

Scheikunde OW 2012

**Faculty of Science and
the Faculty of Sciences,
University of Amsterdam and
VU University Amsterdam**

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This report was finalized on 10 October 2012

Report on the master's programme Chemistry of University of Amsterdam and VU University Amsterdam

This report takes the NVAO's Assessment Framework for Limited Programme Assessments as a starting point.

Administrative data regarding the programme

Master's programme Chemistry

Name of the programme:	Chemistry
CROHO number:	66857 (UvA), 66857 (VU)
Level of the programme:	master's
Orientation of the programme:	academic
Number of credits:	120 EC
Specializations or tracks:	Analytical Sciences, Molecular Design, Synthesis and Catalysis, Molecular Simulation and Photonics
Location(s):	Amsterdam
Mode(s) of study:	full time, part time
Expiration of accreditation:	31-12-2013

The visit of the assessment committee Scheikunde OW 2012 to the Faculty of Science and the Faculty of Sciences of University of Amsterdam and VU University Amsterdam took place on 6 June 2012.

Administrative data regarding the institution

Name of the institution:	University of Amsterdam and VU University Amsterdam
Status of the institution:	publicly funded institution
Result institutional quality assurance assessment:	applied (pending)

Quantitative data regarding the programme

The required quantitative data regarding the programme are included in Appendix 5.

Composition of the assessment committee

The committee that assessed the master's programme Chemistry consisted of:

- Prof. dr. E. Schacht, Honorary Full Professor, Department Organic Chemistry, Polymer Chemistry & Biomaterials, Gent University, Belgium;
- Dr. G. van Lommen, senior director Medical Chemistry Galapagos N.V., Mechelen, Belgium;

- Prof. dr. P. Geerlings, professor conceptual and computational DFT with applications in organic, inorganic and biochemistry Free University Brussels, Belgium;
- Prof. dr. J. Heck, Professor Organometallics, Department Chemistry University Hamburg, Germany;
- M. Medic, master student Life Science and Technology, Leiden University.

The committee was supported by dr. B.M. van Balen, who acted as secretary.

Appendix 1 contains the curricula vitae of the members of the committee.

Working method of the assessment committee

Preparation

The assessment of the master programme Chemistry of Universiteit van Amsterdam and VU University Amsterdam is part of a cluster assessment of 33 chemistry degree programmes offered by ten universities. The entire cluster committee consists of twelve members. The kick off meeting for the cluster assessment was scheduled on 22 March 2012. During this meeting the committee members received an introduction into the assessment framework and evaluation procedures and the committee agreed upon its general working method. For each visit a sub committee is composed that ensures the necessary expertise to evaluate the programme. Furthermore the domain specific requirements and the most recent developments concerning the Chemistry domain were discussed. These domain specific requirements and the actual context form the starting point for the evaluation of the quality of the degree programmes.

The committee chair and the co-ordinator preserved the consistency in evaluation in the cluster project.

In preparation of the assessment of the programme a self-assessment report was prepared by the programme management. This report was sent to QANU and, after a check by the secretary of the Committee to ensure that the information provided was complete, forwarded to the Committee members. The Committee prepared the site visit by studying the self-assessment report and a number of Bachelor's and Master's theses. The secretary of the committee selected fifteen theses randomly and stratified out of a list of all graduates of the last two years per programme. The following stratification is used: five theses for each degree programme with low grades (6-6.5), five theses with middle ranged grades (7-8) and five theses with high grades. QANU asked the programmes to send the theses including the assessment by the supervisor and examiner and divided them among the sub committee members; each committee member therefore assessed three theses per programme.

When a thesis was assessed as questionable or unsatisfactory by a committee member, a reassessment was done by another committee member. In the case that more than 10% of the theses were assessed as questionable or unsatisfactory by two committee members the selection of theses for the programme was extended to 25.

Site visit

The Committee members formulated questions raised by studying the self-assessment report in advance. These questions were circulated in the committee.

The Committee visited the programme on 6 June 2012. The programme of the site visit was developed by the Committee's secretary in consultation with the programme management and the chair of the Committee. The Committee interviewed, next to students, teachers and alumni, the programme management and representatives of the Faculty Board, the Examination Board and the student and teacher members of the Programme Committee. An open office hour was scheduled and announced (but not used).

During the site visit the Committee studied additional material made available by the programme management. Appendix 7 gives a complete overview of all documents available during the site visit. The last hours of the site visit were used by the Committee to establish the assessments of the programme and to prepare the presentation of the findings of the Committee to the representatives of the programme.

Report

The secretary wrote a draft report on basis of the findings of the committee. The draft report has been amended and detailed by the committee members. After approval of the draft report by the committee it was sent to the Department for a check on facts. The comments by the Department were discussed in the committee, this discussion resulted in some changes in the report, and subsequently the committee established the final report.

The assessment was performed according to the NVAO (Accreditation Organization of the Netherlands and Flanders) framework for limited programme assessment (as of 20 November 2011). In this framework a four-point scale is prescribed for both the general assessment and assessment of each of the three standards. The committee used the following definitions for the assessment of both the standards and the programme as a whole:

Decision rules

In accordance with the NVAO's Assessment Framework for Limited Programme Assessments (as of 22 November 2011), the committee used the following definitions for the assessment of both the standards and the programme as a whole.

Generic quality

The quality that can reasonably be expected in an international perspective from a higher education bachelor's or master's programme.

Unsatisfactory

The programme does not meet the current generic quality standards and shows serious shortcomings in several areas.

Satisfactory

The programme meets the current generic quality standards and shows an acceptable level across its entire spectrum.

Good

The programme systematically surpasses the current generic quality standards across its entire spectrum.

Excellent

The programme systematically well surpasses the current generic quality standards across its entire spectrum and is regarded as an (inter)national example.

General Assessment

- When standard 1 or standard 3 is assessed as ‘unsatisfactory’, the general assessment of a programme is ‘unsatisfactory’ .
 - The general assessment of the programme can be good when at least two standards, including standard 3, are assessed as ‘good’,
 - The general assessment of the programme can be excellent when at least two standards, including standard 3, are assessed as ‘excellent’.
-

Introductory remarks

A few weeks before the visit to the master's programme Chemistry it was announced that the cooperation between the University of Amsterdam and VU University Amsterdam will be consolidated in the near future. The universities intend to establish one joint Faculty. The chemistry programmes of both universities already have a close cooperation. The joint master's programme exists since 2002 that is with respect to content, administration is still separated.

Summary judgement

Objective

The master's degree programme in Chemistry is taught on the basis of the research programmes of both UvA and VU in all Chemistry disciplines. The master's programme offers three tracks: Analytical Sciences, Molecular Design, Synthesis and Catalysis, and Molecular Simulation and Photonics. The committee is positive about the cooperation between VU and the UvA and the joint master's programme resulting from that cooperation. The programme is established on clear choices and distinguishes itself from other master's programmes in the Netherlands with the tracks it offers.

Next to the research variant, which is chosen by most students, the UvA/ VU programme also offers a communication, education and society variant. The intended learning outcomes of the master's programme are, according to the committee, well described in terms of level and orientation and are in line with the domain specific framework and the international requirements for Chemistry and Chemical Engineering.

Learning teaching environment

Students following the master's degree programme in Chemistry come into contact with current scientific research in various ways. The programme contains theoretical courses in which recent research articles are studied and case studies are performed, training in academic skills, research projects and the final thesis. According to the committee the UvA /VU offers a traditional and thorough master's programme. The teaching concept of the programme and the way students are guided and supervised is according to what can be expected from a master's programme in Chemistry. The academic environment in which the students are involved is good and students are thoroughly trained in research and academic skills. The programme is coherent and challenging. Students are enabled to finalise their programme in time, the study load is evenly spread over the two years.

The committee is very positive about the intake procedure and the accessibility of the programme for students with a bachelor's degree from a university of applied sciences.

The teaching staff is good, adequately trained in didactic skills and with a good research profile. The expertise of the involved staff has a broad range, which is attractive for students. The facilities of both universities are adequate for a master's programme in Chemistry.

The committee has established that the master programme enables the students to develop their competences in chemistry on an advanced level and prepares the students for continuing their studies in a PhD programme or to fulfil a position in the labour market for which an advanced scientific education in chemistry is required.

Assessment and achieved learning outcomes

The committee has established that the programme has an adequate assessment system and assessment procedures. The committee is positive about the Guidebook Master in Sciences Degrees which provides very useful and transparent information for students about all procedures. The master theses are adequately assessed by two or three staff members in accordance with a transparent procedure.

The committee has noticed that the master students finish each course with a test. During the programmes students are assessed by a variety and combination of test methods: attendance, participation, written exams and assignments. The committee took a close look at the

overview of assessment methods carefully and also looked into several tests. The committee views the mix of assessment methods used throughout the programmes to be balanced and appropriate.

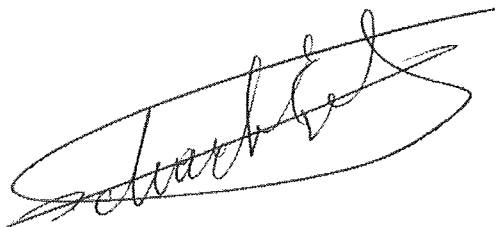
The theses studied by the committee illustrate that the students have achieved the intended learning outcomes as formulated by the programme. The theses assessment forms are used and give sufficient information about the argumentation leading to the final mark.

