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Introduction

This guide contains information about the master programme in mathematics and the different specialisations, a description of the master courses that are offered and a class schedule. In addition to the courses offered by the Maths department itself, it lists the master courses in the Dutch Master Programme in Mathematics (www.mastermath.nl), a joint effort of all Dutch departments of mathematics. These courses can be part of a master programme in mathematics at any of the participating institutions.

This guide can be profitably consulted by all students that follow one or more of the courses it lists: regular master students, advanced bachelor students, students from other Dutch universities, international students enrolled in the ALGANT programme, and visiting foreign exchange students. In case the specific information needed for your individual study programme is not given in full detail, do not hesitate to contact one or more of the faculty members listed on the next page for help.

Information in this paper version of the guide is believed to be accurate at the time of printing. Updates and changes can be found in the electronic version of the guide at

<http://www.studiegids.leidenuniv.nl/>.

Leiden, July 1, 2010

Prof. dr. Bas Edixhoven
Director of Education

General information

The Mathematical Institute is located in the **Snellius** building, Niels Bohrweg 1, Leiden
PO Box 9512, 2300 RA Leiden

Director of Education:

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Ms. B. ten Hove
Huygens Lab. room 123 (“Educatief Centrum”)
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Chairman of the Department Teaching Committee (“Opleidingscommissie”):

Dr. M.F.E. de Jeu
phone: (071) 527 7118
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Chairman of the Board of Examiners (“Examencommissie”):

Prof. dr. R.D. Gill
phone: (071) 527 7137
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Temporary chairman of the Board of Examiners in 2010-2011

Prof. dr. W.Th.F. den Hollander
phone: (071) 527 7105
e-mail: denholla@math.leidenuniv.nl

Chairman of the Board of Admissions (“Toelatingscommissie”):

Dr. M. Lübke
phone: (071) 527 7110
e-mail: lubke@math.leidenuniv.nl

Organisational matters

Rules and Regulations

In the Student Charter ('Studentenstatuut' in Dutch) all rights and obligations of students, the University, Faculty and programme are laid down. Besides being a collection of all rights and obligations, the Student Charter also lists all facilities provided by the University available to students. The charter also contains an overview of the legal protection of students.

The rights and obligations laid down in the Student Charter are derived from the legislation of the Higher Education and Research Act ('Wet op het Hoger Onderwijs en Wetenschappelijk Onderzoek –WHW).

Every student is assumed to have taken notice of all parts of the Student Charter.

The charter comprises two parts. The Institutional part is equal for all students and can be found on the website of the University www.regulations.leiden.edu/education-students/student-charter.html and a hard copy is made available at PITSstop (Information and Support Services & Information Desk Plexus Student Centre).

The departmental part of the charter addresses students of a specific programme and comprises two parts: the Course and Examination Regulations (OER in Dutch) and the Rules and Regulations for the examinations, practicals and final examinations (R&R). In the OER en R&R a.o. the rules of the Faculty regarding admission, examinations, the degree programme and organisation are laid down.

The texts of these documents can be found on the website of the faculty www.science.leidenuniv.nl >> Graduate School >> MSc Regulations

uSis and ULCN account

Upon registration at the University every student receives a student number and accompanying ULCN account. The ULCN account provides access to the following facilities.

- Work stations
Access to work stations (PCs) in the faculties, in Plexus student centre and the University Library.
- Leiden University Wireless Access (LUWA)
LUWA provides wireless access to internet with your own laptop.
- uMail
Access to your uMailbox, including mail forwarding to an alternative mail address.
- uSis (Student Information System)
Registering and deregistering for exams, work groups and courses, applying for exam results and notifying change of address.
- uPrefs
Here you can change your ULCN password and create extra settings for Blackboard
- Blackboard
Access to the digital teaching environment

- UB Catalogue
Searching for books and journals (including electronic journals) in the libraries of University Leiden Libraries.
- Digital Library
Access to catalogues, bibliographic files, full-text sources and electronic journals of University Leiden Libraries.
- eStemmen
Voting for student members of faculty and university boards
- Surfspot
Ordering software via a campus licence.
- Weblog
Maintaining a blog, including an academic blog

When you have problems with your account, please contact your local ICT-helpdesk.

Your ULCN account gives you access to uSis. In uSis all student data as address, programme and grades are registered. Students can monitor their own progress. Registration for courses, examinations, minors etc. should be done via uSis.

More information on the system, manuals and FAQs can be found on:
<http://students.leiden.edu/student-life/student-facilities/>

Registration for courses, examinations, tutorials, practicals

According to general regulations of the Faculty of Science, students who wish to participate in any of the educational programmes of the Faculty of Science need to register themselves via uSis. Without timely registration, participation may not be possible and potentially a grade cannot be registered.

Registration for courses opens six weeks before the start of the semester and closes a week before the activity commences. Registration for a course includes the examination.

Registration for (a re-sit of) an examination is possible up to one week before the day of (the re-sit of) the examination. If conditions apply to participating in a second examination, they are laid down in the R&R. An oral examination does not require registration in uSis.

Results of examinations

Grades for examinations, as set by the examiner, will be registered in uSis by the Graduate School Office ('Educatief Centrum' in Dutch). Students can check their grades themselves via www.usis.leidenuniv.nl and keep track of their own progress.

