

Guidebook

2012–2013

Masters in Sciences



UNIVERSITEIT VAN AMSTERDAM



vrije Universiteit

amsterdam

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*The information in this Guidebook is based on the Education and Examination Regulations (OER) and on the on-line Course Catalogue 2012–2013. Please see these documents for the complete programme details.
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INTRODUCTION

Dear student,

Welcome to this 2012 edition of the Guidebook for *Master in Science* Degrees, available at the two Universities in Amsterdam.

This Guidebook is intended for Science students who consider taking their studies beyond the *Bachelor Degree* level, and who wish to obtain a Master Degree in one of the Science disciplines at both Faculties of Sciences.¹

The master's programmes, commencing in September or February each year, cover a two-year period of study. In this Guidebook the four principle routes through the master's programmes, the so-called *variants*, are described, as well as how each *specialisation track* within a variant can be tailor-made to a student's personal requirements.

At the initial planning stage, and with the help and advice from the master (track) coordinator, the optimal personal programme can be defined, striking a balance between compulsory courses, elective courses and research training. The training in a research environment is a major element within all the programmes, culminating in a written thesis and a colloquium (oral presentation).

The Guidebook also contains the details of how credit points are allocated to the various components of the programme in accordance with the European Credits Transfer System (ECTS). In addition, the roles played by the teaching and research staff in both Universities are identified, including the way in which they carefully monitor the student's progress throughout the two-year period of study.

It first starts with some practical study information, and ends with what you should do to get your diploma. So it really guides you through all the phases of your master studies.

Good Luck!

Education Service Centre, University of Amsterdam / Education Office, VU University Amsterdam
September 2012

¹ Not all programmes are offered jointly by UvA-VU; for an overview of the various programmes see appendix 1.

STUDY INFORMATION

1.1 University of Amsterdam

Academic Counsellor

The academic counsellor for the Master's students is Anja Zoomer.

Present on Monday, Tuesday, Thursday and Friday (please make an appointment by email).

Visiting address: Science Park 904, room B1.37 (behind the Servicedesk, Education Service Centre);

tel.: +31 (0)20 525 7636; email: A.M.L.Zoomer@uva.nl

Postal address: PO Box 94214, 1090 GE Amsterdam.

Students may consult the academic counsellor for study regulations, advice on the choice of a study programme, exemptions and deficiencies, special facilities for students, e.g. functionally challenged students, students with dyslexia or with study and personal problems, but also students practicing top-class sports activities, study stop (temporary), study planning and planning methods and problems with teachers or other students.

Academic Calendar 2012–2013

<i>Semester 1</i>	<i>Monday 3 September 2012 – 1 February 2013</i>
Block 1	Monday 3 September – Friday 26 October
Block 2	Monday 29 October – Friday 21 December
Block 3	Monday 7 January – Friday 1 February
<i>Semester 2</i>	<i>Monday 4 February 2013 – 27 June 2013</i>
Block 1	Monday 4 February – Friday 29 March
Block 2	Monday 1 April – Friday 3 May
Block 3	Monday 3 June – Friday 27 June
<i>Holidays and Events</i>	
Introduction Programme Master's students	Friday 31 August
Christmas Holidays	Monday 24 December – Friday 4 January
PAC Symposium (chemistry students)	Thursday 7 March
Good Friday	Friday 29 March
Easter Monday	Monday 1 April
Queens Day	Tuesday 30 April
Liberation Day	Sunday 5 May
Ascension Day (and next day)	Thursday 9 May; no classes on Friday 10 May
Whit Monday	Monday 20 May
Start Summer holidays	Saturday 28 June

Announcements and Information

Students are obliged to check regularly whether there are changes and/or additions to information earlier provided. Any amendment or supplement to information already provided in the teaching schedules or other practical matters will be made public through one or more of the following sources:

- Schedules: http://rooster.uva.nl/current_en/ and <http://datanose.nl>
- Check your student email at least every other day.
- Education: www.student.uva.nl, see under your own master's programme.
- Blackboard: <http://blackboard.ic.uva.nl/>, specific communication for the course module concerned.

See also 'Useful websites' at the end of this chapter.

Exam results will be registered in the student administration as soon as possible; the student automatically receives an email. For an overview of study results see <http://student.uva.nl/english/sis/>. If the result of an examination is not a final mark, you can always find the result on Blackboard, or ask the lecturer.

Assessment of the Courses

One of the aims of assessment of the courses and of the master's programmes is the continuous monitoring of the quality of the programmes, the courses, the teaching of the courses, and to carry out improvements at the

earliest possible moment. Assessment of the courses takes place through student interviews and questionnaires. All the results of the assessments are on the agenda of the Programme Committee's meetings. Any specific results from these discussions are communicated to the Programme Director and to all parties concerned.

Blackboard

Lecturer and classes make use of the Blackboard digital learning environment, which can be accessed through <http://blackboard.ic.uva.nl>. Students registered for a course automatically have access to the Blackboard site of the course.

Books and Tutorials

Most study books can be bought through the student societies (see further on in this chapter). Members receive a discount.

The coordinator of a course also informs the students registered for the course where to obtain tutorials, lecture notes etc. Textbooks sometimes may be borrowed from the library.

Computer Facilities

The Faculty of Science has a large amount of computers at its disposal. The ICT group takes care of computer and internet support of the Faculty. Some pages in the science website are only available to the staff and to students of the Faculty of Science. Such web pages require a FNWI username and password in order to load.

For information see www.science.uva.nl/ict and www.student.uva.nl.

For log-in procedures and information on access to the Internet, email accounts and how to link your email addresses consult the Help Desk of the Study Centres: www.ic.uva.nl/studentenmail

Education and Examination Regulations

Every educational programme has its own Education and Examination Regulations (OER). These regulations are set up by the Dean with advice from the Faculty's Student Council (FSR) and the Programme Committees.

Certain parts of the OER require the approval from the FSR. The Dean ensures that these regulations are enforced properly, and he is responsible for the periodic evaluation of the OER.

The OER consists of two sections: a general section (part A) and a programme specific section (part B).

The most important regulations are:

- the programme's admission requirements
- the exam regulations
- exams and the rights of the Examination Board
- the objectives and the exit qualifications of the programme.

Students may consult the OER on www.student.uva.nl, select your master → Regulations.

Education Service Centre: Servicedesk

Location: Science Park 904, first floor. Postal address: PO Box 94214, 1090 GE Amsterdam.

Tel.: +31 (0)20 525 7100; email: servicedesk-esc-science@uva.nl.

Opening hours: Monday to Friday from 9 a.m. to 5 p.m.

The practical issues concerning your study are organized by the Servicedesk of the Education Service Centre (ESC). The Servicedesk provides the schedules for lectures, practicals and exams, registers marks for exams and takes care of all examinations procedures. Also, the International Office, the Secretariat of the Examination Boards, the programme coordinators and the academic counsellors are part of Education Service Centre. Students may contact the Servicedesk for schedule information, forms for approval of a study plan or programme, registration of courses and (re) examinations, student administration and regulations, an overview of study results, application for the Master Certificate etc.

Examination Board

The Examination Board chairs the examination ceremonies, evaluates foreign and divergent former education programmes, approves Personal Education Programmes and Requests for Approval, issues exemptions etc.

The members of the Board are appointed by the Dean of the Faculty. Each Examination Board consists of a Chairman, a Secretary and at least two other members.

Each discipline in the Master School of Sciences has its own Examination Board.

All requests to the Examination Board must be handed in at the Education Service Centre, Science Park 904, or sent to: Servicedesk ESC, Examination Board [*name of discipline*], P.O.Box 94214, 1090 GE Amsterdam.

For questions about procedures etc. send an email to the Secretary, Margaret Jans: examew-science@uva.nl

Students have to send in a request for approval by the Examination Board for:

- the Personal Education Programme (drawn up in consultation with the master (track) coordinator)
- courses of other programmes that are not described in the on-line Course Catalogue, and are not part of the elective courses; this also applies to courses and projects at a foreign university
- industrial research project (must also be approved by the master (track) coordinator)
- a specialisation in research outside the university (e.g. in industry or abroad); this also has to be approved by the master's programme coordinator
- any diversions from the Education and Examination Regulations (OER)
- special facilities for functionally challenged students, students who suffer from dyslexia but also students practicing top-class sports activities have to ask the Board's permission for e.g. more examination time, exams at different times from the regular schedule etc.
- the Examination Boards meet every month, and decide on the first coming meeting, but not later than five weeks after receiving the request, except during the summer holidays (July/August).