The committee assesses the standards from the Assessment framework for limited programme assessments in the following way:

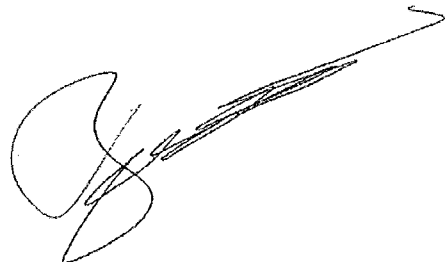
Standard 1: Intended learning outcomes	good
Standard 2: Teaching-learning environment	satisfactory
Standard 3: Assessment and achieved learning outcomes	satisfactory
General conclusion	satisfactory

The chair and the secretary of the committee hereby declare that all members of the committee have studied this report and that they agree with the judgements laid down in the report. They confirm that the assessment has been conducted in accordance with the demands relating to independence.

Date: 10 October 2012



prof.dr. E. Schacht



dr. B.M. van Balen

Description of the standards from the Assessment framework for limited programme assessments

Standard 1: Intended learning outcomes

The intended learning outcomes of the programme have been concretised with regard to content, level and orientation; they meet international requirements.

Explanation:

As for level and orientation (bachelor's or master's; professional or academic), the intended learning outcomes fit into the Dutch qualifications framework. In addition, they tie in with the international perspective of the requirements currently set by the professional field and the discipline with regard to the contents of the programme.

Findings

The master's degree programme in Chemistry is taught on the basis of the research programmes of both UvA and VU in all Chemistry disciplines. The master's programme offers three tracks: Analytical Sciences, Molecular Design, Synthesis and Catalysis, and Molecular Simulation and Photonics. General learning outcomes for all master's degree programmes in Chemistry and related molecular disciplines in the Netherlands have been formulated in consultation between the universities concerned (see Appendix 2: Subject-specific reference framework). The content and scope of the master's degree programme in Chemistry at VU/UvA are in line with these nationally agreed learning outcomes. Students can opt for four variants: the research variant (R), the communication variant (C), the education variant (E) and the society-oriented variant (S).

In the R variant, the student focuses on scientific research in preparation for a research career in the academic world, at a research institute or in industry (chemical or otherwise). Students have the possibility (as one of the optional modules of the master's degree programme) to spend some time in an internship in industry or at another university, possibly abroad, as preparation for such a research career. However, not all graduates in the natural sciences continue their career in research. The C, E and S variants are designed to meet these needs. Students taking these variants do one of the tracks of the Master's degree programme including a research project worth 30 EC in their first year, together with other modules related to their specific discipline. The society oriented (S) variant focuses on innovation management and policy aspects. The general learning outcomes and the specific learning outcomes for each track are included in Appendix 3.

During the site visit the students told the committee that the cooperation between UvA and VU has established an attractive programme that gives students the opportunity to choose out of a wide range of research subjects. This cooperation attracted several students to Amsterdam. They see the advantages of the combination of expertises from the VU and the UvA. Students have therefore ample opportunities to follow their own directions.

Considerations

The committee is very positive about the cooperation between the UvA and VU and the joint master's programme resulting from that cooperation. The programme is established on clear choices and distinguishes itself from other master's programmes in the Netherlands with the tracks it offers. These are relatively unique for the Netherlands, in particular the Analytical Sciences and the Molecular Simulation and Photonics tracks. The UvA VU programme is attractive and offers the students ample opportunities to choose subjects according to their interests.

The intended learning outcomes of the master's programme are, according to the committee, well described in terms of level and orientation and are in line with the domain specific framework and the international requirements for Chemistry and Chemical Engineering.

Conclusion

Master's programme Chemistry: the committee assesses Standard 1 as good.

Standard 2: Teaching-learning environment

The curriculum, staff and programme-specific services and facilities enable the incoming students to achieve the intended learning outcomes.

Explanation:

The contents and structure of the curriculum enable the students admitted to achieve the intended learning outcomes. The quality of the staff and of the programme-specific services and facilities is essential to that end. Curriculum, staff, services and facilities constitute a coherent teaching-learning environment for the students.

Findings

Curriculum

UvA and VU offer one master's programme Chemistry, which implies that the programme is completely identical for both UvA and VU students. An overview of the courses and components offered in the master's programme is included in Appendix 4. In the R variant, both years are devoted to extending and deepening the relevant knowledge and skills in one of the three master's tracks. Both years of the R variant and the first year of the other variants are taught in English. The programme of the R variant contains compulsory lectures (24 EC), a literature survey (12 EC) and an (internal or external) research project with concluding thesis and oral presentation (at least 42 EC). In addition, students taking the R variant have to spend some time acquiring general academic skills (6 eEC. Courses are offered in English scientific writing and Survival Guide for Scientists. Students can also show that they have acquired academic skills individually. Up to 36 EC remain, which may be filled with various options of the student's choice. A possibility is to extend the major research project by up to 18 EC, for example by taking part in an interdisciplinary project, or to continue a promising project.

The objective of the Analytical Sciences track is to train students to be analytical chemists with a wide range of expertise and the ability to work in a wide variety of fields. Within the track Analytical Sciences it is possible to focus on environmental chemistry. Students interested in this direction can compose a programme providing a solid education in interdisciplinary environmental research, involving aspects of analytical chemistry, ecology, protection of the environment and risk assessment and management. The variant attracts a number of students from various sub-disciplines and from abroad. Lecturers from the IBED institute at UvA are involved in teaching.

The objective of Molecular Design, Synthesis and Catalysis track is to train students to be chemists who are able to understand and influence the physical, chemical and biological properties of substances at the molecular level. Students are introduced to the latest methods of molecular modelling, synthesis and characterization. The curriculum includes the fields of physical organic chemistry, synthetic organic chemistry, bio-organic chemistry, organometallic chemistry and catalysis.

The objective of the Molecular Simulation and Photonics track is to offer interdisciplinary training at the interface of chemistry, physics and biology. The link between these various disciplines is the interaction of light with matter, which is viewed from a molecular perspective and studied with the aid of molecular spectroscopy. This track trains chemists and physicists to play a meaningful role in modern computational chemistry. Graduates will be able to apply state-of-the-art computational techniques in present-day experimental and theoretical research. Graduates will have modelling skills that can be put to very good use in industrial R&D, and will also have useful expertise in a wide field of other software development and applications.

A one-year master's degree programme in Computer simulation of physical, chemical and bio molecular systems' (acronym AtoSiM) has been offered in the framework of the Erasmus Mundus programme, since 2006. From September 2012 it will have a 2-year programme, which runs in part parallel to and contains parts of the track Molecular Simulation and Photonics that hosts it. It aims to select talented students from all over the world for a highly competitive and international Master Course. Students follow a joint curriculum with courses, tutorials, short research projects and a literature study during the first three semesters in Amsterdam, Rome, and Lyon and a long research project during the fourth semester in a laboratory affiliated with one of the universities of a CECAM research centre.

The programme for the S, C and E variants differs radically from that for the R variant in that the second year is entirely devoted to specific S, C or E topics. In the first year, students specialize in one of the three Master's tracks by following a number of compulsory lectures (18 EC), performing a short literature survey and doing a research project in the form of an internship, which concludes with a thesis and a presentation (in total 36 EC). Dutch is the language of instruction in the second year of the S, C and E variants, since these programmes have been designed with the Dutch labour market in mind.

The Society-oriented variant has been created to meet the increasing need of universities, the business world, government and social institutions for academic professionals who are able to analyse complex problems and influence social systems. This degree programme teaches students how to combine knowledge of various scientific disciplines with knowledge of social systems. Students receive both theoretical and practical guidance in the course of their studies from concrete courses on policy analysis, management and entrepreneurship in the fields of healthcare and the environment, among others.

Students taking the C/E variant can specialize in either communication (C) or education (E), each with a programme of 60 credits. The Communication curriculum comprises two compulsory courses (Qualitative and Quantitative Research Methods and Science & Communication). Further, students may choose between a set of courses. The year is rounded off with a dissertation (9 EC) and a short internship (18 EC). The Communication variant is run by the department of Scientific Communication of the Faculty of Earth and Life Sciences of VU University Amsterdam and the Education Variant is offered by the Centre for Educational Training, Assessment and Research (CETAR) of VU University.

In the Education variant, students can take the teacher's training course which qualifies them to teach in the upper classes of secondary schools and in higher professional education. The course consists of a number of modules together with an internship in a secondary school to gain teaching experience, all of which run in parallel.

Students who did not gain a bachelor's degree in Chemistry at a Dutch university may be obliged to take a deficiency courses to fill in any gaps in their qualifications (max 12 EC). In general, however, students will follow advanced courses.

Teaching concept and teaching formats

The committee has seen that students following the master's degree programme in Chemistry come into contact with current scientific research in various ways during their studies. For example, they have to perform various case studies during their theoretical courses, in which they study recent research articles and reach certain conclusions concerning specific research questions or the experimental methods and techniques used to answer current research questions. During the research project, the student also comes into contact with other chemical research through the working meetings of the research group and other activities such as workshops, conferences or symposia at a national or international level. The compulsory literature survey also gives students an in-depth impression of the state of modern chemical research. This approach means that students' scientific and academic development is closely linked to research trends in the specialism they have chosen. Students get ample opportunity to acquire the research skills in research projects.

The master's degree programme in Chemistry starts with a number of compulsory theoretical courses. Compared to the bachelor's degree programme, courses have generally less contact hours, and students will have to master much of the material by self-study. Most theoretical courses end with a written test, though in some cases the acquisition of the relevant knowledge may be tested by an oral examination or an assignment. E-learning was introduced in the Molecular Design, Synthesis & Catalysis track in 2011, allowing students to consult a wide range of textbooks online under a group licence taken out by the university. The course work within the different variants of the master's degree programme varies, and students have a high degree of freedom in choosing their own personal education programme. Different modes of instruction (lectures, tutorials, computer and other practicals, self-study, presentations to be prepared, etc.) are combined and integrated in the different courses.

