

## Besluit

### Besluit strekkende tot het verlenen van accreditatie aan de opleiding wo-master Water Science and Engineering van de UNESCO - IHE

#### Gegevens

datum	Naam instelling	:	UNESCO - IHE
23 juli 2013	Naam opleiding	:	wo-master Water Science and Engineering (106 ECTS)
onderwerp	Datum aanvraag	:	27 december 2012
Besluit	Variant opleiding	:	voltijd (postinitieel)
accreditatie wo-master	Afstudeerrichtingen	:	Hydrology and Water Resources Hydraulic Engineering and River Basin Development Hydraulic Engineering – Coastal Engineering and Port Development
Water Science and Engineering van de UNESCO - IHE (001384)			Hydraulic Engineering – Land and Water Development Hydroinformatics – Modelling and Information Systems for Water Management
uw kenmerk			Erasmus Mundus Programme on Flood Risk Management Erasmus Mundus Programme on Ecohydrology
EB-011-BFA			
ons kenmerk			
NVAO/20132486/ND			
bijlagen			
3	Locatie opleiding	:	Delft
	Datum goedkeuren panel	:	22 mei 2013
	Datum locatiebezoek	:	17 t/m 19 december 2012
	Datum visitatierapport	:	11 december 2012

Instellingstoets kwaliteitszorg : aangemeld en geaccepteerd voor het invoeringsregime van de instellingstoets kwaliteitszorg als bedoeld in artikel 18.32 b en c van de WHW

#### Aanvullende informatie

De NVAO heeft de instelling op 15 mei 2013 telefonisch om aanvullende informatie gevraagd over de gehanteerde toelatingsvoorwaarden en over enkele kwantitatieve gegevens. Bij e-mails van 16 en 30 mei 2013 heeft de NVAO de aanvullende informatie ontvangen.

#### Beoordelingskader

Beoordelingskader voor de beperkte opleidingsbeoordeling van de NVAO (Stcr. 2010, nr 21523).

#### Inlichtingen Henri Ponds

+31 (0)70 312 23 61  
h.ponds@nvaو.net

Parkstraat 28 | 2514 JK | Postbus 85498 | 2508 CD Den Haag  
P.O. Box 85498 | 2508 CD The Hague | The Netherlands  
T + 31 (0)70 312 2300 | F + 31 (0)70 312 2301  
info@nvaو.net | www.nvaو.net

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

Via opgevraagde, aanvullende informatie heeft de instelling naar tevredenheid van de NVAO een nadere toelichting gegeven bij de gehanteerde toelatingscriteria voor de opleiding.

#### **Advies van het visitatiepanel**

Samenvatting bevindingen en overwegingen van het panel (hierna ook: the committee).

The judgement of the assessment committee is based on information provided in the critical reflection, a sample of theses, additional documentation provided during the site visit and interviews conducted with staff, students and graduates of the programme. During its assessment, the committee noted positive aspects as well as ones which could be improved. Taking these aspects into consideration, the committee decided that the programme in Water Science and Engineering fulfils the requirements set by the NVAO for accreditation.

#### **Standard 1: Intended learning outcomes**

UNESCO-IHE is a development oriented institute of higher education and the Master Water Science and Engineering is one of the four master's programmes offered to mid-career professionals from around the world. Water Science and Engineering offers seven specialisations, most of them in cooperation with international partner institutes. The programme combines hydraulic engineering, hydrology and hydroinformatics. These different fields are complementary and ensure exposure of the student to a large variety of water issues from different perspectives, and the ability to develop sustainable solutions for complex water problems. An international benchmark has been executed by the programme and shows that the contents of the programme are in line with other programmes in the Netherlands and Europe. However, the programme has its special niche in the combination of disciplines it offers to a specific target group of mid-career professionals as well as its orientation on developing countries and countries in transition.

The learning objectives of the programme are the acquirement of scientific knowledge and understanding of natural and engineering sciences, the application of this knowledge in broad contexts, the ability to conduct research on the basis of a good research plan and appropriate methodologies, the skills to communicate the results of research to colleagues and stakeholders orally and in written reports, and the ability to support planning and operation of infrastructures in the domain of water engineering. The formulation of the intended learning outcomes testifies to its ability to successfully navigate between applied and academic science. The consequential hybrid character of the programme is considered most appropriate for a field such as Water Science and Engineering. The committee therefore assesses the first standard as satisfactory.