Fraud en Plagiarism

In the Faculty of Science the Ephorus plagiarism detection programme is used for this purpose.

If a case of fraud and/or plagiarism has been detected, the examiner will immediately inform the student and at the same time notify the Examination Board in writing.

For the Regulations Governing Fraud and Plagiarism see: www.student.uva.nl/preventfraud-plagiarism

Graduation Procedures

For examination procedures consult Chapter 7, and see the website of the relevant master's programme for information on all the requirements of the graduation procedure: <http://www.student.uva.nl>, choose the relevant master's programme and 'Graduation procedure'. The dates of the Graduation Ceremonies in 2012-2013 are published here as well.

MSc. Degree Certificate 'with honours' (cum laude)

For the 'cum laude' conditions students should consult the Education and Examination Regulations of the discipline ('OER') at www.student.uva.nl. Choose the relevant master's programme and 'Regulations'.

In the Diploma Supplement, which is the appendix to the Master Certificate, all components of the study programme with the EC-credit points and grades are included.

Restitution of the registration fee and the OV-chipcard

Students who wish to apply for restitution of the remainder of the registration fee have to fill in a *Restitution Form*, to be downloaded from: www.student.uva.nl/studentenadministratie. They also must stop their student travel product on their OV-chipcard within 5 days after the date on the MSc. certificate.

Students who want to continue travelling with their OV-chipcard until the end of the year of registration, must *not* apply for restitution.

International Office

Location: Science Park 904, room B1.28 (behind the Education Service Centre).

Contact persons: Corinne van den Brink or Niels Molenaar.

Visiting hours: Tuesdays/Thursdays from 2 – 4 p.m.; tel.: +31 (0)20 525 7870.

Email: master-science@uva.nl. First contact by email is preferred.

The Students' Exchange Officer Joke Hendriks is the contact person for UvA-students who wish to go abroad.

Tel.: +31 (0)20 525 7681; email: studex-science@uva.nl.

Study Abroad / Exchange Programmes

In the Faculty of Science it is thought important that students have the opportunity to study abroad in order to acquire some international experience. Therefore, it is possible for students to spend part of their study programme in another country, e.g. by following courses at a university through an exchange programme or by doing a research project. Students who consider spending part of their study abroad, have to start making preparations at least one year in advance before the actual start of this part of their study. Students should consider all the possibilities, and take into account the deadlines for the various (exchange) programmes. For exchange programmes outside Europe, e.g. USA the deadline is even earlier than the Erasmus deadline.

Exchange Programmes

Within the framework of the Erasmus programme, the Faculty of Science has entered into an agreement with about thirty European universities. The agreed period of study varies from 3 to 12 months. Students in an exchange programme do not have to pay a registration fee and receive a monthly allowance.

Please note that only students from EU countries are eligible for this allowance.

A list of the universities the Faculty of Science has signed an agreement with can be obtained from the Students' Exchange Officer Joke Hendriks, and can be downloaded from: www.student.uva.nl, select your master → Study abroad. The University of Amsterdam also has several exchange programmes with universities in, amongst others, Australia, Canada, United States and Asia. A stay abroad is usually for the period of half a year up to one whole (academic) year. For more information see: www.uva.nl/internationaal, select 'Mogelijkheden', (Possibilities), 'Studeren buiten Europa' (Studying outside Europe), and subsequently the region and country of your choice. For each programme the preconditions and deadlines for application are indicated.

Recognition of EC-Credit Points

Before leaving, students have to ask for approval in writing from the Examination Board by handing in a form, indicating all the intended courses or research projects with their contents and EC-credit points. This request also has to be approved by the master (track) coordinator. It is advisable to contact your academic counsellor beforehand. Universities outside Europe may use different credit points systems. Also ask the International Office for information about these systems.

Grants

For information about study grants please contact the International Office. At the Students Information Centre, Binnengasthuisstraat 9, it is possible to get information from the Funds Book and the Funds floppy disk. On the Nuffic website www.beursopener.nl information is available about Nuffic funds.

Information on studying abroad

The brochure 'Studeren in het Buitenland' contains general information on studying abroad, and a list of exchange programmes. At the end of September/early October the 'Nationale Wil Weg Week' will be organized, and in November/December there will be an information meeting on the Erasmus programme. See also the website about studying abroad: www.student.uva.nl, search for 'Buitenland' or 'Study Abroad', or contact the Students Exchange Officer at the International Office (see above).

Legal Protection and Complaints Procedures

College van Beroep voor de Examens (COBEX)

The Board of Appeal for the Examinations judges in appeal on:

- decisions made by the Examination Board
- decisions concerning admission to examinations, e.g. decisions made by the Board for Entrance Examinations
- decisions concerning the amount of credit points obtained for governmental grants.

Address: UvA College van Beroep voor de Examens, Spui 21, 1012 WX Amsterdam. For more information consult <http://student.uva.nl>

Libraries

The University of Amsterdam has a Central Library (University Library) at the Singel and several Faculty Libraries. Students with an UvA student's registration card may borrow books from all libraries. Visitors may apply for a library card at the information desk of one of the libraries. The loan period of books is four weeks. Renewing a book is possible, except if the item has been reserved. Books can be returned at every UvA-library. Journals,

reference works and college textbooks can not be borrowed, they are for reading only. However, photocopies can be made. Please refer to the staff members of the libraries for more information or consult the website of the Library of the University of Amsterdam www.uba.uva.nl, or email to sciencelib-science@uva.nl.

Programme Committees

Each discipline has a Programme Committee (Dutch: Opleidingscommissie (OC)). The OC members consist of 50% students and 50% lecturers. The Programme Committee advises the Programme Director on all educational matters. Further, the OC proposes, amongst others, changes to courses, schedules and examinations, carries out the assessment of the courses and advises on renewal of (parts of) the study programmes.

The OC student members participate actively in the organisation and in the quality of education. New OC-student members may join a special OC-course offered by ASVA, the student association of the UvA. Students interested in an OC-membership should contact one of the student members of their OC.

Registration procedure elective ('bijvak') student at the VU

All master's students in the joint UvA-VU master's programmes will be registered at the VU automatically. More information at: <http://www.few.vu.nl/en/current-students/vu-uva-corporation/index.asp>

Registration and Cancellation Procedures for Courses, Examinations and Resits

For these procedures see the student website of the UvA: www.student.uva.nl. Select your master → Regulations, and consult part A of the Education and Examination Regulation (OER). For courses apply via student.uva.nl/sis until 4 weeks before start of the semester.

Safety, Environment and Insurance

Safety and Environment

To avoid serious accidents during practical chemical and physics laboratory work (fire, poisoning, explosion etc.) the utmost care must be taken in the laboratories. Safety measures are laid down in the UvA Safety Regulations. This is also the case in environmental protection when carrying out laboratory work. In each laboratory there is a certified Safety Supervisor, who is responsible for the safety procedures.

When entering a lab, students should always first consult the available safety literature before starting an experiment, and always wear personal protection: a lab coat and safety glasses are compulsory. The safety glasses are provided free of charge by the safety coordinator, Wim de Lange: W.G.J.deLange@uva.nl.

General

The UvA has contracted insurances for all sorts of study related activities, but in all cases the third-party insurance of students is excluded.

Students are personally responsible for their own third-party insurance, or through their parents or guardians.

The UvA rejects all liability, unless there is proof of culpable negligence or behaviour by the UvA. Each claim will be judged individually and is highly dependent on the specific circumstances. In case of damage or personal injury while travelling abroad contact Peter Wurtz, p.wurtz@uva.nl for the necessary procedures, and also inform the Secretariat of the Education Service Centre: secretariaat-ESC-Science@uva.nl, c.c. to the Financial Department of the Faculty: R.M.Hoeksema@uva.nl.

