

## Besluit

**Besluit strekkende tot het verlenen van accreditatie aan de opleiding wo-master Geoinformation Science and Earth Observation (M.Sc.) van de Universiteit Twente alsmede tot het toekennen van het bijzonder kenmerk Internationalisering**

### Gegevens

<b>datum</b>	Naam instelling	: Universiteit Twente
30 juni 2015	Naam opleiding	: wo-master
<b>onderwerp</b>		Geoinformation Science and Earth Observation (M.Sc.) (118 EC)
Besluit	<b>Datum aanvraag</b>	: 29 december 2014
accreditatie wo-master	<b>Graad opleiding</b>	: Master of Science
Geoinformation Science and Earth Observation (M.Sc.) van de Universiteit Twente (003629)	<b>Variant opleiding</b>	: voltijd (postinitieel)
<b>ons kenmerk</b>	<b>Tracks/specialisaties</b>	: Applied Earth Sciences (Natural Hazards and Disaster Risk Management or Geological Remote Sensing); Geoinformatics; Land Administration; Natural Resources Management (Forestry – Agriculture – Environment); Urban Planning and Management; Water Resources and Environmental Management.
NVAO/20151868/LL	<b>Joint programme</b>	: Geo-Information Science and Earth Observation (Chang 'An University, China, Single and Double degree; Spatial Planning and Risk Management (Universitas Gadjah Mada, Indonesia, Double degree); Geoinformatics (Indian Institute for Remote Sensing, India, Single degree); GIS for Natural Resource Management (Kwame Nkrumah University, Ghana, Double degree); Geo-Information Science and Earth Observation for Environmental Modeling and Natural Resource Management (Lund University, Sweden, Double degree); Geo-Information Science and Earth Observation for Environmental Modeling and Management (Sweden, Poland, UK, Iceland, Double degree); Development Planning and Infrastructure Development (Technical University Bandung, Indonesia, Double degree); Geo-Information Science and Earth Observation for Natural Resources Management (Beijing Normal University, China, Double degree); Geo-Information Science and Earth Observation for Water
<b>bijlage</b>		
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### Inlichtingen

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Locatie opleiding : Enschede  
Datum goedkeuren panel : 14 juli 2014  
Datum locatiebezoeken : 6,7,8 oktober 2014  
Datum visitatierapport : 6 februari 2015  
Instellingstoets kwaliteitszorg : ja, positief besluit van 2 mei 2014

### **Beoordelingskaders**

Beoordelingskader voor de beperkte opleidingsbeoordeling van de NVAO (Stcrt. 2010, nr 21523).

Frameworks for the Assessment of Internationalisation: Distinctive Quality Feature Internationalisation (kader voor het bijzonder kenmerk internationalisering), 14 november 2011.

### **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 en heeft geadviseerd tot toekenning van het bijzonder kenmerk Internationalisering.

### **Advies van het visitatiepanel**

Samenvatting bevindingen en overwegingen van het panel.

This report provides an overview of the panel's findings and considerations regarding the academic master's programme Geo-information Science and Earth Observation of the University of Twente. The panel based its judgement on information acquired from the critical reflection, a number of selected theses, the interviews held during the site visit, additional reading material which was available during the site visit, and the digital learning environment. It found positive aspects as well as points for improvement. After careful consideration, it concludes that the academic master's programme Geo-information Science and Earth Observation satisfies the requirements for re-accreditation. In addition, the panel grades the overall quality of 'internationalisation' of the programme as 'good' and advises the NVAO to award the programme a distinctive quality feature internationalisation.

### **Limited programme assessment Standard 1**

The panel studied the domain-specific framework of reference and finds it clearly formulated. The framework includes an adequate description of the characteristics of the field, developments and requirements and covers the academic and professional master's programme of the ITC Faculty well. The panel is enthusiastic about the general mission of the ITC Faculty to be a gateway for knowledge exchange on Geo-Information Science and Earth Observation for individuals and institutes from countries that are economically and/or technologically less developed. There is a clear link between ITC's mission of capacitybuilding and the academic programme on the one hand, and between the needs of incoming students and the design and objectives of the academic degree programme on the other hand. As of the cohort 2014-2016, the academic degree programme adopted revised intended learning outcomes. The panel judges these learning outcomes to be well formulated, appropriate for the field and of the right level. The new intended learning

Pagina 3 van 10 outcomes for internationalisation mirror one of the key-aspects of post-graduate training at the ITC Faculty: the experience of working in a different research culture and the exposure of students to problems that arise from different cultures and professional contexts.

