

**Faculty of Science, Leiden University**

**and**

**Faculty of Technology, Policy and Management,  
Delft University of Technology**

**Implementation Regulations**

**September 1<sup>st</sup>, 2018 till August 31<sup>st</sup>, 2019**

**Masters' Programme Industrial Ecology**

**Corresponding to the Course and Examination Regulations  
of the master's programme Industrial Ecology**

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## **Section 1 – General**

### **Article 1.1 – Semesters and start of the study**

The academic year is divided into two semesters. The programme starts in September.

### **Article 1.2 – Admission Requirements**

1. A bachelor's degree in any of the Natural Sciences, Engineering Sciences, or Social Sciences from an accredited university programme and comparable with three years of Dutch Academic Education.
2. For Dutch HBO students: a bachelor degree in any of the Natural Sciences, Engineering Sciences, or Social Sciences from an accredited programme and a grade point average of the entire curriculum of 7.5 or higher.
3. Demonstrable affinity with multi- or interdisciplinary education and research. This should be shown in a motivation letter to the admission committee by elaborating on relevant course modules, summer courses, internships, or other relevant experiences that at a sufficient academic level.
4. Demonstrable interest in the field of sustainability. This should be shown in a motivation letter to the admission committee by elaborating on relevant course modules, summer courses, internships, or other relevant experiences that are of a sufficient academic level.
5. Proof of sufficient proficiency in English: IELTS test level of at least 6.5, or Cambridge Certificate of Advanced English (CAE), minimum grade C, or TOEFL score of at least 90, evidenced by an appropriate test. This requirement does not apply if the student has:
  - a. completed his/her education in Canada, USA, UK, Ireland, New Zealand or Australia, or
  - b. an International Baccalaureate, or
  - c. for Dutch students, completed VWO level English.

### **Article 1.3 – Special tracks**

The master's programme does not offer special tracks.

## **Section 2 – Description of the master's programme**

### **Article 2.1 - General**

The Industrial Ecology programme is an interdisciplinary and international programme, which focuses on the analysis of sustainability problems and the design and implementation of solutions for these problems; all from a socio-technical system perspective. The aim of the programme is to educate students to become researchers or practitioners who can contribute to the development of solutions for persistent sustainability problems, such as related to resource depletion and climate change. The programme has been designed to transfer knowledge from natural science, engineering and social science, and enable students to integrate that knowledge to analyse sustainability problems and design science based solutions.

### **Article 2.2 - Overview of the two-year curriculum**

1. Core Modules (54 EC)
2. Interdisciplinary Project Groups (12 EC)
3. Specialisation Modules (18 EC)
4. Thesis Preparation Module (6 EC)
5. Thesis Research Project (30 EC)

Implementation Regulations for the  
Industrial Ecology Master's programme, 2018 - 2019

Coursecode	Course	Level	EC
<b>Core Modules (see article 2.3)</b>		<b>500</b>	<b>54</b>
4413GEIIEY	General Introduction to Industrial Ecology	500	6
4413FMDA6Y	Fundamentals of Modelling and Data Analysis	500	6
4413ANMT6Y	Analytical Methodologies and Tools	500	6
4413CLOSCY	Closed Loop Supply Chains	500	6
4413RENESY	Renewable Energy Systems	500	6
4413SYSEAY	System Earth	500	6
4413DoSTSY	Design of Sustainable Technological Systems	500	6
4413SUISCY	Sustainable Innovation and Social Change	500	6
4413UEINFY	Urban Environments and Infrastructures	500	6
<b>Interdisciplinary Project Groups (see article 2.4)</b>		<b>600</b>	<b>12</b>
4413INTPGY	Interdisciplinary Project Groups	600	12
<b>Specialisation Modules (see article 2.5)</b>		<b>master</b>	<b>18</b>
<b>Thesis Research Project (see article 2.6)</b>		<b>600</b>	<b>36</b>
4413TRP30Y	Thesis Preparation Module	600	6
4413GRPMDY	Thesis Research Project	600	30
<b>Total of the two-year curriculum Industrial Ecology</b>			<b>120</b>
<b>Specialisation Modules provided by the Industrial Ecology Master's programme</b>			
4413LCA9EY	LCA Practice & Reporting	600	9
4413EIOANY	Environmental Input-Output Analysis	500	6
4413MFA18Y	Material Flow Analysis	600	6
4413GIS18Y	GIS: Spatial analysis in urban regions	500	4
4413IECS2Y	Industrial Ecology Capita Selecta Module	500	2
4413IECS3Y	Industrial Ecology Capita Selecta Module	500	3
4413IECS4Y	Industrial Ecology Capita Selecta Module	500	4
4413IECS5Y	Industrial Ecology Capita Selecta Module	500	5
4413IECS6Y	Industrial Ecology Capita Selecta Module	500	6

