

Besluit

Besluit strekkende tot het verlenen van accreditatie aan de opleiding wo-bachelor Civiele Techniek van de Technische Universiteit Delft

Gegevens

datum	Naam instelling	: Technische Universiteit Delft
17 juli 2013	Naam opleiding	: wo-bachelor Civiele Techniek (180 ECTS)
onderwerp	Datum aanvraag	: 27 december 2012
Definitief besluit	Variant opleiding	: voltijd
accreditatie wo-bachelor	Locatie opleiding	: Delft
Civiele Techniek van de	Datum goedkeuren	
Technische Universiteit Delft	panel	: 3 juli 2013
(001397)	Datum locatiebezoeken	: 3 en 4 oktober 2012
uw kenmerk	Datum visitatierapport	: december 2012
O&S-UIT-706\EL\dt	Instellingstoets kwaliteitszorg	: ja, positief besluit 21 november 2011
ons kenmerk		
NVAO/20132420/ND		

bijlagen

Beoordelingskader

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

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. Het visitatierapport geeft de bevindingen en overwegingen weer van het panel over de opleidingen bachelor Civiele Techniek en master Civil Engineering van de Technische Universiteit Delft. Het panel heeft beide opleidingen gezamenlijk beoordeeld. In het rapport worden de oordelen per standaard voor de opleidingen afzonderlijk voldoende beargumenteerd.

Inlichtingen

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Samenvatting bevindingen en overwegingen van het panel (hierna ook: the visitation committee). De samenvatting heeft betrekking op zowel de bachelor- als de masteropleiding. In dit besluit is alleen de bacheloropleiding aan de orde. Het rapport geeft voldoende inzicht in de kwaliteit van de afzonderlijke opleidingen.

Standard 1, Intended learning outcomes

The civil engineering domain covers the broad field of 'building for people and society'. The mission of the degree programmes in Civil Engineering is to educate future engineers to enable them to participate and to show leadership in the design, realisation, operation and maintenance of multidisciplinary projects in civil engineering. The programmes in Civil Engineering consist of a three-year BSc degree and a two-year MSc degree. It is the ambition of Delft University of Technology to meet or exceed the level of education provided by its counterparts in the major European countries and in the United States of America.

The final attainments of the study programmes in Civil Engineering (BSc and MSc) are described properly. They match with international standards in the domain of civil engineering and comply with the international description of academic standards (Dublin descriptors) for BSc and MSc levels. The profile of both programmes is well defined. There is a balanced mix between the scope of the domain of civil engineering: broad and in-depth knowledge of the fundamental basics of Civil Engineering. The BSc programme lays the foundation for further academic education on an MSc level, both in the Netherlands and abroad.

The MSc programme in Civil Engineering educates for careers in civil engineering where academics are needed who first and foremost have knowledge and skills of the classical engineer (profound knowledge of technical care disciplines), combined with an attitude of being sensitive to societal and environmental effects of technical solutions and being able to communicate on these issues. These are the so called soft skills of the engineer. The visitation committee would like to advise TUD to continue its strong focus on the technical aspects (the hard skills) of the programme of Civil Engineering.

The visitation committee assesses standard 1 for the bachelor and master programmes in Civil Engineering as good.

Standard 2, Teaching and learning environment

Students are well informed about the BSc and MSc programmes in Civil Engineering. All modules give proper information on the intended learning outcomes, the content of the modules, the forms of education, assessment methods and the number of contact hours and hours of individual study. The visitation committee observes that the BSc programme is being redesigned. In the present programme the applied science component has been emphasized (more than in the former programme). The committee agrees with this approach, as long as this does not negatively affect the current depth of (notably the technical) content of the programme. According to the visitation committee, the focus on the technical in-depth knowledge could have been better specified in the relation between the curriculum and the final qualifications of the BSc programme. In the MSc programme in civil Engineering this relation is well defined. The MSc programme consists of seven tracks, with specializations offered within each track. These tracks provide in-depth specialisation within the relevant domain.

Pagina 3 van 9 Both the BSc and the MSc programme in Civil Engineering pay ample attention to the academic level in terms of the content of the courses, the required research and design skills and the scientific orientation of the students.

Students achieve knowledge and skills in various study components e.g. data analysis, model validation and reporting, problem oriented learning, working on projects in teams, excursions and symposia, as well as individual research and design. The final thesis work in particular includes reflections on the academic research and design processes and addresses the issues of scientific reporting and presentation. Students are satisfied with the balanced mix of research oriented components and practice oriented components (such as the projects and graduation work).

Students are satisfied with the methods of instruction used in the programmes of Civil Engineering. The visitation committee is positive about the mix of instruction methods used: lectures and tutorials, assignments, case studies, internships and thesis work. The central theme throughout both the BSc and the MSc programmes is to teach each student how to deal with open-ended and often poorly defined design problems creatively and effectively.

