

## Besluit **Besluit strekkende tot het verlenen van accreditatie aan de opleiding wo-bachelor Aardwetenschappen van de Vrije Universiteit Amsterdam**

	<b>Gegevens</b>	
datum	Naam instelling	: Vrije Universiteit Amsterdam
23 juli 2013	Naam opleiding	: wo-bachelor Aardwetenschappen (180 ECTS)
onderwerp	Datum aanvraag	: 18 december 2012
Besluit accreditatie wo-bachelor	Variant opleiding	: voltijd
Aardwetenschappen van de	Afstudeerrichtingen	: Solid Earth; Earth Surface; Geoarcheology (until 2014).
Vrije Universiteit Amsterdam	Locatie opleiding	: Amsterdam
(001232)	Datum goedkeuren	
uw kenmerk	panel	: 22 mei 2012
CvB/EK/dv/2012/1930	Datum locatiebezoeken	: 18 en 19 september 2012
ons kenmerk	Datum visitatierapport	: februari 2013
NVAO/20132520/SL	Instellingstoets kwaliteitszorg	: aangemeld en geaccepteerd voor het invoeringsregime als bedoeld in artikel 18.32 b en c van de WHW
bijlagen		
3		

### **Aanvullende informatie**

De NVAO heeft bij e-mail van 1 mei 2013 de instelling aanvullende informatie gevraagd over enkele feitelijke gegevens. Bij e-mail van 7 mei 2013 heeft de NVAO de aanvullende informatie ontvangen.

### **Beoordelingskader**

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

### **Bevindingen**

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. Het visitatierapport geeft de bevindingen en overwegingen weer van het panel over de bachelor- en masteropleidingen Aardwetenschappen, Earth Sciences en Hydrology van de Vrije Universiteit Amsterdam. Het panel heeft ook aardwetenschappelijke wo-opleidingen aan drie andere universiteiten beoordeeld.

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

**Standard 1: Intended learning outcomes**

The bachelor's and master's programmes Earth Sciences and the master's programme Hydrology at the VU have, as other academic programmes of Earth Sciences, the planet Earth as the object of study, its genesis and its quality of life. These sciences are strongly interdisciplinary, with interaction between various factors, such as humans, fauna, relief, soil, water, lithology, atmosphere, hydrosphere and vegetation. Knowledge is gathered about its origin, current and former composition, and structure and the processes acting in and between the components of geosphere, hydrosphere, atmosphere and biosphere. Equally important is knowledge of how to manage and sustainably use the Earth's resources and understand the influence of human activity on the terrestrial system. It takes into account society's rapidly growing demand for well-trained Earth Scientists prepared to tackle scientific and societal issues.

The bachelor's programme Earth Sciences offers a broad and integrated spectrum of geological and geographical aspects, thereby considering the Earth as a dynamic system with particular emphasis on the interaction between physical and chemical processes at and below the Earth's surface and its evaluation through time. The committee applauds the breadth of the programme, offering students insight in many interrelating aspects of the Earth system.

The primary aim of the bachelor's programme is to prepare students to become independent and critical academics who can play an active role in society. Besides this academic research orientation, the programme also aims to forge a clear link between Earth Sciences and society. The committee is positive about the orientation towards both a research and a professional career. Since the programme is currently taught in Dutch, the committee states that there is scope for improving its international perspective, in order to better prepare the students for the international market.

The committee concludes that the programme properly relates to the domain-specific framework of reference. The framework is an effective and correct representation of Earth Sciences and offers enough anchor points for programmes to establish their own objectives. Derived from this framework of reference, the programme has formulated intended learning outcomes. The intended learning outcomes are in line with the Dublin descriptors. The committee confirmed that the intended learning outcomes are in line within this framework and reflect the level, and orientation of the programme.

**Standard 2: Teaching-learning environment**

The bachelor consists of 180 EC divided over three years. The programme comprises basic, compulsory and optional courses, fieldwork and a thesis project. The programme is structured around the following specific themes; Academic skills, Methods in Earth Sciences, Earth's building blocks, Dimensions in time and space and Social demands and impact. The general themes of the first year are further developed in the second year. In the spring of the second year, students have to select one of two more specialised study tracks: Solid Earth or Earth Surface. The tracks offer courses that provide more in-depth knowledge on the topics of the selected track, and prepare for the specialised, integrated field project at the end of the 2nd year. The third year of the programme starts with a minor, followed by 3 courses that are compulsory for both tracks. Science History and Science Philosophy are

Pagina 3 van 9 part of the theme Academic skills, while the courses Applied Geophysics and Computer modelling are part of the theme Methods in Earth Science. Finally, the programme is concluded with a BSc thesis project of 15 ECTS, in which the students take part in the research programmes of the Department of Earth Sciences.