#### **Standard 2: Teaching-learning environment**

The Delft-based curriculum consists of 106 ECTS and runs over 18 months. The programme follows a modular structure, each module having a duration of three weeks and a study load of 5 EC. It has four distinct phases: Foundation, Deepening, Broadening and Research. The institute has used the T-shape model in designing the curriculum. In this model the vertical bar of the letter T represents the in-depth knowledge of the main

Pagina 3 van 8 discipline and the horizontal bar reflects the basic knowledge of adjacent disciplines. The students appreciate the effect of the programme in first broadening their scope and then focusing again.

The double degrees with partner institutes have a longer duration, ranging from 110 to 123 EC. The double degree programmes are neatly combined with the specialisation modules of the Delft programme and are tailored to the needs and possibilities of students in developing countries and their employers. The Erasmus Mundus programmes focus on specialized issues of current interest and also make use of the existing modules. The committee concludes that these double degree programmes are a worthwhile addition and that the programme staff ensures that their contents and level are of the same quality as the single degree programme.

The didactical concept of the Water Science and Engineering programme aims to stimulate the student's independent and active learning attitude and intellectual growth. The learning objectives are described in clear module sheets. Each module uses a variety of teaching and assessment methods, depending on the goal of the course. This may include laboratory work, lectures, self-study, field trips, small group assignments and individual exams. Lectures are given by UNESCO-IHE staff and by guest lecturers who provide additional applied and theoretical expertise and illustrations from the professional field.

Students find the study load demanding. A large volume of material has to be covered, and many students have been out of the classroom for many years. Especially the work on the research project is difficult for many students because only few of them have a research background. The guidance and supervision during the research phase are intensive to give the students the necessary support.

The academic staff is well-qualified academically and professionally and have good teaching skills. They are highly committed. Their international background and experience fit the scope of the programme and the contexts of the students. For additional input guest lecturers are called upon. The committee recommends to evaluate the number of guest lecturers and the contents they offer with respect to the load of each module. The Student Affairs Office offers non-academic support in a proactive manner and well-coordinated with the academic support by the Programme Coordinator and the Specialisation Coordinator. The committee recommends to establish for each incoming student a 'portfolio' with his/her initial motivation and career plan, which should be discussed and updated as needed, preferably with a unique mentor from the start.

The committee recognises the often intricate selection of the right candidates with the correct background. It recommends therefore to explore the possibilities for on-line preparation and self-learning opportunities through the e-Campus development. The committee acknowledges the effort to balance the appropriate level of the curriculum and its necessary flexibility within the constraints of the duration of the programme. The committee suggests to look into the possibility of offering a programme of 120 EC for all students and granting credits to incoming students with professional experience, comparable with an internship of 6 months.

The curriculum clearly reflects the T-shaped concept. The Programme Committee is aware of the often overwhelming choice of modules or specialisation and evaluates the curriculum regularly. The group work approach is a useful way to prepare future water leaders to face

Pagina 4 van 8 real-life problems. This approach as well as most of the curriculum allows for good interaction among students. An international exposure is given in field trips and site visits. The institute has well-staffed specific services and good facilities. The committee therefore assesses the second standard as satisfactory.

### **Standard 3: Assessment and achieved learning outcomes**

The committee established that the assessment system of the UNESCO-IHE functions very well. Good control mechanisms ensure that work is systematically and consistently graded. The committee further found the variety of assessment methods to be appropriate. The examination structure has clearly been tailored to the intended learning outcomes of the programme. The committee especially appreciates the system of blind marking and the involvement of external assessors. The assessment system has strong checks and balances and the assessments are transparent, valid and reliable.

The committee studied a representative sample of the Water Science and Engineering theses. In most cases the committee agreed with the mark given by the thesis committees, but in a number of cases the committee would have marked slightly lower. The committee suggests to include an examiner, fully external to the Institute, in all thesis committees. All theses met the minimum requirements for academic quality and some were at a higher level. On this basis the committee concludes that the master's programme Water Science and Engineering graduates have achieved the intended learning outcomes of an academic master. The positive effect of the master's programme was confirmed by the alumni with whom the committee met. The committee therefore assesses the third standard as satisfactory.