Student supervision and guidance is considered an important feature of the educational approach. Students and supervisors meet on a regular basis. The visitation committee is positive about the way students are guided during their study and especially during their BSc and MSc thesis work. To improve the feasibility of the programme, many lectures in both the BSc and MSc programme are videotaped and available through Collegerama. This enables students to review a lecture or watch a missed lecture online. Collegerama is extremely popular among students.

The Civil Engineering programmes are delivered by a well-qualified staff. Most of the lecturers who teach in the BSc and MSc programmes are also active in research. The increase in student numbers in recent years, combined with the demand for more research output, limits the time lecturers have for making new ambitious improvements to the programme. A realistic assessment of resources is required, according to the faculty. The visitation committee agrees with the faculty's viewpoint

The visitation committee is of the opinion that the facilities of Civil Engineering are well-equipped and more than adequate in comparison to other (international) schools.

According to the visitation committee, the quality of the BSc and MSc programmes is well-monitored by the faculty. Students play a vital role in the quality assurance system of the faculty. Content and focus of the programme (the appropriate balance between breadth and depth), feasibility of the study programme, study load, lead times of thesis work, student guidance and the quality and quantity of staff are topical issues in the discussions regarding the quality assurance of the programmes. The visitation committee observes that the faculty and its Board of Examiners are well aware of the importance of these discussions.

Standard 3, Assessment and achieved learning outcomes

Students are informed about the manner of assessment via the educational information system Blackboard. Students find information on the learning objectives and means of assessment of each module in the study guide. Therefore, students are aware of what is expected of them. Various methods of assessment are used: assignments, written examinations, computer assessments, project presentations and the BSc and MSc thesis. Students are satisfied with the way they are informed on examinations and grading criteria.

Pagina 4 van 9 According to the visitation committee the quality of projects the committee has reviewed, is high and compared to other (international) CE programmes more than satisfactory.

TU Delft has established a university assessment and examination policy that has been adopted by all programmes in order to formulate faculty assessment and examination policies. According to an internal audit of the assessment policy of the faculty of Civil Engineering the way of testing differs between lecturers. The internal audit report also states that the faculty works hard to improve its testing policy and testing practice. The visitation committee observes that the Examination Board of Civil Engineering is actively working on the implementation of the assessment and examination policy and that professionalization on testing is high on the agenda.

The visitation committee is positive about the way BSc and MSc students of the programme in Civil Engineering are guided during their thesis work, the feed back students get during the process of graduation and the assessment procedure of the theses.

The professional field (research institutes and academia, engineering and construction firms and consultants firms) is satisfied with the level and quality of the graduates of the CE programme. Dutch practice shows that almost all BSc degree holders continue their studies by following an MSc programme of their choice at TU Delft and many other universities in the Netherlands and abroad. BSc graduates who continue their studies in the MSc programme in CE have no difficulty in the transition from the BSc to the MSc programme and generally perform very well.

The visitation committee studied seven BSc theses and seven MSc theses of the CE programme. In all cases the visitation committee judged more or less the same as the examiners of the theses. In some cases the motivation for the judgement according to the assessment format could have been more specific. However, the visitation committee is satisfied with the grading of these theses.

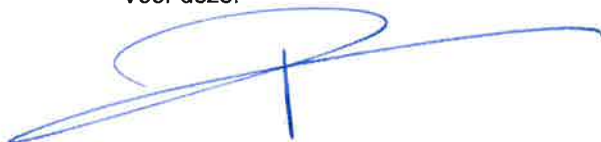
Ingevolge het bepaalde in artikel 5a.10, tweede lid, van de WHW heeft de NVAO het college van bestuur van de Technische Universiteit Delft te Delft in de gelegenheid gesteld zijn zienswijze op het voornemen tot besluit van 13 mei 2013 naar voren te brengen. Bij e-mail van 27 juni 2013 heeft de heer T.P.J. van Drunen namens de instelling van deze gelegenheid gebruik gemaakt. Dit heeft geleid tot enkele kleine correcties.

Op grond van het voorgaande besluit de NVAO accreditatie te verlenen aan de wo-bachelor Civiele Techniek (180 ECTS; 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 1 januari 2014 en is van kracht tot en met 31 december 2019.

Den Haag, 17 juli 2013

De NVAO
Voor deze:

A handwritten signature in blue ink, consisting of a large, stylized 'R' followed by a horizontal line extending to the right and a vertical line extending downwards from the center of the 'R'.

