MASTER OF SCIENCE IN BIOINFORMATICS (SYSTEMS BIOLOGY)

120 ECTS CREDITS - LANGUAGE: ENGLISH

FACULTY OF SCIENCES

2026-27

WHAT

Recent technological advances have changed our view on life science research dramatically and have turned biology into a data-driven science. It is in this context that bioinformatics, a booming interdisciplinary field, has quickly evolved from a new research field into a basic discipline.
Bioinformatics aims at gaining a better and preferentially more quantitative molecular understanding of cellular processes by integrating and modelling high-throughput molecular data. As a bioinformatician, you will become an interdisciplinary scientist who can develop or use state-of-the art statistical and computer science techniques to mine molecular data in order to answer fundamental or applied biological and biomedical questions.
The Master of Science in Bioinformatics programme:

- offers specialised tracks tuned to your specific interests and background (Systems Biology, Bioscience Engineering or Engineering track), which prepare you for different job profiles in the field of bioinformatics (bioinformatics scientist or bioinformatics engineer, respectively);
- offers both in-depth theoretical and data analytical/problem-solving skills;
- is embedded in a strong bioinformatics and biotechnology research environment, located at the Faculties of Sciences, Medicine and Health Sciences, Bioscience Engineering and Engineering and Architecture. It is also affiliated with VIB and IMEC.

Master of Science in Bioinformatics: Systems Biology

A bioinformatics scientist applies (bio)informatics tools and techniques to understand a biological system or to solve an innovative research question. You are trained as a problem-solver who can combine bioinformatics tools and algorithms to analyse, integrate and model data in a creative and efficient manner. Having the essential programming and data analysis skills requires a deep understanding of statistics, programming and data analytical techniques (courses of the Applied Mathematics and Informatics Module). The courses of the Applied Bioinformatics Module will make you familiar with the basic data analytical methods (e.g. NGS analysis), help you to acquire interdisciplinary skill sets and illustrate how theoretical concepts of statistics and data mining are used to build bioinformatics tools. The difference between the Systems Biology track and the Bioscience Engineering track is that the former focuses more on advanced knowledge of (systems) biology, whereas the Bioscience Engineering track deepens the engineering skills. The Master's dissertation focuses on a research topic. In your curriculum there is opportunity to do an internship to familiarize yourself with the role and expectations of a bioinformatics scientist in the industry or at a government agency.

STRUCTURE

LABOUR MARKET

Technological advances have turned biology into a data-driven science. The wealth of molecular data enables key discoveries in biology, ecology and molecular evolution, drives innovation in the biotech and pharma industry and supports medical and governmental decision-making. However, the power of using these data for innovation depends on interdisciplinary skills to analyse, integrate and interpret the data.
There is thus an urgent need for bioinformatics scientists and engineers with an interdisciplinary mindset. There is currently a large discrepancy between the exponential increase of biological data (28% each year) and the number of newly graduated bioinformaticians (increase of only 5.8%) who typically find a job in agro, biotech and pharma industry, in research and government agencies, and in genetics centres and hospitals. Because of their interdisciplinary and analytical skill sets, bioinformaticians also find their way into consultancy, spin-offs and data analytics.

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TOELATINGSVOORWAARDEN VOOR HOUDERS VAN EEN VLAAMS DIPLOMA

1 **Rechtstreeks:**
- Bachelor in de bio-ingenieurswetenschappen
- Bachelor in de biochemie en de biotechnologie
- Bachelor of Molecular Biotechnology

2 **Na het met succes voltooien van een voorbereidingsprogramma:**

aantal studiepunten te bepalen door de faculteit
- Bachelor in de biologie
- Bachelor in de biomedische wetenschappen
- Bachelor in de biowetenschappen
- Bachelor in de chemie
- Bachelor in de computerwetenschappen
- Bachelor in de fysica
- Bachelor in de fysica en de sterrenkunde
- Bachelor in de geneeskunde
- Bachelor in de industriële wetenschappen, afstudeerrichting: chemie
- Bachelor in de industriële wetenschappen: chemie
- Bachelor in de industriële wetenschappen: milieukunde
- Bachelor in de informatica
- Bachelor in de wiskunde
- Een diploma van een opleiding 'Bachelor of Science in de ingenieurswetenschappen' (met uitzondering van 'architectuur')
- Master in de biowetenschappen
- Master in de industriële wetenschappen: biochemie
- Master in de industriële wetenschappen: chemie
- Master in de industriële wetenschappen: milieukunde

3 **Na het met succes voltooien van een schakelprogramma:**

aantal studiepunten te bepalen door de faculteit
- Bachelor in de bio-informatica
- Bachelor in de biomedische laboratoriumtechnologie, afstudeerrichting: farmaceutische en biologische laboratoriumtechnologie
- Bachelor in de chemie, afstudeerrichting: biochemie
- Bachelor in de chemie, afstudeerrichting: chemie

ADMISSION REQUIREMENTS FOR INTERNATIONAL DEGREE STUDENTS

Information on admission requirements and the administrative procedure for admission on the basis of a diploma obtained abroad, can be found on the following page: www.ugent.be/admission
Additional information:
- Diploma equivalence of international bachelor's degree students will be checked by the OC on the basis of their individual dossier.
- Students who wish to enrol must add the result of a GRE test to their application, more specifically the result of the Quantitative Reasoning of the General Test. The GRE test result will be assessed using the grading scale of the Faculty of Engineering and Architecture.

LANGUAGE REQUIREMENTS

Language requirements	Dutch: no language requirements English: CEFR level B2

The language requirements for this study programme can be found on: www.ugent.be/languagerequirements

PRACTICAL INFORMATION

Study programme

studiekiezer.ugent.be/master-of-science-in-bioinformatics-systems-biology-en/programma

Information sessions

EVOLV

evolv.gent/en/students/further-studies

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Enrolling institution
Information on enrolment at Ghent University.

Application Deadline (for International degree students)
For students who **need a visa**: before 1st of April
For students who **do not need a visa**: before 1st of June
Read more

Tuition fee
More information is to be found on: www.ugent.be/tuitionfee

Contact
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Printed on 15 April 2026