Accreditation Report

HPE Bachelor course Process & Food Technology

Full time

de Haagse Hogeschool / The Hague University of applied sciences

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CROHO nr. 34275

Hobéon Certificering BV
Date
March 18th 2011
Audit team
A.T. de Bruijn
A.J. Kowalski
S. Purwono
J.L. den Hollander
J. Aalders
Secretary
J.G.J. de Gooijer

CONTENTS

General information:

Name of the institute:	The Hague University of Applied Sciences
Name of the course:	Process & Food Technology
Variant of the course:	full time
Locations involved:	The Hague
Name of VBI:	Hobéon Certificering b.v.
Date of the audit:	September 14th 2010
Date of the advisory report:	March 18th 2011

Assessment framework

The assessment framework used is the 'Accreditatiekader bestaande opleidingen hoger onderwijs Nederland' (14 februari 2003).

Special feature: internationally oriented educational programme.

Composition of the audit team

The audit team was composed of the following persons:

Chairman:
Fred de Bruijn, partner of the Hobéon Group.

Team member, work field expert / professional expert:
A.J. Kowalski, Royal Society Industry Fellow, Department of Chemistry, University of Liverpool, Honorary Professor, School of Chemical Engineering and Analytical Sciences, University of Manchester, Science Leader for Systems, Process and Device Engineering, Unilever plc.

Team member, professional expert:
S. Purwono, Vice Director, Graduate studies, Department of Chemistry, Gadjah Mada University, Yogyakarta, Indonesia

Team member, work field expert:
J.L. den Hollander, Senior Scientist Down Stream Processing in DSM Biotechnology Center, Delft.

Team member, student:
J. Aalders, is 3rd year student HBO Chemical Technology, Hogeschool Utrecht.

Secretary:
J.G.J. de Gooijer, advisor in the Hobéon Group.

PART 1

1. MANAGEMENT SUMMARY

1.1. Integral advice

Hobéon Certificering advises the Nederlands-Vlaamse Accreditatieorganisatie (NVAO) to accredit the HBO-Bachelor course Process &Food Technology provided by de Haagse Hogeschool (The Hague University of Applied Sciences), CROHO number 34275, with all its variants.

This advice is based on the findings in this report.

1.2. Review Summary

The advice of Hobéon Certificering to accredit the HBO-Bachelor course Process &Food Technology is based on the following considerations:

General picture
The Process & Food Technology programme of The Hague University of Applied Sciences is an innovative higher teaching and learning programme educating students for the degree Bachelor of Applied Science. The English programme is a follow up of the former Dutch “Chemische Technologie” programme and still resides under the same CROHO number.
The objective of the programme is to educate students to become starting professionals in the field of process technology with an emphasis either on Chemical Engineering or Food Engineering. The students are guided towards an innovative and societal attitude and are prepared for vocations in an international and multicultural environment. This is done in close cooperation with industrial (national and international) partners.

Subject Aims and objectives of the curriculum: sufficient
The opinion of the audit team on all aspects of this subject is positive. The following considerations have led to that opinion.

Domain specific demands: an advisory board was involved in setting up the PFT programme and still is actively involved in the PFT evaluations, desired changes etc. Selecting the mem–bers of the board with a broad international background and the actual involvement of all members of the board prove to be of great importance for a balanced and truly international programme.
Bachelor level: a choice was made to incorporate all BAS competences in the PFT programme (all programme variants), raising some to an even higher level than the minimum requirements, and in addition to this two more competences were defined (Social responsibility and Functioning in an international environment).
Professional orientation: the advisory board played an important and active role in setting up the PFT programme, based on their international background and professional experience. The wide variety of companies involved guarantees a balanced educational programme aiming at the right level.

All three facets of subject 1 (Aims and objectives of the curriculum) are rated as ‘good’ for this programme, which warrants a qualification 'good' for the subject. This is considered an ‘additional bonus’.

Subject Curriculum: sufficient
The opinion of the audit team on all aspects of this subject is positive. The following considerations have led to that opinion.

Requirements for professional orientation: the basis of the course is broad and provides a good entry to the rest of the course. A mix of broad and in depth treatment of subjects, projects based on industry related problems, internships related with industrial partners, provide a thorough knowledge base and competence development. For each project an industrial partner is required, coordinators play an important and active role in this. Recent and relevant study books and literature, as well as lectureships from industrial speakers contribute a great deal. Rising influx of students, both Dutch and from abroad, supports this view. The NIZO report will be the guideline for the introduction of the new Functional Food specialisation, a promising initiative.
Correspondence between the objectives and aims of the PFT programme: the first year provides a good basis for later years, development of competences plays a key role. International orientation starts early, already in the second year. Development and introduction of the Fast Food Specialisation can further improve the balance between Production and Food in the curriculum.
Consistency of the PFT programme: the body of knowledge and development of competences, in combination with the industry-related projects prove to be properly tuned, balanced and interrelated. The theme blocks (subjects and topics) give a wide perspective but still are sufficiently deep. Students are mostly well equipped to fulfil their tasks in the internships.
Study workload: the demands in terms of development of competences are high, yet no marked impediments appear to be present in the study. Also the 3 year fast track programme with an even higher workload is not seen as excessively heavy by the students. In part this can be attributed to the high motivation of the students who choose this programme, which is supported by a relatively low number of drop-outs.
Admission requirements: for both the 3 and 4 year programme the admission requirements are well defined. Good command of the English language, based on international standards, is an important factor for both home and foreign students.
Credits: the description of all parts of the curriculum shows that the size of the course corresponds to 240 ECTS, for both 3 and 4 year programme and to 60 ECTS for the 1 year dual degree programme.
Coherence of structure and content: a clear set of aims is defined, most of which are translated into a rather practical approach with an emphasis on production technology, supported by sufficient theory. The implementation of the Functional Food specialisation and its consequences are in progress.
Learning assessment: a wide variety of appropriate assessment methods is used with active involvement of experts from the work field. This is supported by an assessment plan.

All facets of subject 2 (Curriculum) are rated as ‘good’ for this programme, which warrants a qualification 'good' for the subject. This is considered an ‘additional bonus’.

Subject Deployment of Staff: sufficient
The opinion of the audit team on all aspects of this subject is positive. The following considerations have led to that opinion.

Professional orientation requirements: all teaching staff members prove to be capable of linking the programme to professional practice, guest lecturers complement this.
Quantity of staff: the present student-staff ratio should be able to handle the expected increase in influx of students for the next few years.

Quality of staff: all educational staff have a MSc degree or a PhD, with relevant and, in part, international background. External lecturers and coaches/assessors receive training to match the desired standard. Good use is made of part time appointments to provide specialised teaching in key subjects and to make use of staff with industrial experience

All three facets of subject 3 (Deployment of Staff) are rated as ‘good’ for this programme, which warrants a qualification 'good' for the subject. This is considered an ‘additional bonus’.

Subject Services: sufficient
The opinion of the audit team on both aspects of this subject is positive. The following considerations have led to that opinion.

Facilities: library, ICT and laboratory facilities are adequate and mostly up to standard.
Tutoring: study materials are well up to standard. Information services for aspects as scheduling and publication of test and assessment marks, as well as study career counselling, are sufficient, but need (more) attention.

Subject Internal quality Assurance: sufficient
The opinion of the audit team on all aspects of this subject is positive. The following considerations have led to that opinion.

Periodic evaluations by students are carried out by questionnaires, but low response and troublesome interpretation of answers are reasons for considering further development. Measures for improvement are taken where required, but little documentation can be presented. Planning and structured approach are satisfactory, but may need more attention, especially since the student population is growing.
Involvement of staff, students, alumni and the professional field: evaluations are carried out throughout all groups/committees involved. For alumni (too little and too short in time to give useful results) a limited amount of feedback is available. In part this is compensated by feedback from the advisory board. No employee satisfaction surveys are carried out.

Subject Results: sufficient
The opinion of the audit team on both aspects of this subject is positive. The following considerations have led to that opinion.

Achieved learning outcomes: markings of the final thesis reflect the actual level to be expected. Not enough data are available yet to interpret work field acceptance of alumni.
Study progress: for the 3 year course study progress proves to be good with 8 out of 9 having successfully completed the course after 3 year. For the 4 year course 9 out 19 have finished studies so far. For these students the first year (called propedeuse) outcome shows a high success rate, well above the national average.

Both facets of subject 6 (Results) are rated as ‘good’ for this programme, which warrants a qualification 'good' for the subject. This is considered an ‘additional bonus’.

2. INTRODUCTION

2.1. Function of the advisory report

The function of this advisory report is twofold: the report gives an answer on the question whether the quality of the HBO-Bachelor course Process & Food Technology, provided by "de Haagse Hogeschool" (THU) meets the requirements set out by NVAO, being the Accreditation Organisation of the Netherlands and Flanders. Secondly, this report includes the audit panel's advice to NVAO to accredit the HBO-Bachelor course concerned.

Starting point of the audit panel's inquiry was the comprehensive Self Evaluation Report (the so-called Management Review) with regard to the HBO-Bachelor course Process & Food Technology, CROHO 34275.

2.2. The audit

The audit took place on September 14th 2010.
The program of the audit is included in Appendix I.
The audit team consisted of A.T. de Bruijn, A.J. Kowalski, S. Purwono, J.L. den Hollander, J. Aalders en J.G.J. de Gooijer.
The expertise of this team can be seen in the table below.

	work field	profession / discipline	education	quality /audit	students-perspective
chairman: ir. A.T. de Bruijn, partner, Hobéon				X	
work field/professional expert prof. A.J. Kowalski PhD, Science Leader, Unilever plc.	X	X	X		
professional expert prof. S. Purwono PhD, Gadjah Mada University		X	X		
work field expert dr.ir. J.L. den Hollander, Senior Scientist, DSM	X			X	
student J. Aalders HU, Chemical Eng.					X
secretary ir. J.G.J. de Gooijer, advisor, Hobéon			X	X	

In the framework of the Dutch accreditation system Fred de Bruijn has chaired many audits in various subject areas. De Bruijn, graduated from Wageningen University, has a large experience in the innovation of higher (professional) education, in particular in the technology & life sciences domain.

Team member, work field expert / professional expert:
A.J. Kowalski, graduated from the University of Manchester, BSc Physics, ICI CASE PhD, University of Birmingham, Dept of Chemical Engineering, presently holds a position as Honorary Professor, Department of Chemistry, University of Liverpool as well as Honorary Professor, School of Chemical Engineering and Analytical Sciences, University of Manchester, as well as holds a position as Science Leader for Systems, Process and Device Engineering, Unilever plc.

Team member, professional expert:
S. Purwono, graduated from the University of Waterloo, Ontario, Canada, holds a PhD from Chemical Engineering Dept. University of Waterloo, Ontario, Canada, presently holds a position as Vice Director, Graduate studies, Department of Chemical Engineering, Gadjah Mada University, Yogyakarta, Indonesia

Team member, work field expert:
J.L. den Hollander, graduated from Delft University of Technology, dpt. Chemical Engineering, holds a PhD from Delft University of Technology, department of biochemical engineering. Presently holds a position as Senior Scientist Down Stream Processing in DSM Biotechnology Center, Delft.

Team member, student:
J. Aalders, is 3rd year student HBO Chemical Technology, Hogeschool Utrecht (HU).

Secretary:
J.G.J. de Gooijer, graduated from Delft University of Technology, dpt. of physical, inorganic and analytical Chemistry, presently holds a position as advisor in the Hobéon Group.

Advisory report
The Process & Food Technology programme of The Hague University of Applied Sciences is a programme educating students for the degree Bachelor of Applied Science.
The new international programme is a follow up of the former Dutch “Chemische Technologie” programme and resides under the same CROHO programme registration number.
Prior to the assessment Hobéon received a report (Management Review) with underlying documents, presenting the basic for visit and the report.
This advisory report includes the panel’s judgement on every facet from the NVAO Assessment Framework followed by the panel’s findings and reasoning, in each case leading to a conclusion.

3. CHARACTERISTICS OF THE PROCESS & FOOD TECHNOLOGY PROGRAMME

General
Process & Food Technology of The Hague University (THU), Academy of Technology, Innovation and Society The Hague (TISH), is a full-time broad but distinctive process technology programme with a strong international and multicultural orientation. The programme offers the students higher education in an international context and helps students to acquire international competences as needed for a starting professional..

The programme prepares students for professions in the field of chemical and/or food technology and engineering at the level of Bachelor of Applied Science (HBO-Bachelor) as defined by the Dutch higher education organisation Domain Applied Science: DAS (Website Stichting DAS, 2010).

The students are prepared for a future career in an international environment in the Netherlands or abroad, in a multinational or a small company having strong international connections

Next to the regular 4 year track for students with a GCSE (HAVO for Dutch students) or suitable Dutch MBO-4 background, there is also a three year track (PFT-3) for students with an A-level (VWO for Dutch students) background and a special 1 year track: PFT-1, for students in double degree exchange programs. After successful graduation, students from these three tracks are awarded the same PFT Bachelor of Applied Science diploma. Hence all these students possess the set of competences defined at, at least, the minimum final level defined. This level is at least in accordance with national and European competence level definitions for a bachelor degree (i.e. Dublin Descriptors).

Organisation
THU consists of academies each having a number of higher education programmes. The PFT programme is one of a total of eight programmes of the The Hague site of the Academy of Technology, Innovation and Society The Hague (TISH). The managing director of the Academy, together with the academy secretary and the programme team managers, the head of the academy office and the management assistant constitute an Academy Management Team. The academy office supports the management and also the educational programmes. The PFT programme is one of the smaller, but growing, programmes of TISH.
The PFT programme team consists of staff members. The staff consists of lecturers, instructors and supporting staff. The manager of the PFT programme is the staff member (and lecturer) who manages the team on a daily basis. He is responsible for the performance of the programme according to the policy of the academy and The Hague University and for performing the programme according the annual budget planning and education planning. Besides the PFT team manager the staff members also have organisational tasks and responsibilities such as the phase coordinators for year 1, year 2, and the specialisation phase. Other coordination tasks are: block coordinator, internship (graduation) coordinator, company project coordinator and a study career counselling coordinator. The study phase coordinators, the study career counselling coordinator and the team manager together are responsible for managing the programme on a daily basis. The other coordinators communicate with the phase coordinators on lecturing, coaching, performance, tuning and assessment tasks in a theme block.
A detailed description of organisational structures, functions, responsibilities, roles, committees, coordinators and specific support can be found in the document PFT_Organisatiestructuur.

The position of Academy TISH within the THU and that of THU within the city and region of The Hague cannot be ignored. Decreasing rates of study success in the year 2004-2005 led to an initiative to investigate this in a wider context. A summary of the results can be found in a pamphlet “Het Haagse studiesucces” (The Hague study success), formulating the top-five dominant factors causing low pass rates, coupled to the top-five dominant factors resulting in high pass rates.
Together with the Hogeschoolontwikkelingsplan (THU development plan) this gives a good idea of how directors and management are looking into the future.

