

## WHAT

The goal of this programme is to create specialists in the domain of data science to support business decisions of the firm. As a result, the profile of a typical DS4B graduate consists of three cornerstones:

- analytical mindset with a strong interest in data;
- hands-on experience that can readily be applied in business;
- the ability to translate complex decision support models to a business environment.

The programme has been training students since 1999, which makes it the longest-running (predictive) analytics programme in the world. The programme addresses the needs of companies for better-educated staff with strong methodological skills in the domain of data mining, artificial intelligence (AI), large-language models (NLP). Thanks to information technology and the availability of market data both at the demand side (customer information, e.g. scanning data ...) and supply side (internal information about marketing actions, competitors, production data, ...), data science has become omnipresent in today's business environment. As a result, there is a strong need in the marketplace for people able to: control and cope with the huge amount of available data; and generate and use models to translate these raw data into useful business information. These people will be the interface between company management (e.g. production manager, marketing manager, supply chain manager) and the suppliers of data within the organisation. Currently, departments are not facing the problem how to obtain data, but rather how to transform these massive amounts of (numerical, textual, pictorial, video) data into useful information and systems.

At its core, the main methods in this program are related to data mining, machine learning, and deep learning. At first, the students are introduced to a wide range of machine learning techniques. Next, these techniques are applied in real-life business settings in a range of courses. One of the main topics in the program is analytical customer relationships management. We train students in the theoretical underpinnings but the main focus is on the practical skills of managing customer databases:

- acquisition (identifying and attracting new customers);
- cross/up-selling (profitable usage stimulation);
- retention (identifying customers who intend to attrite/churn and trying to keep profitable

customers);

- recapturing 'lost' customers (win-back strategies).

Besides the business content, an important focus is on computer programming. Students will become experts in programming in the following open-source programming languages: Python (with the Numpy and Pandas packages), SQL, and (Py)Spark. The programme also includes specific courses on social media and web analytics, prescriptive analytics, and big data (Hadoop, Apache Spark) technology. We also added a Machine Learning and a Deep Learning course to the set of course units. This significantly ups the methodological part of the programme. It requires prospective students to review their math skills (derivatives, gradient, hessian ...). Several advanced topics are covered such as natural language processing (using e.g., the transformer architecture), deep learning, and reinforcement learning. Several of these methods are applied to various business problems such as credit scoring, fraud detection, HR analytics, demand forecasting, among others.

## STRUCTURE

All students follow the same mandatory course schedule detailed on our website. From April on, all course work is suspended to fully concentrate on the project.

### Master's dissertation

The Master's dissertation consists of a real-life project for a company dealing with a specific marketing issue. A list of previous projects can be obtained from: [www.ugent.be/eb/nl/opleidingen/master-na-master/master-of-science-in-data-science-for-business](http://www.ugent.be/eb/nl/opleidingen/master-na-master/master-of-science-in-data-science-for-business)

## LABOUR MARKET

The choice of engaging in a specific advanced master's programme is, even more than a master's programme, related to the question: "Which job(s) will I be trained for?". Fortunately, there is a broad variety of jobs for which students are trained. About equal proportions of DS4B graduates are currently working in different areas of Business Analytics. Our graduates have made important contributions in the business world; at least two are CEOs of sizeable organisations. Fifteen MScMA graduates have pursued academic research careers and completed their PhDs (+ five are currently in progress). Five graduates have become analytics (assistant/associate/full) professors. In order to offer potential students more insights into the variety of

# MASTER OF SCIENCE IN DATA SCIENCE FOR BUSINESS

60 ECTS CREDITS - LANGUAGE: ENGLISH

functions, companies, industries, and even countries where our graduates are already present, some former students were very willing to share their experiences in this programme with – possibly – their future colleagues ... Their testimonials can be found at [www.mma.UGent.be/mma.pdf](http://www.mma.UGent.be/mma.pdf) (see middle section).

## TOELATINGSVOORWAARDEN VOOR HOUDERS VAN EEN VLAAMS DIPLOMA

- 1 **Na onderzoek van de bekwaamheid van de student om de opleiding te volgen:**
  - a opleidingen nieuwe structuur:
    - Een diploma van een masteropleiding aansluitend op een bacheloropleiding
    - Een diploma van een masteropleiding die volgt op een andere masteropleiding
  - b opleidingen oude structuur:
    - Een diploma van de tweede cyclus van het hogeschoolonderwijs van twee cycli
    - Een diploma van een academische opleiding van de tweede cyclus
- 2 **Na het met succes voltooien van een voorbereidingsprogramma:**  
**30 SP**
  - a opleidingen nieuwe structuur:
    - Een diploma van een masteropleiding aansluitend op een bacheloropleiding
    - Een diploma van een masteropleiding die volgt op een andere masteropleiding
  - b opleidingen oude structuur:
    - Een diploma van de tweede cyclus van het hogeschoolonderwijs van twee cycli
    - Een diploma van een academische opleiding van de tweede cyclus

### Additional Information on Admission (Flemish Degree)

We require candidates to: score very high on an online statistics test (link to be found on our website: <https://mma.ugent.be/>) and have followed an R programming course (e.g. a freely available online course) and demonstrate their ability to use the language.

## ADMISSION REQUIREMENTS FOR INTERNATIONAL DEGREE STUDENTS

The target group consists of students with strong analytical skills with an interest in marketing business problems with prior knowledge in statistics and market(ing) research. Prior knowledge of (or strong interest in) computer programming is a plus.

Foreign students can apply if they have a four-year bachelor's degree. Admission is dependent on the study results of the student and the subjects taken.

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online statistics test (link to be found on our website: <https://mma.ugent.be/>) and have followed an R programming course (e.g. a freely available online course) and demonstrate their ability to use the language.

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/prospect/en/administration/enrolment-or-registration](http://www.ugent.be/prospect/en/administration/enrolment-or-registration).

## LANGUAGE REQUIREMENTS

Language requirements	Dutch: no language requirements English: CEFR level C1
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## PRACTICAL INFORMATION

### Study programme

[studiekiezer.ugent.be/master-of-science-in-data-science-for-business-en/programma](http://studiekiezer.ugent.be/master-of-science-in-data-science-for-business-en/programma)

### Information sessions

#### Graduation Fair

[afstudeerbeurs.gent/en/students/further-studies](http://afstudeerbeurs.gent/en/students/further-studies)

### 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

Aside from the standard application procedure, you are also required to complete and submit an information form on the Marketing Analysis webpage.

### Tuition fee

More information is to be found on: [www.ugent.be/tuitionfee](http://www.ugent.be/tuitionfee)

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## Contact

Department of Marketing, Innovation and Organization

Programme Director:

Prof. dr. Dirk Van den Poel

Campust Tweekerken

Tweekerkenstraat 2

B-9000 Gent

T +32 (0)9 264 89 80

[dirk.vandenpoel@ugent.be](mailto:dirk.vandenpoel@ugent.be)

[mma@ugent.be](mailto:mma@ugent.be)

[www.ugent.be/eb/nl/opleidingen/master-na-master/master-of-science-in-data-science-for-business](http://www.ugent.be/eb/nl/opleidingen/master-na-master/master-of-science-in-data-science-for-business)