# Study Programme

Academic year 2026-2027

Faculty of Sciences,Faculty of Engineering and Architecture,Faculty of Bioscience Engineering

Master of Science in Bioinformatics --  Engineering

Language of instruction: English

Programme version 9

## 1  General Courses — 33 credits

### 1.1  Applied Bioinformatics Module — 33 credits

| Nr | Course | | CRDT | Ref | MT1 | Session | Study |
|----|--------|--|------|-----|-----|---------|-------|
| 1 | C003694 | Statistical Genomics | 6 | | | A:1 | 180 |
| | | *Lieven Clement -- Department of Mathematics, Computer Science and Statistics* | | | | | |
| 2 | C003695 | Applied High-throughput Analysis | 6 | 1 | | A:1 | 180 |
| | | *Tim De Meyer -- Department of Data Analysis and Mathematical Modelling* | | | | | |
| 3 | C003696 | Genome Biology | 6 | 1 | | A:2 | 180 |
| | | *Klaas Vandepoele -- Department of Plant Biotechnology and Bioinformatics* | | | | | |
| 4 | C004000 | Integrative Biology | 3 | 1 | | A:2 | 80 |
| | | *Kathleen Marchal -- Department of Plant Biotechnology and Bioinformatics* | | | | | |
| 5 | C003698 | Design Project | 9 | 1 | | A:J | 270 |
| | | *Tim De Meyer -- Department of Data Analysis and Mathematical Modelling* | | | | | |
| 6 | C004122 | Capita Selecta in Bioinformatics | 3 | | | A:1 | 75 |
| | | *Kathleen Marchal -- Department of Plant Biotechnology and Bioinformatics* | | | | | |

## 2  Courses Related to the Main Subject

### 2.1  Engineering Module — 36 credits

| Nr | Course | | CRDT | Ref | MT1 | Session | Study |
|----|--------|--|------|-----|-----|---------|-------|
| 1 | E017930 | Parallel and Distributed Software Systems | 6 | 1 | | A:1 | 180 |
| | | *Jan Fostier -- Department of Information Technology* | | | | | |
| 2 | C003711 | Computational Challenges in Bioinformatics | 6 | 1 | | A:2 | 180 |
| | | *Jan Fostier -- Department of Information Technology* | | | | | |
| 3 | E061330 | Machine Learning | 6 | | 2 | B:1 | 180 |
| | | *Joni Dambre -- Department of Electronics and Information Systems* | | | | | |
| 4 | E004120 | Optimisation Techniques | 6 | | 2 | | 180 |
| | | *Ljubomir Jovanov -- Department of Telecommunications and Information Processing* | | | | | |

#### 2.1.1  Elective Course List — 12 credits

Subscribe to 12 credit units from the following list.

| Nr | Course | | CRDT | Ref | MT1 | Session | Study |
|----|--------|--|------|-----|-----|---------|-------|
| 1 | E034140 | Parallel Computer Systems | 6 | | | A:1 | 180 |
| | | *Lieven Eeckhout -- Department of Electronics and Information Systems* | | | | | |
| 2 | E003600 | Information Theory | 6 | | | B:2 | 180 |
| | | *Heidi Steendam -- Department of Telecommunications and Information Processing* | | | | | |
| 3 | E019400 | Information Security | 6 | | | B:2 | 180 |
| | | *Eric Laermans -- Department of Information Technology* | | | | | |
| 4 | E092623 | Modelling of Physiological Systems | 5 | | | A:2 | 150 |
| | | *Patrick Segers -- Department of Electronics and Information Systems* | | | | | |
| 5 | E074011 | Quantitative Cell and Tissue Analysis | 6 | | | A:1 | 180 |
| | | *An Hendrix -- Department of Human Structure and Repair* | | | | | |