Noteworthy in this development plan is the following poem (actually a part of it)

Als je doel Ithaka is en je vertrekt daarheen,
dan hoop ik dat je tocht lang zal zijn,
en vol nieuwe kennis, vol avontuur.

Verlies Ithaka niet uit het oog;
daar aankomen was je doel.
Maar haast je stappen niet;
het is beter dat je tocht duurt en duurt
en je schip pas ankert bij Ithaka, wanneer je rijk geworden bent
van wat je op je weg hebt geleerd.
Verwacht niet dat Ithaka je meer rijkdom geeft.
Ithaka gaf je een prachtige reis;
zonder Ithaka zou je nooit vertrokken zijn.
Het gaf je alles al, meer geven kan het niet.

En mocht je vinden dat Ithaka arm is,
denk dan niet dat het je bedroog.
Want je bent een wijze geworden, hebt intens geleefd,
en dat is de betekenis van Ithaka.

As you set out for Ithaca
hope your road is a long one,
full of adventure, full of discovery.

Keep Ithaca always in your mind.
Arriving there is what you're destined for.
But don't hurry the journey at all.
Better if it lasts for years,
so you're old by the time you reach the island,
wealthy with all you've gained on the way,

Not expecting Ithaca to make you rich.
Ithaca gave you the marvellous journey.
Without her you wouldn't have set out.
She has nothing left to give you now.

And if you find her poor, Ithaca won't have fooled you.
Wise as you will have become, so full of experience,
you'll have understood by then what these Ithakas mean

Konstantinos Kafavis

Characterisation and history
The English Process & Food Technology programme started in 2006 as an international curriculum built upon the extensive experience gained from the former Dutch ‘Chemische Technologie’ (Chemical Technology) curriculum at THU . The set up of a new programme was urged both from the perspective of The Hague University and professional bodies representing the work fields. A key challenge was the number of students in the ‘Chemische Technologie’ programme being sub-critical in 2005. Moreover, there was an increasing need for internationalisation as well as a need to strengthen the direct involvement of industry in order to further increase the direction on application and professions.
The former Dutch Chemical technology programme was accredited in 2004. The results and recommendations of the accreditation committee were taken into account in the design of the new programme. The new PFT programme is, similar to the former curriculum, a competence based programme in which students develop their competences in theme blocks by doing projects, course work, company visits, internships etc. However, the start of the PFT programme in 2006 was a turning point in several respects. It was a landmark in attracting larger numbers of Dutch and foreign students and also in the educational concept in which students are involved in actual industrial projects, right from the start.

Benchmark
When compared to other THU programmes PFT stands out, though not being the only English programme within THU, it is the only English technology study within THU. The total inflow of female students is increasing for the technology sector of THU. In particular, PFT already has an intake consisting of ~50% female students.

On a national level the PFT programme is unique, with both the fields of chemical technology and food technology united, whereas other higher education institutions offer these programmes separately, or not at all. From a survey carried out not long ago among Dutch universities of professional education THU concluded that PFT is the largest single programme in Holland of Chemical Technology students.

Internal 2008 audit

Two years after the start of the new Process & Food Technology programme, in October 2008, an internal audit of the Process & Food Technology programme was held. During the set up of the new PFT programme recommendations and improvement tracks, which were formulated during the 2004 accreditation process, were taken into account. The audit team reported that they encountered an educational programme with a deeply rooted vocational orientation. The audit team saw a challenging programme, a programme that makes students enthusiastic. However the audit team concluded that the new programme still has some weaknesses as well. The audit team remarked that there are discrepancies between the written and practised educational profile and educational competence profile.
At the time of the internal audit no PFT graduation reports were available yet. This made the evaluation of the Achieved Learning Outcomes (ALO's) and the comparison with national and European standards difficult. This may also be the reason, as the auditors concluded, that a consistent quality assurance system with respect to end qualifications was not found to be realised yet.
Assessment and quality assurance were points of attention for PFT.

4. RELATIONS WITH '2004 AUDIT' OF THE FORMER 'CHEMISCHE TECHNOLOGIE' PROGRAMME

The last accreditation of the former 'Chemische Technologie' curriculum took place in 2004. Hobéon investigated this curriculum according to the NVAO accreditation framework criteria.

In the summarizing 2004 audit report the subject "Staff" was judged as insufficient because the sub-facets "quantity" and "quality" of the staff could not be judged, due to lack of information. THU has repaired this in the new PFT programme.

The subject Results was judged as good because of the high educational success rate. THU has preserved this quality in the new PFT curriculum.

All other facets were judged as sufficient in the 2004 audit report. The evaluations, findings and actions defined during and after this accreditation process were taken into account by the staff in 2005, in the set up of the new PFT programme.

As appeared from the internal 2008 audit the present programme is in a development stage: strong points are identified but also weak points were recognized. This has led to several changes.

- the student population changed drastically in terms of increasing number of enrolled students (both national and international), their educational and cultural background, study orientation and motivation;
- the staff composition changed a lot as well and evolved into a highly educated staff, with both recent and relevant experience in doing applied research;
- the programme is completely in English;
- the involvement of industry is much more direct;
- student projects resemble small application oriented research projects in a number of cases especially in the specialisation phase of the programme.

This makes a comparison between the 2010 and 2004 situation somewhat difficult. Still a reference will be made to the 2004 situation whenever relevant.

PART 2

5. SUBJECTS AND FACETS NVAO ACCREDITATION FRAMEWORK

1. Aims and objectives of the curriculum

Facet 1.1. Specific requirements of the domain

- **The intended learning outcomes of the programme correspond to the requirements set by professional colleagues, both nationally and internationally and practices in the domain concerned (subject / discipline and / or professional practice)**

Judgement: good
The judgement is based on the following observations and considerations.

Findings
The new full time PFT programme is a follow-up of the former Dutch 'Chemische Technologie' programme and started in 2006. The educational concept in this programme is competence and project based learning and is supported by courses, to build the necessary Body of Knowledge as required by the professional fields. The CROHO number of PFT is still the same as that of the previous programme. The focus of the new programme is on both the chemical process industry as well as the food industry. The programme is designed and validated in strong cooperation with industrial partners and meets the required graduate competence levels aimed at in the description of the level of the Bachelor of Applied Science (BAS).
This is done in strong cooperation with international industrial companies such as Shell, Unilever, and DSM. This cooperation concerns both the development of the educational programme as well as the execution of educational tasks.

The PFT programme has a three year track (PFT-3) for students with an A-level (VWO for Dutch students) background, a four year track for students with a GCSE (HAVO for Dutch students) or suitable vocational (Dutch MBO-4) background, and a special 1 year track: PFT-1, for students in double degree exchange, all with the same graduate level.

The objective of the programme is to educate students as starting professionals in the field of process technology with an emphasis either on chemical engineering or food engineering. The students are guided towards an innovative and societal attitude and are prepared for vocations in an international and multicultural environment. The programme is positioned as a higher education programme that is fully embedded in current industrial practice.

PFT graduates can find work in a wide range of jobs. On the whole, these jobs are higher staff positions within organisations and companies. To prepare student for these staff positions the THU has formulated the following objectives:

- Multi-disciplinary integration: during the programme students acquire knowledge, insights and practical skills necessary to operate at higher staff position level and know how to integrate them when it comes to technological, economic, communicative and organisational aspects.
- Broad professionalization: during the programme students develop competences. These competences have been divided into professional competences, socio-communicative competences and individual competences. The development of these competences enables students to adopt a problem-oriented approach to their work and to think and act methodically.

- Core qualifications for management jobs: during the programme students develop a professional attitude and an ability to act adequately in complex situations.

In the set up of the new programme, but certainly also in running it, the PFT advisory board has played a pivot role. This committee consists of employees from major industrial companies with international orientation. The members possess a broad view of current issues, developments and other needs for PFT relevant professional fields. The advisory board is involved in programme evaluations, programme extensions, reflecting on the level of the graduates, signalling omissions in the programme and so on. Consulting of the alumni is important in these respects as well.

Competences

The present general BAS profile descriptions and qualifications were generated in the period 2003-2006 as a joint effort of the DAS member programmes in strong cooperation with the professional fields involved (e.g. DSM, Unilever, Danone, Shell, Akzo-Nobel). The 1999 Bologna accords were the starting point and the final results in terms of competence profiles and level descriptions were validated by the professional fields, i.e. multinational companies such as Albemarle, Shell, DSM and Unilever were involved. DAS published a booklet (Bootsma et al, 2008) about the BAS education containing descriptions of the BAS realm of professions, the 'Applied Science' profession profile, and national educational profiles in terms of competence descriptions. This document is fundamental to PFT and the starting point for the specific PFT bachelor programme descriptions. DAS defined the BAS level in terms of a set of eight competences and required competence levels that a graduate has to achieve.

The competences and corresponding graduate levels are in accordance with the internationally defined bachelor level as described by the Dublin-descriptors. Besides the previously stated achievements, a The Hague University BAS also fulfils THU bachelor qualifications and the Dutch general HBO-core-qualifications. The PFT set of competences is more extended than the one defined by DAS for the chemical engineering profile. It includes 'recommending/selling' and 'coaching/instructing' in the PFT competence profile. In fact, the PFT competence profile has final level definitions for all eight BAS competences as defined by DAS. Furthermore, for all 'The Hague Bachelors', international/multicultural awareness is formulated as an explicit competence, as is 'social responsibility'.

The table shows the PFT competences and final levels to be achieved, compared with the BAS competence levels (defined on the national level, where I is low and IV is high)

Nr	Competences	PFT-3/1	PFT-4	DAS/BAS
	Programme year->	Year 3	Year 4	CT4
1	Researching	II-III	II-III	II
2	Developing	II-III	II-III	II
3	Experimenting	II	II	II
4	Controlling/ Coordinating	I-II	I-II	I
5	Consulting/ purchase & sales	I	I	-
6	Instructing/ coaching/teaching	I	I	-
7	Leadership/managing	I	I	I
8	Self-guidance	II	II	II
9	Social responsibility	II	II	-
10	Functioning in an international environment	II	II	-

PFT aims and focus points
The PFT objective involves in a number of aims and focus points. Important aims are:
- Directed towards professional practice right from the start.
- Functioning in an international and multicultural environment.
- Strong connection between knowledge development and competence growth.
- Achieving an increasing degree of self-guidance of the students.
- Application oriented research interwoven with the bachelor education, and facilitating a smooth transition to a subsequent master study.

Important focus points are:
- Internationalisation.
- Product related process technology.
- Competence and competence level development
- Interconnection and integration of disciplinary subjects.

Here the focus is on applications, strongly connected to professional practice, without losing sight of basic principles and concepts. Constructive alignment of Intended Learning Outcomes (ILOs), Teaching and Learning Activities (TLAs) and Assessment is what is aimed at in this education.
Compared to the former 'Chemische Technologie' programme internationalisation and inter-cultural aspects have become much more important. At the start of PFT in 2006 Study Career Counselling (SCC) was taken up with emphasis on support for these two additional aspects.

Internationalisation of the market for graduates
In 1995 the internal market of the European Union was largely realised. For graduates of technical programmes, too, this means that their possible place of work could be anywhere in the European Union. The Academy of Technology, Innovation & Society uses the following principle in relation to the international orientation of its programme:
Graduates need to have reasonable writing and speaking skills in general as well as good writing and speaking skills as far as technical subjects are concerned in at least one foreign language. In concrete terms this means that within the curriculum attention is given to internationalisation by integrating the English language in all modules. By means of electives students can also study other languages within THU.

Internationalisation according to The Hague University
The last few years The Hague University stimulated internationalisation activities to a larger extent. These activities are derived from The Hague University 2006 internationalisation policy plan 'Wereldburger in Wording'. This policy plan overviews the relevant developments in the internationalisation arena and formulates future targets. The main objective is educating starting professionals to be able to function in an international and multicultural environment. As a tool for realising this objective The Hague University offers a teaching and learning environment which has an international and multicultural climate in which both students and staff are immersed. Presently there are six English bachelor programmes at The Hague University. Three years ago it was only three. International students account for 8% of the total student population but for PFT this figure is around 50%. The number of nationalities involved is greater than 100. The specific position of the PFT programme, the city of The Hague with its international character etc, are described in extenso in many underlying documents as mentioned earlier.

Advisory board
Based on the 2005 PFT feasibility study a new professional field committee, i.e. PFT advisory board, was established. The advisory board consists of representative employees from Shell, Unilever, and DSM, to name a few, having a broad overview of their respective fields. The board covers the fields of chemical and food engineering and technology. At this moment, one member of the advisory board is actually from abroad, other members are currently working for multinational companies and have international experience. The board played a very important and active role in the initial stages of the set up and start of the new PFT programme, a role that they continued to play to the present day. The advisory board has an important advisory and sounding board function with regard to teaching and learning activities and the connection with professional practice. They signal shortcomings in the programme and make proposals for curriculum adaptations, advise on company projects, give input about job roles and associated skills, and make suggestions for improvement.

In the academic year 2009 a new programme part was designed in the field of Functional Food as an extension of the Food Engineering specialisation. This is done in a project financed by the Sprint programme of the Dutch 'Platform Beta Techniek'. The advisory board played a role in this development as well. Now this Functional Food part will be implemented in the specialisation programme of PFT in 2010.

Summary and conclusion
The audit team concludes that the management and curriculum committee have succeeded in defining and introducing a largely modified set of enhanced objectives, based on the existing Chemical Technology objectives and programme, with a broad vision towards developments in society, supported by and in cooperation with major international companies. New demands in production technology, food related issues and the new functional food specialisation promise to meet the demands of today's society. The set of competences to be achieved is aiming considerably higher than the standard set as defined in the set BAS competences, i.e. both wider and deeper. The international character of the PFT programme is evident, has a good basis in the general approach of THU towards internationalisation and has the support of experts from major international companies in the advisory board.

The audit team considers a qualification 'good' justified.

Facet 1.2. Level: bachelor

- **The intended learning outcomes of the programme correspond to the general, internationally accepted descriptions of a bachelor's qualification**

Judgement: good
The judgement is based on the following observations and considerations.

Findings
The PFT programme is a competence based programme fulfilling the requirements for the degree of Bachelor of Applied Science as defined on the European level by the corresponding Dublin Descriptors. The basic BAS competence profiles were developed by DAS in the period 2003-2006 as a joint effort of the higher education programmes united in DAS and in strong cooperation with and validated by the professional fields in 2006. This led to, amongst others, a general BAS competence profile and its relation to the Dublin Descriptors for the Chemical Engineering BAS. The present PFT bachelor description in terms of competences and competence levels is in line with the Dublin Descriptors for a bachelor as defined by the Bologna Working Group on Qualification Frameworks'.
THU worked out detailed descriptions of level I, II, III and IV in terms of acting (performance) indicators. The final minimum end-levels required for the PFT variants are the same, however the competence development over the years is different for PFT-4 and PFT3/1.

PFT competences and Dublin Descriptors
The relation between the Dublin Descriptors and competence levels is in fact that between the performance indicators of a competence and a corresponding Dublin Descriptor. In general the relation between the Dublin Descriptors and the BAS competences is not one to one. For example the Dublin Descriptor 'Knowledge and Understanding' is part of all 10 PFT competences. A full account of the relation between PFT BAS competences and the Dublin Descriptors is laid down in a separate document. An illustration of this, based on the connection between the SOLO system (see next section) and the BAS-competences, can be found in the following tables (next pages).