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
		<i>voltijd</i>
1. Beoogde eindkwalificaties	De beoogde eindkwalificaties van de opleiding zijn wat betreft inhoud, niveau en oriëntatie geconcretiseerd en voldoen aan internationale eisen	G
2. Onderwijsleeromgeving	Het programma, het personeel en de opleidings specifieke voorzieningen maken het voor de instromende studenten mogelijk de beoogde eindkwalificaties te realiseren	G
3. Toetsing en gerealiseerde eindkwalificaties	De opleiding beschikt over een adequaat systeem van toetsing en toont aan dat de beoogde eindkwalificaties worden gerealiseerd	G
Eindoordeel		G

De standaarden krijgen het oordeel onvoldoende (O), voldoende (V), goed (G) of excellent (E). Het eindoordeel over de opleiding als geheel wordt op dezelfde schaal gegeven.

BSc Civil Engineering

Table 1 Intake and drop-out of students in the BSc programme in Civil Engineering

Cohort	Total Intake	Total drop-outs	Drop-outs after BSc 1		Number of re-enrollers BSc 2		Drop-outs BSc 2 and 3		
2005-2006	240	108	45%	47	20%	193	80%	61	32%
2006-2007	209	63	30%	48	23%	161	77%	15	9%
2007-2008	246	57	23%	37	15%	209	85%	20	10%
2008-2009	311	71	23%	51	16%	260	84%	21 [^]	8%
2009-2010	330	116 [^]	35%	100	30%	230	70%	16 [^]	7%
2010-2011*	297 [^]	78 [^]	26%	78 [^]	26%	219	74%	0 [^]	0%
2011-2012*	335 [^]	23 [^]	7%	23 [^]	7%				

Table based on VSNU data, reference date 1 October

[^] TU Delft data, reference date 1 July 2012

Table 2 Number of graduates of the BSc programme in Civil Engineering

Cohort	Number of re-enrollers BSc 2	Diploma in ≤ 3 years		Diploma in ≤ 4 years		Diploma in ≤ 5 years		Diploma in ≤ 6 years		Diploma in < 6 years	
2002-2003	161	18	11%	47	29%	82	51%	113	70%	126	78%
2003-2004	141	13	9%	37	26%	68	48%	78	55%	83	59%
2004-2005	181	11	6%	33	18%	69	38%	81	45%	97 [^]	54%
2005-2006	193	29	15%	46	24%	77	40%	96 [^]	50%	126 [^]	65%
2006-2007	161	19	12%	50	31%	92 [^]	57%	112 [^]	70%		
2007-2008	209	29	14%	87 [^]	42%	126 [^]	60%				
2008-2009	260	32 [^]	12%	98 [^]	38%						
2009-2010	230										

Table based on VSNU data, reference date 1 October

[^] TU Delft data, reference date 1 July 2012


Figures are cumulative. Percentage of re-enrollers in the BSc programme in Civil Engineering (students who continue their studies after BSc 1).

Table 3 Teaching staff in the BSc and MSc programme in Civil Engineering

	Teaching staff	Number of staff	Number of FTE
BSc programme (major programme)	Full professor	12	8,4
	Assistant / Associate professor	14	11,1
	Senior lecturer	15	13,6
MSc programme (all modules)	Full professor	32	23
	Assistant / Associate professor	56	46,5
	Senior lecturer	29	21,5

This table shows only key lecturers, employed by the CEG Faculty. BSc programme service lecturers are not included in this overview.

The staff-student ratio for the BSc programme in Civil Engineering is: 1:36

Pagina 8 van 9  Table 4 Distribution of study load for the BSc programme in Civil Engineering, expressed in hours

	Contact hours				Group work			Self-study			Total study load
	Lectures tutorials	Practical training, projects	Laborator y work	Subtotal	Projects	Subtotal	Individual study	Thesis	Electives	Subtotal	
Year 1	354	62	65	481	110	110	1088			1088	1680
	21%	4%	4%	29%	7%	7%	65%			65%	100%
Year 2	362	24	121	507	116	116	1058			1058	1680
	22%	14%	7%	30%	7%	7%	63%			63%	100%
Year 3 (30 EC)*	64		16	80	99	99	257	280	124	661	840
	8%		2%	10%	12%	12%	68%	33%	15%	78%	100%
Overall	743	86	202	1031	325	325	2720	280	124	3124	4200
	18%	2%	5%	25%	8%	8%	65%	7%	3%	74%	100%

* BSc year 3 has a major of 30 EC and a minor of 30 EC. The 30 EC major consists of 12 EC modules, 8 EC elective modules and 10 EC BSc thesis.

Percentages are based on total study load per year and the major programme of 150 EC

Pagina 9 van 9 **Bijlage 3: panelsamenstelling**

- Prof. Dr. Ir. R.E.C.M. van der Heijden (chairperson , representative profession /discipline Transportand Logistics);
- Prof. Dr. J.W. Kamphuis (representative profession/discipline Civil Engineering);
- Ir. R.P. Mulder (representative profession/discipline Civil Engineering and Building Construction);
- S.M. Kleinendorst BSc (student member).

Het panel werd ondersteund door Drs. Ing. A.G.M. Horrevorts, secretaris (gecertificeerd).