

Besluit

Besluit strekkende tot het verlenen van accreditatie aan de opleiding wo-master Industrial Ecology (joint degree) van de Universiteit Leiden en de Technische Universiteit Delft

	Gegevens	
datum	29 januari 2016	Naam instelling : Universiteit Leiden en Technische Universiteit Delft
onderwerp	Besluit	Naam opleiding : wo-master
accreditatie wo-master (joint degree) Industrial Ecology Universiteit Leiden en Technische Universiteit Delft (004265)	Datum aanvraag	Industrial Ecology (joint degree) (120 EC)
uw kenmerk	2015/36536	Datum opleiding : 21 september 2015
ons kenmerk	NVAO/20160014/ND	Graad opleiding : Master of Science
bijlagen	2	Variant opleiding : voltijd
		Locaties opleiding : Leiden, Delft
		Datum goedkeuren : 14 september 2015
		Datum locatiebezoek : juni 2015
		Datum visitatierapport : augustus 2015
		Instellingstoets kwaliteitszorg : Universiteit Leiden: Positief besluit van 2 juli 2013 Technische Universiteit Delft: Positief besluit van 21 november 2011

Beoordelingskader

Beoordelingskader voor de beperkte opleidingsbeoordeling van de NVAO (Stcrt. 2014, nr 36791).

Bevindingen

De NVAO stelt vast dat in het visitatierapport deugdelijk en kenbaar is gemotiveerd op welke gronden het panel de kwaliteit van de opleiding voldoende heeft bevonden.

Advies van het visitatiepanel

Samenvatting bevindingen en overwegingen van het panel.

Programme profile

Industrial Ecology is an academic field that takes a systemic approach to environmental problems. This approach combines technical, environmental and social frames of reference, which are considered essential in the eventual transition to sustainable development. For that reason Industrial Ecology is sometimes referred to as the 'toolbox for sustainable development' or the 'science of sustainability'.

Pagina 2 van 6 Industrial Ecology takes a positive approach to sustainable development: 'industry's answer to the environmental challenge'. The analogy between natural and technical systems and processes is a core element. Processes in nature, where cycles are closed and waste from one process is input for another, serve as models for socio-technological processes. The term 'industrial' does not refer only to the industrial complexes or industrial process systems, it is used for all kinds of technological systems used in the exploration-production-consumption chain.

Standard 1. Learning outcomes

The intended learning outcomes focus on the analysis, design, and implementation of industrial systems on the analogy of ecological systems and with the least possible adverse sustainability impacts. They comply evidently with both the Dublin descriptors and the Dutch-Flemish domain specific referential framework.

Industrial ecology is a relatively young program. Like related programs regarding sustainability and the environment it relates to a complex and rapidly evolving field (in terms of research, theoretical concepts, practical applications and student body). The current articulation of the intended learning outcomes (dating from 2009) is overambitious and runs the risk of extending the field or scope of Industrial Ecology too broadly. Given the current state of development in the field of Industrial Ecology and related fields the panel recommends a rearticulation of the learning outcomes.

The panel assesses standard 1 as 'satisfactory'.

Standard 2. Teaching-learning environment

Industrial Ecology is a two-year master program. The first year focuses on acquiring the knowledge and skills that an Industrial Ecologist needs (covering the three basic areas of Industrial Ecology (Natural Sciences, Social Science and Engineering) with some room for specialization modules. The second year is primarily about applying the knowledge and skills that have been taught in the first year of the programme and consists of interdisciplinary group projects, specialization modules (of which about 25 are on offer) and an individual thesis research project. The panel notes some tension between a multidisciplinary and a truly interdisciplinary approach in the program.

The program succeeds in attracting a student body that is well-balanced in terms of relevant background disciplines: Natural Sciences, Social Science and Engineering. All students are required to master a core level of these three areas. There is some study delay and early drop-out of students due to this and because many students do internships for which no credits are awarded.

Given the complexity and dynamic development of the field, the panel doubts that the basic tenet of the program (that all students should have a common understanding of the three core disciplines) is sustainable in the long run and suggests implementing a system of 'tracks' (implying a 'T-structure' of the curriculum).

All staff members have both a teaching and a research task, because the philosophy of both involved faculties is that education should be based on scientific research. Most staff members are involved in research relevant to the theme of the program. The panel considers a total of 6 fte for the program and the number of students to be rather low, but still satisfactory now.

There is one full professor of Industrial Ecology in Leiden. Given the international ambitions of the program and the development of the field of Industrial Ecology, it would be

Pagina 3 van 6 advantageous to also have a full professor of Industrial Ecology at Delft University of Technology.

The program specific facilities are adequate. The panel assesses Standard 2 as 'satisfactory'.