Teaching staff

The responsibility for teaching lies at all times with the tenured academic staff (professors, associate and assistant professors), who will in fact do by far the largest part of the teaching. The professional quality of teachers is closely connected to their active role in scientific research and their academic standing. They are actively engaged in research at an internationally competitive level.

Both UvA and VU assign great importance to professionalization of its teaching staff. New lecturers employed at the UvA and the VU without any teaching experience must follow the Basic Teaching Qualification programme on teaching methods and course design in order to develop and improve their teaching competences. The aim of the UvA Faculty is that 90% of the teaching staff will have completed the BKO by the fall of 2014. The VU aims for 60% in 2014. Teaching skills and teaching quality are discussed during the annual interviews of academic staff. In addition, the results of teaching evaluation will be taken into account, and the Director of Education may comment on the teaching activities of a member of staff before the annual interview. If the results of the annual interview or the teaching evaluation call for this, the member of staff in question may be required to undergo further training in relevant skills.

The students report that the teachers are very supportive and accessible. The communication with the teachers is informal and teachers are willing to help students in making choices in

their master programme. Professors are willing to share their network with students. Students do not experience any differences between the UvA and the VU teachers in this regard.

Students

Students are registered with the UvA or the VU and can follow courses at both universities. Students can also do their research at either university not depending on their registration. Students with a bachelor's degree in Chemistry from any Dutch university, or with a bachelor degree in natural and social sciences (Bèta gamma-opleiding in Dutch) from UvA with a major in Chemistry are automatically entitled to follow any track of the master's degree programme in Chemistry. Students who have a bachelor degree in any subject other than Chemistry from a Dutch university (including a university of applied science) are admitted to the master's degree programme in Chemistry after consideration by the Board of Examiners. When students have more gaps in their qualifications than can be covered by the deficiency courses, they will have to successfully complete a pre-master programme of up to 30 credits before the Board of Examiners authorizes them to admit the master's degree programme they have chosen. Foreign students are admitted when they have no significant gaps in their qualifications. In addition, foreign students have to take a TOEFL or IELTS test unless English is their native language.

The number of students enrolled in Chemistry at UvA/VU since 2002 varies from 40 to 80. Both the Analytical Sciences track and the Molecular Design, Synthesis & Catalysis track attract a considerable number of students, with on average well over 20 new students yearly at UvA and VU together. The Molecular Simulation and Photonics track attracts less Chemistry students. However, courses given in this track are also taken by students from the master's programme Physics and by the international students of the AtoSiM program. The enrolment of foreign students varies from year to year (up to 7 in 2010). The number of students with a bachelor degree from a university of applied science (HBO) enrolling in the degree programme is up tot 14 in 2010. Part time students follow the same programme as full time students and have the same opportunities; they can spread the courses and programme components over four years. The vast majority of students taking the master's degree programme in Chemistry opt for the R variant.

The committee has observed that the programme, in particular the analytical sciences track, attracts a lot of students with a degree from the Higher Professional Education Schools. These students told the committee that they are very satisfied with the master's programme and the possibilities to remedy their deficiencies. In general they do not meet any difficulties in finalising the master's programme successfully.

It is expected of the students that they arrange and organise their own programme. Guidance by these choices is possible. Students are expected to discuss the planning with a master programme coordinator. It is according to the students quite easy to ask a professor to help with planning. The programme furthermore has to be approved by the Board of Examiners. Students did not report any problems with study load or feasibility of the programme. Is, according to the students, possible to finalise their programme in time, the study load is evenly spread over the two years.

It is possible to do an international internship during the master programme. Some students opt for that, they get a supervisor from the UvA-VU, who has to guarantee the level and domain of the internship. Professors help to find an internship at a foreign university by listing their contacts. Many students however do their internship in a company.

Programme-specific services and facilities

The lectures and tutorials for the theoretical courses are given in the new buildings at Science Park (UvA) and in the completely renovated teaching accommodation on the sixth floor of the Mathematics and Physics building of VU University Amsterdam. During the final research project each student is assigned a worksite in the research group and the student can make use of all the facilities of the research group.

The main objective of student support and guidance is to optimize the progress of individual students through the degree programme. The coordinator of the master's degree programme plays a key role with respect to aspects related to the content of the programme. After the initial intake interview, each student will meet the master's coordinator at least once a year on an individual basis to discuss the personal education programme and the progress the student has been making in his or her studies.

During the site visit the students reported to the committee that, although they can cope with the different administrations and regulations, it is somewhat annoying that blackboard access of both universities is still different and that students have to keep up with two information channels. Students complained that information about grades comes very late. The programme management is aware of this problem and discusses this with higher levels within university. It is expected that these problems will be solved when the joint Faculty is realised. The current problem with different ICT-tools and the slow responsiveness of administration is clearly experienced by the students as annoying. The management of VU and UvA are fully aware of these problems. The committee fully understands the problems experienced by the students and urges the management to give priority to solving that problem. The management told the committee during the site-visit that they are working towards a solution for this problem.

Considerations

The programme offered to the master's students is according to the committee a traditional and thorough master's programme. The teaching concept of the programme and the way students are guided and supervised is according to what can be expected from a master's programme in Chemistry. The academic environment in which the students are involved is good and students are well-trained in research and academic skills. The programme is coherent and challenging. Students are enabled to finalise their programme in time, the study load is evenly spread over the two years.

The committee is positive about the intake procedure and the accessibility of the programme for students with a bachelor's degree from a university of applied sciences.

The teaching staff is good, adequately trained in didactic skills and with a good research profile. The expertise of the involved staff has a broad range, which is attractive for students. The facilities of both universities are adequate for a master's programme in Chemistry.

The committee has noticed that the master programme enables the students to develop their competences in chemistry on an advanced level and prepares the students for continuing their studies in a PhD programme or to fulfil a position in the labour market for which an advanced scientific education in chemistry is required.

The persistent problems with ICT and student administration efficiency put a shade on the quality of the learning environment.

Conclusion

Master's programme Chemistry: the committee assesses Standard 2 as **satisfactory**.

Standard 3: Assessment and achieved learning outcomes

The programme has an adequate assessment system in place and demonstrates that the intended learning outcomes are achieved.

Explanation:

The level achieved is demonstrated by interim and final tests, final projects and the performance of graduates in actual practice or in post-graduate programmes. The tests and assessments are valid, reliable and transparent to the students.

Findings

The committee has seen that a variation of assessment methods is used in the master's programme. Most courses are assessed with a written examination, combined with practical work, or a presentation, a report and/ or assignments. Other assessment methods used concern open book examination, case study and computer examination. The committee appreciates this variation in testing and is positive about the information provided to the students about the way of testing. The requirements for each module of the degree programme are clearly stated either in the study guide or at the start of the module. In the case of composite marks, the weighting of the individual components is clearly indicated. Staff members who mark examinations -used to test the results of coursework- determine the assessment level by mutual consultation. Most subjects are taught by more than one staff member, in which case this mutual consultation is built in. When doctoral students, postdoctoral students or support staff play a role in assessment, the marks are subject to consultation and/or checking.

The level of knowledge and skills required in examinations is announced during lectures, and often illustrated with reference to a sample examination. The type of examination used is adapted to suit the type of education given, and is made known in advance in the study guide. The final research project is marked by two or three members of teaching staff in accordance with a defined procedure. The consistency of the assessment is guaranteed by specified assessment criteria. The assessment criteria for the research projects and the literature survey are laid down in the Master's Guidebook. Assessment is performed by the responsible member of the teaching staff together with a colleague not involved in the project. External internships are assessed by two members of the teaching staff. If the marks awarded by the different examiners differ by more than one point, the examiners must agree on a joint mark. If they fail to reach agreement, another member of teaching staff must be called in to resolve the difficulty.

The conditions governing the holding of examinations designed to test the results of specific programme modules and the frequency of these examinations are laid down in the teaching and examination regulations (OER). The Board of Examiners monitors compliance with the OER and plays a role in dealing with any complaints that may arise. The Board of Examiners meets once a month. During these meetings the Board determines on the basis of random samples whether the examinations held represent a good test of the achievement of the relevant learning outcomes and checks the marking of a random sample of Master's theses. The committee met with the Board of Examiners during the site visit and established that the Board developed an adequate quality assurance policy and acts pro-actively by monitoring examinations and master theses.

The committee assessed fifteen recent master theses and established that all theses met the requirements for graduation. On average the theses are of good quality. The committee has not seen any thesis that was on the whole unsatisfactory. The theses illustrate that the students have achieved the intended learning outcomes as formulated by the programme. The theses assessment forms are used and give in general sufficient information about the argumentation leading to the final mark.

Considerations

The committee has established that the programme has an adequate assessment system and assessment procedures. The assessment procedures are implemented in the programme and available for all involved. The committee is positive about the Guidebook for Master in Science Degrees which provides very useful and transparent information for students about all procedures. The master theses are adequately assessed by two or three staff members in accordance with a transparent procedure...

The committee has seen that the master students finish each course with a test. During the programmes students are assessed by a variety and combination of test methods: attendance, participation, written exams and assignments. The committee studied the overview of assessment methods carefully and also looked into several tests. The committee views the mix of assessment methods used throughout the programmes to be balanced and appropriate. The given variety and combination of testing provides for assessing knowledge, understanding, applying knowledge and skills sufficiently.

The theses studied by the committee illustrate that the students have achieved the intended learning outcomes as formulated by the programme. The theses assessment forms are used and give sufficient information about the argumentation leading to the final mark.

Conclusion

Master's programme Chemistry: the committee assesses Standard 3 as satisfactory.

General conclusion

The committee concludes that the cooperation between VU and UvA has resulted in a broad master's programme established on clear choices. The programme distinguishes itself from other master's programmes in the Netherlands with the tracks it offers. The intended learning outcomes of the master programme have been concretised well in terms of content, level and orientation.

