

## Besluit

### Besluit strekkende tot het verlenen van accreditatie aan de opleiding wo-master Physics van de Vrije Universiteit Amsterdam

	<b>Gegevens</b>	
<b>datum</b>	<b>Naam instelling</b>	: Vrije Universiteit Amsterdam
31 december 2014	<b>Naam opleiding</b>	: wo-master Physics (120 ECTS)
<b>onderwerp</b>	<b>Datum aanvraag</b>	: 23 december 2013
Definitief besluit	<b>Varianteopleiding</b>	: voltijd
accreditatie wo-master	<b>Afstudeerrichtingen</b>	: Advanced Matter and Energy Physics; Particle and Astroparticle Physics; Physics of Life and Health; Theoretical Physics.
Physics van de Vrije Universiteit Amsterdam (002529)	<b>Locatie opleiding</b>	: Amsterdam
<b>uw kenmerk</b>	<b>Datum goedkeuren</b>	
CvB/EK/dv/2013/1502	panel	: 10 februari 2014
<b>ons kenmerk</b>	<b>Datum locatiebezoek</b>	: 3 en 4 april 2014
NVAO/20144135/ND	<b>Datum visitatierapport</b>	: 24 juni 2014
<b>bijlagen</b>	<b>Instellingstoets kwaliteitszorg</b>	: Positief besluit onder voorwaarden van 3 september 2014.
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#### 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 assessment committee assesses Standard 1 as satisfactory

#### Inlichtingen

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Pagina 2 van 7 The main goal of the programme is to provide students with a good knowledge basis in physics, including the necessary mathematical, experimental, computational and communicative skills and insight in the latest developments in physics, to optimally prepare them for a career in scientific research or other positions in society requiring an academic master's title in physics. The programme is divided in eight tracks: four 'regular' tracks, and four tracks which are offered in collaboration with other master's programmes or universities.

On a national scale, the master's programme Physics positions itself as a programme that offers students the benefits resulting from the collaboration between UvA and VU: research expertise and facilities from two universities, as well as networks and collaborative projects at both universities and related research institutes. Regarding the programme's international position the management refers to the international scientific reputation of its research groups.

The committee concludes that the master's programme Physics has a clear profile that sets it apart from similar master's programmes in The Netherlands and abroad. The programme is primarily geared towards preparing students for a career in (academic) research and consequently has a strong research-focus. The aim and focus of the programme are reflected in the various tracks and in eleven intended learning outcomes.

The committee has taken notice of the plans expressed by the management to decrease the number of tracks in the master's programme. The committee supports this decision, pointing out that the programme, with eight different tracks and four variations, currently does have a complicated structure.

The committee is of the opinion that the intended learning outcomes of the programme, although slightly generic because they cover many different tracks, are adequately formulated and meet international academic standards. The committee advises the programme to formulate track-specific learning outcomes to help make clear how these tracks relate to the requirements of the job market.

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

The assessment committee assesses Standard 2 as satisfactory

The master's programme Physics consists of 120 EC, divided over two years. Most of the first year is filled with track and profile specific courses. The second year is entirely spent on a master's research project and (in the non-research profiles) a compulsory internship.

The assessment committee concludes that the master's programme Physics succeeds in offering a coherent and challenging set of courses, which offer ample opportunities for students to follow their interests while they specialize in one particular subfield of physics. Together, the tracks and profiles cover a wide range of subfields of physics as well as different approaches within these subfields. The programme ties in well with a bachelor's programme in physics and with the research field towards which the programme is geared. Finally, the study load is evenly spread over the year because of the structure of the academic year in two blocks of 8-8-4 weeks. Students follow no more than two 6 EC courses at the same time.

Pagina 3 van 7 The committee is pleased to hear that the programme seems well aware of students' wishes with respect to a future career in research. However, the committee also finds it important that students are informed about opportunities on the job market outside (academic) research. The committee concludes that within the programme more attention could be paid to job orientation outside research.

With an annual intake of approximately 90 students, the programme succeeds in attracting enough students. Some tracks are more popular than others. The committee supports the aim of the programme to try and attract at least twenty students per year for each track. The committee concludes that there are no major stumbling blocks which might prevent students from successfully finishing the programme within two years. Currently, the programme success rate (nominal +1) is 65%. The average study duration is considerably lower than three years, but could, according to the committee, probably be further improved if stricter deadlines were imposed for the research project.

