GHENT UNIVERSITY

Study Programme

Academic year 2021-2022

Faculty of Engineering and Architecture

Master of Science in Industrial Engineering and Operations Research

Language of instruction: English

Programme version 9

1 General Courses 32 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E004255	Operations Research Models and Methods *El-Houssaine Aghezzaf -- Department of Industrial Systems Engineering and Product Design*	6		1	A:1	180
2	E005741	Simulation of Stochastic Systems *Stijn De Vuyst -- Department of Industrial Systems Engineering and Product Design*	6		1	A:1	180
3	E076950	Engineering Economy *Sofie Verbrugge -- Department of Information Technology*	4		1	A:1	120
4	E076340	Information Technology and Data Processing *Jan Aelterman -- Department of Telecommunications and Information Processing*	6		1	B:2	180
5	E004241	Industrial Systems Modelling and Optimization *El-Houssaine Aghezzaf -- Department of Industrial Systems Engineering and Product Design*	6		2	A:1	180
6	E004152	Heuristics and Search Methods *Sidharta Gautama -- Department of Industrial Systems Engineering and Product Design*	4		2	A:1	120

2 Majors 30 credits

Subscribe to 1 major from the following list. Subject to approval by the faculty.

2.1 Major Manufacturing & Supply Chain 30 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E076221	Manufacturing Planning and Control *Birger Raa -- Department of Industrial Systems Engineering and Product Design*	6		1	A:1	180
2	E076380	Methods Engineering and Work Measurement *Dieter Claeys -- Department of Industrial Systems Engineering and Product Design*	6		1	A:1	180
3	E060240	Quality Engineering and Industrial Statistics *Stijn De Vuyst -- Department of Industrial Systems Engineering and Product Design*	6		1	A:2	180
4	E004701	Design of Manufacturing and Service Operations *Dieter Claeys -- Department of Industrial Systems Engineering and Product Design*	6		1	A:2	180
5	E076251	Supply Chain Engineering *Birger Raa -- Department of Industrial Systems Engineering and Product Design*	6		2	A:1	180

2.2 Major Transport & Mobility 30 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	C004177	Spatiotemporal Analysis and Modelling *Nico Van de Weghe -- Department of Geography*	5		1	A:1	150
2	E084390	Traffic Flow Modelling *Dieter Fiems -- Department of Telecommunications and Information Processing*	6		1	A:1	180
3	E084460	Design of Urban Services *Sidharta Gautama -- Department of Industrial Systems Engineering and Product Design*	6		1	A:2	180
4	C003534	Urban Mobility and Logistics *Frank Witlox -- Department of Geography*	5		2	A:1	150
5	E084470	Computational Aspects of Transport and Mobility *Pieter Audenaert -- Department of Information Technology*	4		2	A:1	120
6	E084480	Advanced Topics in Traffic and Logistics *Sidharta Gautama -- Department of Industrial Systems Engineering and Product Design*	4		2	(A:2)^{c}	120

3 Elective Courses 6 credits

Subscribe to no less than 6 credit units from the following list. Subject to approval by the faculty.
Depending on the student's previous degree.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E018310	Algorithms and Data Structures *Tom Dhaene -- Department of Information Technology*	6		1	B:2	180
2	E007120	Modelling and Control of Dynamic Systems [nl] *Mia Loccufier -- Department of Electromechanical, Systems and Metal Engineering*	6		1	A:2	180

4 Elective Courses 28 credits

Subscribe to 28 credit units from 1 path from the following list. Subject to approval by the faculty.
Divided as:
- in year 1: 8 credits for major Manufacturing & Supply Chain; 15 credits for major Transport & Mobility
- in year 2: 20 credits for major Manufacturing & Supply Chain; 13 credits for major Transport & Mobility

4.1 Elective Courses: Path 1

Subscribe to 28 credit units from no less than 1 and no more than 4 modules from the following list. Subject to approval by the faculty.
Divided as:
- either 18 (to 22) credit units from the Minor Artificial Intelligence, with 10 (or 6) credit units from the other elective modules (4.1.1, 4.1.3 and/or 4.1.4)
- either at least 15 credit units from the elective list 4.1.1, with max. 13 credit units from the elective list 4.1.3 and/or max. 13 credit units from the elective module 4.1.4