Sexual Harassment

Students, who in some way have to deal with sexual harassment by a lecturer, a staff member or another student may lodge a complaint with the Faculty's contact person for sexual harassment: Iris Hettelingh, Education Service Centre, Science Park 904, 1ste floor, room: B1.37, email: I.Hettelingh@uva.nl, tel.: +31 (0)20 525 5864. Action will only be taken with the explicit approval of the student concerned.

Student Societies

Student societies aim to enrich their members' life in many different ways. There are social gatherings like drinks after a degree ceremony, parties, movie evenings. There are also educational visits to business companies, trips abroad and activities organized with other student societies. Membership of a student society also entitles students to various discounts e.g. of study books. Students are encouraged to contact the members of the board for new ideas and activities. For more information see www.student.uva.nl.

ACD – Amsterdams Chemisch Dispuut

ACD, founded in 1945, is the student society for Chemistry students. Students joining ACD receive a discount on their books and can order their lab coat via this organisation. Students also have the opportunity to attend free lectures and to join excursions (also abroad). Also ACD organizes drinks, parties and other activities to enable their student members to relax from time to time.

Tel.: +31 (0)20 – 525 5601; email: acd@science.uva.nl; website: www.science.uva.nl/student/acd.

NSA – Natuurwetenschappelijke Studievereniging Amsterdam

NSA is the student society for students of Astronomy and Astrophysics, Physics, Mathematics and Stochastics. Students joining the NSA receive a discount on their books and access to the online exam databank. The NSA organizes lectures and excursions, and an annual trip abroad.

However, since studying is not just about serious matters the NSA also organizes drinks, pool-tournaments, movie nights etc. For larger events, such as the Beta Party, the NSA cooperates with other student societies.

Tel.: +31 (0)20 525 5726; email: nsa@science.uva.nl; website: www.nsaweb.nl.

NIMF – Netwerk voor Informatica Mathematica en Fysica

NIMF: Network for Computer Scientists, Mathematicians and Physicists, is a nationwide network for women in Mathematics, Physics and Computer Science, and in related fields like Astronomy, Geology and Engineering. Many members are from other countries, making NIMF quite an international group. The network has representatives from all walks of life: students and professors, managers and trainees, professionals, civil servants, freelancers, etc. The aim of the network is to enable women with a background in science and technology to exchange information and experiences in a pleasant and informal way. NIMF's goal is to improve contact between its members, and to exchange practical experience and information during network meetings and activities like lectures, workshops and excursions. In addition, NIMF offers mentoring, peer mentoring groups and email discussion lists. Most meetings and the newsletter NIMFormatie are in Dutch, but the email lists can be used to post English messages, and (peer) mentoring can also take place in English (the small groups decide on the language themselves), email: info@stichtingnimf.nl; website: www.stichtingnimf.nl.

SBBA – Stichting Beta Bedrijven Contactdag Amsterdam

The SBBA was founded as a joint venture of the bèta student associations from the two Amsterdam universities UvA and VU. Nowadays, it is an independent foundation consisting of six bèta students from both universities. Every year, in March or April, the SBBA organizes the Bèta Career Event, to give students the opportunity to get into contact with companies. The target group of this career day consists mainly of bèta students in the last phase of their study programme, and PhD students. The Bèta Career Event is an information market representing over 30 companies. Subsequently, several companies give presentations or workshops to inform the students on job possibilities in their company. It is also possible to have an interview with one or more companies that are represented. For information about the next Bèta Career Event and registration options see the website: www.sbba.nl. Furthermore, the SBBA is always looking for enthusiastic students to organize this event, so please contact us if you are interested, email: info@sbba.nl.

Study Delay

For students, who receive a study grant from the Dutch government and who lag behind with their study programme because of illness, pregnancy, bereavement in the family etc., there is the possibility of financial support from the Graduation Fund (Dutch: Afstudeerfonds). In order to be considered for this fund, the student must inform the academic counsellor of this delay as soon as possible, but at least within two months of the start of the special circumstance. After the course year the period of study delay will be decided on by the student counsellor at Service and Information Centre of the university.

As soon as the study delay has been registered payment will take place. For more information consult the 'Studentenhandboek': www.student.uva.nl/studentenhandboek/ (in the Dutch language only).

Study Results

Study results, registered in the university's study registration programme SIS, are automatically announced by email and on request by sms. Students taking an individual (oral) examination should receive a pass sheet, signed by the examiner, directly after the examination. A print-out of the list of results may be obtained from the Servicedesk, and can be printed by the student from study web.

Useful Websites

AMC Amsterdam	http://www.amc.nl
Black Board	http://blackboard.ic.uva.nl
Complaints Procedures	http://student.uva.nl/a-z/klachten.cfm
Datanose	http://datanose.nl
Enrollment Courses	http://studieweb.student.uva.nl/studieadmin/menu
Grant Finder	http://www.grantfinder.nl
My Library	http://digitaal.uba.uva.nl
On-line Course Catalogue	http://studiegids.uva.nl/sgs/WebSite_en
Schedules	http://rooster.uva.nl/current_en/
Student Accounts	http://www.student.uva.nl/studentenmail/studentenmail.cfm
Student Service Point	http://www.student.uva.nl/english/a-z.cfm
Programme Information	http://www.student.uva.nl/english/programmes.cfm
VU University Amsterdam	http://www.vu.nl

1.2 VU University Amsterdam

Academic Counsellor

See: <http://www.few.vu.nl/en/current-students/study-guidance-and-contact/index.asp>

Announcements and Information

Information about lectures and examination timetables can be found on the website:

<http://www.few.vu.nl/en/current-students/> and on VUnet: <http://www.vu.nl/nl/studenten/digitale-voorzieningen/ict-voorzieningen/studentenportal/index.asp>

Blackboard

Lecturer and classes make use of the Blackboard digital learning environment, which can be accessed through <http://bb.vu.nl>. Students who are registered for a course have automatically access to the Blackboard site of the course.

Books and tutorials

Books, tutorials, lecture notes, etc. can be obtained from the VU bookshop in the main building. Textbooks also may be borrowed from the library.

Building

There is free access to the VU Mathematics and Sciences building, De Boelelaan 1081, from Monday to Friday from 7.00 a.m. to 7.00 p.m. In addition, the building is accessible via the entrance at De Boelelaan 1085 from Monday to Friday from 7 p.m. to 10.30 p.m.

Access to the W & N building for the disabled is via the ramp at the 1083a entrance.

Computer Facilities

Rooms equipped with these computer systems are located in building sections P4, P3, S3, S1 and N1. The computer classrooms are available to students from Monday to Friday from 8.30 a.m. to 10.30 p.m.

Education Service Centre

During opening hours you can put your questions about grades, exams and classes to the staff of the VU Education Service Centre desk, in room S3.11. The desk is open daily from 11.30 to 14.30.

Outside opening hours, the Education Service Centre can be reached by telephone: +31 (0)20 598 7660 or by email: owb@few.vu.nl.

International Office

Contact: Greetje Gorens, De Boelelaan 1083, Room P-362, tel.: +31 (0)20 59 87517,
email: international@few.vu.nl.

Lecture rooms

Lectures and tutorials are held in the Science building. For actual information check the 'onderwijs' website (see above: Announcements and Information).

Library

The website of the VU Library www.ubvu.vu.nl provides detailed information about lending and photocopying facilities, library regulations, other libraries at the VU, reading rooms and catalogues.

Printing and copy facilities

Photocopy machines are located at various points throughout the building. These are fitted with photocopy charge card readers. Photocopy charge cards can be purchased at the W & N Service Point, De Boelelaan 1085a, room M0.18.

Registration procedure elective ('bijvak') at the UvA

All master's students in the joint UvA-VU master's programmes will be registered at the UvA automatically. More information at: <http://www.few.vu.nl/en/current-students/vu-uva-corporation/index.asp>

Safety and Environment

Information about safety at the VU can be found on: www.few.vu.nl/en/onderwijs/voorzieningen/veiligheid

Students' ID Card

Each student registered at the VU is issued with a student chip card. Students are notified when their card is ready for collection. The card also acts as a pass for the university library.

Student Services Desk

The Student Services Desk is located in the central hall of the main building of the VU, room 0A-11, opening hours on weekdays from 10 a.m. to 5 p.m.