#### Standard 2

The curriculum of the academic master's degree programme is comprehensive. It has a study load of 118 EC, which is spread over eighteen months and four blocks. The programme can be followed in-house or as a Joint Education Programme (JEP).

The curriculum of the academic master's programme consists of an introductory period (3 EC) and 23 modules of 5 EC. The modules in the first block deal with the basic principles of Geo-Information, Remote Sensing, the System Earth, Data Integration, the User and Academic Skills. In Block 2, students take seven domain modules. There are six domains within the programme and students specialise in one of them: Applied Earth Sciences; Geoinformatics; Land Administration; Natural Resources Management; Urban Planning and Management, and; Water Resources and Environmental Management. Block 3 is designed around research orientation, the deepening of knowledge and skills of research related to individual research topics, and the development of a thesis proposal. In Block 4, students work on their MSc thesis. The panel is of the opinion that the curriculum of the academic master's degree programme is well-developed, coherent, state-of-the art and of the right level. The six domain modules link well to the student's interests, the requirements in the field and the expertise at ITC. The panel is convinced that all learning outcomes are addressed in the programme.

The academic master's degree programme includes nine Joint Education Programmes (JEPs) in cooperation with educational institutions around the world. Students in these programmes take part of the programme at home and part of the programme at the Faculty ITC. At the end of the programme, they acquire a recognized UT degree (single degree or double degree) in Geo-Information Science and Earth Observation. Generally, JEP students take ITC-core modules, domain modules and research orientation, and write a thesis (including a thesis proposal and a thesis defence). Therefore, the findings of the panel mentioned above also apply to the JEPs. The panel established that the JEPs are clearly defined and well thought out, and comply with Dutch rules and regulations. The ITC Faculty has ample control over the content and level of the parts of the programme that are organised at partner institutions. The ITC Faculty is closely involved in the supervision and final examination of JEP theses.

Education at the ITC Faculty is based on the philosophy of 'life-long learning'. Other important didactic principles are 'blended learning', 'the international classroom'; and the 'ethically aware engineer and academic'. Although the didactical principles have not yet been streamlined with the didactic concept of the University of Twente, the panel established that they are relevant and well integrated in the programme.

The intake has remained relatively stable in the last six years. The panel studied the admission criteria and considers them to be suitable. It is enthusiastic about the diversity of the student body: the vast majority of students originate from different continents outside Europe. The programme turns out to be demanding, but feasible. The panel understands the choice of the ITC Faculty to offer a programme that is as short and dense as possible. The programme management is actively monitoring the workload and is urged by the panel to continue doing so.

Pagina 4 van 10 Although the panel advises the programme management to encourage more staff to take additional courses on internationalisation and the multicultural classroom, the panel is confident that the programme has a good teaching staff. The quantity of the teaching staff is adequate.

The panel found that the internal quality assurance of the JEPs is well organised in practice. However, not all procedures have been formalised and are recorded. The panel strongly recommends the programme management to work on this in the near future.

### Standard 3

Following the merger with the University of Twente, the ITC Faculty established one Examination Board (EB) for all of its courses. This EB works according to an annual cycle and is responsible for the assessment policy and for the safeguarding of the achieved learning outcomes. It also deals with complaints and exemption requests applicable to all examinations. The panel found that the EB is professional and has implemented clear procedures for assessment and control as well as adequate action points for the near future. It urges the EB to continue on the course it has set.

According to the panel, there is sufficient variation in the assessment types. Procedures for the assessment of JEP students at partner institutions are clearly defined. The JEPs are all working on the basis of exemptions. Each JEP has been checked by the EB. This check is repeated every three years. The quality of a JEP thesis is double checked by the ITC supervisor and the ITC chair of the TAB.

