nvao
nederlands - vlaamse accreditatieorganisatie

Besluit

Besluit strekkende tot het verlenen van accreditatie aan de opleiding wo-master Applied Physics van de Universiteit Twente

datum
31 december 2014
onderwerp
Definitief besluit accreditatie wo-master Applied Physics Universiteit Twente (003186)
uw kenmerk
CvB UIT - 440/S&B
ons kenmerk
NVAO/20144139/ND
bijlagen
3

Gegevens

Naam instelling	:	Universiteit Twente
Naam opleiding	:	wo-master Applied Physics (120 ECTS)
Datum aanvraag	:	10 juli 2014
Variant opleiding	:	voltijd
Afstudeerrichtingen	:	Fluid Physics Materials Physics Optics & Biophysics
Locatie opleiding	:	Enschede
Datum goedkeuren panel	:	10 februari 2014
Datum locatiebezoeken	:	18 en 19 maart 2014
Datum visitatierapport	:	11 juni 2014
Instellingstoets kwaliteitszorg	:	ja, positief besluit van 2 mei 2014

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

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 (hierna ook: the assessment committee).

Standard 1 Intended learning outcomes
The master's programme Applied Physics is one of five master's programmes in the University of Twente Faculty of Science and Technology. The programme is primarily research oriented; students are trained to start their professional career as applied physicists. From the start of the programme, they choose from one of three tracks (1) Fluid Physics, (2) Materials Physics, and (3) Optics and Biophysics. The track Fluid Physics focuses on 'phenomena that are encountered in liquids and gases', the track Materials

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Physics on the understanding and control of exceptional materials properties, and the track Optics and Biophysics on 'fundamental problems and cutting-edge applications in photonics and optical biophysics'.

The committee concludes that the master's programme has a clear profile. At the same time, it believes that the programme could position itself better internationally by highlighting its unique character in comparison to similar programmes elsewhere – in The Netherlands and abroad. The committee was impressed with the amount of detail given to the formulation of the intended learning outcomes. The programme identifies which specific research, designing and communication skills master graduates should possess. The intended learning outcomes of the master's programme are more specific than those of the bachelor's programme and they are geared towards starting a professional career as an applied physicist. The committee concludes that the intended learning outcomes are in line with the domain specific framework of reference and meet international standards.

Standard 2 Teaching-learning environment

The master's programme Applied Physics consists of 120 EC, divided over two years. The didactic concept underlying the programme is that of learning by means of a master-apprentice relation. Almost half (50 EC) of the master's programme is devoted to 5 EC courses. Furthermore, students take a compulsory, three-month internship (20 EC) and finish their studies by doing a research project (50 EC).

The committee concludes that the contents and design of the master's programme ensure that students are able to obtain the intended learning outcomes. The programme has a clear structure and offers a lot of flexibility. There is a clear connection between the aims of the courses and the learning aims of the programme. The courses provide students with the necessary theoretical knowledge basis. During the internship and the research project, the focus shifts to doing research. The didactic concept underpinning the master's programme, the committee finds, is not very transparent and asks for a better elaboration.

The committee is of the opinion that the scientific orientation of the programme is more than sufficiently safeguarded. It also concludes that, apart from the (mostly research oriented) internship, the programme depends heavily on study association Arago for job orientation outside research. The committee strongly suggests that the programme management secures a more prominent place for job orientation activities in the master's programme.

Students on average take 2.2 years to finish the programme. The committee concludes that the completion rates are good. The committee also observes that the programme has an adequate system of study guidance in place. The committee got the impression that students are generally very enthusiastic about their lecturers and seem to feel well supported in their study.

The committee concludes that the academic staff is very well equipped for delivering the programmes. All lecturers participate in research and thus are able to teach students about the latest developments in their field. The committee was also impressed by the dedication and enthusiasm of which the teaching staff testified. However, the committee also noted that the staff workload is tough. This in turn has resulted in the fact that a significant percentage of staff has not yet obtained a basic teaching qualification (BKO).