1 CURRICULUM OF THE MASTER'S PROGRAMME

Variants

There is a wide choice of programmes at master degree level, most of which are offered jointly by the University of Amsterdam and the VU University Amsterdam. The master's programmes in Mathematics are collaborating in the national Master's Degree Programme in Mathematics. Students' personal study programmes fall into three main categories:

- The **Research (R-) variant** trains a student as a scientific researcher and as a specialist in a particular field. Often these students aim to continue their study with a PhD. education, in order to obtain an executive job as researcher or group leader at a university, a research institute, government department or in industry.
- The **Communication/Education (CE-) variant**: prepares for a career as a science journalist, a science public relations officer (e.g. in industry or in a museum), a science policy-maker or as a science teacher (equivalent to the former post-graduate teacher's training).
- The **Social (S-) variant** prepares for a career in executive and/or management functions in industry, business or public organisations, by combining a sound background in disciplinary subjects with a business, administrative or economic training.

R-variant

The R-variant master's programmes of the UvA and the VU are taught in the English language, except a few courses of the teacher's training programme and some elective courses in other faculties. In the first year of the R-variant students follow courses, while in the second year the focus is on research training at one of the research institutes, participating in ongoing frontier research. The results of the research project have to be reported in a master thesis, which is a requirement for the Master in Science degree.

C-, E- and S-variants

The CE- and S-variants of the master's programmes consist of a disciplinary first year, of which the first semester is basically identical to the first semester of the first year R-variant. In the second semester the student carries out the research training, reporting the results in a master thesis. The second year is dedicated to the C-, E- or S-variant. Students receive a Master Certificate in the discipline of the master's programme on which the C-, E- or S-variant is based. Some of the courses are in Dutch (see the website of these variants for details).

Credit points

The master's programme consists of a two-year study of 120 EC points. The allocation of academic credits in the European Credit Transfer System (ECTS) is 60 credits per year. An EC point corresponds to 28 study hours. As many European universities participate in this uniform credit system, students have the opportunity to complete part of their study programme abroad. The workload of an R-variant research project varies per master's programme.

NOTE It is also possible to design an individual master's programme. This programme must consist of a coherent list of courses and a research project amounting to 120 EC, and has to be approved by the Examination Board of the discipline before the start of the programme.

Specialisation programme tracks

After choosing the variant, students also have to select a specialisation track (see Appendix 1 for the specialisation tracks and their coordinator). Each track comprises compulsory and elective courses, or training and a research project including a master thesis and presentation. See the Course Catalogues and the websites: www.student.uva.nl and www.few.vu.nl for detailed information about the research groups of the Faculty of Science at the UvA and of the VU, and the projects in which to participate.

2 PERSONAL EDUCATION PROGRAMME (PEP)

Composing and planning a study programme

The form Personal Education Programme (PEP) has been developed for every student following one of the master's programmes. This programme serves both as a study file and a timetable. There are two PEP-forms: one for the R-variant and one for the CE- and S-variants. The PEP-form contains different tables referring to the different study phases. Examples of a PEP-form can be found in Appendix 1, and may be downloaded from www.student.uva.nl ('Requirements for fulfilment') or from www.few.vu.nl/en/onderwijs/

It has already been mentioned that your education programme is drawn up in consultation with the master (track) coordinator. If you already know in which field to conduct your research project, the supervisor of this project may also be involved in designing the study programme.

The master (track) coordinator of the chosen programme is able to provide all the details with respect to the compulsory courses. Most courses in this category are introductory, and therefore have to be taken before the start of a research project. It is important to attend these courses in the first master year, but in exceptional cases one or two of these courses may be postponed to the second year. In particular, if there are still deficiencies in your former education, then the latter option (postponement) should be discussed.

Deficiency courses should preferably be undertaken in the first year of your master study.

For the Social variant and the Communication and Education variant, some courses are compulsory and others depend on the specialisation. For the programme details consult the coordinators (see Appendix 1).

Attending courses at another university, and registration

In the following cases students have to follow a *regular 'bijvak' registration procedure*:

- following courses at the UvA or VU in the MasterMath programme if the bachelor has not been completed
- following courses at the UvA or VU that are not a part of the MasterMath programme
- following courses at another university than UvA or VU.

This double enrolment is free. Contact the local Education Service Centre for the enrolment procedure.

NOTE For the national courses in the *MasterMath programme* students have to register at www.mastermath.nl, even if such a course is given at the VU or the UvA.

Application procedure

A student's Personal Education Programme has to be approved by the Examination Board of the master's programme. The Examination Board scrutinises the combination of courses, taking into account things such as possible overlap between the courses and compliance with the regulations of the variant concerned, the academic level of free choice courses, the workload etc. Approval of the PEP ensures that when all components are completed, a student can apply for the Master Degree.

The application procedure runs as follows:

1. As soon as the student and the master (track) coordinator have arranged the definitive* programme, the PEP must be submitted to the Examination Board. This should be done before the start of the master research project.
2. The Examination Board judges the programme and informs the student of the decision.

* When the PEP is approved, it is still possible to make changes to the programme. This has to be done in consultation with the master (track) coordinator, and requires a new decision by the Examination Board.

3 RESEARCH TRAINING

Masters Astronomy and Astrophysics, Chemistry and Physics

NOTE For the Mathematics, Mathematical Physics and the Stochastics and Financial Mathematics Master Project see Chapter 5.

Usually, research training takes place at one of the research institutions at the UvA or the VU (see the on-line Course Catalogues), but can also take place at an institution or company outside the university. In all cases appointments have to be made in order to set up the necessary arrangements. The Research Training Contract gives some structure to all matters relating to research training.

This chapter contains guidelines, and acts both as a manual and a planner for the major research project. See Appendix 3 for an example of these planning forms, contracts and assessments.

These forms are also published on the websites www.student.uva.nl and www.few.vu.nl/en/onderwijs/, and may also be used for a minor research project.

Requirements

In general, the compulsory courses of the master's programme must first be completed before commencing a research project. For a minor research project it may also be wise to first take a specialised course. Some research groups demand additional theoretical knowledge. For more information on the rules and options see the Education and Examination Regulations (OER).

At the latest at the beginning of the second year, the student has to decide on the group for the research training. The formal application for research training with the master (track) coordinator should occur at the latest one month before the proposed starting date. Unlike the courses, research training is not bound by the academic calendar, and can be undertaken and end at any time during the year, including the summer vacation, and can also span academic years. The EC points are granted upon completion of the research training on a special form (see Appendix 3).

Orientation

In order to prepare for the research training, the student should investigate the possibilities within the chosen variant of the study programme. Information about the research groups and their projects can be found both in the on-line Course Catalogue and on the websites www.science.uva.nl or www.few.vu.nl/en/onderwijs/. During the introductory courses in the master's programme, students acquire additional knowledge about the different types of research in their specialised fields. Furthermore, extra information can always be obtained from the various research groups.

Supervision

A *supervisor* is a staff member who is responsible for the students undertaking a research studentship. For research studentships outside the university, a permanent staff member must always supervise this research. In both cases, the staff member ensures that the research training is appropriate to the student's needs, and makes sure that the rules for coaching and evaluation are observed.

The *daily supervisor* is in charge of day-to-day activities, and as such determines the scope of the research training. In many experimental research situations, the daily supervisor may be a PhD student or a post-doctoral graduate. Sometimes, the daily supervisor and the supervisor are the same person. Both the supervisor and the daily supervisor are responsible for the progress of the research training.

On-site appointments

During an exploratory talk with the supervisor, at least the following points will be discussed:

- study progress
- possible research subjects
- supervision (daily supervisor, different daily supervisors related to different subjects, etc.)
- possible starting date, duration and final date
- theoretical courses as background knowledge for the research.

The appointments must be included in the Research Training Contract form. If the final results are insufficient, the research studentship may be extended beyond the agreed period, but the number of credit points will remain unchanged. Interruptions of two weeks or more due to holidays or courses known in advance, also have to be reported in this contract form.

It is assumed that day-to-day contact with the daily supervisor is possible, and that at least on a weekly basis some discussion takes place. In view of the need for interim assessments, regular consultation of the supervisor is also advised. Furthermore, it is expected that the supervisor will contact the daily supervisor at least at the beginning and at the end of the research training period.

The Research Training Contract form has to be signed by the student and the supervisor(s). A copy must be sent to the master (track) coordinator and to the Education Service Centre.

