GHENT UNIVERSITY

Study Programme

Academic year 2026-2027

Faculty of Engineering and Architecture

Master of Science in Computer Science Engineering

Language of instruction: English

Programme version 11

1 General Courses — 60 credits

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E034140	Parallel Computer Systems *Lieven Eeckhout -- Department of Electronics and Information Systems*	6		1	A:1	180
2	E017930	Parallel and Distributed Software Systems *Filip De Turck -- Department of Information Technology*	6		1	A:1	180
3	E017920	Design of Multimedia Applications *Glenn Van Wallendael -- Department of Electronics and Information Systems*	6		1	A:2	180
4	E031710	Research Project *Joris Walraevens -- Department of Telecommunications and Information Processing*	3		1	A:1	90
5	E033710	Design Project *Femke De Backere -- Department of Information Technology*	9		1	A:J	270
6	E012320	Mobile and Broadband Access Networks *Ingrid Moerman -- Department of Information Technology*	6		1	B:2	180
7	E003600	Information Theory *Heidi Steendam -- Department of Telecommunications and Information Processing*	6		1	B:2	180
8	E011322	Queueing Analysis and Simulation *Sabine Wittevrongel -- Department of Telecommunications and Information Processing*	6		1	A:1	180
9	E061330	Machine Learning *Joni Dambre -- Department of Electronics and Information Systems*	6		1	B:1	180
10	E019400	Information Security *Eric Laermans -- Department of Information Technology*	6		1	B:2	180

2 Elective Courses — 36 credits

Subscribe to 36 credit units from 1 elective path from the following list. Subject to approval by the faculty.

2.1 Elective Path 1 — 36 credits

Subscribe to 36 credit units from no less than 1 and no more than 3 modules (2.1.1, 2.1.2, 2.1.3) from the following list. Subject to approval by the faculty.

2.1.1 Major, minor — 18 credits

Subscribe to at least 1 major or minor from the following list. Subject to approval by the faculty.
Students can combine two majors of combine a major with a minor. A combination of two minors is not allowed.

2.1.1.1 Major Artificial Intelligence — 18 credits

Subscribe to no less than 18 credit units from the following list, with no less than 12 credit units with reference a. Subject to approval by the faculty.
In order to follow the major AI, students must have followed the course Artificial intelligence (course code E016350 for 6 ECTS).

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E061360	Reinforcement Learning *Pieter Simoens -- Department of Information Technology*	6	a		A:2	180
2	E061341	Natural Language Processing *Chris Develder -- Department of Information Technology*	6	a		A:2	180
3	E018230	Recommender Systems *Toon De Pessemier -- Department of Information Technology*	6	a		A:2	180

4	E061350	Deep Generative Models	4	a			120
5	E016340	Probabilistic Graphical Models	4	a			120
6	E061460	Computer Vision: Theory and Applications [nl] *Hiep Luong -- Department of Telecommunications and Information Processing*	6	a		A:2	180
7	E019370	Robotics *Tony Belpaeme -- Department of Electronics and Information Systems*	6			A:1	180
8	E031800	AI Research Seminar *Tijl De Bie -- Department of Electronics and Information Systems*	3			A:1	90
9	E061370	Data Visualization for and with AI	3				90
10	E018240	Big Data Technology	4				120
11	E018700	Data Quality *Antoon Bronselaer -- Department of Telecommunications and Information Processing*	3			A:1	90
12	E003710	Game Theory and Multiagent Systems *Heidi Steendam -- Department of Telecommunications and Information Processing*	6			A:1	180
13	E016360	Cognitive and Brain-Inspired Artificial Intelligence *Tony Belpaeme -- Department of Electronics and Information Systems*	3			A:2	90
14	E010220	Speech Processing	4				120

2.1.1.2 Major Data Engineering — 18 credits

Subscribe to no less than 18 credit units from the following list, with 12 credit units with reference a. Subject to approval by the faculty.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E018610	Database Design	4	a			120
2	E018240	Big Data Technology	4	a			120
3	E017310	Cloud Storage and Computing	4	a			120
4	E018250	Big Data Algorithms	3				90
5	E018700	Data Quality *Antoon Bronselaer -- Department of Telecommunications and Information Processing*	3			A:1	90
6	E018130	NoSQL Databases *Antoon Bronselaer -- Department of Telecommunications and Information Processing*	3			A:2	90
7	E018160	Knowledge Graphs *Pieter Colpaert -- Department of Electronics and Information Systems*	3			A:2	90
8	E061370	Data Visualization for and with AI	3				90