The curriculum was recently revised (2011-2012). According to the programme managers, the changes primarily involved the introduction of the minor and the intention to increase the portability of the programme. Furthermore, the programme aims to strengthen the link between fieldwork and theory. The committee noted that the curriculum is organised in a structured way. It noted after comparison with the old curriculum, that the content of the new curriculum is more balanced.

The committee noted the relatively large amount of time devoted to fieldwork and the limited time available for auxiliary courses. As a consequence, the committee has noted that most students appear to feel less comfortable with quantitative and numerical methods and therefore choose more qualitative and descriptive research projects. The staff's assumption is that integration of theory and fieldwork will provide students with a better understanding of the system Earth. The committee does not disapprove of this didactic concept within the programme, but holds the opinion that its assumed advantage has to be proven before it can be justified.

*Didactic concepts and methods.* All the VU programmes aim to offer an educational environment with ample scope for students to exploit their talents and achieve their ambitions. The committee values the creation of a context in which students are able to explore and express their own talent and ambition, but also noted that in this context students appear not to be intellectually challenged in an optimal manner. The committee advises that the aim to create an optimal context for realising the students' ambition on one hand, whilst expressing the programme's ambition on the other, should be actively maintained. It will enable students to improve themselves and become self-critical Earth Scientists.

*Intake and studyload.* Intake numbers are increasing. Nevertheless, student progress is seen as an important source of concern. Many students do not graduate on time. The committee concludes that the programme should devote more attention to student progress. The committee holds the opinion that a better expression of the programme's ambition, accompanied by less possibilities for re-sitting assessments will result in improved study progress.

*Internationalisation.* The committee suggests that the international orientation of the programme can be improved. There are many ways to increase its standing in the world, including attracting more students from abroad by gradually change the language of Dutch elements of the programme into English. This will enhance the international orientation of the programme and help students prepare for the international market.

*Staff.* The committee concluded that the programme is taught by lecturers who are both willing and able to pay close attention to the students. It is positive about both their research and educational qualities. Together with the programme coordinator and study advisor, they create a supportive and accessible surrounding for the students.

Pagina 4 van 9 *Quality Assurance*. Recently, the curriculum was revised. In the future, the increasing number of students will also influence the curriculum. The committee holds the opinion that the Board of Education should take a more proactive and central role to guarantee the quality of the programme. Furthermore, a positive and open attitude on the part of both management and lecturers is essential to make plans for maintaining the quality and quantity of staff.

*Safety*. Because it focuses on Earth Sciences, the programme includes fieldwork and practical training. Because safety is an important issue in fieldwork, the committee strongly recommends that a legally based safety assurance system is needed to legally protect faculty, staff and students. The committee applauds the already existing safety guidelines, but these documents have no legal status. As in other programmes in Earth Sciences in the Netherlands, lecturers, management and students are not fully aware of their responsibilities. The committee therefore recommends that a safety assurance system should be developed in cooperation with the other academic education programmes in Earth Sciences in the Netherlands. The current guidelines of the VU programmes in Earth Sciences will be very useful in implementing such a system, if they are given legal status. The committee also advises that teaching staff should ensure that safety rules are enforced in the field. Finally, the committee recommends obligatory first aid courses for both students and lecturers.

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

The committee verified the assessment system and methods as well as the achievement of intended learning outcomes by students. It concludes that the assessment system is satisfactory.

The committee applauds the efforts of the assessment committee to evaluate the quality of the assessments. The committee encourages further improvement of this quality evaluation, e.g. with the introduction of peer review to evaluate the requirements of assessments. Although the committee suggests some improvements in grading the thesis, it is very positive about the use of the checklist to help in grading a thesis in an objective and transparent manner.

To assess the achievement of the learning outcomes, the committee has studied several theses. Based on the theses and the information gathered about progress and success rates, the committee has established that students achieve the learning outcomes to a satisfactory level. Most of the theses seen from the programme have a qualitative research character. This is seen to result from a curriculum with a substantial part devoted to fieldwork and limited time allocated for training in methods of data analysis. The committee was nevertheless pleasantly surprised by some theses in which high level quantitative methods were used.

De NVAO onderschrijft de aanbevelingen van het panel om

- internationale oriëntatie te versterken;
- het veronderstelde voordeel van de grote hoeveelheid veldwerk te onderbouwen;
- meer aandacht te besteden aan studievoortgang;
- in samenwerking met andere opleidingen een adequaat veiligheidsprotocol voor veldwerk in te stellen zoals in het visitatierapport is omschreven.