Standard 3. Assessment

The assessment system of the program is in (a final stage of) development and some of the standard measures for quality control of assessment have only relatively recently been implemented. Still, given the material studied by the panel and the general impression of rigor in the program, the percentage of retakes in natural sciences exams for students with a social science background, and the improvements that have been realised with regard to the thesis assessment (see also standard 4) the panel concludes that the assessments are overall sufficiently transparent, valid and reliable.

The panel assesses Standard 3 as 'satisfactory'.

Standard 4. Achieved learning outcomes

The panel has paid much attention to the theses, both in terms of level and content. Initially, the panel had (on the basis of a sample of 15 theses) doubts about the relevance of the research topics in relation to the field of Industrial Ecology and about the grading. This has intensively been discussed in the various meetings, and the panel has studied additional theses and thesis research proposals.

The panel concludes that the original sample of theses was not wholly representative and that, while the thesis grading tends to be generally somewhat too high, the level of the theses is sufficient.

The program has provided a list showing the jobs of graduates (n= 72). Of these 28% work in research and 69% in 'industry' (including consultancy, government). Only 3% are unemployed.

Clearly graduates are in demand.

The panel assesses Standard 4 as 'satisfactory'.

General conclusion

Following the NVAO assessment rules the final conclusion of the panel regarding the WO master program Industrial Ecology, offered by Leiden University and Delft University is 'satisfactory'.

De NVAO onderschrijft de aanbevelingen van het panel, met name de aanbeveling om de beoogde eindkwalificaties hernieuwd te articuleren. Als aandachtspunt onderstreept de NVAO de opmerking van het panel dat de eindwerken enigermate aan de hoge kant beoordeeld worden.

Besluit

Ingevolge het bepaalde in artikel 5a.10, derde lid, van de WHW heeft de NVAO het college van bestuur van de Universiteit Leiden te Leiden in de gelegenheid gesteld zijn zienswijze op het voornemen tot besluit van 7 december 2015 naar voren te brengen. Van deze gelegenheid is geen gebruik gemaakt.

De NVAO besluit accreditatie te verlenen aan de wo-master Industrial Ecology (joint degree) (120 EC; variant: voltijd; locaties: Leiden en Delft) van de Universiteit Leiden te Leiden en de Technische Universiteit Delft te Delft.

De NVAO beoordeelt de kwaliteit van de opleiding als voldoende.

Dit besluit treedt in werking op 29 januari 2016 en is van kracht tot en met 28 januari 2022.

Den Haag, 29 januari 2016

De NVAO
Voor deze:

A handwritten signature in black ink, consisting of a large, stylized loop followed by a horizontal line and a vertical line intersecting it.

R.P. Zevenbergen
(bestuurder)

Tegen dit besluit kan op grond van het bepaalde in de Algemene wet bestuursrecht door een belanghebbende bezwaar worden gemaakt bij de NVAO. De termijn voor het indienen van bezwaar bedraagt zes weken.

Onderwerp	Standaard	Beoordeling door het panel
1. Beoogde eindkwalificaties	De beoogde eindkwalificaties van de opleiding zijn wat betreft inhoud, niveau en oriëntatie geconcretiseerd en voldoen aan internationale eisen.	Voldoende
2. Onderwijsleeromgeving	Het programma, het personeel en de opleidingsspecifieke voorzieningen maken het voor de instromende studenten mogelijk de beoogde eindkwalificaties te realiseren.	Voldoende
3. Toetsing	De opleiding beschikt over een adequaat systeem van toetsing.	Voldoende
4. Gerealiseerde eindkwalificaties	De opleiding toont aan dat de beoogde eindkwalificaties worden gerealiseerd.	Voldoende
Eindoordeel		Voldoende

De standaarden krijgen het oordeel onvoldoende, voldoende, goed of excellent. Het eindoordeel over de opleiding als geheel wordt op dezelfde schaal gegeven.

Pagina 6 van 6 **Bijlage 2: panelsamenstelling**

- prof. dr. W. Hafkamp (voorzitter), Erasmus University Rotterdam, domeindeskundige;
- prof. dr. H. Moll (lid), Rijksuniversiteit Groningen, domeindeskundige;
- prof. dr. A. Jamison (lid), Aalborg University, domeindeskundige;
- prof. dr. H. Eijkelhof (lid), Universiteit Utrecht, onderwijsdeskundige;
- ir. W. van Gerwen (lid), Department Manager Industrial Projects Tebodin, werkvelddeskundige;
- Th. Mason BSc (studentlid), Universiteit Utrecht, wo-master Sustainable Development.

Het panel werd ondersteund door drs. C. Hover, secretaris (gecertificeerd).