The use of the competence set is reviewed twice a year in a national discussion group chemistry and chemical technology (LOC-CT) within the Domain Applied Science. PFT plays a leading role in this DAS discussion group. For some years already the PFT team leader is secretary and acting chairman of this DAS committee. In the LOC-CT, educational experiences are exchanged with professional contacts. This involves, for example, exchange of experiences with each other' 'teaching and learning' programme and about the number and type of student inflow. Identifying the common skills of Applied Science graduates and the specific skills based on the professional roles has been a common activity of the programmes associated in DAS. Next to the advisory board and the DAS forum, foreign partner institutions play an important role in the validation of the PFT program. In this respect THU presented the curriculum to Indonesian universities with which THU first established a double degree programme in the context of the EXISTENTE project.

The SOLO level description
In 2009 THU started searching for a more consistent way to describe the competence levels and corresponding acting indicators. THU found that the SOLO level description as described by Biggs & Tang (2007) is an especially coherent and appropriate description to define the competence growth on the programme level, theme/project level and course level in terms of consistent ILO's.

The table shows the structure of the SOLO system.

Level	Description	Keyword	SOLO level
I	Show effective behaviour if the setting allows	Executing	Unistructural
II	Show effective behaviour based on your own initiative	Solving, Analysing	Multistructural
III	Strengthen effective behaviour in others in the immediate environment, in particular by example	Integrating; developing, knowledge transfer; transfer of knowledge & skills	Relational
IV	Inspire effective behaviour in others in the organisation and thereby raise the competence level within (part of) the organisation.	Generating knowledge	Extended abstract

The connection between the SOLO-system and the BAS competences is illustrated in the following table for the competence “Developing”.

	Level I (Executing)	**Level II (Solving)**	**Level III (Integrating)**
	Produces materials and products and manages processes according to a description	Develops materials, products or processes to a pre-selected prescription and adjusts the prescription if necessary.	Translates requirements into a material, product or production process
	Execute; by assignment of	***Analysing solving***	***Generate knowledge***
	He/she shows this by:	He/she shows this by:	He/she shows this by:
a	Producing materials and products and managing production processes according to a prescription with fixed parameters	Producing materials and products and managing production processes according to a pre-selected description and adjusting the parameters if necessary.	Translating requirements of materials products and processes to actual materials, products and processes.
b	Managing materials, products and production processes according to given criteria	Linking criteria for the development of materials, products and production processes to the requirements of the customers or client	Translating the requirements of the customer or client into criteria related to relevant materials, products or production processes.
c	Applying supplied models.	Selecting appropriate models from the Literature	Selecting and adopting models from the literature
d	Adding raw materials and applying unit operations to a production process according to a given chemical, physical or biological parameter or model.	Adding raw materials and applying unit operations to a process according to a prescription and if necessary adapting the prescription to improve the process	Translating a production process into appropriate raw materials and unit operations.
e	Up- or downscaling a simplified process according to a given chemical, physical or biological parameter or model.	Identifying key chemical, physical or biological parameters or models in upon downscaling of a process..	Taking into account key chemical, physical or biological parameters or models in up- or downscaling of a process
f	Keeping equipment or a unit operation of a process operational, according to prescription	Keeping equipment or a unit operation of a process functioning optimally	Keeping interlinked equipment and unit operations of a process functioning optimally.
g	Reporting orally and in writing according to specified guidelines	Combining the (partial) results in a report according to specified guidelines.	Reporting on research according to the standard of the professional field.

Relations between the SOLO competence performance indicators and the Dublin Descriptors for the BAS competence 'Developing' at level II

Competence (BAS)	Performance Indicator (SOLO)	Dublin Descriptor
Developing Level II(Solving): Showing effective behaviour based on own initiative.	He/she shows this by: **e**. Identifying key chemical, physical or biological parameters or models in up- or downscaling of a process.	**Knowledge and understanding** Have demonstrated knowledge and understanding in a field of study that builds upon their general secondary education, and is typically at a level that, whilst supported by advanced textbooks, includes some aspects that will be informed by knowledge of the forefront of their field of study
	He/she shows this by: **a**. Producing materials and products and managing production processes according to a pre-selected description and adjusting the parameters if necessary. **b**. Linking criteria for the development of materials, products and production processes to the requirements of the customers or client. **c.** Selecting appropriate models from the literature. f. Keeping equipment or a unit operation of a process functioning optimally.	**Applying knowledge and understanding** Can apply their knowledge and understanding in a manner that indicates a professional approach to their work or vocation, and have competences typically demonstrated through devising and sustaining arguments and solving problems within their field of study.
	He/she shows this by: **g**. Combining the (partial) results in a report according to specified guidelines.	**Communication** Can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences.
	He/she shows this by: **g**. Combining the (partial) results in a report according to specified guidelines.	**Learning skills** Have developed those learning skills that are necessary for them to continue to undertake further study with a high degree of autonomy

Summary and conclusion

After analyzing the referenced documents the audit team concludes that the range and depth of the aims and objectives (i.e. the intended learning outcomes) fully reflect the bachelor indicators the Dublin Descriptors refer to. Regular revision on an national level guarantees actuality and relevance of the competence set.

The audit team considers a qualification 'good' justified.

Facet 1.3. Bachelor Orientation

- **The intended learning outcomes are derived from requirements set by the scientific discipline, the international scientific practice and, for programs to which this applies, the practice of relevant professional field**
  - **A hbo-bachelor has the qualifications for the beginning professional level in a specific profession or coherent spectrum of professions for which a college degree is required or appropriate**

Judgement: good

Findings
An impression of possible job positions suggested is given in the table below

Work field	Some possible vocations
Research & Development	• Designer of production processes in the chemical or food industry • Project manager process enhancement • Product developer of functional food
Engineering & Manufacturing	• Trouble shooter in case of production problems • Production manager of colours and dyes • Production manager beverages
Commerce & Services	• Quality control manager • Environmental issue advisor

In facet 1.1 it is shown that the PFT-programme qualifies as hbo-bachelor for the beginning professional level in a specific profession.
In facet 1.2 it is shown that the PFT-programme qualifies as beginning professional for which a college degree is required or appropriate

Summary and conclusion
After considering job positions suggested in the programme the audit team concludes that goals and intended results provide a good match with possible job positions. Other factors for this facet have already been dealt with in facets 1.1 and 1.2.

The audit team considers a qualification ‘good’ justified.

THE OVERALL CONCLUSION FOR ASPECT 1 IS: GOOD

2. Curriculum

Facet 2.1. Hbo bachelor requirements

- **The students develop their knowledge through profession-based literature and the interaction between education and research within the relevant discipline**
- **The curriculum corresponds to current developments in the relevant discipline(s) by verifiable links with the discipline**
- **The programme ensures the development of competences in the relevant discipline and has verifiable links with the current relevant professional practice**

Judgement: good
The judgement is based on the following observations and considerations.

Findings

Development of knowledge
Students develop their knowledge in a theme block through the courses that PFT offers as well as in a project. In both cases there is a close connection with industrial practice. Every block is associated with at least one industrial partner with whom PFT has developed a case study. In this way THU tightly connects to actual and relevant industrial issues in the area of production processes, product development, and design of processes and products. Guest lecturers, visits to companies, experimentation and assessment by the industrial partners all play an important role here. The role of the advisory board in these matters is to signal strong and weak points in the programme and to propose improvements.

Competence development / connection with the professional field
In the theme blocks a strong connection is made with vocational practice. This is very important for the competence development of the students. It also plays a very important role in the motivation of the students. The PFT advisory board, external experts, guest lecturers and assessors from companies play an important role in realising the connection. Together with the industrial partners projects and case studies are developed in which students work on actual and relevant industrial issues. The complexity of these projects and hence the level of competences required, gradually increases from the propedeutic (= first year) phase via the main phase to the specialisation phase. The final part of this process of growth in competences is the graduation work thesis. This thesis and the intermediate assessments during the graduation period show whether the student has reached the required level of competences. In order to be able to assess the whole process of competence development up to the final thesis work competence levels are defined for each competence along with level indicators. The judgment of external experts and company supervisors plays an important role here as well.

Course/educational material
In the theme block courses students have to study from books meeting international standards. Handouts, internet sources and technical/scientific articles from peer reviewed journals are other study sources students have to use. The choice of texts books is based on careful examination of those on the international higher education market and discussed within the curriculum committee. The decision to place a book on the book list is taken in a PFT team meeting. Before a book is chosen tutors point out how the content of a book connects to the content of courses and projects and decide on that basis whether a book sufficiently covers a part of the programme, has a suitable level, and fulfils the needs of the students.
The audit team notes on the other hand that students appear to be over reliant on internet sources without references.
In the project team work and courses the students also have to do a literature research and have to read articles from technical journals. The students are coached here by the PFT staff and external content experts. The literature used supports the competence development.

Interaction with the professional field / Professional skills
The themes and projects are an excellent means of keeping in touch with current practice directly from the start of the programme. Guest lecturers are involved in the theme block for providing information and discussion with the students. In later phases of study also internships and the graduation thesis play a role, not only for the students themselves but for the staff as well. Internships have to be in line with the programme and are checked whether internship projects and work place fulfil the requirements of the programme. A large part of the staff has an industrial and/or research & development background. The cooperation with multi-national companies and the student projects defined in this context contribute strongly to the international competence of the students. International and multicultural competences also grow due to team work in the multinational and multicultural project teams.

Small companies
Although PFT has an orientation towards multinational companies PFT does not neglect the contacts with smaller companies (MKB). Here contacts with The Hague University affiliated Regional Director is of importance. The Regional office acts as a mediator between companies and THU. Students can approach the Regional Director to find internships, assignments and training.

Applied research
Presently the research & development vision is not yet fully worked out. In the academic year 2010-2011 PFT intends to develop a research & development vision and programme for PFT applied research in close cooperation with industry.

Relevance of the programme
Chaired by the PFT team leader the curriculum committee meets bimonthly to discuss new curriculum parts, evaluations of existing course and modules and current issues regarding the curriculum performance. New curriculum parts are designed by a design team (i.e. project team) consisting of staff members and external experts. ‘Functional Food' is a recent example which was discussed in a special meeting event of the curriculum committee.
In addition to the curriculum committee the advisory board also proposes adaptations of the curriculum on the basis of current developments in the PFT professional fields. The interaction between the advisory board and curriculum committee is warranted, as the curriculum committee members are also attending the advisory board meetings.
To provide input to the curriculum committee the reports of professional field days, minutes of the advisory board and reports from alumni surveys, are always passed on to this committee and the design team, so that the members gain insight into the latest developments and can adapt the programme to the latest professional requirements.

The new PFT programme was developed in collaboration with industry by a design team consisting partly of members of the PFT advisory board and extended with other external members if the subject required this. A recent example is the Functional Food curriculum extension of the Food Engineering specialisation. The professor of food processing of Wageningen University took part in the Functional Food project team brainstorming. The internationally renowned ‘Food Engineers’ Institute NIZO took part in these developments as well. The project team 'Functional Food’ concerned with the design and marketing of the new curriculum part, proposes the new programme to the curriculum committee, which in turn sends it to the Academy Management Team.

Frequent meetings with the advisory board, the input from the PFT network and the acquisition of new company projects (a separate task of one of the staff members) keep the programme profile dynamic and up to date.

Summary and conclusion

The audit team concludes that the basis of the course is broad and provides a good entry to the rest of the course. A mix of broad and in depth treatment of subjects, projects based on industry related problems, internships related with industrial partners, provide a thorough knowledge base and competence development. For each project an industrial partner is required, coordinators play an important and active role in this. Recent and relevant study books and literature as well as lectureships from industrial speakers provide connection to recent developments. This way the programme has a solid basis in the professional field. Relevance is maintained throughout and results in an ambitious vision on development of the programme for the next years.

The audit team considers a qualification ‘good’ justified.

Facet 2.2. Correspondence between the aims & objectives and the curriculum

- **The curriculum is an appropriate realization of the intended learning outcomes of the programme and this regards the level, the orientation and the discipline-specific requirements**
- **The intended learning outcomes are adequately transferred into the educational goals of the curriculum or parts thereof**
- **The contents of the curriculum ensure the students' achievement of the intended learning outcomes**

Judgement: good
The judgement is based on the following observations and considerations.

Findings
The PFT management and staff have defined an educational concept in which students are involved in actual company projects of increasing complexity. This is suitable for reaching the PFT educational objective by a high level of constructive alignment between Intended Learning Outcomes (ILOs), Teaching and Learning Activities (TLAs), and assessment tasks evaluating a student's competence level and the Achieved Learning Outcomes (ALOs). The competences and levels together with the specified acting (=performance) indicators for the levels guide the setting up of projects and courses and in the assessment tasks. The company projects facilitate the choice and acquirement of a suitable internship position.
All student teams are intentionally international and multicultural, giving the students a taste of their working environment after graduation and embed the use of English as the technical language of the course.

Self guidance and Study Career Counselling
Self guidance of students is vital for PFT students as they have to make important choices for example about minors, about internship positions and about graduation projects. So becoming aware of the implications of their choices for their further study and career is very important here. Study career counselling (SCC) plays an important role in the competence development of the students and hence has a prominent place in the programme. SCC makes students aware of the connections in the programme and the relations with their future profession. SCC is important in achieving the required bachelor level.

Intended Learning Outcomes
The three PFT variants PFT-4, PFT-3 and PFT-1 have the same final level in terms of Intended Learning Outcomes, i.e. competence levels defined, and hence lead to the same Bachelor of Applied Science diploma. Each year of the programme consists of four blocks of ten weeks each. Each block has a central theme. The content of a theme block is described in a corresponding student manual. Within a theme block, the students work in a student project team of 4-6 students on an industrial project that are designed together with industrial partners. The project teams are coached by PFT staff members and by company employees as well. To support these projects students participate in subject oriented courses. These courses are connected to the project and fit in the vertical more disciplinary learning lines.

In the design of projects and courses both the level descriptions and corresponding procedural indicators are taken into account. In this way a direct connection between objective, competences to be achieved, intended learning outcomes and teaching and learning activities is established. Also the company internship plays a key role in achieving the intended learning outcomes.

The table below provides an overview of the curriculum in terms of the theme blocks for PFT-3 and PFT-4. The PFT-1 students participate in the PFT specialisation blocks of PFT-3 and also in the risk management minor of block 2.1.

The table also gives an outline of the entire programme set up of PFT including the central themes for each block.