4.1.1 Elective Courses Industrial Engineering and Operations Research

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E003700	Game Theory with Engineering Applications *Heidi Steendam -- Department of Telecommunications and Information Processing*	6			A:1	180
2	E007920	Computer Control of Industrial Processes *Clara Ionescu -- Department of Electromechanical, Systems and Metal Engineering*	6			A:1	180
3	E016330	Artificial Intelligence *Aleksandra Pizurica -- Department of Telecommunications and Information Processing*	6			A:1	180
4	E061330	Machine Learning *Joni Dambre -- Department of Electronics and Information Systems*	6			B:1	180
5	E003421	Estimation and Decision Techniques *Hiep Luong -- Department of Telecommunications and Information Processing*	4			A:1	120
6	E011610	Performance Analysis of Telecommunication Systems *Sabine Wittevrongel -- Department of Telecommunications and Information Processing*	4			A:1	120
7	E019331	ICT and Mechatronics *Guillaume Crevecoeur -- Department of Electromechanical, Systems and Metal Engineering*	6			A:2	180
8	E018210	Big Data Science *Dieter De Witte -- Department of Electronics and Information Systems*	6			A:2	180
9	E005220	Linear Systems *Gert De Cooman -- Department of Electronics and Information Systems*	6			A:2	180
10	E005722	Modelling and Simulation of Dynamical Systems *Guillaume Crevecoeur -- Department of Electromechanical, Systems and Metal Engineering*	6			A:2	180
11	E004720	Network Modelling and Design *Mario Pickavet -- Department of Information Technology*	4			B:2	120
12	E011320	Queueing Theory *Joris Walraevens -- Department of Telecommunications and Information Processing*	6			B:1	180
13	E005770	Total Plant Automation *Johannes Cottyn -- Department of Industrial Systems Engineering and Product Design*	6			A:2	180
14	E003110	Applied Probability [nl] *Sabine Wittevrongel -- Department of Telecommunications and Information Processing*	3			A:2	90
15	E076221	Manufacturing Planning and Control *Birger Raa -- Department of Industrial Systems Engineering and Product Design*	6			A:1	180
16	E076380	Methods Engineering and Work Measurement *Dieter Claeys -- Department of Industrial Systems Engineering and Product Design*	6			A:1	180
17	E060240	Quality Engineering and Industrial Statistics *Stijn De Vuyst -- Department of Industrial Systems Engineering and Product Design*	6			A:2	180

18	E084390	Traffic Flow Modelling *Dieter Fiems -- Department of Telecommunications and Information Processing*	6			A:1	180
19	E084470	Computational Aspects of Transport and Mobility *Pieter Audenaert -- Department of Information Technology*	4			A:1	120

4.1.2 Minor Artifical 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	E016330	Artificial Intelligence *Aleksandra Pizurica -- Department of Telecommunications and Information Processing*	6			A:1	180
2	E061330	Machine Learning *Joni Dambre -- Department of Electronics and Information Systems*	6			B:1	180
3	E018210	Big Data Science *Dieter De Witte -- Department of Electronics and Information Systems*	6			A:2	180
4	E016340	Probabilistic Graphical Models *Aleksandra Pizurica -- Department of Telecommunications and Information Processing*	4			A:2	120
5	F000918	Deep Learning *Joni Dambre -- Department of Electronics and Information Systems*	6			A:2	180

