<table>
<thead>
<tr>
<th><strong>Degree</strong></th>
<th>Master of Science in Industrial Ecology</th>
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<tr>
<td><strong>Type of Programme</strong></td>
<td>Full-time</td>
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<tr>
<td><strong>Duration</strong></td>
<td>2 years</td>
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<tr>
<td><strong>Start Date</strong></td>
<td>September and February</td>
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<tr>
<td><strong>Language</strong></td>
<td>English</td>
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**Short introduction**
Industrial Ecology is an emerging scientific discipline that takes a systemic approach to environmental problems. An interdisciplinary approach, integrating technical, environmental and social frames of reference, is essential for sustainable development. For that reason Industrial Ecology is sometimes referred to as “the toolbox for sustainable development” or the “science of sustainability.” Industrial Ecology takes a positive approach to sustainable development: “industry’s answer to the environmental challenge.”

**A balance between people, planet and profit**
Industrial Ecology is inspired by nature. The analogy between natural and technical systems and processes is at the core of the Industrial Ecology field. As a student you will learn concepts such as industrial metabolism, industrial symbiosis, industrial evolution and life cycle thinking, in order to generate innovative solutions as a catalyst for change.

The Master of Science in Industrial Ecology (IE) offers talented students from around the world the opportunity to enhance their expertise and work on current challenges facing our world today. This rigorous programme accepts students from a wide range of studies in engineering, natural and social sciences, believing that international multidisciplinary workgroups, where each student brings his own specific bachelor knowledge and cultural background are the best way to move forward.

As a student you will find yourself inspired by professors from two top universities in the world, who are at the forefront of the field of Industrial Ecology. Over 18 years, since the master IE started, the research groups on sustainability issues with a problem owner from industry, government or research institute have gained international impact.

The next four decades are crucial for the long-term future of humanity. If all goes well the urban population will double, GDP per capita will triple, a transition will be made to low-carbon energy system and 9 billion people will live “the good life.” However, there are many obstacles on the road such as
geopolitical instability and security, resource scarcity, pollution and climate change.
Innovations that are closely guided by a policy framework are needed to overcome these challenges and facilitate a smooth transition to a world that will allow “the good life” for 9 billion people in 2050. Industrial Ecology alumni are ready to take a leading role in overcoming these obstacles.

This MSc programme is also linked to the European Erasmus Mundus Master programme Industrial Ecology.

Curriculum
The two year programme of 120 ECT is composed of Core Modules (54 ECT).
The study programme is designed to maximise knowledge exchange, creating a true-to-life environment and ultimately prepare for the master thesis. As a student you are encouraged to share your specific bachelor knowledge, initiate scientific research on current IE problems and take ownership. Collaboration with third parties, such as national or international partner universities, NGOs, industrial partners, or government institutes is encouraged and facilitated.

The curriculum includes topics such as:
- Social Systems, Policy and Management
- Urban Environments and Infrastructures
- Sustainable Innovation and Social Change
- Biocasting
- Design of Sustainable Technological Systems
- Fundamentals of Systems
- Analytical Methodologies and Tools
- Life Cycle Assessment (LCA)
- Material Flow Accounting (MFA)
- Substance Flow Analysis (SFA)
- Industrial Symbiosis
- Biogeochemical Cycles
- Resource Scarcity
- Agent Based Modelling of Complex Adaptive Systems
- Renewable energy systems and technologies (wind, solar, biomass, hydrogen, fuel cells etc.)
- Sustainable Product and Process Design

Extra-curricular
Students of the programme regularly organise discussion meetings and social events for students, professors, alumni and others interested in Industrial Ecology mmi@kth.se.

The international community of Industrial Ecology academics and practitioners offers a lively platform for discussions through the International Society of Industrial Ecology with a host base at Yale University idea.org and the International Journal of Industrial Ecology wiley.com/go/jie.
Career Prospects

Industrial Ecology graduates find employment opportunities throughout business, industry, and government, as well as in non-governmental organizations, universities, and research institutes. They operate as mediators, system designers, innovators and scientific researchers. They are primarily engaged in activities designed to encourage people at all levels of society to consider adopting sustainable practices and to initiate change in existing patterns of production and consumption. Graduates of the programme typically secure suitable employment quickly after graduation.

Admission requirements

A bachelor’s degree in any of the Natural Sciences, Engineering Sciences, or Social Sciences and a demonstrable interest in the field of Industrial Ecology is required for admission. More detailed information on the requirements and application can be found at is.leidenuniv.nl/admission-and-application

"The unique combination of the scientific and cultural backgrounds of all our students takes discussions to the next level. Learning is not a one way street, students learn from each other and I have also learned a lot from their insightful and inspirational views."

Ron Kleijn, director of education
More Information
For more information on the master's programmes, courses, admission requirements, application procedures and forms, and tuition fees, please check our website:

www.leidenuniv.nl

For academic information on course content
Study advisor
studyadvisor-ie@erl.leidenuniv.nl

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