	Year 1		Year 2		Year 3		Year 4
	PFT-4	PFT-3	PFT-4	PFT-3	PFT-4	PFT-3/ PFT-1*	PFT-4
1	Water treatment	Water treatment & Food products	**Minor** Risk management	**Minor**: Risk management; Biotechnology; or Food product Design	**Minor** : Biotechnology Food product Design	**Specialisation** Chemical Process or Food Process Technology. Focus: process & Lint minor*	**Specialisation** Chemical Process or Food Process Technology. Focus: process & Lint minor*
2	Food products	Food processing & Food products	Food processing	Internship	Internship	Specialisation Focus: Design or manag. & Lint minor*	Specialisation Focus: Design or manag. & Lint minor*
3	Inorganic products	Inorganic products & Polymer Science	Responsible operation	Responsible operation	Internship	Individual Graduation project	Individual Graduation project
4	Organic products	Organic products & Polymer technology	Polymer science & technology	Specialisation Chemical process technology or food (process) technology	Specialisation Chemical process technology or food (process) technology	Individual Graduation. project	Individual Graduation project

* A lint minor of 15 ECTS is planned to span 2 blocks

Propedeuse

The first year of the programme is a period of orientation, selection and redirection for the students. After the first year final assessment, students are referred to other programmes if necessary, or desired by the student. It is the aim that at the end of the first year the students know the professional practice and the possible vocations for a PFT bachelor very well. In this first year the students are introduced to the basic principles of process technology in the field of chemical as well as food technology. In the second, third, and fourth year students are trained to become competent starting bachelors in the field of Chemical or Food Technology.

Main phase

Year 2 is process oriented. Here a deepening of a number of subjects takes place with respect to design and production processes. The student's individual development and the ability to work in teams get much attention as well. The projects in the theme blocks become of a higher complexity which is in line with the intended growth of the student's competence. In parallel with these increasing levels of competences the student has to operate more and more independently. He/she has to find his/her own way and make choices on his/her own without losing sight on team communication. In the third year students do one or two internship(s) for a 10 or 20 week period (see table 1). This internship is very important for further development of the students' competence levels and to learn their personal preferences and capacities in the work fields.

Specialisation

The specialisation phase starts in the last block of year 3 for PFT-4, and year 2 for PFT-3. Based on previous experience and own interest the students choose between Chemical Technology / Engineering and Food Technology / Engineering. THU developed together with their industrial partners and the internationally well known food engineering institute NIZO a new 'Functional Food' specialisation within 'Food Process Technology', which will start in block 3.4 of 2011. The thematic approach is pursued in the specialisation phase and students have to work on company projects under the theme. Both specialisation programmes have a number of common engineering courses. The specialisation phase gets shape by the student's choice of electives, the choice of the project subjects in the specialisation blocks and the choice of the individual graduation thesis subject. Horizontal as well as vertical connections are important here to achieve the intended learning outcomes.

The graduation project is preferentially performed at an industrial company of the student's own choice, in compliance with the PFT requirements. Exceptions to this rule are made when the student plans to pursue an academic career; in this case the student may opt for a graduation project with a university.

Internships and graduation projects
Internships and graduation projects are an important part of the PFT programme in which a student has the possibility to give his or her higher education its own colour. For example this year Dutch students went on internships in New Zealand, India, Russia and Germany. The students have to acquire a company position for their internship and graduation project on their own. PFT checks whether a student's internship or graduation position is according to the PFT requirements as described in the PFT graduation and internship manual.

Minors
In the major/minor structure of the PFT programme 2 minors each of 15 ECTS are planned in block 1 of year 2 and in block 1 of year three for PFT-4. A lint minor of 15 ECTS is planned to span 2 blocks of the specialisation phase (see table previous page). There are several possibilities to earn the 15 minor credit points in the lint minor:

- Doing a premaster programme consisting of courses at a university.
- A minor of own choice, e.g. the English minor 'Personal Effectiveness & Leadership Development' offered by PFT.
- A dedicated project in cooperation with a company.

The pre master programme is based on PFT cooperation with universities, i.e. TU Delft, and offers a smoother connection to a Master programme.
The lint minor confronts students of PFT and other programmes involved with their behaviour and its effect on their environment. The company project in this phase can be a more extensive process design, a research or a development assignment from a company. A student team of 5 max 6 students work on this project assignment.
Three deepening minors in the second and third year of PFT-4 the programme are offered. These minors are developed together with industrial companies who also play an important role in minor courses and projects.

The minor policy follows the guidelines of THU. Students are free to choose minors, albeit with some constraints imposed by the curriculum committee and with the approval of the Examination Board. Depending on the specialisation students want to choose, students are advised on suitable minors.

Student appreciation of PFT internationalisation

The Reflector 2009 shows that the students value the international content of the program is only slightly below that of the HEBO (Hogere Europese Beroepenopleiding). The valuation of the PFT programme is on the other hand considerably higher than that of the academy as a whole.

Reflector judgment on international character of PFT, HEBO and TISH					
Question and statement	HEBO 2008	HEBO 2009	PFT 2008	PFT 2009	TISH 2009
In my opinion my study programme/academy is sufficiently adapted to international developments in the relevant professional fields *	3,8	4,2	3,9	3,8	2,9
Are you satisfied about the possibilities to go abroad for acquiring international professional experience? **	4,2	4,4	4,0	3,8	3,4

* 1=completely disagree; 5=completely agree

**satisfaction: 1=very dissatisfied; 5=very satisfied

Summary and conclusion

The audit team concludes that the first year of the PFT-programme provides a good basis for later years. Development of competences plays a key role throughout the programme. International orientation starts early, already in the first year, and remains a focus for the remaining years. The programme has a good balance between theory and practice, with logical and continuous development of knowledge and competences. Development and introduction of the Functional Food Specialisation will improve the balance between Production and Food in the curriculum even further. Programme and developments are supported by the work field and the advisory committee.

The audit team considers a qualification ‘good’ justified.

Facet 2.3. Consistency of the curriculum

- **The contents of the curriculum are internally consistent**

Judgement: good
The judgement is based on the following observations and considerations.

Findings
The PFT programme is described in terms of orientation phase, main phase and specialisations. The competence set defined for PFT is a direct consequence of the main objectives and derived aims. In order to achieve the objectives and aims the programme is worked out in theme blocks, the company projects, the horizontal connection with courses in a block and the details of the Chemical Process Technology and Food Process Technology specialisation.

As explained in facet 2.2 each year of the programme consists of four blocks of ten weeks each. Each block has a central theme. The content of a theme block is described in a corresponding student manual. Within a theme block, the students work in a student project team of 4-6 students on an industrial project that is designed together with industrial partners. The project teams are coached by PFT staff members and by company employees as well. Next to the project students participate in subject oriented courses. These courses are connected to the project and fit in the vertical more disciplinary learning lines.

In this way the whole curriculum consists of vertical learning lines such as a mathematical one, a transport phenomena one, a chemical one and the horizontal connections of these lines with the projects in the theme blocks. The learning lines aim explicitly at knowledge growth and increasing competence in applying this knowledge in applications that become gradually more complex.

The assignments and the block project are based on the block theme. Every block is managed by a block co-ordinator, with tutors supervising every project team. The contents of a block are published in a so-called block book or manual. Block books are made available at the start of a block through the Internet or in a printed version and contain the information that students need to study during that particular half-term. For instance, the following information is given in a block book:

- Names of lecturers involved in the block
- Overview of activities per week
- Description of the block project
- Project assignments
- Assessment criteria
- Recommended reading material

The audit team considers this way of combining all aspects of a block within a block book a useful way of integrating parts of the study, preparing students for both projects and internships.

In the design of projects and courses both the level descriptions and corresponding procedural indicators are taken into account. In this way a direct connection between objective, competences to be achieved, intended learning outcomes and teaching and learning activities is established.

In discussions with the audit team students were quite positive about the mix of theory and practical training (laboratory and projects).

Summary and conclusion
The audit team concludes that the body of knowledge and development of competences, in combination with the industry-related projects prove to be properly tuned, balanced and interrelated. The theme blocks (subjects and topics) give a wide perspective but are still sufficiently deep. Students are mostly well equipped to fulfil their tasks in the internships. The balance between theory and practical training is good.

The audit team considers a qualification ‘good’ justified.

Facet 2.4. Workload

- **The curriculum can be successfully completed within the time set, as certain programme-related factors that may be an impediment in view of the study progress, are eliminated where possible**

Judgement: good
The judgement is based on the following observations and considerations.

Findings
Perceived study load
The study load of the PFT-3 programme is higher than that of the PFT-4 programme, because the PFT-3 students follow the same programme in three instead of four years. A higher workload for PFT-3 is motivated by the higher educational background level of the PFT-3 students and their higher competence level at the beginning of the programme. Based on formative assessments and student evaluations the study load for PFT-4 students appears to be realistic. The qualification criteria for PFT-3 track ensure that the work load is realistic for participating students as well. This is supported by the high study success and the low percentage of PFT-3 students who quit the program. In addition this was probed by the audit team in the session with students and the audit team was convinced that faster pace of the PFT-3 programme was acceptable and indeed appreciated by those students.

Study career counselling
In addition to the technological courses, the students follow subjects like English (foreign students follow Dutch classes as well), communication and study career counselling (SCC). The latter assists the students in their study planning and monitors their study progress. In SCC they are familiarized with their own responsibilities towards study planning and self reflection. Writing a portfolio is an important tool in this. Strong and weak points are recognised and the students are urged to take measures to repair their competence deficiencies. Also the students are invited twice a year by the student mentor for an individual progress meeting. Both of these study progress monitoring tools enable the staff to identify possible bottlenecks (either workload related or not) and enable a timely intervention. This is taken further into the individual study for each student.

Language buddies
The Language Buddy Program connects a student from abroad (who speaks English) to a Dutch student, to learn some Dutch, as needed to function in Dutch society. The buddy programme is another manner and active way of language learning and increasing international understanding and awareness from both sides. Especially the Dutch PFT language buddies linked to foreign PFT students support them in the module: 'Introduction to Dutch Culture and Society'. In this module such a buddy couple discovers The Hague and The Netherlands and the international student learns some Dutch too.

Accessibility of lecturers
All lecturers have a strict open door policy that facilitates the student/teacher interaction and this is appreciated by the students. In spite of the high student/teacher interaction communication sometimes proceeds with difficulty. To overcome this the staff uses Blackboard as a tool to communicate any program related information to students. Students are stimulated to use Blackboard as their main source of program information. Any information ranging from course related documents to announcements regarding the schedule can be found via Blackboard.
Student evaluations however show that they are not satisfied with the blackboard system, this system not always giving clear and useful information.

Contact hours
Weekly contact hours programmed for PFT-4, PFT-3 and PFT-1 programme are listed below.

Block	PFT-4 Year1	PFT-3 Year1	PFT-4 Year2	PFT-3 Year2	PFT-4 Year3	PFT-3/1 Year3	PFT-4 Year4
1	29	35	8 (minor)	8 (minor)	8 (minor)	17-25	17-25
2	29	35	29	Intern ship	Intern ship	17-25	17-25
3	29	35	25	25	Intern ship	Graduation work	Graduation work
4	29	35	25	12-18	12-18	Graduation work	Graduation work

The audit team notes that the number of contact hours programmed is well above the demands as formulated in the TISH Policy Plan.

Internships
A difficulty that some students face is the interview for their internship position. Job interview trainings and CV writing workshops are organized to overcome this, in collaboration with experts in this field. To guide students through their internship there is an internship and graduation manual available. This manual contains a feedback form to be completed by the company supervisor. This feedback form is discussed with the student and if necessary also with the company supervisor.

Student evaluation
The student's opinion about the study load is that it is fairly evenly distributed over the year. It is difficult to assess the total amount of hours the students spent on their study weekly. PFT staff thinks the Reflector question about this is interpreted wrongly. Based on classes, class and project attendance, block evaluations and student interviews PFT estimate it to be on average about 35 hours a week.
The audit team notes that the feedback mechanism needs revising to make it more useful. Reflector in particular needs revising to make it less susceptible to misinterpretation.
On questioning the students the audit team hears no specific hindrance as to the workload.

The possibility to resit an exam is given in the examination period of the tenth week of the block. There is a second resit before the summer holidays, with the exception of the fourth block exams, which second resit will be offered in the resit period after the summer holidays. In case of modules for which a second resit cannot be offered, the students can retake them in the following academic year (ref: PFT Examination regulations).
The audit team considers this to give sufficient flexibility for the students
On questioning the students the audit team hears no specific hindrance as to the exams and resits of exams, except for occasional late publication of results.

Summary and conclusion
The audit team concludes that the demands in terms of development of competences are high, yet no marked impediments appear to be present in the study. Also the 3 year fast track programme with an even higher workload is not seen as excessively heavy by these students. In part this can be attributed to the high motivation of the students who choose this programme. This view is supported by a relatively low number of drop-outs for the PFT-3 track.

The audit team considers a qualification 'good' justified.

Facet 2.5. Influx of students

- **The structure and contents of the curriculum are in line with the qualifications of the influx of students:**
  - **hbo-bachelor: Dutch vwo, havo, MBO4 education or equivalent qualifications, shown by an intake test**

Judgement: good
The judgement is based on the following observations and considerations.

Findings

Admission requirements and prior learning for the PFT-4 and PFT-3 programmes
Because the PFT program is in English it is accessible to students from around the world. Dutch students with a HAVO (NT or NG profile) or relevant MBO4 diploma automatically qualify for the PFT-4 programme. English is mandatory in the Dutch secondary school programmes. Dutch students with a VWO (NT or NG profile) qualify for the PFT-3 programme and for these students there is always the possibility to fall back to the 4 year programme.
In the PFT Examination Regulations (OER) the Dutch MBO-4 study Procestechniek is considered a related study, meaning that students from this study may qualify for the PFT-3 track as well. Foreign students require a comparable diploma as judged by NUFFIC. In accordance with this evaluation a student will be admitted to either the PFT-4 or the PFT-3 programme. Foreign students will have to do an assessment of their knowledge and understanding of the English language (TOEFL, IELTS) as well. Intake interviews with students are possible additional actions to assess the inflow level.
A student can apply for exemptions based on prior acquired competences (APL, or in Dutch: EVC or Ervaringscertificaat). He or she will have to hand in proof of these acquired competences and through evaluation by the exam committee exemptions may be granted. PFT follows the THU function impairment policy in admitting students. In case of indicated function impairment the student counsellor advises the staff accordingly.

The PFT-1 programme
The EXISTENTE project showed the way in the cooperation of The Hague University with Indonesian Universities. A Memorandum of Understanding (MoU) with the Gadjah Mada University in Yogyakarta and a Memorandum of Agreement (MoA) with the Chemical Engineering faculty of this university were signed. These documents make the inflow of the Indonesian students in the final year of the PFT programme possible, because the credits earned in their Indonesian university education are accepted (ECTS transfer) here as well. Vice versa the credits earned in the final Dutch institution are accepted by the home university in Indonesia as well. This results in double-certification after successful completion of the program in The Hague. The nomination and selection of students for the academic year 2009-2010 and subsequent years is now a direct responsibility of the two curricula. The criteria for nomination are known. Students should at least meet the known criteria of TOEFL >550, a GPA of above 3, explicit interest in Applied Sciences and willingness to work with a Dutch company at the end of the study. In addition, for an outgoing personality, an ability to communicate fairly openly and to work in groups is required. An interview is part of the selection procedure.

The audit team spoke with students from different backgrounds and countries. They all showed a good mastery of the English language.

