

## Besluit

### Besluit strekkende tot het verlenen van accreditatie aan de opleiding wo- master Industrial Engineering and Management van de Universiteit Twente

#### Gegevens

datum	Naam instelling	: Universiteit Twente
31 juli 2017	Naam opleiding	: wo- master
onderwerp		Industrial Engineering and Management (120 EC)
Besluit	Datum aanvraag	: 11 april 2017
accreditatie wo-ma	Variant opleiding	: voltijd
Industrial Engineering and Management van de Universiteit Twente (005557)	Afstudeerrichtingen	: Production and Logistics Management (PLM); Health Care and Technology Management (HCTM); Financial Engineering and Management (FEM)
uw kenmerk	Locatie opleiding	: Enschede
CvB UIT - 2570	Datum goedkeuren	
ons kenmerk	Panel	: 10 oktober 2016
NVAO/20171910/ND	Datum locatiebezoeken	: 12 en 13 oktober 2016
bijlagen	Datum visitatierapport	: 13 maart 2017
2	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.

#### Advies van het visitatiepanel

Samenvatting bevindingen en overwegingen van het panel.

The master's programme Industrial Engineering and Management (hereafter: IEM) is a two-year programme, offered by the University of Twente. Prospective master students are required to have either completed an international bachelor's degree, a completed degree of a Dutch University of Applied Sciences (hbo-level), or a degree of a Dutch Research University (wo-level). As an additional selection method, all prospective students are

Pagina 2 van 6 required to have completed Mathematics B at vwo-level and to show a sufficient mastering of the English language. IEM aims to educate academic professionals with an eye for long-term social, societal and environmental sustainability in the field of Industrial Engineering and System Engineering (hereafter: IE&SE), with excellent analytical and problem-solving abilities and a thorough knowledge of the academic field. Graduates will be able to embark on a professional career within their chosen specialisation tracks: Production and Logistics Management (hereafter: PLM), Health Care Technology and Management (hereafter: HCTM), and Financial Engineering and Management (hereafter: FEM).

The panel ascertained that the master's programme is concerned with suitable organisational problems in the field of IE&ES. It renders its profile appropriate. It appraises its focus on social and societal problems from an entrepreneurial viewpoint and approves of the three tracks, focussing on management in production and logistics (track PLM), health care and technology (track HCTM) and financial engineering (track FEM). Of these, the panel established that HCTM and FEM are characteristic for Twente, distinguishing the master's programme in research interests within the domain of IE&IS. According to the panel, the focus of the programme – a multidisciplinary approach that links technology to management – is appropriate, yet not distinctive for Twente. It therefore encourages the programme to consider its focus for a more unique approach and profile within the field IE&IS.

The master's academic profile is translated into fifteen intended learning outcomes. These meet (inter)national requirements and are considered suitable, reflecting appropriate choices made by the programme specific for Twente. Nonetheless, the programme considers the intended learning outcomes wide-ranging. Consequently, they do not bring across Twente's take, approach, or profile in the panel's view. The panel ascertained that the generic learning objectives have been adequately interpreted into the master's curriculum design. The curriculum allows students to meet the intended learning outcomes: it allows for academic specialisation at the master's level, based on scientific research methods and up to date academic research. The panel renders the programme a good preparation for enrolment in a PhD programme or for a challenging career in industry and management. During their studies, students have ample opportunity to influence their study trajectory. All three tracks offer next to mandatory courses plenty of time for electives, both at the University of Twente and beyond its precinct. The panel appreciates this flexibility in the curriculum design, which allows students to acquire a strong individual profile. The panel encountered some connection problems with students enrolling in the programme at other moments than in September. It encourages the management to look into these problems and to address these in the forthcoming curriculum design.