Research proposal

After gaining the background information with regard to the research project, the student writes a research proposal. This proposal must contain a description of the scientific problem that is aimed to be solved, and the steps intended to achieve this, including the estimated amount of practical and theoretical work. The workload and the order of expected events in the research project will also be indicated. The supervisor evaluates this proposal and, after agreement, a copy will be submitted to the second reviewer and to the master (track) coordinator.

Interim assessments

During a research project, an interim assessment will be carried out at least twice (the Interim Assessment form can be used, but this form is not obligatory). The purpose of these assessments is to record achievements, and to indicate how skills as a researcher can be further improved. The interim assessment also indicates if the research training is on schedule, and if the quality of work is sufficient. If the supervisor and the student agree by mutual consent to continue the research project, the student can expect the project to be finished on schedule, provided that there is sufficient progress, and that the agreed timetable is kept.

If there is substantial deviation from the research training contract, or problems of quality arise, this should be discussed in a meeting between master (track) coordinator, supervisor, daily supervisor and the student.

Reporting results

The *major research project* ends with a master thesis and presentation; a *minor research training project* ends with a written report only. The thesis and presentation will be discussed in more detail in the next chapter.

Final assessment

For the assessment of the research project, the Final Assessment Research Training, Thesis and Presentation form has to be completed. Assessment will take place in the presence of the supervisor, the daily supervisor, the second reviewer and the student. The daily supervisor and the supervisor assess all aspects of the research project. The second reviewer assesses the presentation and thesis only.

The supervisor is responsible for submitting a copy to the Servicedesk at the Education Service Centre, including the (split) marks and final grade(s).

NOTE In case the result of a research project is 8.0 or higher the supervisor is required to write a letter motivating this result. This letter must be addressed to the Chairman of the Examination Board, with a copy to the student and to the coordinator of the master programme. The letter must be submitted by the supervisor to the Servicedesk, together with the Final Assessment Research Training, Thesis and Presentation form.

Research project in a company or business

Sometimes there are opportunities to carry out a final research project at a business enterprise. If a student is interested in a particular research field at a business enterprise, he/she may inquire whether perhaps one of the lecturers has contacts, or the student can contact the company directly. In this case, the student has two supervisors: one at the institute or enterprise where the research is carried out, and one supervisor at the university. Approval by the Examination Board for carrying out the research project outside the university is compulsory. Student may use the Research Training Contract form for this purpose, combined with a description of the project.

4 THESIS AND COLLOQUIUM

At the end of their research project it is compulsory for all students to write a thesis and to give an oral presentation (colloquium) on the research training. A literature thesis and colloquium is not compulsory for all students (see the on-line Course Catalogue).

In this chapter, a *second reviewer*² is introduced. The second reviewer is involved in the assessment of the thesis, the presentation and the literature thesis and colloquium. This second reviewer should be a staff member of one of the other research groups, or a member of the Examination Board.

This chapter contains the procedure with regard to the thesis and presentation, and the literature thesis and colloquium. The form Thesis and Colloquium Planner (see Appendix 3 for an example) can be used for this purpose (to be downloaded from the website www.student.uva.nl, select your master. This form does not have to be handed in at the Servicedesk.

Thesis

It is common practice and also advisable for the student to first discuss the outline of the master thesis or research report with the daily supervisor, and subsequently with the supervisor. The supervisor has to correct the draft outline within a few weeks. As soon as the supervisor has approved the outline, the student can start writing the contents.

To make appropriate appointments on the planning of the Thesis and Presentation the Thesis and Colloquium Planner form can be used; it is not necessary to hand this form in at the Education Service Centre.

In most cases, the master thesis or research report will have the same format as a scientific article, although the various parts must be described more extensively than is usually done in a scientific article (see Appendix 2 for the guidelines on how to write a thesis).

If the quality of the work justifies publication, the student will be made author or co-author of the publication presenting the results.

The final version of the thesis will be offered to the daily supervisor, the supervisor, a second reviewer and the master (track) coordinator (see for an example of the title page of a thesis the website www.student.uva.nl or check with your supervisor).

When graduating, the student is required to submit an electronic version to the Education Service Centre. This version must contain:

- The thesis in PDF format.
- A scientific abstract in English.
- A half-page popular summary of the research work in Dutch; this summary should give an interested first-year student an idea of the contents of the research work; foreign students are allowed to write this summary in English.
- An attractive figure characterising the research work (if possible), and a caption describing the figure.
- Optional: a digital (passport) photo of the student.

Only for students of the master's programmes *Astronomy and Astrophysics and Physcis*

- Students of these master's programmes have to hand in **3** hardcopies of the thesis at the Education Service Centre of the Faculty of Science three weeks prior to the examination session.

All theses are stored in a digital archive on www.science.uva.nl/onderwijs/thesis.³

The scientific abstract and the popular summary will be published on the web. In case the research work is confidential, the supervisor must send a request to the Education Service Centre, indicating that this thesis cannot be made public.

² At the UvA the second reviewer must be a staff member

³ At the VU the digital archive is in development; the student will be notified when to submit an electronic version of the thesis.

Colloquium

At the end of a (major) research project the student is required to present the results in an oral presentation (colloquium) to the staff of the division or institute and to other students. Not all the information in the thesis has to be presented in this presentation. The intention is that other students and the members of the staff can understand the subject, including the pros and cons, problems and latest results.

The date and time of the presentation will be agreed on after consultation with the daily supervisor, the supervisor, the second reviewer and the Examination Board, but note that arranging a colloquium during the summer vacation period in July and August might prove to be impossible!

In accordance with the entire master's programme, the presentation must be in English. The mark will be determined directly after the presentation.

This colloquium is a public lecture, and will be announced by the research institute some weeks in advance, using the bulletin boards and (e)mailboxes. This announcement contains at least:

- title of the presentation
- the student's name
- date and time
- location
- abstract
- a few references

A rehearsal of this presentation can be organized in the presence of the supervisor. This is very important, and also strongly recommended, as it enables students to improve the content and structure of their presentation.

See Chapter 3 for the final assessment procedure 'Final Assessment Research Training, Thesis and Presentation' of the research project.

Literature Thesis and Colloquium

The aim of a literature thesis is to learn to write short descriptions of scientific articles in the student's own words, and to give ones commentary. The student should write a paper under the auspices of one of the department's research groups (the thesis supervisor). The thesis may be written either on a subject provided by the research group, or one the student has come up with and which has been approved by the supervisor.

The thesis comprises:

- a summary of the literature on the subject including the most recent publications the student's name
- a critical opinion of the literature.
- the student's perceptions and views on the subject based on the literature that is read and suggestions for further research

In general, a literature study and colloquium (30–45 min) will be executed at the end of the first year or in the second year of the master's programme. Occasionally, these activities are scheduled before the major research project (ask the master (track) coordinator what is recommended). The master (track) coordinator or supervisor, or thesis supervisor will have some suggestions for a subject.

The structure of the literature thesis ('scriptie') is like that of a scientific review article. Based on the initial literature study, the student will make the outline of the literature thesis. This outline, defining the subject of the thesis, will be discussed with the literature thesis supervisor. At least once in two weeks, further discussion will be needed with the thesis supervisor about the structure and contents of the thesis and, later on, the colloquium

The final assessment is based on the criteria in the Thesis and Colloquium form (see Appendix 3), and will be carried out in the presence of the thesis supervisor, a second reviewer and the student. The supervisor is responsible for submitting the form to the Education Service Centre, including the (split) marks and final grade(s).

5 MATHEMATICS MASTER PROJECT

The second year of the master is largely devoted to advanced mathematics and ends in a master project. The subject of the project should be chosen at the end of the first or at the beginning of the second year. The master project can be carried out under supervision of a member of one of the two mathematical institutes or externally, within a company or research facility other than one of these two institutes. In the latter case the student will have local advisor and a supervisor from one of the two institutes. The student chooses the master project with the help of the coordinator and the preliminary supervisor, and possibly the internship office at the VU.