According to the committee the content and structure of the curriculum and the available staff, services and facilities constitute a coherent, attractive and challenging teaching-learning environment for the students.

The programme has an adequate assessment system in place and demonstrates sufficiently that the intended learning outcomes are achieved.

Some persistent problems with ICT and student administration should be solved with high priority

The committee is of the opinion that the UvA-VU offers a good master's programme, but according to the decision rules of the NVAO has to conclude that the final assessment is satisfactory.

Conclusion

The committee assesses the *master's programme Chemistry* as satisfactory.

Appendices

Appendix 1: Curricula Vitae of the members of the assessment committee

Prof. dr. Paul Geerlings is full Professor at the Free University of Brussels (Vrije Universiteit Brussel), where he obtained his Master's (1972), Ph.D. (1976) (both Summa Cum Laude) and Habilitation (with unanimous votes in 1983). He currently heads a research group involved in conceptual and computational DFT with applications in organic, inorganic and biochemistry. He is the author or co-author of about 370 publications in International Journals or as book chapters, edited several books in the field, and has about the same number of contributions to International Conferences with many invited lectures or presentations. Besides research, Paul Geerlings has always strongly been involved in teaching, among others the Freshman General Chemistry and Quantum Chemistry courses in the Faculty of Science. During the period 1986-1990 and 2005-2010, he has been the head of the Department of Chemistry of the Faculty of Sciences, in the period 1995-1996 Vice Dean of the Faculty of Sciences. During the period 1996-2000 he has been the Vice Rector for Educational Affairs of his University and in the period 1998-2000 he has been a Member of the Interuniversity Council of the Flemish Community.

Prof. dr. Jürgen Heck studied Chemistry at the TU Braunschweig and acquired the diploma of Diplomchemiker (Dipl. Chem.) in 1978 at the University of Marburg, where he also obtained a Ph.D. for his research on inorganic (organometallic) chemistry and on EPR spectroscopy (1982). After his postdoctoral study at the University of Zürich, he started his research for a 'Habilitation' at the University of Marburg in 1983. Additionally, he organized and supervised an advanced inorganic-chemical practical. He obtained his 'Habilitation' in 1989 and became 'Universitair Hoofddocent' Inorganic Chemistry at the KU Nijmegen (now Radboud University). Since 1992, he has been the holder of the chair 'organometallic chemistry' at the Chemistry department at the University of Hamburg. In this period, he has been the director of the 'Institut für Anorganische und Angewandte Chemie' twice and has been vice-dean and dean of the Chemistry department of the University of Hamburg. His scientific research is aimed at metal-metal-interactions in di- and oligonuclear organometallic complexes.

Dr. Guy Van Lommen studied chemistry at RUCA and the VUB. In 1977 he received his doctorate at the chemistry group at the VUB. He started his career as a researcher at the NFWO and IWT and was a post-doc at the University of Arizona. From 1981 to 2007 he worked at Johnson & Johnson Pharmaceutical Research and Development (formerly Janssen Pharmaceutica) in Beerse, in the department of medicinal chemistry, initially as a researcher and then from 1992 as a senior research fellow. His research domains were situated in cardiovascular, anti-inflammatory, metabolic diseases and pain research, as well as research on herbicides. Since January 2008, he is senior director of medicinal chemistry at Galapagos Mechelen. Van Lommen is the author of several publications and has multiple patents to his name. He was a member of the Chemistry programme committee of Avans Hogeschool Breda and the Karel de Grote Hogeschool College. He has participated in the assessment of academic chemistry programmes in Flanders (2002-2003 and 2010) and the applied bachelor chemistry (2007-2008).

Maja Medic is masterstudent Life Science and Technology University Leiden, Leiden. She received her bachelor degree Life Science and Technology (cum laud) from the University Leiden and Technical University Delft in 2011. In 2009 she received the 'Jong Talent' grant from the Royal Dutch Society of Sciences. She is student member of the master's programme

committee Life Science and Technology (since 2011), member of the Symposium committee of the Study Association LIFE (since 2010) and was student member of the bachelor's programme committee Life Science and Technology.

Prof. dr. Etienne Schacht is honorary full professor in Polymer Science at the Department of Organic Chemistry of the University of Gent, Belgium. He is founder of the Polymer Chemistry & Biomaterials Research Group of the University Gent, co-author of more than 440 peer reviewed international papers, promoter of more than 50 Ph-D works; co-founder and former president of the Belgian Polymer Group (BPG); honorary member of the BPG council and currently coordinator of the BPG Think-Tank group; co-founder and former president of IBITECH, the Institute for Biomedical Technology University Gent; honorary member of the Romanian Society for Biomaterials.

He has been involved in a large number of European and national and regional research projects. Prof. Schacht was for 12 years member of the Council of the European Society for Biomaterials, where he was responsible for the European Doctoral Award programme.

He is/was member of the editorial board of several international research journals and served as external expert for several European organizations. He was external coordinator of the 2011 assessment of the research at the Department of Engineering of the Free University Brussel.

At present Prof. Schacht is chairman of a committee of the FRS-F.N.R.S of the French community in Belgium.

Appendix 2: Domain-specific framework of reference

The 'VSNU Kamer Scheikunde' formulated, in consultation with the professional field, a Dutch qualification framework for the bachelor's and master's degree programmes Chemistry, Chemical Engineering, Molecular Life Sciences, Natural Sciences and (Bio-)Pharmaceutical Sciences. These programmes are denoted as 'Chemistry and related Molecular programmes'.

De regiecommissie van de VSNU Kamer Scheikunde heeft in overleg met het afnemend veld onderstaand referentiekader voor de bachelor- en masteropleidingen Scheikunde, Scheikundige Technologie, Moleculaire Levenswetenschappen, Natuurwetenschappen en Farmaceutische Wetenschappen opgesteld. De opleidingen worden gezamenlijk aangeduid als 'chemie en verwante moleculaire opleidingen'.

Eindkwalificaties van de masteropleiding chemie en verwante moleculaire opleidingen in Nederland (onderzoeksspecialisatie)

Doel masteropleidingen

In het kader van de introductie van de bachelor-masterstructuur is het wenselijk om moderne masteropleidingen aan te bieden, die ook internationaal in aanzien staan. Om deze doelstelling te bereiken dienen moderne, flexibele curricula te worden geïntroduceerd die inspelen op actuele ontwikkelingen op het gebied van wetenschappelijk onderzoek en wetenschappelijk onderwijs.

De masteropleidingen (MSc) chemie en verwante moleculaire opleidingen in Nederland beogen:

- Studenten op te leiden voor zelfstandige beroepsuitoefening. Hieronder dient in dit verband te worden verstaan het uitvoeren van fundamenteel wetenschappelijk onderzoek, alsook het werken met de bestaande wetenschappelijke kennis en het toepassen daarvan op steeds andere en nieuwe praktijksituaties;
- Interdisciplinaire samenwerking in wetenschapontwikkeling vanuit een (bio)chemische achtergrondkennis actief te stimuleren;
- Vaardigheden, kennis en inzicht te ontwikkelen in een specialisme van het vakgebied, met het accent op inzicht in en de aanpak van wetenschappelijke vraagstellingen;
- Onderwijs te bieden dat studentgericht is en naar internationale maatstaven van hoge kwaliteit;
- Een deel van de te verwerven kennis en inzicht op te laten doen in een internationaal verband;
- Een inspirerende academische leeromgeving en studeerbare paden aan te bieden aan een veeleisende en heterogeen samengestelde studentenpopulatie;
- Het vermogen te ontwikkelen om verworven kennis aan anderen over te dragen.

Voor de inrichting van het onderwijs van de opleiding geldt dat kennis en vaardigheden moeten worden opgedaan in soortgelijke situaties als waarin zij uiteindelijk toegepast worden. Om deze reden dient op een heldere wijze te worden beschreven hoe de eindkwalificaties van de opleiding tot uiting dienen te komen in het onderwijsprogramma van de opleiding.

Algemene eindkwalificaties voor de masteropleidingen

De onderstaande algemene eindkwalificaties kunnen voor alle masteropleidingen Chemie en verwante moleculaire opleidingen worden geformuleerd:

De afgestudeerde in dit domein van chemie en verwante moleculaire opleidingen:

- Dient in staat te zijn de vakliteratuur op de voor hem relevante deelgebieden in algemene zin bij te houden en te benutten;
- Dient in staat te zijn zich in een redelijke tijd in te werken in een deelgebied van het domein chemie en verwante moleculaire opleidingen;
- Dient in staat te zijn een onderzoekswerkplan te formuleren op basis van een globale vraagstelling in een deelgebied van het domein chemie en verwante moleculaire opleidingen
- Dient in staat te zijn onderzoeksresultaten te analyseren en te interpreteren, en dient in staat te zijn er conclusies uit te trekken;
- Dient inzetbaar te zijn in functies waarin kennis en onderzoeksvaardigheden op het gebied van de chemie en verwante moleculaire opleidingen vereist zijn;
- Dient voldoende kennis van en inzicht te hebben in de maatschappelijke rol van het domein van de betreffende opleiding om tot een verantwoorde beroepskeuze en beroepsuitoefening te kunnen komen;
- Dient inzicht te hebben in de rol van chemie en verwante moleculaire opleidingen in een duurzame samenleving;
- Dient in staat te zijn samen te werken met anderen, kennis aan anderen over te dragen, een voordracht te houden, een verslag dan wel internationaal toegankelijke wetenschappelijke publicatie te schrijven en deel te nemen aan een discussie over een vakonderwerp;
- Dient zelfstandig in staat te zijn om experimenten en de bijbehorende controles te bedenken, uit te voeren, en te evalueren;
- Dient de verkregen resultaten en conclusies te kunnen plaatsen in het kader van door anderen verkregen resultaten.