The panel is positive about the support network for students, including involved lecturers, management and support staff, an active programme committee and student association. It encountered an informal open-door policy that really works for both students and staff. The panel has verified in meetings with the programme management and academic staff that both have a proactive and problem-solving attitude towards problems within courses. The programme is supported by academic staff members with good research and teaching credentials, who continuously reflect upon their teaching practice. It applauds the staff's willingness to experiment with its own teaching practice and is satisfied with the availability of didactic expertise to support staff at faculty level and to strengthen teaching practice at all levels within the university. It recommends the programme to allow all teaching staff to continuously develop their teaching practice through reflection and further pedagogical

Pagina 3 van 6 training, and to stimulate its staff to expand their international networks through research and teaching in order to strengthen the programme's international profile and to fortify its international ambitions.

The encountered student support network also allows for plenty of formal and informal feedback on teaching practice, curriculum design and assessment methods. The management, course coordinators and examination board assure the quality of assessment of the curriculum. Courses are regularly examined by the programme and its staff, and by institutional educationalists and the examination board. Spot checks, test screening and calibration procedures assure the quality of assessment at the programme. Nevertheless, the panel recommends paying further attention to the quality assurance of theses. It advises formalising the existing practice or introducing new initiatives to further shape a structural mechanism for performing spot checks in order to assure the assessment quality of theses. It also advises the programme to redesign its thesis assessment forms to allow for additional qualitative feedback and to introduce greater transparency into the assessment process by asking all examiners to fill in assessment forms independently.

The panel verified that master students meet the intended learning outcomes at satisfactory level; it studied a representative selection of master graduation projects and agreed with the assessment. The theses reflected sound disciplinary research at the appropriate degree level. Recent IEM graduates are highly successful at the job market and well-prepared for enrolling in PhD programmes. In panel meetings, IEM alumni reflected a confident and professional attitude and expressed satisfaction with the way in which the programme prepared them for a career in academia and/or the professional field.

In the panel's view, a strong social and societal orientation, freedom of choice to direct personalised learning and good thorough academic training characterise the master's programme. The programme offers a solid curriculum in three tracks which the panel renders suitable for a master's programme in the field of IE&ES. Students perform adequately and within an acceptable time frame. The panel invites the programme to reformulate its learning outcomes and objectives in the upcoming programme redesign. It considers the IEM programme in Twente as a good preparation for a further career in science and in the professional field, yet encourages the programme to further diversify and/or specialise to create a truly unique profile and programme with distinguishing features. In addition, the panel advises to formalise the quality assurance of the thesis assessment. The panel assesses the IEM master's programme at the University of Twente on all four standards as satisfactory.

#### **Aanbevelingen**

De NVAO onderschrijft de aanbevelingen van het panel.

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 26 juni 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 Industrial Engineering and Management (120 EC; variant: voltijd; locatie: Enschede) van de Universiteit Twente te Enschede. De opleiding kent de volgende afstudeerrichtingen: Production and Logistics Management (PLM); Health Care and Technology Management (HCTM); Financial Engineering and Management (FEM). De NVAO beoordeelt de kwaliteit van de opleiding als voldoende.

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

Den Haag, 31 juli 2017

De NVAO  
Voor deze:

A handwritten signature in blue ink, consisting of a large, stylized loop at the top and a long, sweeping horizontal stroke extending to the left.

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

- Prof. dr. ir. R.E.C.M. (Rob) van der Heijden, Radboud University Nijmegen (chair), is since 2016 Professor in Innovate Planning Methods within the Nijmegen School of Management (NSM);
- Prof. dr. H.M.C. (Harrie) Eijkelhof, Utrecht University, has specialised knowledge of didactics and teaching methods in science education;
- Prof. dr. E. (Erik) Demeulemeester, KU Leuven, Belgium, is Full Professor at the Faculty of Economics and Business since 2001 and Head of the Research Center for Operations Management at KU Leuven;
- M.G. (Maarten) van Ruitenbeek BSc, University of Groningen (student member), is a second-year master's student in Industrial Engineering and Management at the University of Groningen.

Het panel werd ondersteund door dr. E. (Els) Schröder, secretaris (gecertificeerd).