Master in Operations Management

It isn't big data but big algorithms that is going to change the world.

"Change is the end result of all true learning." (Leo Buscaglia)

Operations Management

Operations Management is an area of management concerned with overseeing, designing, and controlling the process of production and redesigning business operations in the production of goods or services. It involves the responsibility of ensuring that business operations are **efficient** in terms of using as few resources as needed, and **effective** in terms of meeting customer requirements. It is concerned with managing the process that converts inputs (raw materials, labor, and energy) into outputs (goods and/or services).

The **Master in Operations Management** of the Business Engineering programme will focus on the most relevant topics of Operations Management, which is often referred to in the literature as **Management Science** or **Business Analytics** or in business as **Supply Chain Management** or **Logistics**. The two-year Master will highlight various business aspects of Operations Management in a learning-by-doing environment and will put forward a well-balanced combination of theoretical lectures, practical business games and case studies, as well as guest lectures and company projects.

The important business concepts within Operations Management will be highlighted from various angles and perspectives. A stream centered around **supply chain concepts** such as *lean* management, *agile* management, *risk* management and *cost/benefit* management will illustrate how various concepts from the Bachelor years are applied in a real-world business decision making setting.

A stream centered around **business ICT** with attention to ICT and business alignment of **project management**, including project management best practices such as *Earned Value Management* and *Schedule Risk Analysis* will showcase best practices in ICT and project management based on experience in world leading companies. Within this stream, a lot of attention will be spent to recent evolutions within the business software decision making tools, with a focus on the recent evolutions on *business analytics* and *big data*.

Concepts such as *e-business*, *six-sigma quality* management, supply chain *mapping*, third party *logistics* as well as supply chain *innovations* such as fully automated *warehousing*, advanced *inventory* management, *database* management in decision making, and much more will be discussed, not only from a theoretical point of view but almost always illustrated from practical experience and business cases.

Teaching is not a static process but rather requires a continuous dynamic update to new relevant business topics. Therefore, many of the topics are given in **collaboration with companies** involved in the programme. The member companies of PMI Belgium and EVM Europe, but also others such as Arcelor Mittal, Fabricom GDF Suez and CERN from Switzerland often play an active role: They define relevant topics, they follow the work done by students and sometimes even award the most relevant outcomes with a recognition (cash prize, award, ...).

Courses

Master 1

Project Management provides an understanding of key issues and applied methodologies relating to Integrated Project Management and Control. It provides the essentials a project manager should have when faced with preparing the work necessary for managing and controlling projects in progress, with a clear focus on integrating scheduling, risk and control to set up a project management and control system using the available tools and techniques and best practices.

Production Strategy. In order to achieve the flexible, cost-effective production systems required to survive in today's volatile, global markets, a thorough understanding of the basic dynamics of factories/services and their link with the competitive strategy of a firm is essential.

Total Quality Management deals with questions on how to produce high quality goods or services, discusses ways to discover the reliability of suppliers, presents techniques on how to decide whether or not to accept the raw materials received, assesses software tools to monitor production systems with high quality standards, and much more.

Master 2

Decision Making for Business (or **Applied Operations Research**) is a *integrated decision making case study* in which students are responsible for a real business problem. They should act as a consultant and must analyze and define the company problem, suggest a novel solution, think about an implementation strategy as well as validate the return of investment for their suggested approach.

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Supply Chain Management. The objective of this course is to make the students aware of the importance of supply chain management and logistics and to teach them the concepts and techniques necessary to analyze and optimise a supply chain. This way companies are in a position to respond to the increasing pressure to shorten delivery times, enhance flexibility and reduce costs.

Blended learning

All courses are given in a flexible and dynamic teaching environment rather than in a traditional ex cathedra teaching method. This style and method of teaching is known as **blended learning**, and includes the use of case studies, business games, software tools, and all other digital techniques available in the classroom. It is an ideal way to design courses that mix different kinds of teaching methods and supportive material to engage students and bring them closer to the relevance of the course content, hereby stimulating engagement, involvement and even enthusiasm resulting in a better learning experience.

Who

The Master in Operations Management is targeting young **undergraduate students** with a background and experience in production management and information science. All topics are relevant for a professional career in both the private and public sector, and apply to supply chain managers, data scientists, marketeers, project managers, financial engineers, human resource managers, and many others who are responsible for business processes with critical performance, time and budget targets.

Lecturers

All lecturers have academic and professional experience within their specific domain and will highlight the course themes from both an academic point of view as from a business relevance perspective, hereby giving novel themes and recent developments a central place in their course curriculum.

Mario Vanhoucke has +15 years of experience in Project Management and Decision Making for Business with teaching assignments at universities in Belgium, the UK and Suriname, business schools in Belgium, Lithuania and China and for various companies. His experience from collaborations with member companies from PMI Belgium and EVM Europe are used as case studies throughout his teaching sessions.

Tarik Aouam has gained his experience in Production Planning, Risk Management and Supply Chain Integration as a lecturer in universities in Morocco, the United Arab Emirates and the US. His experience as senior analyst in various international companies is used throughout his Supply Chain Management lectures.

Dries Goossens has gained his experience in Combinatorial Auctions, Procurement and Optimization in Transportation Problems as a lecturer in Leuven, and occasional stays in the Netherlands and Finland. His involvement in the design of a combinatorial auction for Solids, in cooperation with Housing Association Stadgenoot, is used in his teaching.

Guest lecturers

The **Department of Business Informatics and Operations Management** combines the lectures of our core professors with guest lectures given by nationally and internationally recognized leaders in the field of Operations Management, active at renowned companies such as Möbius, Delaware Consulting, GEO Intelligence, PWC, Groenewout, Cordys, Accenture and Solventure.

Why

Today, companies must make **better** and **faster** decisions about their customers, competitors, partners, and operations by turning tons of **data** into valuable business information. Creating successful business strategies must be accomplished by cleverly combining huge amounts of **information**, skills of different **people** and knowledge of new **technologies** into a single business intelligence system. However, since the managerial landscape is defined by situations of **risk**, **uncertainty** and **continuous changes**, these business intelligence systems should be put into the right perspective, and care must be taken about their use and relevance in practice. **Business intelligence** systems should not be considered as automatic decision-making systems, but rather as **decision-support** systems that help to make decisions for business problems which may be rapidly changing and not easily specified in advance. These systems can be either fully computerized or might require human input, but are preferable a combination of both, such that they **support** and **facilitate** the decision making process and lead to **improved business solutions**.

Everybody's talking about "big data", but few are talking about how you get **from data-rich to decision-smart**. In this master, it will be shown how to get from data discovery to return on investment and real business value and how to bridge the gap between decision-makers, IT managers and analytics professionals. Welcome to the expedition from business problem to analytics solution. Welcome to the exiting world of **Operations Management**!

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