2.1.1.3 Major Cybersecurity — 18 credits

Subscribe to 18 credit units from the following list. Subject to approval by the faculty.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E017942	Software Hacking and Protection *Bjorn De Sutter -- Department of Electronics and Information Systems*	6			A:1	180
2	E017950	Secure Software and Systems *Bart Coppens -- Department of Electronics and Information Systems*	6			A:1	180
3	E008711	Network Hacking and Protection *Bruno Volckaert -- Department of Information Technology*	6			A:1	180

2.1.1.4 Major Internet-of-Things / Robotics — 18 credits

Subscribe to no less than 18 credit units from the following list, with 12 credit units with reference a. Subject to approval by the faculty.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E019370	Robotics *Tony Belpaeme -- Department of Electronics and Information Systems*	6	a		A:1	180
2	E019170	Internet of Things *Jeroen Hoebeke -- Department of Information Technology*	6	a		A:1	180
3	E003422	Fundamentals of Statistical Sensor Processing *Hiep Luong -- Department of Telecommunications and Information Processing*	6			A:1	180
4	E061670	Autonomous Vehicle Perception *Jan Aelterman -- Department of Telecommunications and Information Processing*	3			A:2	90
5	E019380	Intelligent Robot Manipulation *Francis wyffels -- Department of Electronics and Information Systems*	3			A:1	90
6	E033702	Hardware-design Project *Ioulia Tzouvadaki -- Department of Electronics and Information Systems*	6			A:2	180

7	E032322	Sensor Based Measurement Systems	3			90
8	E003710	Game Theory and Multiagent Systems *Heidi Steendam -- Department of Telecommunications and Information Processing*	6		A:1	180
9	E061380	Embedded Machine Learning *Adnan Shahid -- Department of Information Technology*	3		A:2	90
10	E031251	Design Methodology for FPGAs *Dirk Stroobandt -- Department of Electronics and Information Systems*	6		A:1	180

2.1.1.5 Minor Operations Management — 18 credits

Subscribe to no less than 18 credit units from the following list, with 6 credit units with reference a.

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	E004255	Operations Research Models and Methods *El-Houssaine Aghezzaf -- Department of Industrial Systems Engineering and Product Design*	6			A:1	180
3	E060240	Quality Engineering and Industrial Statistics *Stijn De Vuyst -- Department of Industrial Systems Engineering and Product Design*	6			A:2	180
4	E076951	Engineering Economy *Sofie Verbrugge -- Department of Industrial Systems Engineering and Product Design*	6			A:1	180

2.1.1.6 Minor Biosystems — 18 credits

Subscribe to no less than 18 credit units from the following list, with no less than 8 credit units with reference a. Subject to approval by the faculty.

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E092623	Modelling of Physiological Systems *Patrick Segers -- Department of Electronics and Information Systems*	5	a		A:2	150
2	E092662	From Genome to Organism *Fransiska Malfait -- Department of Biomolecular Medicine*	3	a		A:1	90
3	E074011	Quantitative Cell and Tissue Analysis *Andre Skirtach -- Department of Biotechnology*	6	a		A:1	180
4	E063671	Biomaterials and Tissue Engineering *Peter Dubruel -- Department of Organic Chemistry*	5			A:1	150
5	E063682	Biomechanics *Charlotte Debbaut -- Department of Electronics and Information Systems*	6			A:1	180
6	E010371	Medical Imaging *Stefaan Vandenberghe -- Department of Electronics and Information Systems*	6			A:1	180

2.1.2 Elective Courses Computer Science Engineering — 18 credits

Subscribe to 18 credit units from the following list. Subject to approval by the faculty.
- The courses with reference 'AI' are from the major Artificial Intelligence
- The courses with reference 'DE' are from the major Data Engineering
- The courses with reference 'C' are from the major Cybersecurity
- The courses with reference 'IR' are from the major Internet-of-Things / robotics

Students can subscribe to a maximum of 6 ECTS credits internship (Research Internship E099400 and/or Industry Internship Engineering and Architecture E099300).

