nvao
nederlands - vlaamse accreditatieorganisatie

Besluit

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

datum
31 augustus 2017

onderwerp
Besluit
accreditatie wo-master
Electrical Engineering
Technische Universiteit Delft
(005651)

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ons kenmerk
NVAO/20172169/ND

bijlagen
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Gegevens

Naam instelling	:	Technische Universiteit Delft
Naam opleiding	:	wo-master Electrical Engineering (120 EC)
Datum aanvraag	:	26 april 2017
Variant opleiding	:	voltijd
Datum goedkeuren panel	:	22 augustus 2016
Datum locatiebezoek	:	5 oktober 2016
Datum visitatierapport	:	17 november 2016
Instellingstoets kwaliteitszorg:		ja, positief besluit van 21 november 2011

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 goed heeft bevonden.

Advies van het visitatiepanel

Samenvatting bevindingen en overwegingen van het panel.

Standard 1

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

The panel approves of the objectives of the programme and welcomes the focus to train the students thoroughly in the Electrical Engineering domain at the Master level and to prepare them for independent professional as well as scientific activities.

The panel is particularly positive about the Domain-specific Frame of Reference Electrical Engineering that the management of the Electrical Engineering programmes of the three Dutch Technical Universities drafted.

Inlichtingen
Michèle Wera
+31 (0)70 312 23 31
m.wera@nvao.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
info@nvao.net | www.nvao.net

This Frame of Reference presents a sound and insightful description of this domain and links Dutch Electrical Engineering programmes to authoritative international concepts, notions and trends.

The intended learning outcomes of the programme meet the objectives and reflect the in-depth knowledge and skills the graduates need to acquire in the Electrical Engineering subdomain of their choice, the cognitive and intellectual skills they should have and the abilities to relate their activities to personal and societal considerations. The panel regards the subdomains offered in the programme valid and relevant.

Though it is acknowledged that the broader context of Electrical Engineering and societal awareness are covered in the learning outcomes, the panel feels the programme being predominantly technically oriented. The panel advises the programme management to continue their line of thinking on the modern T-shaped engineer and to fit the learning outcomes to these requirements. As the learning outcomes of this programme differ from those of the Master Computer Engineering programme, the panel suggests aligning these two sets of learning outcomes.

The learning outcomes meet the requirements of this Domain-specific Frame of Reference as well as the requirements of an academic Master programme and prepare students for careers in research and industry. The participation of industry in the programme is satisfactory, as exemplified, among others, by the position of the Industrial Advisory Board.

These considerations have led the assessment panel to assess standard 1, Intended learning outcomes, to be satisfactory.

Standard 2

The panel noted the increase in student numbers in the past few years and the international nature of the programme, as exemplified by the substantial proportion of foreign students and foreign staff. The panel considers the admission requirements to be in line with legal regulations and the admission procedures to be very elaborate and effective.

The panel observed the intended learning outcomes to be met in the curricula of each of the tracks. The panel has a very favourable opinion about the curriculum, as the students are taught the fundamental knowledge of and skills in the Electrical Engineering domain and are given the opportunity to specialize in one of the subdomains. Students are acquainted with research, as the courses and the Master thesis projects are closely related to the activities of the research groups. The curriculum is up-to-date. The students have ample opportunities to familiarize themselves with the industry perspective on Electrical Engineering, preparing them for careers in the professional field.

The educational principle has been laid down satisfactorily in the study methods. These study methods are consistent with the course contents and foster the students' learning processes.

The panel is positive about the Individual Exam Programme as a means to structure the individual curricula of the students. The information provision and the study guidance in the programme are appropriate. The student-to-staff ratio of 13 is very favourable, allowing for intensive teaching.

The panel considers the student success rates in recent years to be adequate.
The panel thinks very highly of the lecturers in the programme. They are renowned experts in their fields, while the vast majority of them have a PhD and many of them possess BKO-certificates. The students indicated to be generally satisfied with the lecturers' educational qualities. The panel noted that the teaching and research capacity for the Wireless Communications course of the Signals and Systems and Telecommunications and Sensing Systems tracks and for the thesis projects in this field of expertise is somewhat lacking and advises the programme management to bring this up-to-standard.

Having visited some of the facilities in the programme, the panel considers these to be up-to-standard, allowing students to participate in up-to-date education and research.

The panel noted that the programme management followed up on the recommendations, made during the previous assessment in 2010. Among others, the programme management improved the preparation of the students for the professional field, included the System and Control specialization and keeps track of the alumni.

These considerations have led the assessment panel to assess standard 2, Teaching-learning environment, to be good.

Standard 3
The panel regards the policies and procedures of the tests and assessments in the programme to be appropriate. Tests and assessments are to be valid, reliable and transparent. Tests are drafted by at least two lecturers, whereas test matrices and rubrics are being implemented. The test methods are aligned with the course learning goals. The assessment of courses, lab assignments and projects is adequate. The panel is positive about the position, responsibilities and duties of the Board of Examiners. This Board monitors the test and assessment procedures, looks into the quality of the tests and inspects the Master thesis projects to verify whether students have achieved the intended learning outcomes of the programme. The assessment of the Master thesis projects is appropriate, this being done by more than one examiner, on the basis of a set of relevant criteria.

The considerations have led the assessment panel to assess standard 3, Assessment, to be satisfactory.

Standard 4
Having studied the tests of a number of courses, the panel concludes these to be good in breadth and depth and to reflect the learning goals of the courses. Not one of the Master thesis projects, the panel studied, has been assessed as unsatisfactory. About 10 % of these projects are regarded by the panel to be graded slightly too high, whereas about 70 % of these are assessed by the panel to be clearly of good to very good quality. In the panel's opinion, the graduation projects show the students to have achieved the intended learning outcomes of the programme and a substantial proportion of the students to have surpassed the required level. The panel suggests to address the societal or ethical dimensions of the Electrical Engineering domain more elaborately. The figures about the graduates' careers show them having the capabilities to pursue relevant careers in industry and in research.

The considerations have led the assessment panel to assess standard 4, Achieved learning outcomes, to be good.

General conclusion

The panel assesses the Master programme Electrical Engineering of the Delft University of Technology to be good and recommends NVAO to grant re-accreditation to this programme.

Besluit

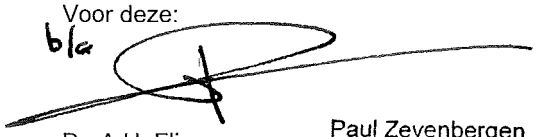
Ingevolge het bepaalde in artikel 5a.10, derde lid, van de WHW heeft de NVAO het college van bestuur van de Technische Universiteit Delft te Delft in de gelegenheid gesteld zijn zienswijze op het voornemen tot besluit van 10 juli 2017 naar voren te brengen. Van deze gelegenheid heeft het college van bestuur geen gebruik gemaakt.

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

Dit besluit treedt in werking op 31 augustus 2017 en is van kracht tot en met 30 augustus 2023.

Den Haag, 31 augustus 2017

De NVAO
Voor deze:



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

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.	**goed**
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.	**goed**
Eindoordeel		**goed**

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. dr. D. De Zutter, professor Electromagnetics, Ghent University (panel member);
- Dr. C. van der Klauw, director of the research activities and programmes, Philips Lighting (panel member);
- E. Leo BSc, student Master programme Educational Sciences, University of Amsterdam, (student member).

Het panel is ondersteund door drs. W. Vercouteren RC, secretaris (gecertificeerd).