Het is goed mogelijk dat er naast bovengenoemde algemene eindkwalificaties nog extra eindkwalificaties worden geformuleerd. Hierbij kan gedacht worden aan een communicatie, educatie- en managementvariant (die zijn in het algemeen faculteitsbreed, en additief op de vakeindkwalificaties), maar ook aan verschillen tussen opleidingen. Voor een meer gedetailleerde beschrijving van deze extra eindkwalificaties voor de verschillende masteropleidingen in het domein van chemie en verwante moleculaire opleidingen wordt verwezen naar de verschillende opleidingsspecifieke delen. Ter illustratie is dit hieronder gegeven voor Scheikunde en Scheikundige Technologie.

Enkele masterspecifieke eindkwalificaties voor Scheikundige Technologie

Voor de opleidingen Scheikundige Technologie zijn een aantal extra eindkwalificaties geformuleerd gericht op de meer technische component van deze opleidingen:

- Dient in staat te zijn een realistisch proces te ontwerpen, inclusief het invullen van de deelstappen, zoals het opstellen van stroomdiagrammen, het omschrijven van apparatuur en processtromen en warmtebeheren het berekenen van het gedrag van procesapparatuur; evenals het aangeven van alternatieven voor deelstappen;
- Dient inzicht te hebben in (1) de relatie procesproduct; (2) het minimaliseren van bijproduct- en afvalstromen; (3) bereidingsmethoden van klassen van moleculen en van producten;

- Dient kennis te hebben van de formulering van een aantal producten, de specificaties, de analysemethoden en de wisselwerking tussen de componenten en van voor de vervaardiging van chemische of biotechnologische producten belangrijke fysische en mechanische werkwijzen.

Enkele masterspecifieke eindkwalificaties voor Scheikunde

Voor de opleidingen Scheikunde zijn een aantal extra eindkwalificaties geformuleerd gericht op de meer wetenschappelijke component van deze opleidingen:

- Dient in staat te zijn om te beoordelen of de eigenschappen van gemaakte producten en de eventuele bijproducten of afvalproducten op korte of langere termijn tot ongewenste neveneffecten kunnen leiden;
- Dient in staat te zijn om – naast het hoofdgebied van studie – op een tweede onderdeel binnen de chemie op academisch niveau een vraagstelling op onderzoeksgebied te kunnen aanpakken.

NB1: Voor de specialistische MSc-opleidingen van een sterk interdisciplinair karakter, zoals nanotechnologie, drug innovation, die in het algemeen worden uitgevoerd in samenwerking met (of primair door) andere vakgebieden (natuurkunde, biologie, farmacie), kunnen soortgelijke meer specifieke eindkwalificaties worden opgesteld. In het algemeen kan men daar niet met elk BSc-pakket S (of ST) instromen.

Appendix 3: Intended learning outcomes

The master's programme in Chemistry aspires to be a study programme with international prestige, emanating from, and based on the strong research areas of the Department of Chemistry.

In the Netherlands the aim of the Master's programme (MSc) in Chemistry is to:

1. Educate students to become independent professionals, enabling them to conduct fundamental scientific research, as well as being able to deal with current scientific knowledge, and to apply this knowledge in new and continuously changing practical situations;
2. Actively stimulate interdisciplinary collaboration in the development of science, based on Knowledge in the field of chemistry;
3. offer students the possibility to develop skills, knowledge and insight in a specialism in the field of chemistry, with emphasis on formulating relevant scientific questions and the approach to formulate answers to these questions;
4. Provide student-oriented education that is of a high, internationally recognised quality (Euro Master Chemistry);
5. Offer students the opportunity to gain knowledge and insight in an international setting;
6. Provide an inspiring academic learning environment, and to offer feasible study tracks to a demanding and heterogeneously composed student population;
7. Develop the ability in students to convey acquired knowledge to others.

In respect to the organisation of education of the study programme, knowledge and skills have to be gained in situations similar to those in which they ultimately may be applied.

Exit qualifications

The graduate:

1. Has a thorough theoretical and practical knowledge of modern chemistry, including the knowledge of other disciplines required for that purpose;
2. Has a thorough knowledge of theoretical and experimental methods and research experience in at least one sub-area within the chemistry discipline;
3. Is able to become acquainted with other sub-areas of the discipline within a reasonable period of time;
4. Is able to formulate a research plan based on a realistic problem within the chemistry discipline;
5. Is able to analyse research results and to draw conclusions there from;
6. Is able to write a report or an internationally accessible scientific publication, and to participate in discussions on a topic in the field of study;
7. Is able to consult (international) professional literature in the relevant sub-areas and to apply the knowledge gained from that;
8. Is able to apply one's chemical knowledge in a broader (multidisciplinary) context;
9. Is able to deal with the safety and environmental aspects of chemistry;
10. Is employable in those positions for which knowledge and research skills in the field of chemistry are a prerequisite;
11. Has sufficient knowledge of and insight in the social role of chemistry in order to be able to make a sound choice regarding one's profession, as well as in the exertion of this profession;
12. Is able to cooperate with, and to convey knowledge to other people and to give a presentation both to discipline specialists and to a broader audience.

The Chemistry Master's study programme consists of three specialisation variants: a Research variant (R-variant), a Communication and Education variant (CE-variant) and a Social variant (S-variant). Each variant has its specific exit qualifications.

The graduate in the Research variant:

R1 must be able to independently design experiments including the corresponding controls, conducting and evaluating these within a given period of time;

R2 is able to incorporate the obtained results and conclusions within the frame work of the results of other scientists;

R3 is able to form a view on the development of scientific research in the field of study;

R4 is able to quantitatively and qualitatively analyse chemical processes, to incorporate data in Existing or in new models, and to present the results at various levels of abstraction;

R5 should have insight in the role of chemistry in a sustainable society.

The Communication and Education variant

The specialisation variant Communication and Education consists of four components, matching the components in the competence profile of the 'VSNU General Plan for the University Teacher's Training' for postgraduate teachers, namely:

- A scientific attitude;
- A discipline surpassing attitude;
- A professional, innovation directed research attitude;
- A pedagogic attitude.

In general terms resulting in the following exit qualifications.

After completion of the study programme a graduate of the CE-variant is able to:

CE1 apply professional knowledge in the field of communication and education in profession in the field of education/communication;

CE2 work independently in a profession in the field of education/communication;

CE3 convey professional knowledge to other professionals as well as to non-professionals;

CE4 stimulate internal and external communication of professional information;

CE5 conduct research and developmental tasks individually as well as in a team;

CE6 continuously renew one's own conduct in all task areas.

If the student aspires to obtain a starting qualification as a postgraduate teacher, the exit qualifications will be based on this aim, specifically concerning the following objectives. The graduate is able to:

CE7 teach classes independently and to stimulate the student's learning capacities;

CE8 participate in various consultative bodies within and outside school;

CE9 communicate with the students;

CE10 help students develop study skills, and to create a positive social learning climate.

During the postdoctoral part of the studies the graduate has to obtain a higher level of these objectives, resulting in a postgraduate teacher's qualification.

The Social variant: Science and Entrepreneurship

The aim of this variant is, from an academic perspective, to acquire the academic skills and knowledge necessary for successful entrepreneurship. The graduate has:

S1 theoretical and practical knowledge of economic and business fields of study;

S2 the ability to distinguish between successful and unsuccessful management;
S3 practical experience with the business-economical, legal, creative, communication aspects of starting up one's own company;
S4 the ability to participate in a multidisciplinary project team.

The Social variant Science and Software Engineering

The aim of this S-variant is for the graduate to acquire insight, skills and knowledge necessary for a position as an academic professional in the ICT sector and in scientific research. The graduate is able to:

S5 develop individually a vision with regard to ICT applications in scientific research organisation;

S6 deduce from this vision a problem solving scientific question; S7 implement this vision in cooperation with scientists, thus creating a bridge between scientific researchers and ICT;

S8 participate in a multi-disciplinary project team.

Appendix 4: Overview of the curriculum

Regular programme

First and Second Year	Compulsory courses depending on the track chosen (24EC in total)		Optional courses depending on the track chosen (36EC in total)	
	Academic skills (6EC)	Literature research and colloquium (12EC)	Final Research project (36EC)	
			Final report and presentation (6EC)	

Programme with master major Science Communication/ Teaching/ Management, Policy Analysis & Entrepreneurship

First Year	Compulsory courses (18EC in total)		Literature research and colloquium (6EC)	Final Research Project (30EC)	Final report and presentation (6EC)
Second Year	Major programme: Science Communication/ Teaching/ Management, Policy Analysis & Entrepreneurship (60EC)				

AtoSim

One Year	Compulsory courses (28EC)	Optional courses (12EC)	Research Project (20EC)
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Track: Analytical Sciences

Compulsory courses

Semester 1		Semester 2	
Separation Sciences (6EC)		(Bio-)Molecular Spectroscopy (6EC)	
Mass Spectrometry (6EC)		Fundamentals of Analytical Sciences (6EC)	
English Academic course (3EC)			

Optional courses

Semester 1		Semester 2	
Bio Analytical Strategies (6EC)		(Bio) Analytical Luminescence Spectroscopy (6 EC)	
Environmental Chemistry (6EC)		Protein Analysis (6 EC)	
Biosystems Data Analysis (6EC)		Analytical Raman Spectroscopy (6 EC)	
Protein Spectroscopy (6EC)		The Analytical Chemist in Industry (6 EC)	
Chemical Analysis for Forensic Evidence (6EC)		Nuclear Magnetic Resonance (6 EC)	
Capillary Electrophoresis (6EC)		Science in Perspective (6 EC)	
		Survival Guide for Scientists (3 EC)	