4.1.3 Elective Courses Industrial Engineering and Operations Research

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E099920	International Internship 1 *Patrick Segers -- Department of Electronics and Information Systems*	3			B:2, A:1	90
2	E099930	International Internship 2 *Patrick Segers -- Department of Electronics and Information Systems*	3			B:2, A:1	90
3	E099940	International Internship 3 *Patrick Segers -- Department of Electronics and Information Systems*	6			B:2, A:1	180
4	E099960	Internship 1 [en, nl] *Patrick Segers -- Department of Electronics and Information Systems*	3			B:2, A:1	90
5	E099970	Internship 2 [en, nl] *Patrick Segers -- Department of Electronics and Information Systems*	3			B:2, A:1	90
6	E099980	Internship 3 [en, nl] *Patrick Segers -- Department of Electronics and Information Systems*	6			B:2, A:1	180
7	E065460	Rational Use of Materials *Tom Depover -- Department of Materials, Textiles and Chemical Engineering*	5			A:1	150
8	E076820	Project Management *Mario Vanhoucke -- Department of Business Informatics and Operations Management*	6			A:2	180
9	C003400	Bayesian Statistics *Emmanuel Lesaffre -- Department of Mathematics, Computer Science and Statistics*	5			A:2	150
10	E037810	Safety of Electrical and Mechanical Installations [nl] *Jos Knockaert -- Department of Electromechanical, Systems and Metal Engineering*	3			A:2	90
11	E076320	The Information Society and ICT *Erik Mannens -- Department of Electronics and Information Systems*	3			A:1	90
12	F000627	Transport Economics [nl] *Jochen Maes -- Department of Economics*	6			A:2	180
13	F000892	Innovation Management *Katrien Verleye -- Department of Marketing, Innovation and Organisation*	3			A:2	90
14	E076460	Dare to Venture *Johan Verrue -- Department of Marketing, Innovation and Organisation*	4			A:2	120
15	F000224	Labour and Employment [nl] *Stijn Baert -- Department of Economics*	5			A:1	150
16	F000083	Macroeconomics [nl] *Freddy Heylen -- Department of Economics*	6			A:1	180
17	H001010	Introduction Industrial Psychology [nl] *Bart Wille -- Department of Developmental, Personality and Social Psychology*	5			A:2	150
18	E076520	Commercial Law [nl] *Diederik Bruloot -- Department of Interdisciplinary Study of Law, Private Law and Business Law*	3			A:1	90
19	F000551	Business Skills *Mieke Audenaert -- Department of Marketing, Innovation and Organisation*	4			C:2	120

20	F000132	Corporate Finance *Sophie Manigart -- Department of Accounting, Corporate Finance and Taxation*	6			A:2	180
21	H001977	Coaching and Diversity [nl] *Elisabeth De Schauwer -- Department of Special Education*	3	UKV		A:J	90
22	K001339	Sustainability Thinking [nl] *Thomas Block -- Department of Political Sciences*	5	UKV		A:J	150
23	E078010	Technology and Environment *Luc Martens -- Department of Information Technology*	3			A:1	90
24	A001900	Introduction to Psychology [nl] *Wim Notebaert -- Department of Experimental Psychology*	3			A:1	90
25	E076130	Introduction to Human Resource Management	3				90
26	D002354	Movement and Sports: Now and Later [nl] *Veerle Segers -- Department of Movement and Sports Sciences*	3	UKV		A:2	90

4.1.4 Elective Courses Faculty

Subscribe to no more than 13 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.

4.2 Elective Courses: Path 2

Only available for students who follow the Major Manufacturing & Supply Chain.
Subscribe to 28 credit units from 2 modules from the following list. Subject to approval by the faculty.

4.2.1 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 *Birger Raa -- Department of Industrial Systems Engineering and Product Design*	6	a		A:1	180
2	E076380	Methods Engineering and Work Measurement *Dieter Claeys -- Department of Industrial Systems Engineering and Product Design*	6	a		A:1	180
3	E060240	Quality Engineering and Industrial Statistics *Stijn De Vuyst -- Department of Industrial Systems Engineering and Product Design*	6	a		A:2	180
4	E005770	Total Plant Automation *Johannes Cottyn -- Department of Industrial Systems Engineering and Product Design*	6	a		A:2	180
5	E066661	Corrosion and Surface Technology *Kim Verbeken -- Department of Materials, Textiles and Chemical Engineering*	6	b		A:2	180
6	E066270	Metal Processing and Technology *Roumen Petrov -- Department of Electromechanical, Systems and Metal Engineering*	6	b		A:1	180
7	E900069	Composites *Wim Van Paepegem -- Department of Materials, Textiles and Chemical Engineering*	6	b		A:1	180
8	E043070	Materials Selection in Mechanical Design *Stijn Hertelé -- Department of Electromechanical, Systems and Metal Engineering*	6	b		B:2	180
9	E061322	Machine Design *Dieter Fauconnier -- Department of Electromechanical, Systems and Metal Engineering*	6	c		A:1	180
10	E037121	Displacement Pumps, Compressors and IC Engine Fundamentals *Sebastian Verhelst -- Department of Electromechanical, Systems and Metal Engineering*	6	c		A:1	180
11	E037221	IC Engines: advanced design and research *Sebastian Verhelst -- Department of Electromechanical, Systems and Metal Engineering*	3	c		A:2	90
12	E061621	Automotive Technology *Toon Demeester -- Department of Electromechanical, Systems and Metal Engineering*	3	c		A:2	90
13	E007920	Computer Control of Industrial Processes *Clara Ionescu -- Department of Electromechanical, Systems and Metal Engineering*	6	c		A:1	180
14	E008420	Servo Systems and Industrial Robots *Guillaume Crevecoeur -- Department of Electromechanical, Systems and Metal Engineering*	3	c		A:1	90
15	E030520	Power Electronics *Hendrik Vansompel -- Department of Electromechanical, Systems and Metal Engineering*	3	c		A:2	90