Access to a master study
A minor in the form of a premaster programme, consisting of courses at a university, provides adequate matching with the demand for entering a university or hbo-master programme.

Dropping out
One reason for dropping out is a mismatch between the expected content of the food related part of the PFT-programme and the actual content. Especially the high mathematical content proves to be a problem for some, mostly Dutch, students.
Interesting and contrasting point here is the fact that the wide variety of educational and cultural background appears not to be a problem when fitting into the PFT-programme.

Internationalisation
The international ambition and character of the PFT programme (in this respect) can be seen in the fact that about 50% of the students are from abroad (i.e. non-Dutch).

Student evaluations show that the match between their actual level and the expected level is good.

Summary and conclusion
The audit team concludes that for both the 4 and 3 year programme as well as the PFT-1 double degree track the admission requirements are well defined, which is supported by relatively low numbers of drop-outs. Mastering the English language, based on international standards, is an important requirement for both Dutch and foreign students (taking up to about 50% of the influx). The actual level needed for the PFT-programme and the expected level show a good match. Adequate measures are taken to support individual students when needed.

The audit team considers a qualification ‘good’ justified.

Facet 2.6. Credits

- **The programme meets the legal requirements (240 ECTS) regarding the range of credits:**
  - **hbo-bachelor programme: 240 ECTS**

Judgement: sufficient
The judgement is based on the following observations and considerations.

Findings
PFT-4 programme track, being the regular programme, is a 4 year curriculum with a size of 240 ECTS.
The major programme consists of 195 points and the minor programme 45.
The PFT4 programme therefore meets the legal requirements (240 ECTS) regarding the range of credits ECTS.

PFT-3 programme track is a 3 year curriculum with a size of 240 ECTS. .
The total size of the PFT-3 programme is valued at 240 ECTS points, despite the fact that the programme is shorter. The first and second year of PFT-3 track both account for 85 ECTS. This compression is possible because the PFT-3 students start at a considerably higher level of knowledge and skills (Dutch VWO-level) as compared to the regular influx (Dutch HAVO level) for the 4-year track.
Projects, minors, technical courses and internship are more intensive compared to the 4-year track and valued with extra ECTS. In the third year no compression or compensation is awarded or allowed. Finally exemptions worth 10 ECTS can be awarded on an individual basis.
The PFT-3 programme therefore meets the legal requirements (240 ECTS) regarding the range of credits ECTS.

PFT-1 is a 1 year double degree curriculum with a size of 60 ECTS.
The PFT1 programme therefore meets the legal requirements (60 ECTS) regarding the range of credits ECTS.

Summary
All PFT programme tracks meet the legal requirements regarding the range of credits ECTS needed for a hbo-bachelor programme.

Facet 2.7. Coherence between structure and contents

- **The educational concept is in line with the aims and objectives**
- **The study methods correspond to this educational concept**

Judgement: good
The judgement is based on the following observations and considerations.

Findings
THE PFT educational vision is shown in the following aspects:
- International orientation.
- Self-guidance.
- Differentiation in and development of talents.
- A challenging and inspiring teaching and learning environment focused on international professional practice.
- An intercultural and international teaching and learning environment.

The current evolution of the professional field and its shift towards internationalisation prompted the PFT staff to take the international professional practice as a starting point in the educational vision.

In order to realise the main objectives the students work in each theme block on an internationally oriented project set up in direct cooperation with and involvement of a company. The courses in a block are designed to connect with the project as much as possible, without losing sight on basic concepts and the learning line. So in order to reach the objective the following aims are derived to ensure a coherent programme:
- Students are embedded in a multicultural and international environment.
- Students are confronted in theme blocks with professional practice in up-to-date challenging and inspiring international company projects directed to innovation from the first day of their study.
- Students' competence and knowledge growth is built by doing projects and courses which are closely connected.
- Gradually more student independence

The blocks are the binding factor between all relevant aspect for learning and make connections between theory (knowledge growth), in-school practical training, projects, internships (competence growth) and finally the final thesis.
All this can be translated into the following focal points:
- A practical approach with a strong relation with the professional fields, without losing sight on basics and concepts.
- A system based engineering approach.
- The central role for process technology and process-product relations both for chemical and food technology.
- The focus on process technology required for feasible products and responsible, safe and environmentally friendly production processes.
- The above objective and aims are derived from the educational vision, where international professional practice, a structural position for a systems approach to technology and the central role of process technology are starting points.

Alignment of the programme on the theme block level is assured by the educational concept of company projects: students are directly involved in industrial problems right from the programme's start and are assessed by their project activities in the student team, the report writing and team presentations. In the projects students work in teams, need to analyse realistic industrial problems and come up with solutions. In this way the students increase relevant professional competences in a direct manner.

The audit team supports this view and acknowledges the contribution of the (industry-related) projects to the development of both knowledge and competences in a relevant environment. In particular working in teams contributes a great deal and shows students how work in an industrial environment can be organised.

Courses
As described above the courses in a theme block serve two purposes: development of the knowledge component of the competences and providing background knowledge to the students for doing the company projects. The aim is to align projects and courses by the course TLA's and assessment by means of an overall test (OAT) at the end of each block. The design of OAT's is in line with the TLA's and assesses mostly the knowledge component of the competences.
Teaching and learning activities and constructive alignment on the course level is basically the responsibility of the respective teachers.
Another means for keeping the programme coherent is the Body of Knowledge (BOK) table. This table describes the course content of the PFT programme in terms of keywords and provides a quick overview of the project course connections and vertical learning lines with respect to knowledge development. These tables are described in a separate document.

Student evaluation
The theme block evaluations and the Reflector do not give much insight in how students value the connection between programme parts. The questions asked do not appear to be suited to provide this kind of information. To overcome this, interviews are held and these interviews show that the connection between courses in a theme block and projects in the same block can be improved. This involves both course design as well as project design. The order in the programme is involved as well. Changes in project content and course content may affect the consistency of the programme. The first draft of a renewed curriculum plan was written in the spring of 2010. Implementation is foreseen for the academic year 2011-2012.

Summary and conclusion
The audit team concludes that a clear set of aims is defined, most of which are translated into a rather practical approach with an emphasis on production technology, supported by sufficient theory. Different parts within blocks support each other, but some improvements need to be made. Plans for these exist. The implementation of the "Food part" in the PFT programme in general, and that of the Functional Food specialisation (planned for next year) and its consequences are not yet fully worked out. The audit team considers this a relevant but necessary and promising improvement.

The audit team considers this facet 'good'.

Facet 2.8. Learning assessment

- **By means of evaluations, tests and examinations, the students are assessed in an adequate way providing insight to students and lecturers into students' performance in order to determine whether the students have achieved the intended learning outcomes of the programme or parts thereof**

Judgement: good
The judgement is based on the following observations and considerations.

Findings
As of September 1st 2009 there is one examination committee for the entire academy. This committee consists of four members appointed from different courses. On programme level test committees (Dutch: toetscommissies) are active. These guarantee the quality of assessments and deal with running matters at student level. A number of tasks from the examination committee are mandated and delegated to the test committees.

Assessment policy
Assessments are directed towards measurement of a student's professional competences. This concerns the general higher professional education competences as defined nationally by DAS, by THU, and the ones defined by the Dublin Descriptors for the BAS level.

The PFT assessment plan
PFT has worked out the assessment policy in the PFT assessment plan. This plan contains detailed protocols for assessment situations. The table below gives an overview of the assessment methods used. The main aim of the assessment plan is tuning of assessment methods within PFT and to motivate and give clarity about these methods and the connected responsibilities.

Teaching & Learning activity TLA's and related assessment methods

TLA	Assessment method
Lecture/tutorial	Overall test (OAT) or exam having open questions
Laboratory practice	Laboratory report
Communication & language skills	Presentations and reports
(company) projects	Project plan, project report, oral presentations
Internships	Evaluation interviews, final interview, report, presentation
Graduation thesis	Interviews, presentation & defence, report
Study career counselling	SCC Port-folio; self reflection assignments

As can be seen in the table several assessment types are used by the programmes of the academy. Summative assessment is used to find out whether a student has achieved a certain competence level. Formative assessment methods are used in order to measure a student's progress, for example in a company project, or in a technical course. A formative assessment is a learning tool for the students and a checking tool for the teachers.
This can be translated into selective (especially first year selection) and judgmental assessments which are both necessary in order to reach a flexible and individual learning trajectory for the students.
In the PFT-assessment plan the relation between educational lines and the types and timing of various assessment types is explained in much more detail.

The audit team consulted the assessment plan and considers this, in combination with the OER (Education and Examination Regulations) to be a well defined starting point for all assessment definitions and developments.

Competence levels and Overall Test
Competences are assessed after each team block, according to the competence levels defined for that stage. Assessments measure all aspects of the competences, i.e. knowledge, skills and professional attitude and the level of integration of these aspects. The assessment tool chosen depends on the teaching and learning activities (TLA's) used and the Intended learning Outcomes (ILO) formulated.
Next to this, at the end of each theme block, the students do an Overall Test (OAT) in which mainly the knowledge and 'know how' component of the competences to be achieved in that block are assessed. This knowledge should be developed by doing the course work in that block and by applying it in the project itself. The integral use of knowledge, is mainly assessed in the project results, but are assessed in the OAT as well. In an integrated OAT viewpoints from the various disciplines are integrated and questions are formulated starting from that perspective.
This year (2009-2010) the first PFT-4 cycle will be completed. Evaluation of the whole programme including the assessments methods is planned.

Individual (industrial) project (final thesis)
The final project consists of an integrated project at the industry and is related to the specialisation of the student. This thesis and the intermediate assessments during the graduation period show whether the student has reached the required level of competences. When a student hands in the graduation thesis, the final competence levels should be reached. Evaluation is performed on the basis of a written report, interviews, presentation & defence. The level of the graduation project is assessed by the programme's internship coordinator and assessment committee. The criteria that a graduation internship has to meet are communicated by means of the 'graduation manual'. The assessment of the student's performance is done by the staff as well as by the internship supervisor of the company involved by comparing the thesis work with the competence table and relevant performance indicators.
For PFT assessment it is important that the company supervisor has a clear image of the acquired and displayed competences of the student at the end of the internship or graduation period. In addition to the internship supervisor, an independent external expert from the professional field has a part in the final assessment. Often the opinions of all assessors comply with the image that the staff has developed on the candidate throughout the study period.

Test development
The OAT tests are made by the staff members involved in the theme block. All lecturers make their own test part, which is checked in a special session. Markings are double checked by a colleague.

The individual in a team
To assure that all team members in a project, or any other kind of team, contribute in a way as designed in the programme, individual markings and judgements are performed. A study coach sees to it that tasks within a team or between teams are evenly distributed. Notes of this are kept and after each block teams are mixed. Students are encouraged to play different roles in the team to develop their competencies.

Feedback
Formative testing occurs along the way in performing part of the programme. Summative testing occurs shortly after ending a course part, at the end of a theme block. In the PFT philosophy resit assessments occur, after having given feedback to the students, the week after the summative test.
The professional field is involved in the assessment process by way of the company coaches and experts. They give a relative ranking of the student performances based on their international professional experience. Internationalisation aspects are taken into account in this way as well. On the basis of student valuation PFT started this year with planning more time for feedback.

Validation
Validation of an assessment concerns the question whether the assessment method tests what is aimed for. This is done by involving national and international professionals from the relevant professional fields in the PFT assessment process.

Student evaluation
The Reflector results on assessment point out that the students are satisfied with the assessments methods used. There seems to be a slight downward trend in the overall student satisfaction about assessments. The block questionnaires point out that students are in general satisfied with the set up of the theme+block approach, including the assessment. This is in agreement with the Reflector results. Being timely with project results and in giving useful feedback is important to the students but they are not satisfied with the present frequent delays. In part this is caused by the fact that judgement by external experts form an important part of the assessment procedure.

Summary and conclusion
The audit team concludes that a wide variety of appropriate assessment methods is used, both summative and formative, showing the progress in terms of competence development of individual students. This is done with active involvement of experts from the work field, for marking projects, internships and final thesis. This means that the ILO's, Teaching and Learning methods and Assessment methods are well in line with the ALO's.

The audit team considers this facet 'good'.

THE OVERALL CONCLUSION FOR ASPECT 2 IS: GOOD

3. Deployment of staff

Facet 3.1. Hbo bachelor requirements

- **The teaching is principally provided by teachers and personnel who can relate between education and the professional subject / discipline**

Judgement: good
The judgement is based on the following observations and considerations.

Findings
The staff policy of the academy TISH is described in the strategic staff planning. This plan is an elaboration of THU mission and development plan.

Relation with the professional field
All lecturers of the Academy are allocated to one of the technical programmes of the academy. Lecturers exchange between programmes occurs if appropriate and necessary.
Part of the PFT staff (3 fte) is involved in other professional duties besides their PFT teaching position. This concerns lecturers involved in other programmes of THU and lecturers having a position at an industrial company or other university. The majority (5 fte) of PFT lecturers has up to date and relevant professional experience in the PFT professional fields. Next to this the external network of the lecturers is used for organising guest lectures, company visits, case studies and the like into the programme, hence contributing in keeping in contact with the professional field.
In general the academy encourages teachers to stay in contact with the professional field by:

- Involving the companies in the education field.
- Working with external project assignments.
- Teacher supervising/coaching at internships and graduation assignments for all teachers.
- Supporting teachers who want to do a teacher training internship.
- Encouraging company visits and excursions.

Company visits to internship and graduation students as well as coaching and discussion with company supervisors, contribute strongly to a lecturers vision on the bachelor profession. Study career counsellors as well as students benefit from the mentoring and supervision experience of the lecturers.

Students highly appreciate the level of practical knowledge of lecturers, both internal and external.

Summary and conclusion
The audit team concludes that at the management level and at the level of the PFT-team, there proves to be an active and wide (international) professional network. Both internal as external lecturers bring-in their expertise into the programme The connection with the professional field is strengthened through the frequent input from visiting lecturers (work field experts).

The audit team considers a qualification ‘good’ justified.

Facet 3.2. Quantity of staff

- **Sufficient staff are deployed to realize the desired quality of the programme**

Judgement: good
The judgement is based on the following observations and considerations.

Findings
The quantity of staff involved is of course closely related to the (total) number of students following the PFT-programmes. The rather strong increase in student numbers, growing from 26 (influx for all tracks) in 2006 to 55 (influx for all tracks) in 2009 makes high demands. The present student / staff ratio of 20 is within generally accepted terms. A further increase to an influx of 60 students, as forecast by the PFT-staff, will be within the limits defined by the PFT-management.

Students are pleased with the easy access to lecturers. Lecturers prove to be sufficiently flexible to take over other tasks whenever needed.

Summary and conclusion
The audit team considers the number of staff to be sufficient to realize the desired quality of the PFT-programmes in terms of quantity. The contribution guest lecturers further increases the effective size of the staff deployed.

The audit team considers a qualification ‘good’ justified.

Facet 3.3. Quality of staff

- **The staff deployed are sufficiently qualified to ensure that the aims and objectives regarding the contents, didactics and organisation of the programme are achieved**

Judgement: good
The judgement is based on the following observations and considerations.

