> <i>Hiep Luong -- Department of Telecommunications and Information Processing</i>	6			A:J	180
5	E098010 <b>Integrated Portfolio [en, nl]</b> <i>Hiep Luong -- Department of Telecommunications and Information Processing</i>	3			B:J	90
6	E076820 <b>Project Management</b> <i>Mario Vanhoucke -- Department of Business Informatics and Operations Management</i>	6			A:2	180
7	E037810 <b>Safety of Electrical and Mechanical Installations [nl]</b> <i>Jos Knockaert -- Department of Electromechanical, Systems and Metal Engineering</i>	3			A:2	90
8	E076320 <b>The Information Society and ICT [nl]</b> <i>Erik Mannens -- Department of Electronics and Information Systems</i>	3			A:2	90
9	F000627 <b>Transport Economics [nl]</b> <i>Jochen Maes -- Department of Economics</i>	6			A:2	180
10	F000892 <b>Innovation Management</b> <i>Katrien Verleye -- Department of Marketing, Innovation and Organisation</i>	3			A:2	90
11	E076460 <b>Dare to Venture</b>	4			A:2	120
12	F000224 <b>Labour and Employment [nl]</b>	5			A:1	150
13	F000083 <b>Macroeconomics [nl]</b> <i>Freddy Heylen -- Department of Economics</i>	6			A:1	180
14	H001010 <b>Introduction Industrial Psychology [nl]</b> <i>Bart Wille -- Department of Developmental, Personality and Social Psychology</i>	5			A:2	150
15	A005646 <b>Introduction to Corporate Law [nl]</b> <i>Diederik Bruloot -- Department of Interdisciplinary Study of Law, Private Law and Business Law</i>	3			A:1	90
16	F000551 <b>Business Skills</b> <i>Mieke Audenaert -- Department of Marketing, Innovation and Organisation</i>	4			C:2	120
17	F000132 <b>Corporate Finance</b> <i>Virginie Mataire -- Department of Accounting, Corporate Finance and Taxation</i>	6			A:2	180

18	F000683	Investment Analysis <i>Michael Frömmel -- Department of Economics</i>	6		A:1	180
19	F000778	Business Process Management <i>Michaël Verdonck -- Department of Business Informatics and Operations Management</i>	4		A:2	120
20	H001977	Coaching and Diversity [nl] <i>Elisabeth De Schauwer -- Department of Special Education</i>	3	UKV	A:J	90
21	E078310	Sustainable Use of Materials: Metals [nl] <i>Kim Verbeken -- Department of Materials, Textiles and Chemical Engineering</i>	3		A:1	90
22	E078320	Sustainable Use of Materials: Plastics and Derived Materials [nl] <i>Lode Daelemans -- Department of Materials, Textiles and Chemical Engineering</i>	3		A:2	90
23	E078010	Technology and Environment <i>Luc Martens -- Department of Information Technology</i>	3		A:1	90
24	A001900	Introduction to Psychology [nl] <i>Wim Notebaert -- Department of Experimental Psychology</i>	3		A:1	90
25	D002354	Movement and Sports: Now and Later [nl] <i>Veerle Segers -- Department of Movement and Sports Sciences</i>	3	UKV	A:2	90
26	K001298	Sustainable Development <i>Bernard Mazijn -- Department of Conflict and Development Studies</i>	5		A:2	150
27	C004545	Bayesian Statistics <i>Koen De Turck -- Department of Telecommunications and Information Processing</i>	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	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 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