- The project requires half a year of work (48 EC including preparatory activities).
- Mathematics students who want to do an internship must take care that before starting the project it has to be approved by the Mathematics internship board (VU) or by the Examination Board (UvA). In order to get this approval a short description of the proposed internship (1.5 or 2 pages) should be handed in at the internship office, www.few.vu.nl/stagebureau (VU); for detailed information consult www.few.vu.nl/stagebureau/stage/m-proposal.doc or the Examination Board (UvA).
- If the master project is carried out at one of the two Mathematics institutes, then also a research proposal for the project has to be made. This proposal must contain a description of the scientific question (problem) you will aim to answer (solve), and steps intended to achieve this, including the estimated workload. The description of the project should contain on the planning on starting and finishing the project. The supervisor evaluates this proposal, and, after agreement, a copy will be submitted to a second reviewer and to the master (track) coordinator.
- Mathematics students who do an internship have to give the internship office one hardcopy and one digital version of the master thesis when the project is completed (VU); a hardcopy must be given to the Education Office and a digital copy must be submitted to www.science.uva.nl/onderwijs/thesis (UvA).
- In case the thesis is confidential, the procedure differs for both universities
 - **At the VU:** the student has to give one copy of the thesis to the internship office. This copy will be treated confidentially. Moreover the student has to hand in at the Internship Office one hardcopy and one digital version of the public version of the master thesis.
 - **At the UvA:** the student has to hand in one hardcopy of the thesis to the Education Service Centre, together with a letter from the supervisor. This letter should contain the reason why the thesis is confidential. In that case no electronic copy is submitted.

When the description of the project is discussed with the supervisor the following items should be considered:

- study progress
- subject of the project
- possible starting date and duration
- required courses

In case of an internship, it is assumed that there is at the least weekly contact with the local supervisor; in case of a master project at the department a weekly contact with the supervisor is expected. During the internship also regular contact with the supervisor at the university is required. During the project the progress of the student should be assessed at least twice.

Unlike courses, the master project is not bound by the academic calendar. It can be undertaken and end at any time during the course of a year, including during the summer vacation period. The project can also span academic years. EC points are granted upon completion of the research training.

Problems arising during the master project with regard to supervision should be brought to the attention of the supervisor, the master (track) coordinator and/or the academic adviser.

Reporting results

The project or internship ends with a master thesis and colloquium.

Thesis

In case of an internship detailed guidelines on the composition of the thesis can be found on:

www.few.vu.nl/stagebureau/schrijfwijzer.php

A brief guideline for the thesis on the master project or internship is provided with this Guidebook (see Appendix 2). A general advice is to start writing down notes on (small) results that you obtain and observations that you make right from the beginning of your project. These notes will give a record of your progress over time, support the regular discussions with your supervisor, and in the end form the rough material for the composition of your master thesis.

Before you start composing your master thesis, it is common practice and also advisable to discuss the outline of your thesis or report first with the local supervisor (in case of an internship) and with the supervisor.

Colloquium

At the end of your master project you will be required to present your results in a colloquium for staff and students. A colloquium is an oral presentation about the subject of your project. Not all the information in your thesis has to be presented in the colloquium, the intention being that other students and the members of the staff can understand the subject.

The date and time of the presentation will be agreed after consultation with your local supervisor, the supervisor, the second reviewer, and at the UvA also the Examination Board, but note that arranging a colloquium during the summer vacation period in July and August might prove to be impossible! In accordance with the entire master's programme, the colloquium will be in English.

Final assessment

For the final assessment of the master project including your thesis and colloquium there is a form to be filled in. This Assessment form will be filled in by the supervisor, the local supervisor, the second reviewer⁴ and at the UvA also by a member of the Examination Board. The daily supervisor and the supervisor assess all aspects of your master project. The second reviewer and at the UvA also the member of the Examination Board assess the colloquium and thesis. The supervisor is responsible for submitting a copy of the form to the Education Office.

⁴ At the UvA the second reviewer should be a staff member.

6 EXAMINATION PROCEDURES UvA en VU

After completing the master's programme, the student can apply for graduation MSc. degree at the Servicedesk. Examination procedures can be found on the following web pages:

UvA: www.student.uva.nl; select your master → Graduation procedure.

VU: www.few.vu.nl/en/onderwijs/studentregelingen/afstuderen.html; → current students → regulations.

Before planning to apply for a MSc. certificate students must have taken care that the:

- Personal Education Programme (PEP) is approved by the Examination Board at least three months in advance
- all registration requirements have been met.

Attendance

For the examination ceremonies of all disciplines family, friends and colleagues are very much invited to attend. See below for the details of the Degree Ceremonies of the disciplines.

Astronomy and Astrophysics and Physics UvA

The MSc. candidates in Physics and in Astronomy and Astrophysics complete their programme by a formal examination, during which the master thesis on the final research project is publicly defended.

Graduation Ceremony dates: every last Monday of the month (national holidays and July excluded).

The Examination Board traditionally consists of three members of the Physics and Astronomy and Astrophysics Examination Board, the thesis advisor, and the second reviewer or other experts on the thesis subject.

The duration of the ceremony is approximately 30 minutes.

The standard time schedule is:

* a popular presentation of the research training project (N.B. No use can be made of whiteboard or computer/beamer)	5 min.
* thesis defence before the Examination Board	15 min.
* deliberation by the Committee (not open to the public)	5 min.
* signing the MSc. certificate and supervisor's appreciation	5 min.

APPENDICES

- Appendix 1: Specialisation tracks, master (track coordinators, academic counsellors)
- Appendix 2: Guidelines for writing a thesis
- Appendix 3: Examples of forms

APPENDIX 1: Specialisation tracks, master (track) coordinators, academic counsellors

<i>Master's programmes R-variant</i>	UVA COORDINATOR	VU COORDINATOR
ASTRONOMY AND ASTROPHYSICS Track: GRAPPA	dr. S.B. Markoff + 31 (0)20 525 7478 S.B.Markoff@uva.nl dr. M.P. Decowski +31 20 592 2145 decowski@nikhef.nl	
CHEMISTRY Track: Analytical Sciences Track: Molecular Design, Synthesis and Catalysis Track: Molecular Simulation and Photonics Track: Science of Energy and Sustainability	dr. W. Th. Kok +31 (0)20 525 6539 W.Th.Kok@uva.nl dr. J.H. van Maarseveen +31 20 525 5671 J.H.vanMaarseveen@uva.nl prof. dr. W.J. Buma +31 (0)20 525 6973 W.J.Buma@uva.nl dr. B. de Bruin +31 20 525 6495 B.deBruin@uva.nl	prof.dr. H. Irth +31 (0)20 59 87527 H.Irth@few.vu.nl dr. ir. R.V.A. Orru +31 (0)20 59 87447 rva.orrufew.vu.nl prof. dr. L. Visscher +31 (0)20 59 87624 l.visscher@few.vu.nl
MATHEMATICS MASTERMATH PROGRAMME	dr. A.J. Homburg +31 (0)20 525 6282 A.J.Homburg@uva.nl	dr. C. Quant +31 (0)20 59 87831 cm.quant@few.vu.nl
MATHEMATICAL PHYSICS	dr. S. Shadrin +31 (0)20 525 5296 S.Shadrin@uva.nl	
STOCHASTICS AND FINANCIAL MATHEMATICS MASTERMATH PROGRAMME <i>Track: Applied Mathematical Finance¹</i>	dr. A.J. van Es +31 (0)20 525 5365 A.J.vanEs@uva.nl	dr. F. Moné-Bijma +31 (0)20 59 87835 f.bijma@few.vu.nl
PHYSICS Track: Adv. Matter and Energy Physics Track: GRAPPA Track: Physics of Life and Health Track: Laser Science and Biomolecular Photonics Track: Particle and Astroparticle Physics Track: Science of Energy and Sustainability Track: Theoretical Physics	prof. dr. M.S. Golden +31 (0)20 525 6363 M.S.Golden@uva.nl dr. M.P. Decowski +31 20 592 2145 decowski@nikhef.nl dr. T.G. van Leeuwen +31 (0)20 5665562 T.G.vanLeeuwen@amc.uva.nl prof.dr. H.B. van Linden van den Heuvell +31 (0)20 525 5628 H.B.vanLindenvandenHeuvell@uva.nl dr. E. de Wolf +31 (0)20 5925123 e.dewolf@nikhef.nl dr. B. de Bruin +31 20 525 6495 B.deBruin@uva.nl prof. dr. B. Nienhuis	dr. R.J. Wijngaarden + 31 (0)20 59 87918 rj.wijngaarden@few.vu.nl Dr. D. Iannuzzi +31 (0)20 59 87577 d.iannuzzi@few.vu.nl dr. H.L. Bethlem + 31 (0)20 59 87951 h.l.bethlem@vu.nl dr. H.J. Bulten + 31 (0)20 592 2018 henkjan@nikhef.nl dr. J.T.M. Kennis +31 (0)20 59 87212 j.t.m.kennis@vu.nl prof. dr. P.J.G. Mulders

	+31 (0)20 525 5749 B.Nienhuis@uva.nl	+31 (0)20 59 87863 pjg.mulders@few.vu.nl
CHEMISTRY AND PHYSICS Track: AtoSiM	dr. E.J. Meijer +31 (0)20 525 6448 E.J.Meijer@uva.nl	

¹ Within the Master SFM students with an interest in the application of mathematics to economic and financial mathematics may follow this special track offered in cooperation with the Faculty of Economics and Business (UvA).