Track: Molecular Design, Synthesis and Catalysis

Compulsory courses

Compulsory choice of 4 out of 8 components

Semester 1		Semester 2	
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Bio Organic Chemistry (6EC)	Homogeneous Catalysis (6EC)
Coordination and Organometallic Chemistry (6EC)	Molecular Computational Chemistry (6EC)
Physical Organic Chemistry (6EC)	Nuclear Magnetic Resonance (6EC)
Supramolecular Chemistry and Nanomaterials (6EC)	Synthetic Organic Chemistry (6EC)
English Academic course (3EC)	
Optional courses	
Optional courses from other Chemistry tracks	

Track: Molecular Simulation and Photonics

Compulsory courses

Semester 1		Semester 2
Quantum Theory of Molecules and Matter (6EC)		
Lasers and Molecular Photonics (6EC)		
Statistical Theory of Complex Molecular Systems (6EC)		
English Academic course (3EC)		
Compulsory choice of 2 out of 4 components		
Understanding Quantum Chemistry (6EC)		Advanced Experimental Techniques (6EC)
Ultrafast Physics and Chemistry (6EC)		
Understanding Molecular Simulation (6EC)		

Optional courses

Semester 1		Semester 2	
Supramolecular Chemistry and Nanomaterials (6 EC)		Biomolecular Simulations (6 EC)	
Light and Matter at the Quantum Level (6 EC)		Scientific Computing (6 EC)	
Laser Cooling and Trapping of Atoms (6 EC)		Numerical Techniques (6 EC)	
Soft Condensed Matter and Biological Physics (6 EC)		Transport Phenomena (6 EC)	
Current Developments in Biophysics (6 EC)		Ab Initio Molecular Dynamics (6 EC)	
Molecular Photodynamics (3 or 6 EC)		Advanced Molecular Quantum Chemistry (6 EC)	

	Protein Spectroscopy (6 EC)
Density Functional Theory for Chemists (6-12EC)	Big Issues in Quantum Gases (3 EC)
Relativistic (Molecular) Quantum Chemistry (6EC)	Bose Einstein Condensates (6 EC)
	Interstellar and Atmospheric (satellite) Remote Sensing (3 EC)*
	Nonlinear Optics (3 EC)
	Medical Imaging (6 EC)
	Biophotonics 2 - Advanced Biophysics (3 EC)
	Biomedical Optics (6EC)
	Applied Theoretical Chemistry (6EC)

AtoSim

One Year	Compulsory courses (28EC):	Elective courses (12EC):	Research Project (20EC)
	Quantum Theory of Molecules and Matter (6 EC)	Introduction to Simulation Methods	
	Scientific Computing and Programming (6 EC)	Soft Condensed Matter and Biological Physics (6 EC)	
	Statistical Theory of Complex Molecular Systems (6 EC)	Understanding Quantum Chemistry (6 EC)	
	Understanding Molecular Simulation (6 EC)	Dentist Functional Theory for chemists (6-12 EC)	

Academic Skills in the Master (6 EC)	Electrons for Energy (6EC)
	Magnetism and Magnetic Data Storage (3EC)

AtoSim

Compulsory courses

Semester 1	Semester 2
Quantum Theory of Molecules and Matter (6 EC)	
Scientific Computing and Programming (6 EC)	
Statistical Theory of Complex Molecular Systems (6 EC)	
Understanding Molecular Simulation (6 EC)	
Academic Skills in the Master (6 EC)	

Optional courses

Semester 1	Semester 2
Introduction to Simulation Methods	
Soft Condensed Matter and Biological Physics (6 EC)	
Understanding Quantum Chemistry (6 EC)	

Appendix 5: Quantitative data regarding the programme

Data on intake, transfers and graduates

Table 1a – number of full time students enrolled per cohort in the MSc Chemistry UvA

Cohort	Eigen universiteit	Andere universiteiten			Totaal		
		NL	HBO	Buiten HO	Absoluut	% man	% vrouw
03/ 04	1	1	3	5	10	50	50
04/ 05	0	0	5	4	9	44	56
05/ 06	11	9	6	5	31	58	42
06/ 07	15	1	5	3	24	37	63
07/ 08	4	0	4	3	11	45	55
08/ 09	8	1	3	3	15	73	27
09/ 10	23	2	4	5	34	53	47

Table 1b – number of part time students enrolled per cohort in the MSc Chemistry UvA

Cohort	Eigen universiteit	Andere universiteiten			Totaal		
		NL	HBO	Buiten HO	Absoluut	% man	% vrouw
03/ 04	0	0	1	0	1	0	100
04/ 05	0	0	1	0	1	100	0
05/ 06	0	1	1	1	3	100	0
06/ 07	0	0	2	0	2	50	50
07/ 08	0	0	7	0	7	71	29
08/ 09	2	0	3	1	6	83	17
09/ 10	0	1	9	0	10	80	20

Table 2 – Total enrolled number of students in the MSc Chemistry UvA

Cohort	Inggeschrevenen			Voltijdopleiding			Deeltijdopleiding			Duaal		
	Totaal	mannen	vrouwen	Totaal	mannen	vrouwen	Totaal	mannen	vrouwen	Totaal	mannen	vrouwen
03/ 04	11	45	55	10	50	50	1	0	100	0	0	0
04/ 05	20	45	55	17	47	53	3	33	67	0	0	0
05/ 06	48	56	44	42	52	48	6	83	17	0	0	0
06/ 07	54	52	48	48	52	48	6	50	50	0	0	0
07/ 08	51	53	47	38	50	50	13	62	38	0	0	0
08/ 09	54	61	39	36	58	42	18	67	33	0	0	0
09/ 10	77	66	34	52	62	38	25	76	24	0	0	0
10/ 11	76	63	37	56	61	39	20	70	30	0	0	0

Table 3 – graduated number of full time and part time students MSc Chemistry UvA

Cohort	Number of graduated students
04/ 05	3
05/ 06	14
06/ 07	12
07/ 08	10
08/ 09	12
09/ 10	13

Table 4a – study time (months) graduated full time students MSc Chemistry UvA

afstudeer cohort	Eigen universiteit		Andere universiteit NL		HBO		Buiten HO	
	Geslaagd absoluut	Duur opl. gemiddeld	Geslaagd absoluut	Duur opl. gemiddeld	Geslaagd absoluut	Duur opl. gemiddeld	Geslaagd absoluut	Duur opl. gemiddeld
04/ 05	1	21					1	24
05/ 06	6	7	4	12	1	36	3	22
06/ 07	2	19	5	17	2	35	2	19
07/ 08	3	23	1	31	4	35	1	31
08/ 09	9	25			2	27	1	40
09/ 10	7	30			2	36		

Table 4b – study time (months) graduated part time students MSc Chemistry UvA

afstudeer cohort	Eigen universiteit		Andere universiteit NL		HBO		Buiten HO	
	Geslaagd absoluut	Duur opl. gemiddeld	Geslaagd absoluut	Duur opl. gemiddeld	Geslaagd absoluut	Duur opl. gemiddeld	Geslaagd absoluut	Duur opl. gemiddeld
04/ 05							1	24
05/ 06								
06/ 07	1	24						
07/ 08					1	34		
08/ 09								
09/ 10					3	45	1	52

Table 5a – time (months) at the UvA of graduated full time students MSc Chemistry UvA

afstudeer cohort	Eigen universiteit		Andere universiteit NL		HBO		Buiten HO	
	Geslaagd absoluut	Duur opl. gemiddeld	Geslaagd absoluut	Duur opl. gemiddeld	Geslaagd absoluut	Duur opl. gemiddeld	Geslaagd absoluut	Duur opl. gemiddeld
04/ 05	1	24					1	24
05/ 06	6	59	4	12	1	36	3	22
06/ 07	2	79	5	17	2	35	2	19
07/ 08	3	51	1	31	4	35	1	31
08/ 09	9	69			2	27	1	40
09/ 10	7	75			2	36		

Table 5b – time (months) at the UvA of graduated part time students MSc Chemistry UvA

afstudeer cohort	Eigen universiteit		Andere universiteit NL		HBO		Buiten HO	
	Geslaagd absoluut	Duur opl. gemiddeld	Geslaagd absoluut	Duur opl. gemiddeld	Geslaagd absoluut	Duur opl. gemiddeld	Geslaagd absoluut	Duur opl. gemiddeld
04/ 05							1	24
05/ 06								
06/ 07	1	60						
07/ 08					1	34		
08/ 09								
09/ 10					3	45	1	52

Masteropleiding Chemistry cijfers VU

Cohortomvang en onderwijs-herkomst masterinstroom

Eigen			Andere universiteiten		
Jaar	universiteit	NL	HBO	Buiten HO	Totaal
02/03	6	1	11	1	19
03/04	17	2	15	0	34
04/05	9	1	13	0	23
05/06	3	1	14	0	18
06/07	8	7	11	1	27
07/08	15	0	13	0	28
08/09	12	5	11	0	28
09/10	7	3	19	5	34

Studieduur (in maanden) masteropleiding naar onderwijs-herkomst

Afstudeer cohort	Eigen universiteit		Andere universiteit NL		HBO		Buiten HO	
	Geslaagd	Duur opl.	Geslaagd	Duur opl.	Geslaagd	Duur opl.	Geslaagd	Duur opl.
	absoluut	gemiddeld	absoluut	gemiddeld	absoluut	gemiddeld	absoluut	gemiddeld
03/94	12	13			7	22		
04/05	7	24	3	26	9	24		
05/06	4	21			10	27		
06/07	6	26	2	18	6	26		
07/08	2	24	1	36	8	33		
08/09	13	27	2	22	6	34	1	26
09/10	4	25	1	24	9	32		

Instellingsverblijfsduur (in maanden) mastergeslaagden naar onderwijs-herkomst

Afstudeer cohort	Eigen universiteit		Andere universiteit NL		HBO		Buiten HO	
	Aantal geslaagd	Verblijfs-duur	Aantal geslaagd	Verblijfs-duur	Aantal geslaagd	Verblijfs-duur	Aantal geslaagd	Verblijfs-duur
	03/94	12	42			7	22	
04/05	7	54	3	26	9	24		
05/06	4	67			10	27		
06/07	6	77	2	18	6	26		
07/08	2	60	1	36	8	33		
08/09	13	77	2	22	6	34	1	26
09/10	4	56	1	24	9	32		

Teacher-student ratio achieved

A rough estimate of the student: staff ratio for the MSc Chemistry can be made on basis of the list of lecturers involved in teaching. Each member of the staff is expected to spend at least 40% of his/her time on teaching. Of the teaching load, approximately 35% is devoted to the MSc Chemistry (the remaining 65% to the BSc programme and to other MSc programmes). Approximately 28 staff members of the HIMS, SILS and IBED institutes of the UvA are involved in the core programme of the MSc Chemistry. This implies that approximately 4 fte staff is available for a student population of approximately 80 (UvA, 2010/2011), yielding a student: staff ratio of around 20. Since half of the teaching is done by VU staff, and half of the student population is registered at the VU, the same student: staff ratio will be valid for the joint programme.