Findings
Lecturer competences
A PFT lecturer should, as laid down by the management, possess a substantive expertise determined by their academic education (preferably PhD) and has recent and relevant experience with the PFT professional fields. A PFT lecturer is a discipline specific teacher but also a teacher that can coach students in their competence development because he or she possesses a broad overview and vision of the field of chemical/food technology and engineering. In addition the international character of the PFT program demands additional teacher competences as stated by THU: a PFT teacher has experience and / or affinity with internationalisation aspects, is conscious and has an open mind regarding students having different cultural backgrounds. External experts involved in the programme (i.e. by the company projects) are expected to possess an overview of their field and know from experience in the field the competences of a bachelor of applied science.

The academy expects from all (new) employees a good command of the English language. English is the PFT working language. Practice shows that for Dutch teachers having no dedicated previous experience it is certainly not easy to teach in English right away.

Student evaluation shows that they are (in general) satisfied in this respect, but yet would prefer to have more native (i.e. English) speakers.

The academy policy asks for lecturers who are able or have the potential to do other tasks in a programme or the academy than the plain teaching tasks. The capability to do application oriented research is very important for (new) PFT lecturers. The lector policy of THU is directed to appoint lecturers in broad areas of societal importance and not in specific areas only, like for example food engineering.

The expected capability to do other tasks, apart from pure teaching tasks, are put forward at job interviews and play a role in the selection process. The plans, functioning and achievements of staff members are discussed and assessed in a yearly interview cycle the so called ‘Results and Development cycle’. So besides lecturing, all PFT teachers have to take up coaching / supervising tasks in student projects, internships and graduation projects.
The strong interaction with companies in the PFT- programme makes external coaches of company projects and company internship coaches a kind of external ‘team members’. Therefore these coaches need to possess a good view of the PFT bachelor competences required at the stage of the programme they are involved in. To achieve this ILOs and project learning outcomes are discussed in the design stage of the project with the external coaches. Here new external coaches also become acquainted with the PFT-educational concept and the competence level PFT is aiming at.

More than 90% of the Educational staff posses a relevant master degree or comparable higher education. This percentage is well above THU rate of 65%. Five of the eight lecturers connected to PFT have a PhD and one a double master degree. Three of the eight lecturers have more than 20 years business experience and 8 have a higher education didactic certificate.
The team’s skills and expertise in chemical technology is well suited to the present PFT programme content. Despite this some deficiencies are to be found in the field of food technology and engineering expertise.

This was recognised in the 'Functional Food" Sprint project activities as well as during curriculum evaluations. PFT-management concluded that part of a solution here is further training of the staff in this field of technology. In an extensive self-assessment PFT lays out ambitious but relevant plans for further professionalization of the lecturers.

Student evaluation
Student are very positive about the quality of teachers. Some decline in the positive judgement was observed in the Reflector results in the period 2007-2009. This has to do with the fact that the first group of PFT students is a pioneering group and the fact that the number of enrolled students was growing. At the start of the PFT programme there were still a significant number of students of the former 'Chemische Technologie' programme enrolled. In 2008 the few 'Chemische Technologie' students left were incorporated in the PFT programme. It is noteworthy that the 'Chemische Technologie' students in 2006-2007 valued the teaching skills of teachers less than the PFT students. This is probably caused by the starting up of the new PFT programme.

Summary and conclusion
The audit team concludes that the quality of the staff deployed amply meets the desired quality for the Process & Food programme. Some shortcomings in the food related expertise are noted but adequate measures are taken to compensate for this. Adequate measures are taken to acquire the expertise needed in innovative Functional Food specialisation by research fellowships. The highly educated staff allows for this. Feedback from the students to the audit team confirm Reflector results.

The audit team considers a qualification 'good' justified.

THE OVERALL CONCLUSION FOR ASPECT 3 IS: GOOD

4. Services

Facet 4.1. Facilities

- **Housing and facilities are adequate to achieve the learning outcomes.**

Judgement: sufficient
The judgement is based on the following observations and considerations.

Findings
Housing
Lecturer rooms
The lecturer rooms are located on the seventh and eighth floor of the 'Slinger' section of the building. These rooms are in the vicinity of the laboratories, which makes smooth communication possible between lecturers and students.
Class and Project rooms
The PFT programme uses the facilities of the Academy of Technology, Innovation & Society for classes and related activities. These rooms are reserved by the planning office. The rooms reserved are ideally on the seventh and eighth floor of the 'Slinger' section of the building, but this cannot always be guaranteed by the planning office. Modern studio and atelier facilities of the academy TISH are available were student teams can work together on company projects.
Laboratories and practice rooms
The laboratories are located on the seventh and eighth floor of the 'Slinger' section of the building. In the two laboratories on the eighth floor students carry out experiments in the field of water-, inorganic-, organic-, polymer- and food chemistry. In the technology hall on the seventh and eighth floor students carry out experiments in the field of distillation, fluid transport and extraction. Samples prepared by the students are analyzed in the instrumental laboratory on the eighth floor, where since 2009 a variety of new instruments is available for analysis. It is expected that, due to the development and implementation of the Functional Food specialisation additional equipment will have to be purchased.
Laboratory facilities of Delft University are available in the PFT minor biotechnology. In case specialised equipment is needed, for example in projects, the related industrial partner will provide the laboratory facilities.
Simulation room
The simulation room is located on the second floor of the 'Slinger' section of the building. This is the room where students are given instruction about simulation software and where related workshops take place.

IT Facilities
Computer rooms
The Academy of Technology, Innovation & Society, The Hague provides a number of computer facilities that are available during specified periods. At the Technology helpdesk various print and plot facilities are available. Social media become more relevant and are accessible through internet.
Media/ library
The library gives good access to relevant literature and publications, either on paper or in digital form, including subscriptions to science libraries. The students of the PFT programme also have access to the library of the TU Delft.

Summary and conclusion
The audit team has visited all relevant facilities within THU. The audit team concludes that housing, laboratory facilities, IT and library are adequate.

The audit team considers this 'sufficient'.

Facet 4.2. Tutoring

- **Tutoring guidance and provision of information services for students are adequate in view of the study progress.**
- **Tutoring guidance and provision of information services for students correspond to the students' needs**

Judgement: sufficient
The judgement is based on the following observations and considerations.

Findings
Tutoring / Study career counselling
Study career counselling is an important tool in the PFT programme in order to reach the objective of the programme. In developing the new PFT programme in 2005 it was realised that the SCC had to be renewed too. The SCC had to be offered in English and more importantly internationalisation and multicultural aspects got a much more prominent role. These aspects and of course professional development were taken up at the start of the new curriculum in 2006. Three phases in Study Career Counselling can be recognised in the PFT programme:

- The initial phase (propedeuse year) where orientation, understanding and selection by student and academy takes place.
- The flow phase (2nd year) concerned with supporting, planning and application.
- The differentiation phase (3rd and 4th year). Here activities and choices related to graduation are the main concern.

See also facet 2.4 and 3.2. for more details, aspects and aims of SCC.
Students are satisfied with the SCC, though the vacancy in 2009 caused a drop in satisfaction. This situation should be solved now with new and more staff performing SCC:

- One staff member has taken on the SCC task (after having received training) and the introduction of one new staff member completed the team.
- Another SCC mentor has completed the SCC Course offered by THU in June 2010
- Two more of the lecturers will attend the SCC in the period 2010-2011.

In the discussions with the audit team the students prove to be satisfied with the present situation for SCC.

Information provision
Scheduling
Schedules are made by the central scheduling agency of THU on basis of data delivered by PFT. The scheduler of PFT makes a schedule as consistent and logical as possible taking into account didactic constraints. Availability of part time lecturers, excursions, guest lecturers, availability of laboratory and work places have to be taken into account. One week before the start of a theme block, the block schedule becomes available on the Portal. Scheduling appears to be difficult as recognised by the board of THU. This is difficult also due to company project demands, which call for frequent changes.
Students, as signalled by the Reflector, are dissatisfied with the late publication of schedules and frequent (and therefore even later) changes in the schedules.
PFT is working on a better planning of projects and scheduling, and timely communication of projects, schedules and changes.
Project and course grade administration
Study progress is administrated in the grade administration system OSIRIS. A timely and correct establishment of grades appears still to be difficult.
As a result students are not satisfied with marking administration in OSIRIS. The differences between PFT-4 and PFT-3 appear to give rise to wrong OSIRIS results.

Summary and conclusion
The audit team has spoken with management, staff, tutors and students. The audit team comes to the conclusion that tutoring provisions are generally speaking adequate.
Planning and actions for desired changes to improve scheduling and grade administration is under investigation or already in progress.

The audit team considers this ‘sufficient’.

THE OVERALL CONCLUSION FOR ASPECT 4 IS: SUFFICIENT

5. Internal quality assurance

Facet 5.1. Evaluation of results

- **The curriculum is periodically evaluated using measurable objectives**

Judgement: sufficient
The judgement is based on the following observations and considerations.

Findings
In the set up of the new programme, but certainly also in running it, the PFT advisory board has played and is still playing an important role. This committee consists of employees from major industrial companies with an international orientation. The members possess a broad view of current issues, developments and other needs for PFT relevant professional fields. The advisory board is involved in programme evaluations, programme extensions, reflecting on the level of the graduates, signalling omissions in the programme and so on. Consulting of the alumni is important in these respects as well.

Periodical Evaluations
Evaluation of the curriculum occurs after each block and yearly. The objectives with respect to the quality of the programme are determined by the academy policy in the first place. Within The Hague University a 'management contract' between the Executive Board and the academy director defines tasks and responsibilities with regards to quality aspects.
All parts of the programme are subject of the evaluation. They include programme content, programme execution, study progress, staff involved in the programme, student valuation.

Procedures for all evaluations can be found in the "Handboek Kwaliteitszorg TISH". They include: general evaluations, Block evaluations, evaluation of programme targets, evaluation by alumni, evaluation of available capacity, quality control, documents and final qualifications of the programme.

The audit team notes that these procedures describe in sufficient detail why, when and how evaluations are carried out. In all cases the staff member for quality control is responsible for monitoring actual evaluations and takes care of further processing of responses.

Next to this all projects, internships and final thesis projects are evaluated with the external coaches involved.

Target figures are defined in the TISH policy plan 2010. For specific programmes these figures may be adapted. PFT has raised some goals to a higher level. Targets include the percentage of students passing the first year (propedeuse) exam after one year (target figure for TISH 50%, PFT 60%) and after two years (target figure 70%), number of drop-outs in the first year (target figure for TISH max 30%, for PFT 25%), average total study time for students passing the final thesis, and also targets for student appreciation of the programme. For example student appreciation of the programme in general should be a 7 or better (on a 1 – 10 scale).

Summary and conclusion
The audit team has spoken with management, staff, tutors and students. The audit team comes to the conclusion that all relevant parts of the programme are subject to regular evaluation. Plans and procedures for evaluations are formulated and carried out accordingly.

The audit team considers this 'sufficient'.

Facet 5.2. Measures for improvement

- **The outcomes of the evaluations form the basis of measures for improvement that contribute in a verifiable way to the achievement of the objectives**

Judgement: sufficient
The judgement is based on the following observations and considerations.

Findings
TISH Academy defines quality in terms of customer satisfaction. Customers are not just students but also the professional field and society. The management plays a key role in the actual performance of a quality system and must make each staff member aware of their role in the process of maintaining quality.
The Quality policy, as described in the Quality policy manual, focuses on students, working environment, reliability and innovation. The well known PDCA-cycle is adapted as fundamental principle. This can be a short cycle (like one year) but can also extend to the whole programme of 4 years.

Points of interest for improvements
Internal audits form the basis for deeper insight in where problems may be, their causes and (directions for) possible solutions. Therefore they play an important role in the quality cycle.
A number of points that was indentified and dealt with are study career counselling, information about the block manuals, the relation between company projects and the theoretical subjects offered, lack of reporting skills of the students in, for example, internships.

The audit team notes that all points for improvement mentioned are highly relevant, but little or no written documentation in the form of quality improvement planning or equivalent can be provided. Complaints are dealt with on an ad hoc basis rather than through a formal circuitry of paperwork. This is explained by the informal way the team (staff and lecturers) operates. In a small team like the PFT-team this will not necessarily lead to uncontrollable situations. When the number of students grows more structure is needed.

Summary and conclusion
The auditteam concludes many signals are taken serious and actually do lead to improvements. Systematic planning however is not present.

The audit team considers this ‘sufficient’.

Facet 5.3. Involvement of staff, students, alumni and the professional sector

- **Staff, students, alumni and the relevant professional sector are actively involved in the internal quality assurance system**

Judgement: sufficient
The judgement is based on the following observations and considerations.

Findings
At the level of the PFT programme several quality evaluation tools are used to assess performance. These tools are dependent of the group in question.
Groups and tools involved are:

- **At student level**: block evaluations, project evaluations, course committee (containing a representation of the entire PFT student population as well as staff members), student reflector. By involving the students in the quality assurance system by means of the above-mentioned tools, they can be made responsible for the success of the program.
- **At staff level**: block evaluations, project evaluations, assessment committee, programme committee, alumni relations. Blocks and projects are evaluated at the end of each block. The outcomes are documented and used in the planning and preparation of the same block in the next academic year. Assessment and programme committee meetings are held according to an annual schedule of at least once per block, or as often as necessary..
- **At professional field level (Advisory Board)**. Advisory Board meetings are held according to an annual schedule of at least once per block. The Advisory Board consists of highly qualified professionals that are currently working in the professional field with large multinational companies. As these people are aware of the requirements that a BAS needs to meet, their evaluation of the program is highly important to the development of a successful improvement plan.
- **Alumni**: The staff tries to keep in touch with alumni. Their feedback on the program is considered to be valuable when drawing up an improvement plan. Currently there is a limited amount of alumni operational in the professional field. Others have taken up a Master study. Both groups are periodically invited to share their experiences with the staff.

This is generally experienced as positive by the staff according to evaluation results.

Student evaluations on the other hand show that they want to be more involved in quality planning, they want to receive more information about quality aspects, not just filling in forms.

As far as the involvement of the external stakeholders is concerned, the feedback process should be more structured than it is now.

The “HBO-monitor” shows how alumni look back on their study, but for THU only one person has given feedback (in part this can be explained by the very low number of alumni in the first place).

Summary and conclusion
The auditteam comes to the conclusion that the PFT team actively involves all stakeholders in order to get the required feedback on the quality of the PFT-programme.

The audit team considers this ‘sufficient’.

THE OVERALL CONCLUSION FOR ASPECT 5 IS: SUFFICIENT

6. Results

Facet 6.1. Level achieved

- **The learning outcomes achieved correspond to the aims and objectives regarding level, orientation, and subject/discipline-specific requirements**

Judgement: good
The judgement is based on the following observations and considerations.

Findings

The opinion of the professional field on the PFT-students is the most important measuring tool available when assessing the quality of the students. Given the internship results that students obtain from their first internship halfway through their study it can be concluded that the professional field is satisfied. Students are expected to achieve a higher competence level than the minimum BAS level, which is recognised by the professional field.