Nr	Course		CRDT	Ref	MT1	Session	Study
1	E031251	Design Methodology for FPGAs *Dirk Stroobandt -- Department of Electronics and Information Systems*	6	IR		A:1	180
2	E012130	Modulation and Detection *Nele Noels -- Department of Telecommunications and Information Processing*	6			B:1	180
3	E030210	Analog Electronics [nl] *Jeroen De Maeyer -- Department of Electromechanical, Systems and Metal Engineering*	6			A:1	180
4	E018520	Compilers *Bjorn De Sutter -- Department of Electronics and Information Systems*	6			A:2	180
5	E010010	Signal Processing *Kris Demuynck -- Department of Electronics and Information Systems*	6			A:1	180
6	E012802	Broadband cable-TV and in-home networks	4				120
7	E010310	Image Processing	6				180
8	E011610	Performance Analysis of Telecommunication Systems	4				120
9	C003241	Fundaments of Programming Languages [nl] *Christophe Scholliers -- Department of Mathematics, Computer Science and Statistics*	6			A:1	165

10	E012210	Advanced Modulation and Coding	4			120
11	E016712	Computer Graphics *Danilo Babin -- Department of Telecommunications and Information Processing*	6		A:2	180
12	E004720	Network Modelling and Design	4			120
13	E004120	Optimisation Techniques	6			180
14	C003349	Discrete Algorithms [nl] *Veerle Fack -- Department of Mathematics, Computer Science and Statistics*	6		A:2	165
15	C003711	Computational Challenges in Bioinformatics *Jan Fostier -- Department of Information Technology*	6		A:2	180
16	E034500	Sustainable Computing	3			90
17	E061390	Quantum Computing: Architecture and Algorithms *Alain Sarlette -- Department of Electronics and Information Systems*	3		A:1	90
18	E061360	Reinforcement Learning *Pieter Simoens -- Department of Information Technology*	6	AI	A:2	180
19	E061341	Natural Language Processing *Chris Develder -- Department of Information Technology*	6	AI	A:2	180
20	E018230	Recommender Systems *Toon De Pessemier -- Department of Information Technology*	6	AI	A:2	180
21	E061350	Deep Generative Models	4	AI		120
22	E016340	Probabilistic Graphical Models	4	AI		120
23	E061460	Computer Vision: Theory and Applications [nl] *Hiep Luong -- Department of Telecommunications and Information Processing*	6	AI	A:2	180
24	E019370	Robotics *Tony Belpaeme -- Department of Electronics and Information Systems*	6	AI, IR	A:1	180
25	E031800	AI Research Seminar *Tijl De Bie -- Department of Electronics and Information Systems*	3	AI	A:1	90
26	E061370	Data Visualization for and with AI	3	AI		90
27	E018240	Big Data Technology	4	AI, DE		120
28	E018700	Data Quality *Antoon Bronselaer -- Department of Telecommunications and Information Processing*	3	AI, DE	A:1	90
29	E003710	Game Theory and Multiagent Systems *Heidi Steendam -- Department of Telecommunications and Information Processing*	6	AI, IR	A:1	180
30	E016360	Cognitive and Brain-Inspired Artificial Intelligence *Tony Belpaeme -- Department of Electronics and Information Systems*	3	AI	A:2	90
31	E010220	Speech Processing	4	AI		120
32	E018610	Database Design	4	DE		120
33	E017310	Cloud Storage and Computing	4	DE		120
34	E018250	Big Data Algorithms	3	DE		90
35	E018130	NoSQL Databases *Antoon Bronselaer -- Department of Telecommunications and Information Processing*	3	DE	A:2	90
36	E018160	Knowledge Graphs *Pieter Colpaert -- Department of Electronics and Information Systems*	3	DE	A:2	90
37	E061370	Data Visualization for and with AI	3	DE		90
38	E017942	Software Hacking and Protection *Bjorn De Sutter -- Department of Electronics and Information Systems*	6	C	A:1	180
39	E017950	Secure Software and Systems *Bart Coppens -- Department of Electronics and Information Systems*	6	C		180
40	E008711	Network Hacking and Protection *Bruno Volckaert -- Department of Information Technology*	6	C	A:1	180
41	E019170	Internet of Things *Jeroen Hoebeke -- Department of Information Technology*	6	IR	A:1	180
42	E003422	Fundamentals of Statistical Sensor Processing *Hiep Luong -- Department of Telecommunications and Information Processing*	6	IR	A:1	180
43	E061670	Autonomous Vehicle Perception *Jan Aelterman -- Department of Telecommunications and Information Processing*	3	IR	A:2	90