Recently a new system has been introduced for the administration of teaching activities (DVM, docent vergoedingen model). When this system will be fully implemented, more precise data on student: staff ratios will become available.

Appendix 6: Programme of the site visit

08.30 – 09.30 Onderwijsmanagement

Naam:	Rol:
Bart Noordam	Decaan FNWI, UvA
Jeanine Meerburg	Portefeuillehouder onderwijs FNWI, UvA
Kees de Groot	Onderwijsdirecteur College of Science, UvA
Steen Ingemann Jorgensen	Opleidingsdirecteur SCH, UvA
Wim Kok	Opleidingsdirecteur MSc Chemistry, UvA
Romano Orru	Opleidingsdirecteur FAR, SCH en DDS, VU
Johan Vermeer	Onderwijsdirecteur FEW, VU

09.30 – 10.00 Studenten bachelor Scheikunde UvA

Naam:	Rol:
Lara van Duin	1 ^e jaars student
Tessel Bouwens	1 ^e jaars student
Bas van Dijk	2 ^e jaars student
Pim Linnebank	2 ^e jaars student
Lukas Jongkind	3 ^e jaars student
Martijn Tros	3 ^e jaars student

10.00 – 10.30 Docenten bachelor Scheikunde UvA

Naam:	Rol:
Jan van Maarseveen	Docent
Bernd Ensing	Docent
Jarl Ivar van der Vlugt	Docent
Sape Kinderman	Vaardighedencoördinator / docent
René Williams	Docent
Steen Ingemann Jorgensen	Docent
Wybren Jan Buma	Docent
Stefania Grecea	Docent

10.30 – 10.50 OC bachelor Scheikunde UvA

Naam:	Rol:
Bas de Bruin	Docentlid
Gabriel Vivo Truyols	Docentlid
Dorien Dunneboer	Student-lid
Rolf Beerthuis	Student-lid
Menzo Mulich	Student-lid
Chuchu Yu	Student-lid

10.50 – 11.30 Examencommissie & studieadviseur bachelor Scheikunde UvA

Naam:	Rol:
Wybren Jan Buma	Lid examencommissie
Evert Jan Meijer	Lid examencommissie
Margaret Jans	Ambtelijk secretaris
Iris Weijtjens-Hettelingh	Studieadviseur

11.30 – 12.15 lunch

12.15 – 12.45 Studenten master Chemistry VU & UvA

Naam:	Rol:
Jan Veldstra	Student VU, MSP
Jaap Borger	Student VU, MDSC (HLO)
Mitchel Cardol	Student VU, MDSC
Steven Lameris	Student VU, AS
Frank Fleurbaaij	Student VU, AS
Hanan Al Habobe	Student UvA, AS (HLO)
Henrik van de Ven	Student UvA, AS (BSc buitenland)
Luuk Steemers	Student UvA, MDSC

12.45 – 13.15 Docenten master Chemistry VU & UvA (incl. mastercoördinatoren)

Naam:	Rol
Chris Slootweg	Mastercoördinator VU MDSC
Luuk Visscher	Mastercoördinator VU MSP
Henk Lingeman	Mastercoördinator VU AS
Romano Orru	Docent VU MDSC
Wim Kok	Mastercoördinator UvA AS
Wybren Jan Buma	Mastercoördinator UvA MSP
Jan van Maarseveen	Mastercoördinator UvA MDSC
Chris de Koster	Docent UvA

13.15 – 13.35 OLC/OC master Chemistry VU & UvA

Naam	Rol
Matthias Bickelhaupt	Voorzitter OLC VU
Ger Molenaar	Student lid OLC VU
Bas de Bruin	Docentlid OC UvA
Rolf Beerthuis	Student-lid OC UvA
Chuchu Yu	Student-lid OC UvA

13.35 – 13.55 Examencommissie en studieadviseur master Chemistry VU & UvA

Naam	Rol
Koop Lammertsma	Voorzitter Examencommissie VU
Dianne Vredenburg	Secretaris + studieadviseur VU
Evert Jan Meijer	Lid examencommissie UvA
Margaret Jans	Ambtelijk secretaris UvA
Anja Zoomer	Studieadviseur UvA

13.55 – 14.25 Alumni master Chemistry VU & UvA

Naam:	Rol
Anton Koers	Senior advisor Ernst & Young (MSP, VU)
Paul Slobbe	AiO RNC (MDSC, VU)
Dik-Paul Kloos	AiO FEW (AS, VU)
Sonja Peters	Unilever (AS, UvA)
Bjorn Berendsen	RIKILT (AS, UvA)
Rachel Scheffelaar	Provincie Noord-Holland (MDSC, UvA)

14.30 – 15.00 Voorbereiden eindgesprek**15.00 – 16.00 Eindgesprek****16.00 – 17.30 Opstellen bevindingen****17.30 – 17.45 Mondelinge rapportage****17.45 – 18.15 Borrel**

Appendix 7: Theses and documents studied by the committee

Prior to the site visit, the committee studied the theses of the students with the following student numbers:

6138160
0571636
0460036
0434388
5619378
5747708
0518840
6005950
5842131
5930081
0426806
0222208
0435848
0553077
5625092

During the site visit, the committee studied, among other things, the following documents (partly as hard copies, partly via the institute's electronic learning environment):

- Course manuals
- Standard / basic books
- Tests, assessment criteria, assessment forms and answers
- Minutes of the Board of Examiners 2009- 2011
- Minutes of het Programme committee 2009 – 2011
- Assessment report on bachelor and master programme chemistry, QANU, 2007
- Assessment report on chemistry research, QANU, 2010

Appendix 8: Declarations of independence



ONAFHANKELIJKHEIDS- EN GEHEIMHOUDINGSVERKLARING

INDIENEN VOORAFGAAND AAN DE OPLEIDINGSBEOORDELING

ONDERGETEKENDE

NAAM: GEERLINGS PAUL

PRIVÉ ADRES: TER MIKKELAAN 4
2030 BOECHOUT
BELGIË

IS ALS DESKUNDIGE / SECRETARIS GEVRAAGD VOOR HET BEOORDELEN VAN DE OPLEIDING:

SCHIEKUNDE

AANGEVRAAGD DOOR DE INSTELLING:

VERKLAART HIERBIJ GEEN (FAMILIE)RELATIES OF BANDEN MET BOVINGENOMDE INSTELLING TE ONDERHOUDEN, ALS PRIVÉPERSOON, ONDERZOEKER / DOCENT, BEROEPSBEOEFENAAR OF ALS ADVISEUR, DIE EEN VOLSTREKT ONAFHANKELIJKE OORDEELSVORMING OVER DE KWALITEIT VAN DE OPLEIDING TEN POSITIEVE OF TEN NEGATIEVE Zouden KUNNEN BEÏNVLOEDEN;



VERKLAART HIERBIJ ZODANIGE RELATIES OF BANDEN MET DE INSTELLING DE
AFGELOPEN VIJF JAAR NIET GEHAD TE HEBBEN;

VERKLAART STRIKTE GEHEIMHOUDING TE BETRACHTEN VAN AL HETGEEN IN
VERBAND MET DE BEOORDELING AAN HEM/HAAR BEKEND IS GEWORDEN EN
WORDT, VOOR ZOVER DE OPLEIDING, DE INSTELLING OF DE NVAO HIER
REDELIJKERWIJS AANSPRAAK OP KUNNEN MAKEN.

VERKLAART HIERBIJ OP DE HOOGTE TE ZIJN VAN DE NVAO GEDRAGSCODE.

PLAATS: *Rotterdam*

DATUM: *22/03/2012*

HANDTEKENING:

A handwritten signature in black ink, appearing to be 'Huisman', is written over a long horizontal line that ends in a sharp arrowhead pointing to the right.