### Article 2.3 – Core modules (54 EC)

These form the central part of the programme and are compulsory for every student.

### Article 2.4 – Interdisciplinary Project Groups (12 EC)

In the second year, students join project groups in which they are trained to solve real-life Industrial Ecology problems, by integrating the knowledge and insights they have acquired from studying different disciplines. Students can only participate in the Interdisciplinary Project Groups if they have finished at least 48 EC of the core modules.

### Article 2.5 – Specialisation Modules (18 EC)

1. Of the 18 EC, a minimum of 12 EC of the Specialisation Modules have to be relevant for the field of Industrial Ecology, preferably also to the topic of the Thesis Research Project, and at master education level, i.e. for Leiden University with a level 400 or higher, or for Delft University of Technology or other universities the course has to be from a master's programme or comparable.

2. A list with pre-approved Specialisation Modules, relevant for the field of Industrial Ecology, can be found on Brightspace. Within the 12 EC Industrial Ecology relevant Specialisation Modules, from this list only one course from the cluster Entrepreneurship, one course from the cluster Organisation and Management and one course from the cluster Serious Games can be chosen.
3. For the remaining 6 of the 18 EC, the only requirement is that the course or courses are at least on master education level and are not language course(s). In addition, the course(s) should not overlap with other courses on a student's ISP. Admission criteria for Specialisation Modules offered by other programmes can be obtained from those programmes i.e. the e-study guide of the module.
4. The choice for Specialisation Modules has to be approved by the Board of Examiners (BoE) before the start of the course or study component. A request for a Specialisation Module should be submitted by the student to the BoE via BoE-IE@cml.leidenuniv.nl. This request should be accompanied by a letter of motivation and course description, except for courses that are on the list of approved Specialisation Modules that is provided by the BoE. The BoE shall reach its decision within twenty working days of receipt of the request, and the student will be notified of the Board's decision as soon as possible by the secretary of the Board.

#### **Article 2.6 – Thesis Research Preparation Module and Thesis Research Project (36 EC)**

1. Students of the master's programme Industrial Ecology have to select, depending on their interest and background, a research topic in deliberation with an examiner. Students have to work independently on a research project. The graduation is composed of two modules, the Thesis Research Preparation Module and Thesis Research Project.
2. Students can only start the Thesis Research Project if:
  - At least 48 EC of the core modules is sufficiently completed.
  - The module 4413INTPGY Interdisciplinary Project Groups is sufficiently completed.
  - The module 4413GRPMDY Thesis Preparation Module is sufficiently completed.
  - The Individual Study Programme (ISP) is approved by the BoE.
  - The Thesis Research Form is completed handed in to the Study Advisor.
  - As preparation to the research topic, the involved examiner can ask the student to successfully finish specific Specialisation Modules, this has to be discussed with the student before the Thesis Research Project starts.

#### **Article 2.7 – Composition of the individual study programme**

1. Each student shall propose an individual study programme (ISP). An ISP must satisfy the final terms as described in the Course and Examination Regulations (OER) and Implementation Regulations and is subject to the approval by the BoE.
2. Adaptations to the ISP are likewise subject to approval by the BoE.

#### **Section 3 – Date of commencement**

These regulations come into force on 1 September 2018. These regulations have been decreed by the Deans of the respective faculties together with the Course and Examination Regulations of the Master's Programme Industrial Ecology.