

## Besluit

### Besluit strekkende tot het verlenen van accreditatie aan de opleiding wo-bachelor Electrical Engineering van de Universiteit Twente

	<b>datum</b>	<b>Gegevens</b>	
	31 mei 2017	Naam instelling	: Universiteit Twente
	onderwerp	Naam opleiding	: wo-bachelor Electrical Engineering (180 EC)
	Besluit	Datum aanvraag	: 27 januari 2017
accreditatie wo-bachelor		Variant opleiding	: voltijd
Electrical Engineering van de		Locatie opleiding	: Enschede
Universiteit Twente		Datum goedkeuren	
(005374)	panel		: 22 augustus 2016
uw kenmerk	Datum locatiebezoek		: 3 oktober 2016
	Datum visitatierapport		: 16 november 2016
ons kenmerk	Instellingstoets kwaliteitszorg		: ja, positief besluit van 2 mei 2014
NVAO/20171285/ND			
	<b>bijlagen</b>	<b>Beoordelingskader</b>	
	2	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 Bachelor programme Electrical Engineering of the University of Twente, which has been assessed according to the NVAO Assessment Framework.

The panel noted that the programme management followed up on the recommendations, made during the previous assessment in 2010. First and foremost, the programme management restructured the curriculum to improve the study pace of the students and to

Pagina 2 van 6 raise student success rates. In addition, the programme management reorganized the internal quality assurance system, clarifying the responsibilities of the Programme Committee and the Examination Committee and introduced scoring or rubrics forms to improve the Bachelor thesis assessments.

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

The panel approves of the programme objectives, welcomes the broad range of technical knowledge, research skills and academic skills the students are to acquire, exemplifying the profile of the modern T-shaped engineer and encourages the programme management to continue educating the engineer of the future. The intended learning outcomes meet the programme objectives, addressing not only in-depth technical knowledge and skills but also describing the knowledge of adjacent fields, academic skills and awareness of the social impact of technology. The learning outcomes of the programme comply with the Meijers criteria of the Dutch Technical Universities and, therefore, meet the requirements of an academic Bachelor programme.

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. 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 meet the requirements of this Domain-specific Frame of Reference.

The panel considers the admission requirements to be in line with legal regulations and the *admission procedures of the programme to be very elaborate and effective.*

The panel considers the intended learning outcomes to be met in the curriculum of the programme and regards the curriculum to be adequate, as students gain knowledge and skills in the electrical engineering domain, become knowledgeable in mathematics and physics at the required level and acquire relevant academic skills, such as communication, (English) academic writing, some level of system thinking and project management skills. The curriculum is regarded by the panel to be very adequate in terms of breadth of the subjects addressed and depth in which these subjects are studied and to be up-to-date. Programme management, research groups and industry representatives in the Advisory Board keep abreast of new trends and developments.

The educational principles, exemplified in the Twente Educational Model, are effective in promoting students' study activity and in fostering their study pace. Study methods such as lectures, tutorials, lectorials, laboratory sessions and projects are consistent with the goals of the educational principles.

The information provision for the students and especially the study guidance are very good. The student-to-staff ratio of 15.8 allows for intensive lecturing and guidance. The Bachelor coordinator, tutors, lecturers and study advisor guide the students very effectively through the programme. The regular meetings of lecturers within and across modules ensure the curriculum coherence.

Pagina 3 van 6 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 very effective.

The panel is very positive about the lecturers in the programme. They are experts in their fields, while the vast majority of them have a PhD and a very substantial number of them possesses BKO-certificates. In addition, the lecturers have a good command of the English language. The panel regards the team of lecturers to be very motivated to participate in this programme. They are very easily approachable, as the students informed the panel.

The panel is impressed by the facilities of the programme. The laboratories, which the panel visited, are state-of-the-art, allowing students to familiarize themselves with today's research in this domain.

The test and assessment policies in the programme are appropriate. The procedures adopted in this respect ensure the quality, validity and reliability of the tests and assessments. This also applies to the procedures for identifying and assessing individual performances of students in group projects. The assessments of the Bachelor assignments are adequate as well. These are graded in integers. In the panel's opinion, this somewhat hampers differentiating across theses. The Examination Committee monitors the test and assessment procedures, the quality of the tests and the students' having achieved the intended learning outcomes of the programme.

Having studied the tests and theses of a number of courses in the modules, the panel concludes these to be satisfactory in breadth and depth and to meet the learning goals of the courses.

One of the Bachelor theses, the panel studied, has been assessed as unsatisfactory. The panel considers this to be an outlier. The Bachelor theses demonstrate that the students have achieved the intended learning outcomes of the programme. Some general observations about the theses' quality may be made. About 30 % of the theses were regarded by the panel to be graded somewhat too high. The panel suggests calibrating the grades of the theses across the research groups. A number of theses were distinctly of good quality. As some theses were written in rather poor English, the panel advises to intensify English language instruction in the programme. Some theses were presented in paper format without appendices. As assessing students' performances is difficult in this case, the panel suggests making the appendices in such cases obligatory parts of the theses.

The figures the programme management collected on the graduates' follow-up education show the graduates are able to continue their studies at Master level.

The panel assesses the Bachelor programme Electrical Engineering of University of Twente to be satisfactory and recommends NVAO to grant re-accreditation to this programme.

#### **Aanbevelingen**

De NVAO onderschrijft de aanbevelingen van het panel.

Pagina 4 van 6 **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 18 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-bachelor Electrical Engineering (180 EC; variant: voltijd; locatie: Enschede) van de Universiteit Twente te Enschede. De NVAO beoordeelt de kwaliteit van de opleiding als voldoende.

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

Den Haag, 31 mei 2017

De NVAO  
Voor deze:

A handwritten signature in black ink, consisting of a large, stylized loop at the top, a vertical line through the center, and a horizontal line extending to the right.

R.P. 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.

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>Goed</b>
<b>3. Toetsing</b>	De opleiding beschikt over een adequaat systeem van toetsing.	<b>Voldoende</b>
<b>4. Gerealiseerde eindkwalificaties</b>	<i>De opleiding toont aan dat de beoogde eindkwalificaties worden gerealiseerd.</i>	<b>Voldoende</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.

Pagina 6 van 6 **Bijlage 2: panelsamenstelling**

- prof. Ir. A. van Ardenne, (voorzitter) strategic advisor-ASTRON, director Ardenne Consultancy;
- prof. Dr. D. De Zutter, (lid) professor Electromagnetics, Ghent University;
- Dr. C.L.M. van der Klauw, (lid) director of the research activities and programmes, Philips Lighting;
- E.E.M. Leo BSc, (student-lid) student Master programme Educational Sciences, University of Amsterdam.

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