According to the panel, the thesis assessment procedure is satisfactory. It includes clear assessment instructions, multiple examiners and an extensive discussion about the final mark. Nevertheless, there are several opportunities to increase the transparency and quality of it further. The panel advises the programme to develop a thesis instruction for students, to adjust the assessment criteria, to archive separate assessment forms of the examiners, and to provide students with a written mark sheet after the thesis defence.

The panel read several theses and was impressed with the overall level achieved. In general, the selected theses are well constructed, have a clear focus, and a logical line of reasoning. The panel would like to suggest the ITC Faculty to include a formative assessment of the intercultural setting of the thesis research by adding a reflective appendix to the thesis addressing the intercultural setting of the thesis research. The programme is well-connected to the labour market. The vast majority of graduates finds employment soon after graduation.

Due to the satisfactory overall level of the theses and the good connection to the labour market, the panel is convinced that the learning outcomes are achieved upon graduation.

### **Distinctive quality feature internationalisation**

#### Standard 1

The mission of the ITC Faculty is to be a gateway of knowledge exchange in the field for individuals and institutes from countries that are economically and/or technologically less developed. The vision of the ITC Faculty on internationalisation is rooted in, and inherent to, its capacity-building mission. It includes linking up the content of education to relevant realworld problems, teaching students about research and professional practices worldwide,

Pagina 5 van 10 attracting an international student body, and responding to the needs of international students and the international working field. In the panel's opinion, the vision of the ITC Faculty on internationalisation is clear and supported by stakeholders. The link between the ITC and the university vision on internationalisation and global citizenship could be more explicit, however. The same applies to the verifiable objectives of this vision. Although the vision includes implicit and relevant verifiable objectives, they are not explicitly mentioned in a document. The ITC Faculty also needs to develop explicit procedures for the evaluation of this vision. Although there are still opportunities for improvement, the panel assesses the overall quality of this standard as satisfactory. The excellent integration of the capacitybuilding mission in its vision on the design of its international educational activities and the international reputation of the ITC Faculty are important factors in this decision.

#### Standard 2

The set of intended learning outcomes of the academic master's programme includes specific learning outcomes for internationalisation. They focus on the ability of students to operate and communicate in a multicultural environment. According to the panel, these learning outcomes are relevant, a clear reflection of the vision on internationalisation of the university and addressed in the programme. The panel is convinced that graduates achieve the intended international and intercultural learning outcomes. However, the international and intercultural learning outcomes have only been included in the set of intended learning outcomes recently and are not yet formally tested. The panel urges the programme to develop more detailed ideas on how to test international and intercultural skills in the near future. The panel read several theses and was impressed with the overall level achieved in the academic degree programme. It found that most theses include international elements and that graduates demonstrate sufficient English language skills. Most graduates are positive about their employability and feel that the international approach and the international learning environment at the ITC Faculty have broadened their understanding of cultural differences.

#### Standard 3

The panel concludes that the curriculum, the teaching methods and the learning environment of the academic master's programme match the vision on internationalisation of the university and the ITC Faculty, and the intended international and intercultural learning outcomes. The teaching methods of the programme focus on multicultural group work, reflection on international case studies, and discussion about the experiences that students bring in from their home country. The curriculum reflects this focus: modules link to global issues and relevant international cases, students take excursions to companies and organisations in Europe, and the development of intercultural competencies and communicative skills is stimulated through guided discussions and group work in international teams. In the panel's opinion, the ITC Faculty offers students a unique and stimulating multicultural learning environment. In this specific respect, it can be seen as an international 'best practice'.

#### Standard 4

The student-staff ratio for the academic master's programme is 1:5.3 for the 2012-2014 cohort. According to the panel the number of teaching staff is adequate. The panel is also positive about their general quality and engagement. The staff is well informed about recent developments in the field. It concludes that the staff of the programme has ample international experience and expertise. Furthermore, sufficient services are in place to

Pagina 6 van 10 facilitate their international experiences, intercultural competences and language skills. In addition, the ITC Faculty offers courses throughout the world. As a consequence, staff members continue to develop and expand their international experience and intercultural competences while they work at the ITC Faculty.

