nvao
nederlands - vlaamse accreditatieorganisatie

Besluit

Besluit strekkende tot het verlenen van accreditatie aan de opleiding wo-master Electrical Engineering van de Technische Universiteit Eindhoven

datum
28 april 2017
onderwerp
Besluit accreditatie wo-master Electrical Engineering van de Technische Universiteit Eindhoven (005348)
uw kenmerk
CvB 2017/1633055
ons kenmerk
NVAO/20171064/ND
bijlagen
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Gegevens

Naam instelling	:	Technische Universiteit Eindhoven
Naam opleiding	:	wo-master Electrical Engineering (120 EC)
Datum aanvraag	:	19 januari 2017
Graad opleiding	:	Master of Science
Varianten opleiding	:	voltijd
Locaties opleiding	:	Eindhoven
Datum goedkeuren panel	:	22 augustus 2016
Datum locatiebezoek	:	4 oktober 2016
Datum visitatierapport	:	19 december 2016
Instellingstoets kwaliteitszorg	:	ja, positief besluit van 6 mei 2014

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.

In this executive summary, the panel presents the main considerations which led to the assessment of the quality of the Master programme Electrical Engineering of the Eindhoven University of Technology, which has been assessed according to the NVAO Assessment Framework.

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The panel noted that the programme management followed up on the recommendations, made during the previous assessment in 2010. As the main adjustment, the programme management reorganized the Master curriculum in order to raise student success rates.

The programme's name, Master Electrical Engineering, matches its contents and corresponds to the names of similar programmes.

The objectives of this Master Electrical Engineering programme are sound. For the panel, the programme management has made a distinct and clear choice to educate students to be able to pursue professional and academic careers in this domain.

The panel is particularly positive about the Domain-specific Frame of Reference Electrical Engineering which the management of the Electrical Engineering programmes of the three Dutch Technical Universities drafted. To the knowledge of the panel, this Frame of Reference is the first substantial effort in the Netherlands to define and describe the Electrical Engineering domain. In the panel's opinion, this Frame of Reference presents a sound and insightful description of this domain. Dutch Electrical Engineering programmes are linked to authoritative international concepts, notions and trends in this domain.

The panel is very positive about the choices the programme management made, to focus on three societal themes, being Connected World, Care and Cure and Smart and Sustainable Society. The panel feels these clear choices add substantially to the programme's profile.

The intended learning outcomes of the programme meet the objectives. These learning outcomes specify not only in-depth technical knowledge and skills in the field of Electrical Engineering but also advanced research and design skills, professional skills, such as critical reasoning and reflection, scientific problem- solving skills, communication skills, *knowledge and skills to enable students to work in multidisciplinary and interdisciplinary* contexts and the awareness of the social impact of science and technology. These learning outcomes specify the competencies of the modern T-shaped engineer.

The panel observed the intended learning outcomes to meet the requirements of the Domain-specific Frame of Reference Electrical Engineering and to comply with the requirements of an academic Master programme. In addition, the learning outcomes appropriately prepare students for careers in industry and in research in the Electrical Engineering domain.

The admission requirements are valid and the admission procedures of the programme are effective. The panel finds the premaster programme very adequate. In view of the considerable increase in student numbers, the panel recommends to pay attention to the recruitment of students from abroad, to raise the number of staff positions and to maintain the students-to-staff ratio.
The curriculum meets the intended learning outcomes of the programme and is considered by the panel to be adequate in breadth and depth. A substantial number of specializations being offered, students have ample opportunities to select the specialization of their preference. Students are appropriately guided in their choices and, as a consequence, the coherence of the curriculum is ensured. The panel recommends to consider making all core courses compulsory, as these are very relevant for the Electrical Engineering field. The panel has a favorable opinion about the internships and the Master graduation projects but,

however, recommends to formalize the criteria for internships and to draft a list of approved internship host organizations. The curriculum is considered by the panel to be up-to-date.

The information provided to the students and the study guidance are appropriate. The student-to-staff ratio of 18 (please refer to section 3.1 of this report) is quite favorable. The lecturers, the Master student counselor and the student mentors ensure the guidance of the students.

The panel considers the student success rates in recent years to be appropriate and regards the efforts of the programme management in this respect to have been effective.

The lecturers are motivated to participate in the programme and are experts in their fields. The vast majority of them have a PhD and many of them participate in research projects in industry. Although measures are being taken to raise the number of lecturers with BKO-certificates, the panel recommends remaining attentive in this respect. The same applies for the number of lecturers, having certificates of proficiency in English.

The panel is impressed by the facilities for the programme. The lecture rooms and laboratories are state- of-the-art, allowing students and lecturers to participate in up-to-date education and research.

The panel regards the test and assessment policies in the programme to be adequate, directed towards ensuring transparent, valid and reliable tests and assessments. The procedures adopted by the programme management with respect to the information provision to students about tests, the drafting of tests and of answering and scoring models and the assessments of tests are appropriate. The procedures for organizing and assessing the Master graduation projects are adequate as well.

The responsibilities and tasks of the Examination Committee are up to standard. The Committee monitors the test and assessment procedures, the quality of tests and the students' achieving the intended learning outcomes of the programme.

Having studied the tests of a number of courses, the panel concluded these tests to be satisfactory in breadth and depth and to reflect the learning goals of the courses.

One of the Master theses has been assessed as unsatisfactory by the panel. The panel considers this to be an outlier, not representative of the quality of the projects in general. The panel considers about 20 % of the theses to be graded somewhat too high, while having assessed a number of theses of good to very good quality. As the projects were written in paper-format, the panel recommends to make it mandatory to include the appendices, to be able to assess the students' performances more reliably, but also to secure sufficient documentation for aggregated learning by next generation students. In the panel's opinion, the Master theses demonstrate the students to have achieved the programme intended learning outcomes.

In view of the high average grade for the Master graduation projects and the relatively high proportion of graduations with distinction, the Examination Committee expressed their intention to inspect the grades awarded for the Master graduation projects, especially the higher grades. The panel supports this plan.

As is evident from the recent alumni survey, the graduates of the programme have been well prepared for their careers in industry and in research.

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 Technische Universiteit Eindhoven te Eindhoven in de gelegenheid gesteld zijn zienswijze op het voornemen tot besluit van 3 april 2017 naar voren te brengen. Van deze gelegenheid heeft het college van bestuur geen gebruik gemaakt.

De NVAO besluit accreditatie te verlenen aan de wo-master Electrical Engineering (120 EC; variant: voltijd; locatie: Eindhoven) van de Technische Universiteit Eindhoven te Eindhoven. De NVAO beoordeelt de kwaliteit van de opleiding als voldoende.

Dit besluit treedt in werking op 28 april 2017 en is van kracht tot en met 27 april 2023.

Den Haag, 28 april 2017

De NVAO
Voor deze:

b/a

Dr. A.H. Flierman
(voorzitter)

Paul 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.

 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.	**Goed**
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.

Bijlage 2: panelsamenstelling

- Prof. ir. A. van Ardenne, strategic advisor-ASTRON, director Ardenne Consultancy (panel chair);
- Prof. D. De Zutter PhD, professor Electromagnetics, Ghent University (panel member);
- C.L.M. van der Klauw PhD, director of the research activities and programmes, Philips Lighting (panel member);
- E.E.M. Leo BSc, student Master programme Educational Sciences, University of Amsterdam, (student member).

Het panel werd ondersteund door W. Vercouteren MSc, RC, secretaris (gecertificeerd).