The committee is satisfied with the academic staff delivering the programme, in both quantitative and qualitative terms. Although the number of lecturers in possession of a teaching qualification is not yet at the programme's target of 90%, it has made significant improvements over the last year.

The programme has adequate facilities, including study guidance, and an adequate system of quality control in place. The committee concludes that the Programme Committee of the VU fulfils its task to a sufficient standard, but should pay more attention to the master's programme. Also, the committee is pleased to hear that the collaboration with the Programme Committee at the UvA will be intensified.

*Standard 3: Academic level achieved*

The assessment committee assesses Standard 3 as good

The committee concludes that the assessment policy is adequate. The exams in the programme are of a high level and match the learning objectives of the courses. The quality control of assessment at the VU is also of a high standard. The committee was impressed with the active role adopted by both the Board of Examiners and a separate Toetscommissie, which checks the quality and achievability of exams.

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

The committee concludes that graduates have acquired the learning outcomes. This is also reflected in the fact that after graduating students have no trouble in finding a job. On average they manage to do so within a period of 0.8 months. The committee is pleased with this statistic and concludes that graduates clearly meet the expectations of the job market.

Ingevolge het bepaalde in artikel 5a.10, derde 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 3 november 2014 naar voren te brengen. Bij e-mail van 28 november 2014 heeft het college van bestuur ingestemd met het voornemen tot besluit.

De NVAO besluit accreditatie te verlenen aan de wo-master Physics (120 ECTS; variant: voltijd; locatie: Amsterdam) van de Vrije Universiteit Amsterdam te Amsterdam. De opleiding kent de volgende afstudeerrichtingen: Advanced Matter and Energy Physics; Particle and Astroparticle Physics; Physics of Life and Health; Theoretical Physics. 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 2018 (2020)<sup>1</sup>.

Den Haag, 31 december 2014

De NVAO  
Voor deze:



Anne Flierman  
(voorzitter)

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<sup>1</sup> Nadat de instelling een onvoorwaardelijk positief besluit instellingstoets kwaliteitszorg heeft gekregen, wordt de accreditatietermijn verlengd naar in totaal 6 jaren.

Onderwerp	Standaard	Beoordeling door het panel
<b>1. Beoogde eindkwalificaties</b>	De beoogde eindkwalificaties van de opleiding zijn wat betreft inhoud, niveau en oriëntatie geconcretiseerd en voldoen aan internationale eisen	<b>Voldoende</b>
<b>2. Onderwijsleeromgeving</b>	Het programma, het personeel en de opleidingsspecifieke voorzieningen maken het voor de instromende studenten mogelijk de beoogde eindkwalificaties te realiseren	<b>Voldoende</b>
<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	<b>Goed</b>
<b>Eindoordeel</b>		<b>Voldoende</b>

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

**TABELLEN WO-MASTER PHYSICS - 60202**

Tabel 1: Rendement

Cohort	2007	2008	2009
Rendement	57 %	80 %	75 %

Tabel 2: Docentkwaliteit

Graad	MA	PhD	BKO
Percentage	100%	100%	45%

Tabel 3: Student-docentratio

Ratio	0,08*
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Tabel 4: Contacturen

Studiejaar	1	2
Contacturen	14	40

Eventuele toelichting

\* Voor 854 studenten (Natuurkunde, Scheikunde en Farmaceutische wetenschappen) is 64,5 fte onderwijzend personeel ingezet.

- Prof. dr. Daan Lenstra, professor emeritus of Electrical Engineering at Delft University of Technology and fellow at Eindhoven University of Technology (chair);
- Prof. dr. Elias Brinks, professor of Astrophysics at the University of Hertfordshire (UK);
- Prof. dr. Martin Goedhart, professor of Mathematics and Science Education at University of Groningen;
- Dr. ir. Harald Tepper, chief strategy officer at the Dutch Forensic Institute;
- Lisanne Coenen BSc, master student Applied Physics at Delft University of Technology.

Het panel werd ondersteund door dr. J. Corporaal, secretaris (gecertificeerd).