#### **Bestuurlijke afspraken**

Gelet op het belang van borging van de toetskwaliteit en in lijn met opmerkingen hierover in het visitatierapport, heeft de NVAO met de instelling een bestuurlijke afspraak gemaakt die als volgt luidt:

Uiterlijk 1 april 2015 zal de instelling een jaarverslag van de examencommissie over het academiejaar 2013-2014 toezenden aan de NVAO, waarin aandacht wordt besteed aan de implementatie van de verbetermaatregelen ten aanzien van de toetsing die in het visitatierapport zijn omschreven.

Gelet op de aanbeveling in het visitatierapport ten aanzien van de omvang van het ingezette personeel, dat in een eerdere visitatie ook aan de orde is gesteld, heeft de NVAO met de instelling een bestuurlijke afspraak gemaakt die als volgt luidt:

Uiterlijk 1 januari 2014 zal de instelling een plan van aanpak met indicatoren en timing toezenden aan de NVAO, gericht op het handhaven van een voldoende aantal docenten van hoge kwaliteit.

Het college van bestuur van de instelling heeft deze afspraken bij brief van 26 juni 2013 bevestigd.

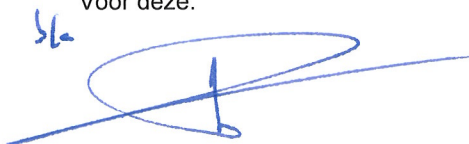
Ingevolge het bepaalde in artikel 5a.10, tweede lid, van de WHW heeft de NVAO het college van bestuur van de Vrije Universiteit Amsterdam te Amsterdam in de gelegenheid gesteld zijn zienswijze op het voornemen tot besluit van 27 mei 2013 naar voren te brengen. Bij e-mail van 18 juli 2013 heeft de instelling gereageerd op het voornemen tot besluit. Dit heeft geleid tot enkele aanpassingen in het besluit.

De NVAO besluit accreditatie te verlenen aan de wo-bachelor Aardwetenschappen (180 ECTS; variant: voltijd; locatie: Amsterdam) van de Vrije Universiteit Amsterdam te Amsterdam. De opleiding kent de volgende afstudeerrichtingen: Solid Earth; Earth Surface; Geoarcheology (until 2014). De NVAO beoordeelt de kwaliteit van de opleiding als voldoende.

Dit besluit treedt in werking op 1 januari 2014 en is 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 (Wet) 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.

Onderwerp	Standaard	Beoordeling door het panel
		<i>voltijd</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	G
<b>2. Onderwijsleeromgeving</b>	Het programma, het personeel en de opleidings specifieke 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>Eindoordeel</b>		V

De standaarden krijgen het oordeel onvoldoende (O), voldoende (V), goed (G) of excellent (E).

Het eindoordeel over de opleiding als geheel wordt op dezelfde schaal gegeven.

**Tabel 1: Uitval na 1, 2, en 3 jaar.**

Cohort	2006	2007	2008	2009	2010	2011
Uitval na 1jr	7%	9%	0%	14%	18%	8%
Uitval na 2jr	61%	19%	13%	19%	24%	
Uitval na 3jr	66%	19%	17%	23%		

*N.B.: hoge uitval in 2006 wegens omzetting studenten naar nieuwe opleiding Aarde en Economie.*

**Tabel 2: Rendement (vwo-instroom).**

Cohort	2006	2007	2008	2009
Rendement na 3 jaar	42%	19%	26%	43%
Rendement na 4 jaar	58%	59%	70%	
Rendement na 5 jaar	71%	81%		
Rendement na 6 <sup>(+)</sup> jaar	75%			

**Tabel 3: Rendement (totale instroom).**

Cohort	2006	2007	2008	2009
Rendement na 3 jaar	32%	20%	23%	41%
Rendement na 4 jaar	43%	36%	67%	
Rendement na 5 jaar	64%	79%		
Rendement na 6 <sup>(+)</sup> jaar	71%			

**Tabel 4: Docentkwaliteit.**

Graad	MA	PhD	BKO
Percentage	2%	98%	48%

**Tabel 5: Student-docentratio.**

Ratio	20
-------	----

**Tabel 6: Contacturen.**

Studiejaar	1	2	3
Contacturen	18.5	17.5	9.5



- Prof. M.A. Herber (chair), professor of Geo-Energy, University of Groningen, the Netherlands;
- Prof. M. Landrø, professor of Applied Geophysics, NTNU Trondheim (Norwegian University of Science and Technology), Norway;
- Prof. J.W. Hopmans, professor of Vadose Zone Hydrology, University of California (Davis), USA;
- Prof. Emeritus D.E. Walling, hydrologist/geomorphologist, University of Exeter, UK;
- Drs. R.L. Prenen, Msc, independent educational advisor;
- M.M. Cazemier (student member), master's graduate of Earth Sciences, Hydrology and Water Quality, Wageningen University.

Het panel werd ondersteund door dr. Willemijn van Gastel, secretaris (gecertificeerd).