

Besluit

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

Gegevens

datum	Naam instelling	: Universiteit Twente
31 mei 2017	Naam opleiding	: wo-master Electrical Engineering (120 EC)
onderwerp	Datum aanvraag	: 27 januari 2017
Besluit	Variant opleiding	: voltijd
accreditatie wo-master	Tracks/specialisaties	: Lab-on-a-chip systems for biomedical and environmental applications, Neurotechnology and biomechanics, Dependable integrated systems, Communication networks, Integrated circuit design, Integrated optical microsystems, Micro sensors & systems, Nanoelectronics, Robotics & mechatronics, Devices for integrated circuits, Computer vision and biometrics, Telecommunication engineering
Electrical Engineering van de Universiteit Twente (005375)		
uw kenmerk		
CvB UIT – 2432/S&B		
ons kenmerk		
NVAO/20170917/ND		
bijlagen	Locatie opleiding	: Enschede
2	Datum goedkeuren	
	Panel	: 22 augustus 2016
	Datum locatiebezoek	: 3 oktober 2016
	Datum visitatierapport	: 16 november 2016
	Instellingstoets kwaliteitszorg	: ja, positief besluit van 2 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.

Inlichtingen

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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 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. Among others, 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 Master thesis assessments.

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 this programme, welcomes the future-oriented character thereof and encourages the programme management to continue educating the engineer of the future. The intended learning outcomes of the programme meet these objectives, addressing specialized in-depth knowledge and skills, research skills, knowledge of adjacent fields, academic skills and awareness of the societal impact of technology. The programme management has succeeded in adequately describing the knowledge and skills of the modern T-shaped engineer. These learning outcomes comply with the Meijers criteria of the Dutch Technical Universities and, therefore, meet the requirements of an academic Master programme. In addition, the learning outcomes prepare students for positions in research and industry alike. The participation of industry in the programme is satisfactory, to be deduced, among others, from the position of the Advisory Board within the programme.

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. 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 and the admission procedures of the programme to be very adequate. Students' backgrounds are effectively checked against the entry requirements and the contents of the premaster programme for students with degrees of professional University programmes are solid and elaborate.

The curriculum matches the intended learning outcomes. As the curricula of the students are specialized and to a certain degree personalized, the Examination Committee of the programme checks whether each of the curricula meet the learning outcomes. The panel is convinced of the validity of this procedure.

The curriculum exhibits a fair balance between course work in the first year and practical work in the second year and is very adequate in terms of breadth of the subjects addressed and depth to which these subjects are studied. The panel considers the curriculum to be up-to-date.

Pagina 3 van 6 The information provided to the students and especially the study guidance are very good. The student-to-staff ratio of 15.8 is favorable, which allows for intensive lecturing and guidance of the students. The master coordinator and the programme mentors are very effective in assisting the students to choose their specialization and to select the courses, thereby ensuring the coherence of the curriculum. Although the supervision of the internships and the Master thesis projects are adequate, the panel suggests to improve the formal organization of the internships. The student success rates after three years are appropriate.

The panel is very positive about the lecturers in the programme, being experts in their fields. *The vast majority of them have PhD's, a very substantial number of them possesses BKO-certificates and they have a good command of the English language.* The panel found the lecturers to be very motivated to participate in this programme. They are very easily approachable, as 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 participate in today's research in electrical engineering.

In the panel's view, 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. The assessment procedures of the internships and Master thesis projects are adequate as well. As the Master thesis projects are conducted in distinct research groups, the grading of these projects may differ between these groups. The panel advises programme management to remain attentive in this respect and to strive for calibration of the results across the research groups. The panel recommends introducing the course files in this programme. The Master thesis projects are graded in integers. In the panel's opinion, this somewhat hampers differentiating between thesis projects.

The Examination Committee monitors the test and assessment procedures, the quality of the tests and the students' achieving the intended learning outcomes of the programme.

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

The figures the programme management collected on the graduates' careers demonstrate that they both meet the demands of industry and are capable of pursuing careers in research. The representatives of industry have favorable opinions of the students and the graduates, which testifies to them meeting the demands of the professional field.

None of the Master theses, the panel studied, have been assessed as unsatisfactory. Though the performances of students and grades differ, some general observations about the theses' quality may be made. About 30 % of the theses was regarded by the panel to be graded somewhat too high. Some theses, on the other hand, were considered to be graded somewhat too low. A number of theses the panel studied, were elaborately written, analytically sound and were clearly of good to very good quality. In the panel's view, the theses show the students having achieved the intended learning outcomes of the programme.

Pagina 4 van 6 The panel assesses the Master programme Electrical Engineering of the 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.

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-master Electrical Engineering (120 EC; variant: voltijd; locatie: Enschede) van de Universiteit Twente te Enschede. De opleiding kent de volgende specialisaties: Lab-on-a-chip systems for biomedical and environmental applications, Neurotechnology and biomechatronics, Dependable integrated systems, Communication networks, Integrated circuit design, Integrated optical microsystems, Micro sensors & systems, Nanoelectronics, Robotics & mechatronics, Devices for integrated circuits, Computer vision and biometrics, Telecommunication engineering.

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 long horizontal stroke 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
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.	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.

- 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).