### **Aanbevelingen**

De NVAO onderschrijft de adviezen van het panel om:

- te onderzoeken of studenten niet voorafgaand aan de start van hun opleiding kunnen worden aangezet tot studie om de behoorlijke verschillen tussen studenten in de beginfase van de opleiding te verkleinen;
- de relatie tussen de beoordelingscriteria van de afstudeerwerken en de eindkwalificaties inzichtelijk te maken;
- de studenten intensiever te begeleiden bij het gebruik van academische literatuur en bronvermelding in de afstudeerwerken;
- gewichten toe te kennen aan de beoordelingscriteria van de masterthesis.

Ingevolge het bepaalde in artikel 5a.10, tweede lid, van de WHW heeft de NVAO het college van bestuur van de UNESCO - IHE te Delft in de gelegenheid gesteld zijn zienswijze op het voornemen tot besluit van 10 juni 2013 naar voren te brengen. Bij e-mail van 18 juli 2013 heeft het college van bestuur ingestemd met het voornemen tot besluit.

Op grond van het voorgaande besluit de NVAO accreditatie te verlenen aan de wo-master Water Science and Engineering (106 ECTS; variant: voltijd; locatie: Delft) van de UNESCO - IHE te Delft.

De opleiding kent de volgende afstudeerrichtingen: Hydrology and Water Resources, Hydraulic Engineering and River Basin Development, Hydraulic Engineering – Coastal Engineering and Port Development, Hydraulic Engineering – Land and Water Development, Hydroinformatics – Modelling and Information Systems for Water Management, Erasmus Mundus Programme on Flood Risk Management and Erasmus Mundus Programme on Ecohydrology.

De NVAO beoordeelt de kwaliteit van de opleiding als voldoende.

Dit besluit treedt in werking op 1 januari 2014 van kracht tot en met 31 december 2016 (2019)<sup>1</sup>.

Den Haag, 23 juli 2013

De NVAO

Voor deze:



Lucien Bollaert

(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.

---

<sup>1</sup> Gelet op het bepaalde in artikel 18.32c, derde lid, van de Wet op het hoger onderwijs en wetenschappelijk onderzoek (WHW) bedraagt de geldigheidsduur van de accreditatietermijn van de opleiding maximaal drie jaar zolang de instelling nog niet beschikt over een positieve instellingstoets kwaliteitszorg. Zodra de instellingstoets is verkregen, wordt de accreditatietermijn verlengd naar zes jaar.

Pagina 6 van 8 **Bijlage 1: Schematisch overzicht oordelen panel**

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

De standaarden krijgen het oordeel onvoldoende (O), voldoende (V), goed (G) of excellent (E). Het eendoordeel over de opleiding als geheel wordt op dezelfde schaal gegeven.

**Tabel 1: Rendement.**

Cohort	2009	2010
Rendement	96%	85%

**Tabel 2: Docentkwaliteit.**

Graad	PhD	BKO
Percentage, exclusief gastdocenten	84%	19%
Percentage, inclusief gastdocenten	72%	

**Tabel 3: Student-docentratio.**

Ratio	1 : 8,9
-------	---------

**Tabel 4: Contacturen.**

Studiejaar	1 en 2
Contacturen	506 uren voor het onderwijsdeel en 72 uren begeleiding in de afstudeerfase

Pagina 8 van 8 **Bijlage 3: panelsamenstelling**

- Prof. dr. André van der Beken (chair), emeritus professor, Free University Brussels, Belgium;
- Prof. ing. Janos Bogardi, professor in Water Resources at the Faculty of Agriculture of the University of Bonn, Germany;
- Academician Dipak Gyawali, professor at the Nepal Academy of Science and Technology (NAST), Nepal;
- Prof. dr. Rivka Kfir, extraordinary professor Microbiology and Plant Pathology and senior advisor at the Water Institute, University of Pretoria, South Africa;
- Prof. dr. Grietje Zeeman, professor in New Sanitation at Wageningen University and Research Centre (WUR), the Netherlands;
- Franca Kramer BSc, master student of Water Management at Delft of Technology, the Netherlands.

Het panel werd ondersteund door dr. Marianne van der Weiden, secretaris (gecertificeerd).