

Mastering Sustainability

MASTER OF INDUSTRIAL ECOLOGY



Industrial Ecology is an emergent scientific discipline that focuses on the sustainable combination of ecology, business and technology. It offers scientific methods to analyse the environmental impact of industrial products and processes and to find opportunities to reduce energy, waste and costs. Design methods for sustainable processes and new products are also part of this field. This can benefit companies: more profit, compliance to increasingly strict legislation and socially responsible entrepreneurship. The postgraduate Master of Industrial Ecology offers participants a toolbox for sustainable development. After completion, participants are able to make sustainability analyses, to improve existing technologies, to design new processes and to manage change and decision-making processes. The programme integrates scientific knowledge with practical experience and market needs.

Participants and group composition

The programme prepares professionals to be inspirational managers that are capable to connect environmental science, sustainable technology and governance of innovation. The programme has been designed for employees in all relevant sectors of industry (from industry to transport companies or consulting firms) and public bodies, who have aspects of Industrial Ecology in their portfolio. Participants work for example as (process) engineer, administrator, policy maker in government, advisor, or sales manager. They have an academic background or work provable on an academic level. Groups are made up of 12 to 20 people, which ensures maximum interaction. All Delft TopTech programmes have a great deal of branch diversity within a learning group. This makes the course particularly valuable and inspiring. Alumni often make a significant step in their career after completing the programme.

Programme director

Dr.ir. Gijsbert Korevaar is the programme director of the Master of Industrial Ecology. He is a chemical engineer and an expert in the field of sustainable chemical processes and industrial ecology. The theoretical foundation is provided by academic staff members from Delft University of Technology and Leiden University. Additional information on specific subjects comes from advisors working for specialist agencies and lecturers from other universities in the Netherlands and abroad. The practical side of the subjects is highlighted by representatives from the public sector, industry and the business world. The main focus is on applying the theory in practice. The programme meets all the requirements set by Delft University of Technology in relation to the award of the Delft TopTech Master Degree and it meets the highest professional and academic standards.

More information

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MASTERING TECHNOLOGY AND BUSINESS

Programme

The Master of Industrial Ecology is a three block programme, consisting of residential taught weeks, plus the thesis (Master Assignment) and group work. The duration of the full programme is 39 contact days in one year. The programme consists of 13 sessions, each session being a three-day 'week' (including evenings). The contact hours are used for knowledge transfer, interaction, reflection and skills. Approximately four weeks between sessions the participants will be expected to undertake private study. In addition, preparing and writing the final thesis typically requires 35 days.

Block 1

Design for Industrial Ecology

This block teaches participants to use design tools for improving existing technologies and for creating new solutions with regards to sustainability. Based upon the generic insights on engineering design and methodology development, participants are trained in three specific sustainable engineering and design tools: eco-design, cradle to cradle and the natural step. Experts from the industry lecture on the practical application of these methods. Participants will be challenged to actively work together on realistic design exercises in order to obtain hands-on experience.

Block 2

Methods and Tools for Sustainability Analysis

Industrial Ecology Analysis focuses on the technosphere: the total of all processes, structures, flows and stocks of goods in society in physical terms. The technosphere can be regarded as the interface between society on the one hand (including amongst others politics, institutions, economy and behavioural aspects) and the environment on the other hand. In this block, participants will gain general knowledge of and insight in dominant concepts related to Industrial Ecology analysis of the technosphere. They will obtain general knowledge of Industrial Ecology tools for analysis and knowledge of specific Industrial Ecology tools. Participants will be trained to apply these tools, especially Life Cycle Assessment, Carbon Footprinting and Eco-Efficiency Analysis.

Block 3

Policy & Management of Industrial Ecology

The complexity of technologies is growing and technologies are globally uniform. New technologies will not only solve old problems, but might also create new and unforeseen ones. How can we foresee these? What will be future needs? In this block participants learn to analyse processes of social and technological change, analyse and design interactive decision-making processes and identify key elements of business strategies and policies for sustainable development. Participants will be able to manage stakeholder processes in order to contribute to an efficient and effective decision-making process. By this, they learn to act upon necessary and relevant changes in organisations and companies to obtain industrial symbiosis.

Master Thesis

After the completion of all three blocks, the participant writes a final thesis. The thesis presents a thorough analysis of an issue related to Industrial Ecology at the participant's own organisation including recommendations for the future. Many theses written for Delft TopTech Master's programmes have become platforms for successful change, giving the participant's organisation a competitive edge.

Delft TopTech

Professionals and managers enlarge their knowledge and strengthen their (innovation) skills by following an advanced master programme at Delft TopTech. A master programme helps them to realise professional growth and often a new step in their career. The Delft TopTech programmes combine business and technical methods and focus on the application of these methods in practice. The lecturers are internationally renowned in their field and teach at the Delft University of Technology or at another top-level institute. Delft TopTech also offers custom incompany programmes to companies and public organisations who wish to professionalize and enlarge their innovation skills and short courses to professionals to update their knowledge on specific subjects.