Monitoring
Throughout the program students are continuously monitored through their study achievements (OSIRIS; the study result/monitoring system). In this way the study success coordinator has a clear image of the achieved quality of each individual student at any given time.
Students are presented with career counselling in every block. In this part of the programme a portfolio has to be started and maintained. This portfolio states the achieved learning outcomes (ALOs) of the student via self reflection. The staff/ study career counsellor monitors the portfolios and spots any study delay or discrepancy between the ILOs and the ALOs. This monitoring system combined with the findings of the study success coordinator allows timely intervention thus minimizing study delay and possible lowering of the quality of students.

Another means to follow the progress of the students are the first and second year final assessments. At the end of the first and second year the students have to do an 'end of year assessment'. This assessment allows the student to demonstrate that he or she has successfully acquired the competences that belong to students at that particular level. The students as well as the assessors are guided by the student's portfolio and the ILOs that are defined in the block books.

Finally, at the end of their study the students go on their graduation internship. The level of the graduation project is assessed by the programme's internship coordinator and assessment committee. For PFT assessment it is important that the company supervisor has a clear image of the acquired and displayed competences of the student at the end of the internship or graduation period. In addition to the internship supervisor also an external expert from the professional field has a part in the final assessment. Often the opinions of all assessors comply with the image that the staff has developed on the candidate throughout the study period. The results of the graduation internship of the students thus give a good image of their acquired competences and thereby of their individual quality.
A quantitative evaluation of the overall throughput has become available recently, after the graduation of the first PFT-4 cohort of 2006 and learns that out of 19 students entering the PFT-4 programme 16 finished the first year (84.2%) and 9 out of 19 finished their PFT-4 programme in 4 years (47.4%). The remaining 5 students are still working in their programme and 5 more have left the programme.

The audit team has evaluated most of the final thesis. Focus was on the minimum level (graded as a 6), higher graded levels (with the focus on the consistency of the markings), relevance of the subjects and literature references.
The audit team comes to the conclusion that the minimum level set by the PFT standards is clearly met, that the minimum level grades reflect an adequate pass and that those thesis that had received a higher mark actually reflect a higher level reached. Remarks are made concerning the literature references. In some reports the literature references presented a remarkably short list, with a rather high Wikipedia content. Students have to be more critical when referencing, find peer reviews or reviewed articles/literature.

Summary and conclusion
The audit team concludes that the level perceived by the PFT-staff actually reflects the desired level.
The audit team has evaluated most of the final thesis and came to the conclusion that the minimum level set by the PFT-standards is clearly met with and grading is consistent.

The audit team considers a qualification ‘good’ justified.

Facet 6.2. Education performance

- **Target figures are formulated that are comparable to other relevant programmes to express the expected success rate**
- **The programme's success rate complies with these target figures**

Judgement: good
The judgement is based on the following observations and considerations.

Findings
Since the beginning of the PFT program in 2006, the results have been very good. Over 80% of the first cohort successfully completed the first year (see table and fact sheet). This result is continued for the cohorts that followed. Figures regarding study success have recently been published. These figures show that the technology studies at THU are doing significantly better than comparable institutions on regional and even on national level. Key items that were examined and published were the intake of first year students, the outflow of students during the first year, the results after the first year and the amount of girls that take up a technological study. Within THU and more specific within TISH the PFT program scores very well on all these subjects with overall propedeuse throughput figures being above 75% for the first three consecutive years of the PFT-programme (cohort 2006, 2007 and 2008) with the targets being 70%, and participation of girls in the PFT-programmes being about 50%.

First PFT graduates
In 2009, the first official group of PFT-3 students graduated. These students completed the fast track program within the set 3-year time frame (8 out of 9). In 2010 the first batch of 9 out of 19 students following the PFT-4 track have graduated, with 5 more still in the programme. A third stream of students is the inflow of PFT-1 (before 2009 students from the EXISTENTE project) students from Indonesia. These students complete the PFT BAS programme within one year. Upon completion of the programme, they go back to Indonesia to complete the Bachelor / Master that they have started there earlier. Thus, these students obtain a double degree.

Year	Inflow PFT-4	Inflow PFT-3	Inflow PFT-1	Graduation PFT-4	Graduation PFT-3	Graduation PFT-1
2006	19	9	-	-		
2007	29	12	9	-		
2008	36	18	2	-		9
2009	33	21	1	-	8	2
2010	30	16	1	9	12	1

As mentioned earlier the main reason for dropping out is a mismatch between expected and actual degree of content of mathematics, especially for the food related parts of the programme. Drop out figures are low for both PFT-4 and PFT-3 tracks.
Propedeuse throughput figures for the PFT-4 track are also promising and are above target figures with 84%. For the PFT-1 track a overall throughput of 100% was realised for the first three years (cohort 2007, 2008 and 2009).

Summary and conclusion
The audit team comes to the conclusion that success rate figures are well above TISH targets and are higher than all other TISH programmes.

The audit team considers a qualification 'good' justified.

THE OVERALL CONCLUSION FOR ASPECT 6 IS: GOOD

6. JUDGEMENT OVERVIEW

Food and Process Technology (full-time)		
Topic / facet	Judgement	
1. Aims and objectives of the curriculum		**S[1]**
1.1. Specific requirements of the domain	G	
1.2. Master level	G	
1.3. Academic orientation	G	
2. Curriculum		**S[1]**
2.1. Academic requirements	G	
2.2. Correspondence between the aims & objectives and the curriculum	G	
2.3. Consistency of the curriculum	G	
2.4. Work load	G	
2.5. Incoming students	G	
2.6. Credits	S	
2.7. Coherence of structure and contents	G	
2.8. Learning Assessment	G	
3. Deployment of staff		**S[1]**
3.1. Academic requirements	G	
3.2. Quantity of staff	G	
3.3. Quality of staff	G	
4. Services		**S**
4.1. Facilities	S	
4.2. Tutoring	S	
5. Internal quality assurance		**S**
5.1. Evaluation of results	S	
5.2. Measures for improvement	S	
5.3. Involvement of staff, students, alumni and the professional sector	S	
6. Results		**S[1]**
6.1. Level achieved	G	
6.2. Education performance	G	

Based on the audit panel's findings with regard to all topics and facets, laid down in the NVAO Assessment Framework, the audit panel's conclusion is that the Food and Process Technology (full-time), offered by de Haagse Hogeschool (the Hague University of Applied Sciences), is fully qualified to be accredited by the NVAO.

[1] Bonus: good.

7. APPENDICES

APPENDIX I PROGRAM AND AUDITEES

When / where	Auditees	Panel	Subjects / remarks
From 08.30		*Panel:*	*Reception of the Panel*
08.45 – 09.15		*Panel*	*internal deliberation by the Panel*
09.15 – 10.00	**Board / Management** Ton de Jager Johan Krop	Panel	Introduction, final arrangements regarding the programme Mission and strategy Market position, intake and admission, exemptions Relation with professional field Policy towards Alumni Internationalisation, innovation Quality assurance, Personnel and schooling Results and output
10.15 – 11.15	**Coordinators** Ben Bonekamp Leo v.d. Kroft Johan Krop Mark Leemhuis Maikel Maloncy	Panel	Curriculum and changes Tests, assessments and markings Intake and admission, exemptions, (including exemptions based on prior learning) Practical component, internship, final project “Minoren” (optional subjects) Study career counselling Required and perceived effort for study Quality assurance
11.30-12.30	**Lecturers** Ben Bonekamp Ron Haring Mark Leemhuis Maikel Maloncy Caroline Mok Baijan Savalan	Panel	Relation with professional field Developments in the curriculum Intake/ propedeuse programme coherence Study career counselling Tests, assessments and markings Final qualifications Practical component, internship, Internationalisation Personnel and schooling
12.30 – 13.15		*Panel*	*Internal deliberation, scrutiny of documents*
13.15 – 13.45	**Students vt; (all years/phases, including representatives in the “opleidingscommissie”)** Bernard Bruins, Andreea Toderascu 1 Emre Akbulut, Robin de Ruiter 2R Anthi Tsilimeni, Chenyi Fu 2F Soile Karjalainen 3R Annie Alting, Rommel Borlangan OC Vini Mangusaputra 3F Chantal Warmerdam, Katarzyna Micor 4R Dini Sekar Langit 4E	Panel	Information and ICT Coherence with previous education/training, admission Tests, assessments and markings Study career counselling, including internship, final project Practical component during the education Required and perceived effort for study Provisions Handling of objections and appeals
14.00 – 14.45	**Exam board and “toetscommissie”** Lineke Bakker Ben Bonekamp, Johan Krop Mark Leemhuis Maikel Maloncy	Panel	Tests, assessments and markings Handling of Appeals Exemptions, (including exemptions based on prior learning) Developments in the curriculum Required and perceived effort for study Actual level realised
15.00 – 15.30	**Visit of laboratoria/practica/library** Ron Haring (sl859, sl877, sl885) Johan Krop (Studio , Atelier) Saskia (Bib)	Panel	Provisions

When / where	Auditees	Panel	Subjects / remarks
15.30 – 16.00	**To be determined** (all available)	Part of Panel	Pending issues
15.30 – 16.00	**Final studies (projects and reports)** Ben Bonekamp Johan Krop Mark Leemhuis Maikel Maloncy	Part of Panel	Final studies (projects and reports)
16.00 – 16.45		*Panel*	*Internal deliberation, scrutiny of documents*
16.45 – 17.00	**All auditees**	Panel	Feedback from panel

APPENDIX II FACTSHEET OF THE COURSE

Studenten

	voltijd PFT-4=havo	voltijd PFT-3=vwo	voltijd PFT-1= univ
Aantal studenten 2009 (bij meerdere lesplaatsen hier alle lesplaatsen noemen)			
Instroom studenten			
2010	30	16	1
2009	33	21	1
2008	36	18	2
2007	29	12	9
2006	19	9	0
Vooropleiding studenten (zie boven kolommen)	mbo-4: havo: vwo: ho: overig:	mbo-4: havo: vwo: ho: overig:	mbo-4: havo: vwo: ho: overig:

Rendementen

Diplomarendement in aantallen en %	voltijd PFT-4		voltijd PFT-3		voltijd PFT-1	
	Aantal	%	aantal	%	aantal	%
cohort 2003 CT	17 / 22	77				
cohort 2004 CT	8 / 23	45				
cohort 2005 CT	8 / 16	50				
cohort 2006	9 / 19	46	8 / 9	88		
cohort 2007			12 / 12	100	9	100
cohort 2008					2	100
cohort 2009					1	100
Propedeuserendement in aantallen en %	voltijd PFT-4		voltijd PFT-3		voltijd PFT-1	
	Aantal	%	Aantal	%	aantal	%
cohort 2003	21 / 22	95				
cohort 2004	15 / 23	65				
cohort 2005	12 / 75	75				
cohort 2006	16 / 19	84	9 / 9	100		
cohort 2007	25 / 29	83	11 / 12	92	Nvt	
cohort 2008	17 / 36	47	18 / 18	100	Nvt	
cohort 2009	8 / 33	24	20 / 21	95	Nvt	

Docenten

Aantal aan de opleiding verbonden docenten	12 (inclusief inhuur van andere opleiding)		
Aantal fte per variant	7,2		
Docent – student ratio per variant	1 op 21		
Aantal docenten tevens werkzaam in beroepspraktijk	2		
Aantal docenten met een master opleiding	5		
Aantal docenten met een Phd	5		
Aantal fte in kenniskringen	0		

Contacturen

Definitie: …Hoorcollege, werkcollege, practicum, begeleid projectwerk, slb begeleiding, toetsen, excursies

contacturen	Voltijd	deeltijd	duaal
1e leerjaar	792		
2e leerjaar	651		
3e leerjaar	384		
4e leerjaar	426		

APPENDIX III CURRICULA VITAE (ALL MEMBERS OF THE AUDIT PANEL) AND STATEMENTS OF INDEPENDENCE

Chairman ir. A.T. de Bruijn
Fred graduated in 1982 at Wageningen Agricultural University as an Agricultural Engineer. Between 1981 en 1988 he was employed at this University, the Ministry of Agriculture and Nature Conservation and the Province of Gelderland developing educational policy, with a special focus on the relation between education, innovation and labour market. From 1988 till 1994 he worked at HBO-Raad (Netherlands Association of Universities of Applied Sciences) as designer and manager of several national HE innovation programmes in the field of science and technology. In 1994 he joined Hobéon. As a senior adviser he designs and manages a wide variety of portfolio innovation and strategy planning processes and underlying feasibility studies on an institutional, regional or national level. Clients are institutes for professional and for higher education, enterprises and governments; both individual and in consortia. Generally, these processes are aimed at creating new and better opportunities for both students and labour market parties. Later Fred was appointed “partner” of the Hobéon Group with a special focus on communication. Fred is lead-auditor in accreditation audits of HE programmes and in audits of APL-centres.

Team member, work field expert / professional expert:
A.J. Kowalski PhD, graduated from the University of Manchester, BSc Physics, and holds a PhD from the University of Birmingham, Dept of Chemical Engineering (industrial CASE award with ICI ltd). Adam is presently a Royal Society Industry Fellow at the Department of Chemistry, University of Liverpool as well as Honorary Professor, School of Chemical Engineering and Analytical Sciences, University of Manchester, as well as holds a position as Science Leader for Systems, Process and Device Engineering, Unilever plc.

Team member, professional expert:
S. Purwono PhD, graduated from the University of Waterloo, Ontario, Canada, holds a PhD from Chemical Engineering Dept. University of Waterloo, Ontario, Canada, presently holds a position as Vice Director, Graduate studies, Department of Chemical Engineering, Gadjah Mada University, Yogyakarta, Indonesia.

Team member, work field expert:
Dr. ir. J.L. den Hollander, graduated from Delft University of Technology, dpt. Chemical Engineering, holds a PhD from Delft University of Technology, department of biochemical engineering. Presently holds a position as Senior Scientist Down Stream Processing in DSM Biotechnology Center, Delft.

Team member, student:
J. Aalders, is 3rd year student HBO Chemical Technology, Hogeschool Utrecht (HU).

Secretary **ir. J.G.J. de Gooijer** graduated from Delft University of Technology, dpt. Chemical Engineering. He worked several years at the Delft University of Technology, first in the pilot plant of chemical engineering and later in the dpt. of metals engineering. Then he worked at Kenteq dpt. of exams and predecessor SOM. Presently he holds a position as Advisor in the Hobéon Group.

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Betreft audit door Hobéon Certificering BV van:
Haagse Hogeschool

Betreffende de hbo bacheloropleiding:
Process and Food Technology

Onafhankelijkheidsverklaring lid auditteam

De ondergetekende,

Naam: ir. A.T. de Bruijn

Functie binnen het auditteam: voorzitter

verklaart in te stemmen met de gedragsregels[1] van Hobéon Certificering inzake het *onafhankelijk* auditen van scholen/opleidingen, zoals deze met auditor zijn kortgesloten

en

verklaart geen zakelijke noch persoonlijke binding te hebben, anders dan in het kader van de werkzaamheden als lid van het auditteam van de Visiterende Beoordelende Instantie, met de betrokken school/opleiding(en), tenminste gedurende vijf jaar voorafgaand aan de audit[2].