Master's programmes CE-/S-variant	UvA Coordinator	VU Coordinator
Communication variant	dr. E. Joling (020) 525 7988 E.Joling@uva.nl	drs. M.J.W. Bos +31 (0)20 59 87512 mark.bos@falw.vu.nl
Education variant	dr. E. Joling (020) 525 7988 E.Joling@uva.nl	Contact Education Secretariat +31 (0)20 59 89222 onderwijssecretariaat@ond.vu.nl or Gerrit Kuik +31 (0)20 59 87884 G.Kuik@few.vu.nl www.onderwijscentrum.vu.nl/lerareno pleiding
Social variant:	dr. E. Joling (020) 525 7988 E.Joling@uva.nl	dr. M.B.M. Zweekhorst +31 (0)20 59 87033 marjolein.zweekhorst@falw.vu.nl

Academic Counsellors

All master's programmes UvA	drs. A.M.L. Zoomer Room B1.337, Science Park 904 (020) 525 7636 A.M.L.Zoomer@uva.nl
Pharmaceutical Sciences and Chemistry (VU)	D.M. Maasdijk MSc. Room M-162 (0) 20 59 87541 dm.maasdijk@few.vu.nl
Physics and Medical Natural Sciences (VU)	Dr. A. Bhulai Kamer T 1.06 T +31 (0) 20 59 87887 a.bhulai@vu.nl
Mathematics	Dr. C.M. Quant Kamer S-232 T +31 (0) 20 59 87831 c.m.quant@vu.nl

APPENDIX 2: Guidelines for writing a thesis

General Guidelines

The report has the format of a scientific paper. A general structure of the thesis is given in this appendix, depending on the research discipline. Details depend on the research topic and are provided by the supervisor.

General remarks

- plan the structure well
- be consistent in the format, layout and presentation
- maintain thread connections between all parts of the thesis
- justify all assumptions and define all symbols and acronyms – never expect the reader to "read between the lines"
- be aware of important milestones and achievements in your field of research, and keep up to date with developments
- try as much as possible to write in the active voice and be authoritative
- use clear and simple language to explain concepts and present arguments – keep sentences reasonably short and do not try to impress by using bombastic words
- use a spell checker but be aware of its limitations
- be critical when analysing results and be objective when making comparisons
- be aware of your contributions and the impact that your work has in your research field

Title page

On the title page you enter:

- the full title, and the sub–title if any, of the research work
- the name of the author
- the master's programme and specialisation
- the name of the research institute, the faculty and university
- the date of submission
- names of supervisors and master (track) coordinator
- three to eight keywords
- the logo of the university

For an example of a title page see the website www.student.uva.nl or check with your supervisor.

Abstract

The abstract is usually a one–page summary of the objectives of the research; the methodology used and the main findings of the work

Popular summary (in Dutch, max 2 paragraphs, UvA students only)

This summary should give an interested first–year student an idea of what you have done in your research. For students from abroad, it is permitted to write this summary in English.

Contents list

The contents list includes the chapter and section headings with their corresponding page numbers.

Introduction

The introduction should contain:

- The motivation for the course
- Theoretical background of the research project
- Scientific question (definition of the problem being solved/hypothesis)
- Explanation of the terms used in the thesis
- Description of the relation with former research and a reference to background knowledge
- Your contribution to the research

Report of ones own contribution and results

In these chapters, the main part of the thesis, you describe the working method applied during the research and the results found, in the same order as the corresponding methods.

If you did experimental physical research or observational astronomical research, and compared your observation with theory, then you also have to write a chapter in which this theory is described. Also former work in the field in which you performed the research must be described.

Discussion

In this part, you compare the results with results from others.

In the first paragraph you shortly repeat the hypothesis/scientific question. To what extent is the scientific question answered by the results? Use related literature in the discussion, literature in agreement with or supporting your results, or literature giving explanations for unexpected results. Indicate which points are still unclear and give some suggestions for further investigation.

Materials and methods

In case of experimental work (e.g. chemistry), this chapter should also contain the description of the experiments. For standard procedures a literature reference is sufficient. For modified procedures you must indicate why a modification was needed. For new procedures you must give a full description, such that the experiments can be reproduced by third parties. This chapter should also contain a 'list of chemicals', including the suppliers.

Conclusion

This chapter contains the main conclusions. Suggestions for further investigation can also be included in this part.

References

The references list the references that have been cited in the thesis.

Format: Article: author(s), title, journal, year, volume, pages.

Book: author(s), book title, editor, publisher, place, year.

Appendices

Contain those parts of thesis that are either well known or do not contribute directly to the main text, but need to be included for completeness. Examples are: sample calculations, derivation of a published result which forms the basis for the work, background information.

APPENDIX 3: Examples of the forms

- Personal Education Programme (PEP) R-variant (all disciplines except Mathematics and SFM)
- Personal Education Programme (PEP) CE-/S-variant
- Personal Education Programme (PEP) (R-variant (Mathematics and SFM)
- Research Training Contract
- Interim Assessment Research Training
- Final Assessment Research Training
- Thesis and Colloquium Planner
- Assessment Literature Thesis and Colloquium

Please load these forms down from the website: www.student.uva.nl, select your master → Requirements for fulfilment.



Personal details

Student's name :

Student ID : Year of first registration:

Address :

Postal Code : City:

Phone : E-mail:

Former education

Bachelor : d.d.....

HBO : d.d.....

Different : d.d.....

Master programme :

Master coordinator :

Supervisor research project :

NOTE Please indicate below in the first column the name of the course and in the second column the university that offers the course. Fill in Mastermath if the course is part of the national Mathematics programme. For courses that are not part of the national programme, please indicate in the third column the course code, and in the fourth column the study programme the course is part of. In the fifth column fill in the year that you have taken the course, and in the sixth column the amount of EC's. Finally indicate in the last column whether the course has been successfully completed at the time of submission of this form. For the allowed structure of the study programme please consult the Education and Examination Regulations (OER) part B, of the relevant Master programme.

FREE ELECTIVE COURSES / DEFICIENCIES (max. 12 EC) <i>please indicate when a course is a deficiency course</i>	University/ MasterMath	Course Code	Study progr	Year	EC	Compl

COMPULSORY / ELECTIVE COURSES	University/ MasterMath	Course Code	Study progr	Year	EC	Compl

COMPULSORY / ELECTIVE COURSES	University/ <i>MasterMath</i>	Course Code	Study progr	Year	EC	Compl

ACADEMIC SKILLS IN THE MASTER (total 6 EC)	University	Course Code	Study progr	Year	EC	Compl

RESEARCH PROJECT, MASTER THESIS AND PRESENTATION	EC	Compl
Final Research Project		
<i>Title Master Thesis:</i>		
Final report and presentation	6	
TOTAL EC MASTER PROGRAMME		

Signature master coordinator

Secretariat Examination Board

Signature Examination Board

date:

date:

date:

The definite study programme has to be submitted to the Examination Board at least 4 months before the application deadline of the MSc. Certificate. The signed form has to be handed in/sent to:
UvA-students: Servicedesk ESC, Science Park 904, or send it to: Servicedesk ESC, Examination Board [*name of discipline*], P.O.Box 94214, 1090 GE Amsterdam.
VU-students: The desk of the Educational Office at S311, or mail to the persons mentioned at <http://www.few.vu.nl/nl/studenten/regelingen/goedkeuring-vakkenpakket/index.asp>



Student's name	:	StudentID	:
Address	:	Year of first registration	:
Postal code	:	City	:
E-mail	:	Tel	:
Master programme	:	Variant	: R / CE / S minor/major
Master coordinator	:		

Host organization information

Research Institute : Room nr:

Research group :

Supervisor :

Daily Supervisor :

Second Reviewer :

Title of research project or internship:

Time table

Starting date : Final date:

Interruptions : /

Credit points : EC

Workload : weeks hours/week

Supervision

Frequency consultation internship supervisor:

Frequency consultation daily supervisor :

Interim assessment(s) :

Date, names and signatures

.....