ONAFHANKELIJKHEIDS- EN GEHEIMHOUDINGSVERKLARING

INDIENEN VOORAFGAAND AAN DE OPLEIDINGSBEOORDELING

ONDERGETEKENDE

NAAM: VAN LOMMEN GUY

PRIVÉ ADRES:
KLETS 34
B-2530 Berloze België

IS ALS DESKUNDIGE / SECRETARIS GEVRAAGD VOOR HET BEOORDELEN VAN DE OPLEIDING:

Schikunde

AANGEVRAAGD DOOR DE INSTELLING:

QANU

VERKLAART HIERBIJ GEEN (FAMILIE)RELATIES OF BANDEN MET BOVENGENOEMDE INSTELLING TE ONDERHOUDEN, ALS PRIVÉPERSOON, ONDERZOEKER / DOCENT, BEROEPSBEOEFENAAR OF ALS ADVISEUR, DIE EEN VOLSTREKT ONAFHANKELIJKE OORDEELSVORMING OVER DE KWALITEIT VAN DE OPLEIDING TEN POSITIEVE OF TEN NEGATIEVE Zouden KUNNEN BEÏNVLOEDEN;



VERKLAART HIERBIJ ZODANIGE RELATIES OF BANDEN MET DE INSTELLING DE
AFGELOPEN VIJF JAAR NIET GEHAD TE HEBBEN;

VERKLAART STRIKTE GEHEIMHOUDING TE BETRACHTEN VAN AL HETGEEN IN
VERBAND MET DE BEOORDELING AAN HEM/HAAR BEKEND IS GEWORDEN EN
WORDT, VOOR ZOVER DE OPLEIDING, DE INSTELLING OF DE NVAO HIER
REDELIJKERWIJS AANSPRAAK OP KUNNEN MAKEN.

VERKLAART HIERBIJ OP DE HOOGTE TE ZIJN VAN DE NVAO GEDRAGSCODE.

PLAATS: *Rotterdam*

DATUM: *22/3/2012*

HANDTEKENING:

A handwritten signature in black ink, consisting of a large, stylized initial 'O' followed by a smaller 'h' and a long horizontal stroke.

ONAFHANKELIJKHEIDS- EN GEHEIMHOUDINGSVERKLARING

INDIENEN VOORAFGAAND AAN DE OPLEIDINGSBEOORDELING

ONDERGETEKENDE

NAAM: Eblenne SCHRACHT

ADRES: Kysseveldstraat, 99
B-8840 STADEN, België

IS ALS DESKUNDIGE / SECRETARIS GEVRAAGD VOOR HET BEOORDELEN VAN DE OPLEIDING:

ZIE BIJLAGE

AANGEVRAAGD DOOR DE INSTELLING:

ZIE BIJLAGE

VERKLAART HIERBIJ GEEN (FAMILIE)RELATIES OF BANDEN MET BOVENGENOEMDE INSTELLING TE ONDERHOUDEN, ALS PRIVÉPERSOON, ONDERZOEKER / DOCENT, BEROEPSBEOEFENAAR OF ALS ADVISEUR, DIE EEN VOLSTREKT ONAFHANKELIJKE OORDEELSVORMING OVER DE KWALITEIT VAN DE OPLEIDING TEN POSITIEVE OF TEN NEGATIEVE Zouden KUNNEN BEÏNVLOEDEN;



nederlands-vlaamse accreditatieorganisatie

VERKLAART HIERBIJ ZODANIGE RELATIES OF BANDEN MET DE INSTELLING DE
AFGELOPEN VIJF JAAR NIET GEHAD TE HEBBEN;

VERKLAART STRIKTE GEHEIMHOUDING TE BETRACHTEN VAN AL HETGEEN IN
VERBAND MET DE BEOORDELING AAN HEM/HAAR BEKEND IS GEWORDEN EN
WORDT, VOOR ZOVER DE OPLEIDING, DE INSTELLING OF DE NVAO HIER
REDELIJKERWIJS AANSPRAAK OP KUNNEN MAKEN.

VERKLAART HIERBIJ OP DE HOOGTE TE ZIJN VAN DE NVAO GEDRAGSCODE.

PLAATS: Rotterdam

DATUM: 22/03/2012

HANDTEKENING:

ONAFHANKELIJKHEIDS- EN GEHEIMHOUDINGSVERKLARING

INDIENEN VOORAFGAAND AAN DE OPLEIDINGSBEOORDELING

ONDERGETEKENDE

NAAM: Maja Medic

PRIVÉ ADRES: Rijnsburgerweg 124 G 31
2333 AG Leiden

IS ALS DESKUNDIGE / SECRETARIS GEVRAAGD VOOR HET BEOORDELEN VAN DE OPLEIDING:

AANGEVRAAGD DOOR DE INSTELLING:

VERKLAART HIERBIJ GEEN (FAMILIE)RELATIES OF BANDEN MET BOVENGENOEMDE INSTELLING TE ONDERHOUDEN, ALS PRIVÉPERSOON, ONDERZOEKER / DOCENT, BEROEPSBEOEFENAAR OF ALS ADVISEUR, DIE EEN VOLSTREKT ONAFHANKELIJKE OORDEELSVORMING OVER DE KWALITEIT VAN DE OPLEIDING TEN POSITIEVE OF TEN NEGATIEVE Zouden KUNNEN BEÏNVLOEDEN;



VERKLAART HIERBIJ ZODANIGE RELATIES OF BANDEN MET DE INSTELLING DE
AFGELOPEN VIJF JAAR NIET GEHAD TE HEBBEN;

VERKLAART STRIKTE GEHEIMHOUDING TE BETRACHTEN VAN AL HETGEEN IN
VERBAND MET DE BEOORDELING AAN HEM/HAAR BEKEND IS GEWORDEN EN
WORDT, VOOR ZOVER DE OPLEIDING, DE INSTELLING OF DE NVAO HIER
REDELIJKERWIJS AANSPRAAK OP KUNNEN MAKEN.

VERKLAART HIERBIJ OP DE HOOGTE TE ZIJN VAN DE NVAO GEDRAGSCODE.

PLAATS: Rotterdam

DATUM: 22-03-2012

HANDTEKENING:

~~Handwritten signature~~ maja medic



ONAFHANKELIJKHEIDS- EN GEHEIMHOUDINGSVERKLARING

INDIENEN VOORAFGAAND AAN DE OPLEIDINGSBEOORDELING

ONDERGETEKENDE

NAAM: Prof. Dr. Jürgen Heck

PRIVÉ ADRES: Siederogstiep 77
D - 22926 Threnesburg

IS ALS DESKUNDIGE / SECRETARIS GEVRAAGD VOOR HET BEOORDELEN VAN DE OPLEIDING:

Scheikunde

AANGEVRAAGD DOOR DE INSTELLING:

QANU

VERKLAART HIERBIJ GEEN (FAMILIE)RELATIES OF BANDEN MET BOVENGENOEMDE INSTELLING TE ONDERHOUDEN, ALS PRIVÉPERSOON, ONDERZOEKER / DOCENT, BEROEPSBEOEFENAAR OF ALS ADVISEUR, DIE EEN VOLSTREKT ONAFHANKELIJKE OORDEELSVORMING OVER DE KWALITEIT VAN DE OPLEIDING TEN POSITIEVE OF TEN NEGATIEVE Zouden KUNNEN BEÏNVLOEDEN;



VERKLAART HIERBIJ ZODANIGE RELATIES OF BANDEN MET DE INSTELLING DE
AFGELOPEN VIJF JAAR NIET GEHAD TE HEBBEN;

VERKLAART STRIKTE GEHEIMHOUDING TE BETRACHTEN VAN AL HETGEEN IN
VERBAND MET DE BEOORDELING AAN HEM/HAAR BEKEND IS GEWORDEN EN
WORDT, VOOR ZOVER DE OPLEIDING, DE INSTELLING OF DE NVAO HIER
REDELIJKERWIJS AANSPRAAK OP KUNNEN MAKEN.

VERKLAART HIERBIJ OP DE HOOGTE TE ZIJN VAN DE NVAO GEDRAGSCODE.

PLAATS: *Hamburg*

DATUM: *9.7.2012*

HANDTEKENING: *[Handwritten signature]*

ONAFHANKELIJKHEIDS- EN GEHEIMHOUDINGSVERKLARING

INDIENEN VOORAFGAAND AAN DE OPLEIDINGSBEOORDELING

ONDERGETEKENDE

NAAM:

BARBARA VAN BALEN

PRIVÉ ADRES:

Kleine Houtweg 8 2012 CH Haarlem

IS ALS DESKUNDIGE / SECRETARIS GEVRAAGD VOOR HET BEOORDELEN VAN DE OPLEIDING:

*Scheikunde OW 2012
Leiden - Delft - Eindhoven - WU - Utrecht*

AANGEVRAAGD DOOR DE INSTELLING:

VERKLAART HIERBIJ GEEN (FAMILIE)RELATIES OF BANDEN MET BOVENGENOEMDE INSTELLING TE ONDERHOUDEN, ALS PRIVÉPERSOON, ONDERZOEKER / DOCENT, BEROEPSBEOEFENAAR OF ALS ADVISEUR, DIE EEN VOLSTREKT ONAFHANKELIJKE OORDEELSVORMING OVER DE KWALITEIT VAN DE OPLEIDING TEN POSITIEVE OF TEN NEGATIEVE Zouden KUNNEN BEÏNVLOEDEN;



VERKLAART HIERBIJ ZODANIGE RELATIES OF BANDEN MET DE INSTELLING DE
AFGELOPEN VIJF JAAR NIET GEHAD TE HEBBEN;

VERKLAART STRIKTE GEHEIMHOUDING TE BETRACHTEN VAN AL HETGEEN IN
VERBAND MET DE BEOORDELING AAN HEM/HAAR BEKEND IS GEWORDEN EN
WORDT, VOOR ZOVER DE OPLEIDING, DE INSTELLING OF DE NVAO HIER
REDELIJKERWIJS AANSPRAAK OP KUNNEN MAKEN.

VERKLAART HIERBIJ OP DE HOOGTE TE ZIJN VAN DE NVAO GEDRAGSCODE.

PLAATS:

Rotterdam

DATUM:

23-8-2012

HANDTEKENING:

A large, stylized handwritten signature in black ink, consisting of several loops and a long horizontal stroke extending to the right.