| Nr | Course | | CRDT | Ref | MT1 | Session | Study |
|----|--------|---|------|-----|-----|---------|-------|
| 6 | E003422 | Fundamentals of Statistical Sensor Processing | 6 | | | A:1 | 180 |
| | | *Hiep Luong -- Department of Telecommunications and Information Processing* | | | | | |
| 7 | C004545 | Bayesian Statistics | 5 | | | A:2 | 150 |
| | | *Koen De Turck -- Department of Telecommunications and Information Processing* | | | | | |
| 8 | E018240 | Big Data Technology | 4 | | | A:1 | 120 |
| | | *Dieter De Witte -- Department of Electronics and Information Systems* | | | | | |
| 9 | E018250 | Big Data Algorithms | 3 | | | | 90 |
| 10 | F000918 | Deep Learning | 6 | | | A:2 | 180 |
| | | *Seppe vanden Broucke -- Department of Business Informatics and Operations Management* | | | | | |
| 11 | E061341 | Natural Language Processing | 6 | | | A:2 | 180 |
| | | *Thomas Demeester -- Department of Information Technology* | | | | | |
| 12 | E016340 | Probabilistic Graphical Models | 4 | | | A:2 | 120 |
| | | *Aleksandra Pizurica -- Department of Telecommunications and Information Processing* | | | | | |
| 13 | E018700 | Data Quality | 3 | | | A:1 | 90 |
| | | *Antoon Bronselaer -- Department of Telecommunications and Information Processing* | | | | | |
| 14 | E018130 | NoSQL Databases | 3 | | | A:2 | 90 |
| | | *Antoon Bronselaer -- Department of Telecommunications and Information Processing* | | | | | |
| 15 | E018610 | Database Design | 4 | | | | 120 |
| | | *Guy De Tré -- Department of Telecommunications and Information Processing* | | | | | |
| 16 | E017310 | Cloud Storage and Computing | 4 | | | A:2 | 120 |
| | | *Bruno Volckaert -- Department of Information Technology* | | | | | |
| 17 | E017950 | Secure Software and Systems | 6 | | | | 180 |
| | | *Bart Coppens -- Department of Electronics and Information Systems* | | | | | |
| 18 | E018160 | Knowledge Graphs | 3 | | | A:2 | 90 |
| | | *Pieter Colpaert -- Department of Electronics and Information Systems* | | | | | |
| 19 | E061370 | Data Visualization for and with AI | 3 | | | A:1 | 90 |
| | | *Jefrey Lijffijt -- Department of Electronics and Information Systems* | | | | | |
| 20 | E061360 | Reinforcement Learning | 6 | | | A:2 | 180 |
| | | *Pieter Simoens -- Department of Information Technology* | | | | | |
| 21 | E008711 | Network Hacking and Protection | 6 | | | A:1 | 180 |
| | | *Bruno Volckaert -- Department of Information Technology* | | | | | |
| 22 | E016360 | Cognitive and Brain-Inspired Artificial Intelligence | 3 | | | A:2 | 90 |
| | | *Tony Belpaeme -- Department of Electronics and Information Systems* | | | | | |

## 2.2  Biology Module                                    9 credits

| Nr | Course | | CRDT | Ref | MT1 | Session | Study |
|----|--------|---|------|-----|-----|---------|-------|
| 1 | C003712 | Cellular and Molecular Biology | 6 | | 1 | A:1 | 180 |
| | | *Moritz Nowack -- Department of Plant Biotechnology and Bioinformatics* | | | | | |
| 2 | C003713 | Introduction to Bioinformatics | 3 | | 1 | A:2 | 90 |
| | | *Kathleen Marchal -- Department of Plant Biotechnology and Bioinformatics* | | | | | |

## 2.3  Master's Dissertation                            30 credits

| Nr | Course | | CRDT | Ref | MT1 | Session | Study |
|----|--------|---|------|-----|-----|---------|-------|
| 1 | C003720 | Master's Dissertation | 30 | | 2 | A:J | 900 |

# 3  Elective Courses                                     12 credits

Subscribe to 12 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  Elective Course List

Subscribe to no more than 9 credit units from the following list.

| Nr | Course | | CRDT | Ref | MT1 | Session | Study |
|----|--------|---|------|-----|-----|---------|-------|
| 1 | C004001 | Internship | 6 | | | A:1 | 150 |
| 2 | A003107 | Advanced Academic English | 3 | UKV | | A:1, B:2 | 90 |
| | | *Geert Jacobs -- Department of Linguistics* | | | | | |

## 3.2  Elective Courses UGent

Subscribe to no more than 12 credit units from the courses of Ghent University including the Ghent University elective course list.
Subject to approval by the curriculum committee.

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 |