Production and Logistic Management

Industrial Engineering and Management (MSc)

Production and Logistics Management (PLM) is one of the tracks within the Industrial Engineering and Management (IEM) Master's programme. This track focuses on the heart of the design and control of manufacturing processes in the supply chain from raw material to customer end products. The broad field of PLM requires people with knowledge and insight of production and logistics models (in the tradition of management science). Modern production and logistics processes are becoming increasingly complex. Product lifetimes are decreasing, the geographic distance between suppliers and buyers is increasingly large (globalisation), and an increasing number of activities is outsourced. Key areas of focus include supply chain design (where to put production facilities?), distribution centres (what capacities do we need for production resources?), distribution centres (how to structure operations management: in production, warehousing, transport and distribution?), purchasing (how to get the desired service levels to customers? how to ensure process reliability? how does that interact with maintenance planning?). Any 'mismatch' in the supply of raw materials, semi-raw materials, components or finished products will lead to overstock or production delays and service consequences.

Programme overview

The PLM track works to provide an understanding of the impact of designs (e.g. flow lines, job shops) and logistics control principles (i.e. engineer to order, make to order, assemble to order) on overall performance. PLM track courses focus primarily on theory and its applications. This Master's track consists of 16 obligatory courses, two equalisation courses (which can be used as elective courses if all prerequisites have been satisfied) and a Master's project.

At the core of the PLM track is the design, planning and control of the primary process – from sourcing via manufacturing and delivering to return. Core courses include purchasing, production (two courses), warehousing, supply

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chain and transportation management and reverse logistics. Around this core, we pay attention to supporting processes (e.g. maintenance, ICT), as well as management and organisation. The foundation is comprised of three courses on generic methodology (i.e. empirical research, optimisation and simulation techniques). Further, one course is offered to demonstrate how PLM principles can also be applied to a (for PLM) non-traditional sector, namely health care. This sector has been under a lot of pressure in recent years to focus more on productivity and efficiency. In a manner similar to the manufacturing sector, we will explore the application of operations research, advanced planning and simulation in health care. The principles of PLM are illustrated in our Business Process Laboratory, where you gain experience in the use of advanced software tools for: (a) enterprise resource planning and workflow management, advanced planning systems, (b) simulation, (c) formulating and solving integer linear programming problems for production and logistics, (d) capacity analysis of production systems using queuing networks, and (e) distribution planning and vehicle routing.

Master's thesis

The Master's thesis (30 EC) is your final 'Masterpiece'. It affords you the opportunity to demonstrate your skills by applying the knowledge gained during a company traineeship. Recent examples of graduation projects include:

- providing stock management and production planning at AKZO Oleochemicals (Emmerich, Germany)
- improving the capacity utilisation of a sausage production line at Unilever Bestfoods (Oss)
- optimising spare part inventories for equipment maintenance at Europe Container Terminals (Rotterdam)
- improving the logistic performance of the paint line using simulation at Power Packer (Oldenzaal)
- increasing space utilisation at a Wehkamp distribution centre (Maurik)
- optimising inventories in the supply chain of Mead Johnson Nutritionals (Nijmegen)
- providing logistic planning and control of operating theatres at Erasmus Medical Centre (Rotterdam)

Career prospects

The PLM track provides a solid academic background for a management career in production and logistics. After graduation, our students pursue careers in a wide range of companies, including multinationals, medium-sized manufacturing companies, and consultancy firms. Some even go on to start a company of their own. Typical positions include:

- Logistics manager: the logistics manager's task is to manage the flow of goods and its effects on the organisation. This applies both to internal logistics (i.e. production and inventory) and external logistics (i.e. supply of raw materials and delivery of final products)
- Logistics analyst: large companies often have dedicated departments that focus on the analysis and improvement of their production and logistics processes
- Consultant in production and logistics management

Examples of starting positions of PLM graduates include: analyst/consultant at the supply chain management department of Procter and Gamble, logistics analyst at Wehkamp, management trainee at Stork, consultant operations manager in health care, solutions analyst for UPS Supply Chain Solutions and logistics manager at Burg Industries.

Further information

If you want to know more about admission criteria, the application process and tuition fees, visit our website http://iem.graduate.utwente.nl. For specific questions about the content of this track, please contact Dr. Matthieu van der Heijden.

Website: http://iem.graduate.utwente.nl
E-mail: m.c.vanderheijden@utwente.nl

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