

# MASTER OF SCIENCE IN DATA SCIENCE FOR BUSINESS

60 ECTS CREDITS - LANGUAGE: ENGLISH

## 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 skills in the domain of analytical customer relationship management and business analytics. 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) 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 data into useful information and systems.

At its core, the main methods in this program are related to data mining and machine learning. At first, the students are introduced to a wide range of machine learning techniques. Afterwards, 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.

Next to the business content, a big focus is on computer programming. Students will become expert programming in the following open-source programming languages: Python, R, SQL and (Py) Spark. The programme also includes specific courses on social media and web analytics, prescriptive analytics, and big data (Hadoop, Spark) technology. We also added a Deep Learning and a Machine Learning course to the mandatory courses. 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, 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 functions, companies, industries, and even countries where our graduates are already present, some former students were very willing to share their

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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).