44	E019380	Intelligent Robot Manipulation *Francis wyffels -- Department of Electronics and Information Systems*	3	IR	A:1	90
45	E033702	Hardware-design Project *Ioulia Tzouvadaki -- Department of Electronics and Information Systems*	6	IR	A:2	180
46	E032322	Sensor Based Measurement Systems	3	IR		90
47	E061380	Embedded Machine Learning *Adnan Shahid -- Department of Information Technology*	3	IR	A:2	90
48	E099400	Research Internship *Patrick Segers -- Department of Electronics and Information Systems*	3	S	B:J	90
49	E099400	Research Internship *Patrick Segers -- Department of Electronics and Information Systems*	6	S	A:J	180
50	E099300	Industry Internship Engineering and Architecture [en, nl] *Patrick Segers -- Department of Electronics and Information Systems*	6	S	A:J	180
51	E098010	Integrated Portfolio [en, nl] *Hiep Luong -- Department of Telecommunications and Information Processing*	6	S	A:J	180
52	E098010	Integrated Portfolio [en, nl] *Hiep Luong -- Department of Telecommunications and Information Processing*	3	S	B:J	90

2.1.3 Elective Course Ghent University

Subscribe to no more than 9 credit units from the programmes of Ghent University, including the Ghent University Elective Courses. Subject to approval by the faculty.

2.2 Elective Path 2 36 credits

Subscribe to 36 credit units from no less than 1 and no more than 2 elective modules from the following list. Subject to approval by the faculty.

2.2.1 Elective Courses Computer Science Engineering

Subscribe to no more than 36 credit units from the following list. Subject to approval by the faculty.
- The courses with reference 'AI' are from the major Artificial Intelligence
- The courses with reference 'DE' are from the major Data Engineering
- The courses with reference 'C' are from the major Cybersecurity
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Nr	Course		CRDT	Ref	MT1	Session	Study
1	E031251	Design Methodology for FPGAs *Dirk Stroobandt -- Department of Electronics and Information Systems*	6	IR		A:1	180
2	E012130	Modulation and Detection *Nele Noels -- Department of Telecommunications and Information Processing*	6			B:1	180
3	E030210	Analog Electronics [nl] *Jeroen De Maeyer -- Department of Electromechanical, Systems and Metal Engineering*	6			A:1	180
4	E018520	Compilers *Bjorn De Sutter -- Department of Electronics and Information Systems*	6			A:2	180
5	E010010	Signal Processing *Kris Demuynck -- Department of Electronics and Information Systems*	6			A:1	180
6	E012802	Broadband cable-TV and in-home networks	4				120
7	E010310	Image Processing	6				180
8	E011610	Performance Analysis of Telecommunication Systems	4				120
9	C003241	Fundaments of Programming Languages [nl] *Christophe Scholliers -- Department of Mathematics, Computer Science and Statistics*	6			A:1	165
10	E012210	Advanced Modulation and Coding	4				120
11	E016712	Computer Graphics *Danilo Babin -- Department of Telecommunications and Information Processing*	6			A:2	180
12	E004720	Network Modelling and Design	4				120
13	E004120	Optimisation Techniques	6				180
14	C003349	Discrete Algorithms [nl] *Veerle Fack -- Department of Mathematics, Computer Science and Statistics*	6			A:2	165
15	C003711	Computational Challenges in Bioinformatics *Jan Fostier -- Department of Information Technology*	6			A:2	180