#### Standard 5

The majority of students at the ITC Faculty come from developing countries. Most of them originate from countries in Africa and Asia, but the ITC Faculty also attracts students from the Americas, Europe, and Australia/Oceania. The panel is very impressed by the international composition of the student group and concludes that the ITC Faculty is extremely successful in its mission 'to be a gateway for knowledge exchange for individuals and institutes from countries that are economically and/or technologically less developed'. According to the panel, students have ample opportunity to develop multicultural professional and communicative skills and international experience through the curriculum (formal and informal) and the international learning environment at the ITC Faculty. Important in this respect is the fact that many students come from abroad: for them, staying at the ITC Faculty is already an international experience in itself. Many services and facilities have been put in place to support international students.

#### **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 28 april 2015 naar voren te brengen. Bij e-mail van 11 juni 2015 heeft de instelling van de gelegenheid gebruik gemaakt om te reageren. Dit heeft geleid tot enkele tekstuele aanpassingen.

De NVAO besluit accreditatie te verlenen aan de postinitiële wo-master Geoinformation Science and Earth Observation (M.Sc.) (118 EC; variant: voltijd; locatie: Enschede) van de Universiteit Twente te Enschede. De opleiding kent de volgende tracks: Applied Earth Sciences (Natural Hazards and Disaster Risk; Management or Geological Remote Sensing); Geoinformatics; Land Administration; Natural Resources Management (Forestry – Agriculture –Environment); Urban Planning and Management; Water Resources and Environmental Management en het bijzonder kenmerk Internationalisering toe te kennen aan de opleiding wo-master Geoinformation Science and Earth Observation (M.Sc.) van de Universiteit Twente te Enschede. De NVAO beoordeelt de kwaliteit van de opleiding als voldoende.

Dit besluit treedt in werking op 30 juni 2015 en is van kracht tot en met 29 juni 2021.

Den Haag, 30 juni 2015

De NVAO

Voor deze:



Lucien Bollaert  
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.

<b>Standaard</b>	<b>Formulering Standaard</b>	<b>Beoordeling door het panel</b>
<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>Goed</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 en gerealiseerde eindkwalificaties</b>	De opleiding beschikt over een adequaat systeem van toetsing en 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.



Onderwerp	Standaard	Beoordeling door het panel
		voltijd
<b>Bijzonder kenmerk Internationalisering</b>	<b>1. vision on internationalisation</b>	Voldoende
	1.1 Shared Vision	Goed
	1.2 Verifiable objectives	Voldoende
	1.3 Improvement-oriented evaluations	Onvoldoende
	<b>2 learning outcomes</b>	Voldoende
	2.1 Intended learning outcomes	Voldoende
	2.3. Student assessment	Onvoldoende
	2.4 Graduate achievement	Goed
	<b>3 teaching and learning</b>	Goed
	3.1 Curriculum	Voldoende
	3.2 Teaching methods	Goed
	3.3 Learning environment	Excellent
	<b>4 Staff</b>	Goed
	4.1 Staff composition	Goed
	4.2 International experience and competence	Goed
	4.3 Services provided to staff	Voldoende
	<b>5 Students</b>	Goed
	5.1 Student group composition	Excellent
	5.2 International experience	Goed
	5.3 Services provided to students	Goed
<b>Beoordeling BKK</b>	Eindoordeel	Goed

- Prof. G. (Gerrit) van Straten, (voorzitter) is emeritus professor of Measurements, Systems and Control at Wageningen University and part-time technical-scientific consultant via his firm AgrodynamicsSupport;
- Prof. I. (Ian) Dowman, (lid) is emeritus professor of Photogrammetry and Remote Sensing at the University College London;
- Prof. A. (Alexis) Comber, (lid) s professor of Geographical Information Science at the University of Leicester;
- M. (Martin) Kodde MSc., is Research & Development manager at Fugro GeoServices B.V.;
- M. (Marija) Krūminaitė, BSc., (student-lid) is a student of the master's programme Geomatics at Delft University of Technology.

Het panel werd ondersteund door A.J. (Adrienne) Wieldraaijer-Huijzer, MA, secretaris (gecertificeerd).