The teaching and laboratory facilities in the new Carré-building, the committee concludes, are impressive.
Master students who have reached the research project phase get a workplace in or nearby the laboratory or chair of the research group in which they carry out their master's assignment. They are treated as members of the research group and participate in all group activities. The committee is enthusiastic about this procedure.

The committee concludes that students are generally well involved in the evaluation of the programme. The assessment committee also concludes that the Programme Committee, which can play an important role in the process of quality assurance, could have been better informed about the implementation of TOM in the bachelor's programme. The committee stresses the importance of a well-informed, pro-active Programme Committee. This Committee can help to identify problems before they occur (not only at a course level, but also at the level of the programme as a whole) and to solve these problems. To conclude, the committee stresses the importance of evaluating not just individual courses, but the master's programme as a whole. For this and other purposes, it would be desirable it the programme kept closer ties with its graduates.

Standard 3 Assessment and achieved learning outcomes
The committee finds the assessment procedure adequate. Students are well informed about assessment procedures. Assessment forms in the master's programme match the intended learning outcomes of individual courses and of the programme as a whole. The committee considered exams in the master's programme to be of a high standard. It was also happy with the fact that for each course there is an assessment plan available containing, for instance, model answers the weighing of each assessment in the final grade.

The Board of Examiners is responsible for drawing up and enforcing the rules and regulations, and for checking the quality of assessment within the programme. The committee concludes that the Board of Examiners fulfils its statutory tasks, but could adopt a more pro- active role. The Board should for example formulate an opinion on the assessment of group work in the bachelor's programme. Also, the Board should decide on their line of approach in matters such as detecting fraud and plagiarism.

The introduction of a new assessment forms for the bachelor's research project in September 2013 has led to more clarity on the weighting of the elements the final grade is based on. It would be preferable, the committee concludes, if a similar form was adopted for the master research project. In addition, the programme management and the Board of Examiners should stress the importance of filling in the forms properly.

To assess the level achieved by the students, the committee examined a range of master's theses. In general, it agrees with the marks that have been given and concludes that the level of the theses matches and surpasses the level that may be expected of a graduate of an academic master's programme in physics.

Aanbevelingen
De NVAO onderschrijft de aanbevelingen van het panel.

Besluit

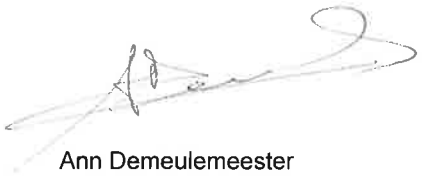
Ingevolge het bepaalde in artikel 5a.10, derde lid, van de WHW heeft de NVAO het college van bestuur van de Universiteit Twente te Enschede in de gelegenheid gesteld zijn zienswijze op het voornemen tot besluit van 3 november 2014 naar voren te brengen. Van deze gelegenheid is geen gebruik gemaakt.

De NVAO besluit accreditatie te verlenen aan de wo-master Applied Physics (120 ECTS; variant: voltijd; locatie: Enschede) van de Universiteit Twente te Enschede. De opleiding kent de volgende afstudeerrichtingen: Fluid Physics; Materials Physics; Optics & Biophysics. De NVAO beoordeelt de kwaliteit van de opleiding als voldoende.

Dit besluit treedt in werking op 31 december 2014 en is van kracht tot en met 30 december 2020.

Den Haag, 31 december 2014

De NVAO
Voor deze:



Ann Demeulemeester
(vicevoorzitter)

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.

 Bijlage 1: Schematisch overzicht oordelen panel

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 en gerealiseerde eindkwalificaties	De opleiding beschikt over een adequaat systeem van toetsing en 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.