16	E034500	Sustainable Computing	3			90
17	E061390	Quantum Computing: Architecture and Algorithms *Alain Sarlette -- Department of Electronics and Information Systems*	3		A:1	90
18	E061360	Reinforcement Learning *Pieter Simoens -- Department of Information Technology*	6	AI	A:2	180
19	E061341	Natural Language Processing *Chris Develder -- Department of Information Technology*	6	AI	A:2	180
20	E018230	Recommender Systems *Toon De Pessemier -- Department of Information Technology*	6	AI	A:2	180
21	E061350	Deep Generative Models	4	AI		120
22	E016340	Probabilistic Graphical Models	4	AI		120
23	E061460	Computer Vision: Theory and Applications [nl] *Hiep Luong -- Department of Telecommunications and Information Processing*	6	AI	A:2	180
24	E019370	Robotics *Tony Belpaeme -- Department of Electronics and Information Systems*	6	AI, IR	A:1	180
25	E031800	AI Research Seminar *Tijl De Bie -- Department of Electronics and Information Systems*	3	AI	A:1	90
26	E061370	Data Visualization for and with AI	3	AI		90
27	E018240	Big Data Technology	4	AI, DE		120
28	E018700	Data Quality *Antoon Bronselaer -- Department of Telecommunications and Information Processing*	3	AI, DE	A:1	90
29	E003710	Game Theory and Multiagent Systems *Heidi Steendam -- Department of Telecommunications and Information Processing*	6	AI, IR	A:1	180
30	E016360	Cognitive and Brain-Inspired Artificial Intelligence *Tony Belpaeme -- Department of Electronics and Information Systems*	3	AI	A:2	90
31	E010220	Speech Processing	4	AI		120
32	E018610	Database Design	4	DE		120
33	E017310	Cloud Storage and Computing	4	DE		120
34	E018250	Big Data Algorithms	3	DE		90
35	E018130	NoSQL Databases *Antoon Bronselaer -- Department of Telecommunications and Information Processing*	3	DE	A:2	90
36	E018160	Knowledge Graphs *Pieter Colpaert -- Department of Electronics and Information Systems*	3	DE	A:2	90
37	E061370	Data Visualization for and with AI	3	DE		90
38	E017942	Software Hacking and Protection *Bjorn De Sutter -- Department of Electronics and Information Systems*	6	C	A:1	180
39	E017950	Secure Software and Systems *Bart Coppens -- Department of Electronics and Information Systems*	6	C		180
40	E008711	Network Hacking and Protection *Bruno Volckaert -- Department of Information Technology*	6	C	A:1	180
41	E019170	Internet of Things *Jeroen Hoebeke -- Department of Information Technology*	6	IR	A:1	180
42	E003422	Fundamentals of Statistical Sensor Processing *Hiep Luong -- Department of Telecommunications and Information Processing*	6	IR	A:1	180
43	E061670	Autonomous Vehicle Perception *Jan Aelterman -- Department of Telecommunications and Information Processing*	3	IR	A:2	90
44	E019380	Intelligent Robot Manipulation *Francis wyffels -- Department of Electronics and Information Systems*	3	IR	A:1	90
45	E033702	Hardware-design Project *Ioulia Tzouvadaki -- Department of Electronics and Information Systems*	6	IR	A:2	180
46	E032322	Sensor Based Measurement Systems	3	IR		90
47	E061380	Embedded Machine Learning *Adnan Shahid -- Department of Information Technology*	3	IR	A:2	90
48	E099400	Research Internship *Patrick Segers -- Department of Electronics and Information Systems*	3	S	B:J	90
49	E099400	Research Internship *Patrick Segers -- Department of Electronics and Information Systems*	6	S	A:J	180

50	E099300	Industry Internship Engineering and Architecture [en, nl] *Patrick Segers -- Department of Electronics and Information Systems*	6	S		A:J	180
51	E098010	Integrated Portfolio [en, nl] *Hiep Luong -- Department of Telecommunications and Information Processing*	6	S		A:J	180
52	E098010	Integrated Portfolio [en, nl] *Hiep Luong -- Department of Telecommunications and Information Processing*	3	S		B:J	90

2.2.2 Elective Courses Ghent University

Subscribe to no more than 9 credit units from the programmes of Ghent University, including the Ghent University Elective Courses.
Subject to approval by the faculty.

3 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 2027-2028	f: annually, from 2028-2029	i: annually, from 2029-2030
b: tri-annually	d: bi-annually, from 2027-2028	g: bi-annually, from 2028-2029	j: bi-annually, from 2029-2030
	e: tri-annually, from 2027-2028	h: tri-annually, from 2028-2029	k: tri-annually, from 2029-2030