Getekend te Den Haag, op 17/08/10

Handtekening .....

---

[1] Ten aanzien van het aspect 'onafhankelijk auditen' het volgende: De leden van het panel hebben geen andere relatie tot de te auditen organisatie dan die welke noodzakelijk en onvermijdelijk is in verband met het auditproces.
De individuele leden van het auditteam verklaren daarin geen persoonlijk belang bij de accreditatie van de opleiding te hebben. Zij hebben dus géén zitting in bijvoorbeeld een werkveldadviesraad, beroepenveldcommissie, Raad van Toezicht, toelatingscommissie, examencommissie, extern lid van een intern auditteam enz.

[2] De Nederlands-Vlaamse Accreditatieorganisatie (NVAO) hanteert een termijn van ten minste vijf jaar voorafgaand aan een accreditatie-audit als periode waarvoor Hobéon de onafhankelijkheid van de betreffende auditor garandeert.

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RE: Audit by Hobéon Certification of:
De Haagse Hogeschool

Regarding the study programme:

Process and Food Technology

Statement of independence by audit team member

The undersigned,

Name: Prof. A.J. Kowalski

Position on the audit team : member

states that he/she consents to the code of conduct instituted by Hobéon Certification (HB) regarding the *independent* audit of schools/study programmes as discussed between auditor and HC;,

and

states that he/she has had no business nor personal ties to the school/study programme(s) in question for at least five years prior to the audit, other than in the context of his/her work as a member of the audit team from the Inspection and Assessment Agency (VBI).

Signed in UK, on 29/10/10

Signature .....

Regarding the aspect 'independent auditing' the following: The members of the panel have no relationship to the organization being audited other than those necessary and unavoidable for the audit process. The individual members of the audit panel state to have no personal interest in the accreditation of the study programme(s). They have no membership in professional field committees, Board of Trustees, Admissions, Examinations, external member of an internal audit team etc. The Dutch Flemish Accreditation Organization (NVAO) uses a period of at least five years prior to an accreditation audit as the period for which Hobéon independence of the auditor concerning guarantee.

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RE: Audit by Hobéon Certification of:
De Haagse Hogeschool

Regarding the study programme:
Process and Food Technology

Statement of independence by audit team member

The undersigned,

Name: Prof. S. Purwono, PhD

Position on the audit team : member

states that he/she consents to the code of conduct instituted by Hobéon Certification (HB) regarding the *independent* audit of schools/study programmes as discussed between auditor and HC;,

and

states that he/she has had no business nor personal ties to the school/study programme(s) in question for at least five years prior to the audit, other than in the context of his/her work as a member of the audit team from the Inspection and Assessment Agency (VBI).

Signed in YOGYAKARTA, on 29TH JULY 2010

Signature .....

Regarding the aspect 'independent auditing' the following: The members of the panel have no relationship to the organization being audited other than those necessary and unavoidable for the audit process. The individual members of the audit panel state to have no personal interest in the accreditation of the study programme(s). They have no membership in professional field committees, Board of Trustees, Admissions, Examinations, external member of an internal audit team etc. The Dutch Flemish Accreditation Organization (NVAO) uses a period of at least five years prior to an accreditation audit as the period for which Hobéon independence of the auditor concerning guarantee.

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Betreft audit door Hobéon Certificering BV van:

De Haagse Hogeschool

Betreffende de hbo bacheloropleiding:

Process and Food Technology

Onafhankelijkheidsverklaring lid auditteam

De ondergetekende,

Naam: Aalders Voorletter: J.

Functie binnen het auditteam: student auditor

verklaart in te stemmen met de gedragsregels[1] van Hobéon Certificering inzake het *onafhankelijk* auditen van scholen/opleidingen, zoals deze met auditor zijn kortgesloten

en

verklaart geen zakelijke noch persoonlijke binding te hebben, anders dan in het kader van de werkzaamheden als lid van het auditteam van de Visiterende Beoordelende Instantie, met de betrokken school/opleiding(en), tenminste gedurende vijf jaar voorafgaand aan de audit[2].

Getekend te Utrecht, op 31-03-2010

Handtekening .....

---

[1] Ten aanzien van het aspect 'onafhankelijk auditen' het volgende: De leden van het panel hebben geen andere relatie tot de te auditen organisatie dan die welke noodzakelijk en onvermijdelijk is in verband met het auditproces.
De individuele leden van het auditteam verklaren daarin geen persoonlijk belang bij de accreditatie van de opleiding te hebben. Zij hebben dus géén zitting in bijvoorbeeld een werkveldadviesraad, beroepenveld-commissie, Raad van Toezicht, toelatingscommissie, examencommissie, extern lid van een intern audit-team enz.

[2] De Nederlands-Vlaamse Accreditatieorganisatie (NVAO) hanteert een termijn van ten minste vijf jaar voorafgaand aan een accreditatie-audit als periode waarvoor Hobéon de onafhankelijkheid van de betreffende auditor garandeert.

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Betreft audit door Hobéon Certificering BV van:
De Haagse Hogeschool

Betreffende de hbo bacheloropleiding:
Process & Food Technology

Onafhankelijkheidsverklaring lid auditteam

De ondergetekende,

Naam: dr.ir. J.L. den Hollander

Functie binnen het auditteam: lid

verklaart in te stemmen met de gedragsregels[1] van Hobéon Certificering inzake het *onafhankelijk* auditen van scholen/opleidingen, zoals deze met auditor zijn kortgesloten

en

verklaart geen zakelijke noch persoonlijke binding te hebben, anders dan in het kader van de werkzaamheden als lid van het auditteam van de Visiterende Beoordelende Instantie, met de betrokken school/opleiding(en), tenminste gedurende vijf jaar voorafgaand aan de audit[2].

Getekend te Delft, op 23 DEC. 2010

Handtekening .....

[1] Ten aanzien van het aspect 'onafhankelijk auditen' het volgende: De leden van het panel hebben geen andere relatie tot de te auditen organisatie dan die welke noodzakelijk en onvermijdelijk is in verband met het auditproces.
De individuele leden van het auditteam verklaren daarin geen persoonlijk belang bij de accreditatie van de opleiding te hebben. Zij hebben dus géén zitting in bijvoorbeeld een werkveldadviesraad, beroepenveldcommissie, Raad van Toezicht, toelatingscommissie, examencommissie, extern lid van een intern auditteam enz.

[2] De Nederlands-Vlaamse Accreditatieorganisatie (NVAO) hanteert een termijn van ten minste vijf jaar voorafgaand aan een accreditatie-audit als periode waarvoor Hobéon de onafhankelijkheid van de betreffende auditor garandeert.

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Betreft audit door Hobéon Certificering BV van:
Haagse Hogeschool

Betreffende de hbo bacheloropleiding:
Process and Food Technology

Onafhankelijkheidsverklaring lid auditteam

De ondergetekende,

Naam: ir. J.G.J. de Gooijer

Functie binnen het auditteam: secretaris

verklaart in te stemmen met de gedragsregels[1] van Hobéon Certificering inzake het *onafhankelijk* auditen van scholen/opleidingen, zoals deze met auditor zijn kortgesloten

en

verklaart geen zakelijke noch persoonlijke binding te hebben, anders dan in het kader van de werkzaamheden als lid van het auditteam van de Visiterende Beoordelende Instantie, met de betrokken school/opleiding(en), tenminste gedurende vijf jaar voorafgaand aan de audit[2].

Getekend te Den Haag, op 20 augustus 2010

Handtekening .....

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[1] Ten aanzien van het aspect 'onafhankelijk auditen' het volgende: De leden van het panel hebben geen andere relatie tot de te auditen organisatie dan die welke noodzakelijk en onvermijdelijk is in verband met het auditproces.
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Hobéon Certificering is een handelsnaam van Hobéon 2 b.v. | Rek.nr. 12 32 11 239 | K.v.K. 's-Gravenhage 27162787 | BTW 8007.18.379.B.06

APPENDIX IV APPROACH, PROCEDURES AND DECISIONRULES

Assessment procedure and methodology

1. NVAO Assessment Framework

The assessment of the Process and Food Technology programme of the THU is focused on the topics, facets and standards from the NVAO Assessment Framework. The audit panel used this framework to determine whether the quality of the Process and Food Technology programme meets the NVAO standards.

Prior to the actual accreditation inquiry Hobéon Certificering discussed the NVAO Assessment Framework with THU to avoid any misunderstanding about the range, impact and interpretation of the topics, facets and standards.

Course-specific reference framework

The aims and objectives of the Process and Food Technology programme of the THU and fully specified into attainment targets, are derived from the nationally agreed Bachelor of Applied Science (BAS), validated by the professional field. The audit panel has taken into consideration this course-specific framework.

Procedure

Apart from the actual audit the assessment procedure includes the following principal steps.

Analysis of Documents

The audit panel scrutinized the documents listed in Annex V. These documents gave the audit panel a good insight in the lay-out and in the contents of the programme as well as in the educational and organisational context. Prior to the site-visit the audit panel informed the THU-PFT staff about the (preliminary) outcomes of the analysis of the documents.

Reporting

The audit panel included the findings and judgements in a draft report that has been sent to THU PFT management for a check on possible incorrect statements and/or misunderstandings. The present report describes the audit panel's judgements as well as their justifications.

2 Audit

The assessment procedure was focused on an active check and verification through interviews with all relevant stakeholders, by an audit team consisting of a chairman and secretary form Hobéon, three experts with international background and a student from a related course. During the site-visit the audit panel discussed all topics and facets from the NVAO Assessment Framework. Many topics and facets have been discussed several times with different stakeholders: e.g. management, students, alumni, lecturers. By doing so, the audit panel could check the real value of the information from the documents and also the panel could verify the statements and information given by the discussion partners. Housing and infrastructure has been checked via a guided tour.

So, the audit panel had sufficient and appropriate tools to inform itself in a very detailed way on the design, the contents and the implementation of the various PFT-courses, on the actual learning outcomes, on the staffing and on the facilities.

The audit panel's findings from the scrutiny of document and from the interviews during the site-visit touch all topics and facets from the NVAO Assessment Framework. These findings result in a specific judgement on each facet and in an overall judgement on each topic.

The audit panel tested its findings against matters like: ambition, orientation on the future, innovative capacity, quality assurance, professional relevance, focus on results, continuity and students' and staff's interests.

3. Decision rules

According to NVAO's decision rules a topic only can be judged as unsatisfactory or satisfactory. A facet can be judged as unsatisfactory, satisfactory, good or excellent. Taking into account these rules, Hobéon Certificering applied the below additional rules.

Topic

A. The overall judgement is 'satisfactory', only if
   a. all facets of the topic concerned are judged at least 'satisfactory' or
   b. only one facet of the topic concerned is judged 'unsatisfactory' provided that a sound and reliable project for the improvement of that particular facet is available.

B. The overall judgement is 'unsatisfactory', only if
   a. only one facet is judged 'unsatisfactory' and no reliable project for the improvement of that particular facet is available;
   b. two or more facet are judged 'unsatisfactory' no matter whether a reliable project for the improvement of these facets are available or not.

Facet

C. Here the audit panel has the possibility to make its own considerations. Basic principle:
   - implementation and practice are more relevant and more important than policy & theory: better well-functioning rules, poorly written down than in the reverse;
   - primary processes (teaching, coaching, assessment) are more important than secondary processes (organisation, information).

Bonus

D. If the audit panel thinks a topic is qualified to be judged more than 'satisfactory' the topic concerned will get a bonus according to the below rules:
   a. a bonus 'good', only if
      - all facets of the topic concerned are judged 'good' or
      - only one facet is judged 'satisfactory' whilst the other facets are judged at least 'good';
   b. A bonus 'excellent', only if
      - all facets of the topic concerned are judged 'excellent' or
      - only one facet of the topic concerned is judged 'good' whilst the other facets are judged excellent'.

Please note: even if only one facet is judged 'unsatisfactory', the topic concerned is not qualified for a bonus.

APPENDIX V DOCUMENTS EXAMINED

General
PFT_ManagementReview2010_final.PDF
PFT_StudyGuide_2009-10.PDF
Toetsplan PFT 01 090327.doc

Folder Academiedocumenten
TISH-00 Beleidsplan TIS-H 2010.pdf
TISH-01 Policy plan 2010 - abstract.doc
TISH-02 De organisatie van de Academie TIS-H.pdf
TISH-03 Scholingsbeleidsplan 2010 TIS-H def 16-02-2010.pdf
TISH-04 Professional development policy plan 2010 - abstract.doc
TISH-05 Strategisch Personeelsplan 2010-2013.pdf
TISH-07 Toetsvisie TISH 2010-06-29 def.pdf
TISH-08 Huishoudelijk reglement excie 2009-2010.pdf
TISH-09 Handboek kwaliteitszorg TISH.pdf

Folder Hogeschooldocumenten
HHS-00 Hogeschoolontwikkelingsplan (HOP) 7.pdf
HHS-01 Kaders voor de Haagse Bachelor.doc
HHS-02 Het Haagse studiesucces.pdf
HHS-02 studiesucces propedeuse uitval, rendementsanalyse.xls
HHS-02 studiesucces rendementsanalyse transversaal en cohort .xls
HHS-02 toelichting kleuren het haagse studiesucces.doc
HHS-03 De Haagse medewerker.pdf
HHS-04 Functiebeschrijving docent.pdf
HHS-04 Functiebeschrijving hogeschooldocent.pdf
HHS-05 Raamwerk toetsbeleid.doc
HHS-06 De Reflector 2010 sneltoetsoverzicht.pdf
HHS-07 Het Kompas 2009 sneltoetsoverzicht.pdf
HHS-08 HBO-Monitor.pdf

Folder PFT_MR_AccompanyingDocuments
DAS_BAS_CompetentiegerichteProfielbeschrijving.pdf
MoU_WidyaMandala.PDF
PFT_Beroepsvisie_2010.PDF
PFT_EducationalProfile_20100330(performance-indicators).PDF
PFT_EducationalVision_20100708.PDF
PFT_ExaminationRegulations_OER_2010-11.PDF
PFT_OrganisatieStructuur_090925.PDF

Folder PFT_programme
PFT_InternshipGraduationManual.PDF
PFT_StudentManual_Block1.1-PFT-3.PDF
PFT_StudentManual_Block1.1-PFT-4_.PDF
PFT_Textbooks_2010-11.PDF
PFT_StudyGuide_2009-10.PDF

Folder PFT_programme / Body_of_Knowledge_tables
PFT_Body_of_Knowledge_table1.PDF
PFT_Body_of_Knowledge_table2.PDF
PFT_Body_of_Knowledge_table3.PDF
PFT_Body_of_Knowledge_table4.PDF

Folder PFT_programme / PFT_staff
PFT_TaskLists_2010.PDF
CV's of staff

Other documents
Final thesis of students.
Study books, text books, manuals etc.
Website of THU / TISH