 Bijlage 2: Feitelijke gegevens

Master's programme Applied Physics:

Intake:

	2006	2007	2008	2009	2010	2011	2012	Average
Total intake	26	36	29	30	29	33	50	33
Female	4	5	6	4	3	4	7	5
	15%	14%	21%	13%	11%	12%	14%	14%
From BSc AP	26	32	22	24	16	29	39	81%
From other BSc	-	1	-	-	2	1	3	3%
From HBO	-	2	3	2	8	1	6	9%
International	-	1	4	4	2	2	2	6%

Succes rates:

Performances	mean over cohorts 2003-2010
MSc diploma ≤ 2 year	42%
MSc diploma ≤ 3 years	85%
MSc diploma final	97%

Teacher-student ratio achieved

Both programmes:

Year	Number of teaching FTEs	Number of registered BSc + MSc students	Number of students per teaching FTEs
December 2013	43 x 40% = 17,2 fte	262	15,2

Master's programme Applied Physics:

		Scheduled hours					Total	Non-Scheduled Hours		Total
		Courses (50 EC)								
		Lectures	Tutorials	Lab projects	Projects	Exams (1)	Total course hours	Internship (120 EC)	MSc Assign. (50 EC)	Total hours
M1+M2	Hrs	200	100	35	15	45	1400	560	1400	3360
		395					1400	1960		3360
	%	14%	7%	3%	1%	3%	100%	17%	42%	100%
		28%						59%		100%

(1) Excluding scheduled hours of re-exam

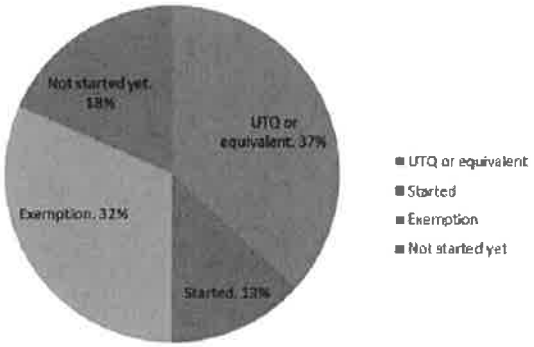
The programme calculates the average amount of face-to-face instruction of the programme as a whole at 12 hours per week.

Qualifications of the teaching staff:

Percentage of PhD:

Category	Total		% PhD	Female	
	No.	FTE		No.	FTE
Full professor	15	6,0	100%	2	0,8 (13%)
Professor (UHD+)	3	1,2	100%	1	0,4 (33%)
Associate professor (UHD)	12	4,8	100%	0	0 (0%)
Assistant professor (UD)	10	4.0	100%	3	1,2 (30%)
Other	3	1,2	33%	0	0 (0%)
Total	43	17,2		6	2,4 (14%)
Student assistants	24	1,3			

Percentage of basic teaching qualification:



UTQ or equivalent: Lecturers who have obtained their UTQ (University Teaching Qualification) or DUIT (Didactisch Universitair Inwerktraject Twente, precursor of UTQ)

Exemption: Lecturers with a appointment of more than 20 years at the University of Twente, or professors with an appointment of less than 8 hours a week ('deeltijdhoogleraren') are not obliged to enter the UTQ training

Started: Lectures who have started with their UTQ training

Not started yet: Lectures who have not started their UTQ training yet

Bijlage 3: panelsamenstelling

- Prof. dr. Daan Lenstra (chair), professor emeritus of Electrical Engineering at Delft University of Technology and fellow at Eindhoven University of Technology;
- Prof. dr. Wim de Boer (member), professor of Physics at the University of Karlsruhe (DE);
- Prof. dr. Friso van der Veen (member), professor of Experimental Physics at ETH Zürich
- Christianne Vink MSc (member), didactic coach, educational advisor/trainer and partner of Academic Factory;
- Dr. ir. Harald Tepper (member), chief strategy officer at the Dutch Forensic Institute;
- Lisanne Coenen BSc (student member), master student Applied Physics at Delft University of Technology.

Het panel werd ondersteund door dr. J. Corporaal, secretaris (niet gecertificeerd, onder supervisie van gecertificeerd secretaris K.J. van Klaveren).