Student	Supervisor(s)	Master coordinator
Amsterdam,		

To be attached:

Description of the project (containing detailed time table with interim goals: total length ½ A4 page)

This form has to be handed in/sent to:

UvA-students: Servicedesk ESC, Science Park 904, or send it to: Servicedesk ESC, Examination Board [*name of discipline*], P.O.Box 94214, 1090 GE Amsterdam.

VU-students: The desk of the Educational Office at S311, or mail to the persons mentioned at <http://www.few.vu.nl/nl/studenten/regelingen/goedkeuring-vakkenpakket/index.asp>



Student's name	:	Student ID	:
Supervisor	:	Daily supervisor	:
Date	:			

1 = poor, 2 = satisfactory, but needs improvement, 3 = satisfactory, 4 = good, 5 = very good

	Supervisor's opinion					Student's opinion				
	1	2	3	4	5	1	2	3	4	5
Quality	<input type="checkbox"/>									
Theoretical knowledge	<input type="checkbox"/>									
Technical skills	<input type="checkbox"/>									
Independence / initiative	<input type="checkbox"/>									
Working attitude	<input type="checkbox"/>									
Accuracy	<input type="checkbox"/>									
Cooperation with others	<input type="checkbox"/>									
Progress	<input type="checkbox"/>									
Overall assessment	<input type="checkbox"/>									
Student's opinion						1	2	3	4	5
The student is satisfied with the quality and amount of the supervision of the research						<input type="checkbox"/>				
The student is satisfied with the facilities						<input type="checkbox"/>				

In case of a negative assessment, please clarify on the back. Also describe the arrangements necessary for improvement.

Will the final date of the research project remain unchanged? Yes / no
If not, please indicate the reason of the delay and the new final date date:.....

Date and signatures:

.....
Supervisor Student

Amsterdam,

This form may be used for the interim assessment, and is kept by the student and the supervisor

Clarification of the terms

Quality:	is the work carried out with care? Are the results interpreted correctly?
Theoretical knowledge:	Does the student acquire the knowledge needed to carry out the project?
Technical skills:	Does the student show good experimental, programming and / or mathematical skills?
Independence/ initiative:	Does the student take initiatives of his/her own to carry out the project, and could he/she make progress in the (temporary) absence of close supervision?
Working attitude:	how is the overall working attitude of the student?
Accuracy:	does the student work accurately? And, if relevant, are the experiments carried out safely, and are environmental issues well respected?
Cooperation:	does the student actively participate in work discussions? How is the cooperation with other group members during the research? How are the student's communicative skills?

Example

Explanation of the assessment criteria

A final assessment discussion will take place between student and supervisor, in which the strong and weak points of the student's performance are discussed and the overall grades are motivated by the supervisor. The assessment criteria may be used as a guideline of what aspects of research and thesis work are generally considered as important in arriving at a final grade.

Remarks student:

Clarification of the terms

Research training

Quality:	was the work carried out with care? Were the results interpreted correctly?
Theoretical knowledge:	did the student acquire the knowledge needed to carry out the project?
Technical skills:	did the student show good experimental, programming and/or mathematical skills?
Independence/ initiative:	did the student take initiatives of his/her own to carry out the project, and could he/she make progress in the (temporary) absence of close supervision?
Original contribution:	did the student make an original contribution to the project?
Working attitude:	how was the overall working attitude of the student?
Accuracy:	did the student work accurately? And, if relevant, were the experiments carried out safely, and were environmental issues well respected?
Cooperation:	did the student actively participate in work discussions? How was the cooperation with other group members during the research? How were the student's communicative skills?

1.1.1 Thesis

Abstract:	Does the abstract contain all elements (scientific question and main conclusions) and is it written in a clear way?
Context:	was the subject placed in a correct scientific context, with proper referencing of the prior work? If applicable, was the relevance for society well recognised (technological aspects, ethical aspects, historic context, or environmental aspects). Is the description of the context readable for a non-expert in the field?
Contents:	does the thesis give an accurate and precise description of the subject? In case of a master's thesis: has the contribution of the student been indicated explicitly?
Scientific question:	did the student properly describe the scientific question and was this question answered in a clear way?
Use of literature:	Is the quality and quantity of the literature sufficient? Is the literature cited adequately in an accurate list of references?
Structure:	Is the thesis clearly written and structured? Do the abstract and the concluding section contain the important results obtained, and is there a discussion of possible future work?
Lay-out	Is there a proper use of figures and graphs? Was the overall layout appealing? Is the use of the language basically correct as to grammar and spelling?

Presentation

Context:	was the research placed in a correct scientific context, with proper referencing of the prior work? Is the description of the context understandable for a non-expert in the field?
Contents:	does the presentation give an accurate and precise description of the work? Has the contribution of the student been indicated explicitly? Was the scientific question presented clearly?
Media use:	did the student correctly use slides, PowerPoint, animations, etc.?
Quality of narrative style:	how was the narrative style of the student, including the nonverbal communication?
Discussion / defence:	were the questions answered correctly?



Student's name	:	StudentID	:
Address	:	Year of first registration	:
Postal code	:	City	:
E-mail	:	Tel	:
Master programme	:	Variant	: R / CE/ S minor/ major
Master coordinator	:		
Type of thesis *	: Master thesis / Literature thesis (<i>literature thesis is only compulsory for chemistry students</i>)		

* *strikethrough which is not applicable*

Host organization information

Research Institute : Room nr:

Research group :

(Thesis) Supervisor :

Daily Supervisor :

Second Reviewer :

Title of thesis :

Time table

Starting date : Final date:

Interruptions : /

Credit points : EC

Date colloquium:

Supervision

Frequency consultation (thesis) supervisor :

Frequency consultation daily supervisor :

Date, names and signatures

.....

Student Supervisor Master coordinator

Amsterdam,

This form is kept by the student, the supervisor and the Master coordinator

Clarification of the terms

1.1.2 Thesis

Abstract:	Does the abstract contain all elements (scientific question and main conclusions) and is it written in a clear way?
Context:	was the subject placed in a correct scientific context, with proper referencing of the prior work? If applicable, was the relevance for society well recognised (technological aspects, ethical aspects, historic context, or environmental aspects). Is the description of the context readable for a non-expert in the field?
Contents:	does the thesis give an accurate and precise description of the subject? Scientific question: did the student properly describe the scientific question and was this question answered in a clear way?
Use of literature:	Is the quality and quantity of the literature sufficient? Is the literature cited adequately in an accurate list of references?
Structure:	Is the thesis clearly written and structured? Do the abstract and the concluding section contain the important results obtained, and is there a discussion of possible future work?
Lay-out	Is there a proper use of figures and graphs? Was the overall layout appealing? Is the use of the language basically correct as to grammar and spelling?

Colloquium

Context:	was the research placed in a correct scientific context, with proper referencing of the prior work? Is the description of the context understandable for a non-expert in the field?
Contents:	does the presentation give an accurate and precise description of the work? Has the contribution of the student been indicated explicitly? Was the scientific question presented clearly?
Media use:	did the student correctly use slides, PowerPoint, animations, etc.?
Quality of narrative style:	how was the narrative style of the student, including the nonverbal communication?
Discussion / defence:	were the questions answered correctly?
Grading:	The letters A – E correspond with the Dutch grading system as follows: A: > 8.5, B: 7.5–8.5, C: 6.5–7.5, D: 5.5–6.5, E: < 5.5