4.2.2 Elective Courses Industrial Engineering and Operations Research

Subscribe to no less than 4 and no more than 10 credit units from the following list. Subject to approval by the faculty.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E003700	Game Theory with Engineering Applications *Heidi Steendam -- Department of Telecommunications and Information Processing*	6			A:1	180
2	E007920	Computer Control of Industrial Processes *Clara Ionescu -- Department of Electromechanical, Systems and Metal Engineering*	6			A:1	180
3	E016330	Artificial Intelligence *Aleksandra Pizurica -- Department of Telecommunications and Information Processing*	6			A:1	180
4	E061330	Machine Learning *Joni Dambre -- Department of Electronics and Information Systems*	6			B:1	180
5	E003421	Estimation and Decision Techniques *Hiep Luong -- Department of Telecommunications and Information Processing*	4			A:1	120
6	E011610	Performance Analysis of Telecommunication Systems *Sabine Wittevrongel -- Department of Telecommunications and Information Processing*	4			A:1	120
7	E019331	ICT and Mechatronics *Guillaume Crevecoeur -- Department of Electromechanical, Systems and Metal Engineering*	6			A:2	180
8	E018210	Big Data Science *Dieter De Witte -- Department of Electronics and Information Systems*	6			A:2	180
9	E005220	Linear Systems *Gert De Cooman -- Department of Electronics and Information Systems*	6			A:2	180
10	E005722	Modelling and Simulation of Dynamical Systems *Guillaume Crevecoeur -- Department of Electromechanical, Systems and Metal Engineering*	6			A:2	180
11	E004720	Network Modelling and Design *Mario Pickavet -- Department of Information Technology*	4			B:2	120
12	E011320	Queueing Theory *Joris Walraevens -- Department of Telecommunications and Information Processing*	6			B:1	180
13	E005770	Total Plant Automation *Johannes Cottyn -- Department of Industrial Systems Engineering and Product Design*	6			A:2	180
14	E003110	Applied Probability [nl] *Sabine Wittevrongel -- Department of Telecommunications and Information Processing*	3			A:2	90
15	E076221	Manufacturing Planning and Control *Birger Raa -- Department of Industrial Systems Engineering and Product Design*	6			A:1	180
16	E076380	Methods Engineering and Work Measurement *Dieter Claeys -- Department of Industrial Systems Engineering and Product Design*	6			A:1	180
17	E060240	Quality Engineering and Industrial Statistics *Stijn De Vuyst -- Department of Industrial Systems Engineering and Product Design*	6			A:2	180
18	E084390	Traffic Flow Modelling *Dieter Fiems -- Department of Telecommunications and Information Processing*	6			A:1	180
19	E084470	Computational Aspects of Transport and Mobility *Pieter Audenaert -- Department of Information Technology*	4			A:1	120

5 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 cours name, using the following ISO codes:

bg: Bulgarian	de: German	es: Spanish	ja: Japanese	pl: Polish	sh: Kroatian/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 in 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 2022-2023	f: annually, from 2023-2024	i: annually, from 2024-2025
b: tri-annually	d: bi-annually, from 2022-2023	g: bi-annually, from 2023-2024	j: bi-annually, from 2024-2025
	e: tri-annually, from 2022-2023	h: tri-annually, from 2023-2024	k: tri-annually, from 2024-2025