Examination cards (tentamenkaart in Dutch) and other forms used for assessment can be used for individual courses, like research projects, thesis or oral examinations. The assessments should be handed in at the Graduate School Office, where they will be registered. Individual courses should be

approved by the Board of Examiners in advance. Requests for approval can be submitted using uSis.

Application for the Master final examination

When a student is convinced to have passed all necessary components of the degree programme, an application for the final examination can be done.

At least five weeks before the desired graduation date, a request should be sent via uSis. All grades of the MSc degree programme have to be registered at that time. Contact the study advisor or study coordinator in due time to make sure all courses are properly registered. Further information on the Master exam is given below.

Petitions in uSis

The initial study requirements shown are based upon defaults for your specific academic program and plan combination. By using ‘petition requests’ it is possible to adjust these to your specific situation.

Your requirements may only be changed by the board of examiners (examen commissie). They need a petition request to analyze the situation. The board of examiners can accept or reject a petition request. If the petition request is accepted then your study requirements will be adjusted. You may submit a petition request for the following reasons:

- Request exemption for a particular subject
- Request a deviation in the number of study points required for a subject
- Request an extracurricular course
- Substitution of one course by another course that is offered by Leiden University
- Courses that have been studied in another university may be added via External Education
- Request for a (research) project or thesis.

The Master Programme in Mathematics

Leiden University offers six specialisations of a MSc programme in mathematics. Three of these correspond to research specialisations at the Leiden Mathematical Institute. The remaining three are the mathematics specialisations of the research MSc with the specialisations Science-Based Business (SBB), Communication or Education; these consist partly of courses in which students from the whole Faculty of Science participate.

Students enrolled in the ALGANT programme in algebra, geometry and number theory follow a specialisation similar to the Leiden specialisation, but a substantial part of their curriculum will take place in either Bordeaux, Padova or Paris.

The duration of each programme is two years (120 EC). Students who complete the programme receive the degree Master of Science in Mathematics, with specification of the specialisation, if applicable. Details are provided below. All specialisations have the same Director, the same Board of Examiners and the same Department Teaching Committee. A Board of Admissions will advise on admissions.

Candidates with a BSc degree or equivalent can apply for admission. The admission guidelines are given below for each specialisation. Individual combinations of the research programmes, with research projects from different groups, are possible in principle, depending on the decision by the Board of Examiners. The admission process may include an interview with the Board of Admissions. Foreign applicants must provide proof of proficiency in English. Further information is available on the website

<http://www.math.leidenuniv.nl>

The goal of each programme is to train the student as an independent researcher, and to develop the necessary skills and proficiency to advance his/her career.

The mathematics courses in a master programme can be taken from

1. master courses offered in Leiden,
2. courses of the Dutch Master Programme in Mathematics,
3. master courses in mathematics offered by another institution.

Travelling expenses for participation in the Dutch Master Programme in Mathematics are reimbursed by the national organisation (see www.mastermath.nl/registration/).

For courses in the 3rd category, the student has to ask the study advisor for permission in advance.

Description of the specialisations

Specialisation Algebra, Geometry and Number theory

This is a research specialisation aimed at students who wish to acquire a profound knowledge of one of the areas within pure mathematics. There is a strong theme dealing with algebra and number theory (see the international ALGANT study programme) as well as a strong theme dealing with topology and geometry. Leiden offers courses at an advanced level ranging over topics such as algebraic number theory, algebraic geometry, cryptology and combinatorics. Some of the courses are compulsory, but there is a lot of freedom in choosing one's own topic. Some of the courses are given at the national level. The programme ends with the preparation of a Master Thesis.

For more information about the Erasmus Mundus study programme ALGANT (featuring the universities of Leiden, Bordeaux, Padova and Orsay), please visit the webpage <http://www.math.u-bordeaux1.fr/ALGANT/>.

Qualifications for admission

Students from any university in The Netherlands with a BSc degree in Mathematics or with a BSc major in Mathematics will be admitted to the programme. For all other (international) candidates, the Board of Admissions will judge the equivalence of their previous training to these BSc degrees. The choice in optional courses in the MSc programme may be limited by the need to adapt the programme to the actual knowledge of the candidate.

Programme

For each student, a programme will be tailored individually. It consists of a choice of advanced courses (at least 60 EC) from algebra, algebraic and analytic number theory and algebraic and differential geometry; a research project (at least 40 EC) and a free choice of courses from any field (maximum 20 EC); required is a total of at least 120 EC.

Specialisation Applied Mathematics

This is a research specialisation aimed at students who wish to become thoroughly acquainted with mathematics as it is applied in various aspects of life. There is a strong theme dealing with Bioscience (see the Leiden Bio Science Initiative), as well as a strong theme dealing with industry and operations research. Leiden offers courses at an advanced level ranging over topics such as dynamical systems, industrial statistics, numerical analysis and probability theory. Some of the courses are compulsory, but there is a lot of freedom in choosing one's own topic. Some of the courses are given at the national level. The programme ends with the preparation of a Master Thesis.

Qualifications for admission

Students from any university in The Netherlands with a BSc degree in Mathematics or with a BSc major in Mathematics will be admitted to the programme. For all other (international) candidates, the Board of Admissions will judge the equivalence of their previous training to these BSc degrees. The choice in optional courses in the MSc programme may be limited by the need to adapt the programme to the actual knowledge of the candidate.

Programme

For each student, a programme will be tailored individually. It consists of a choice of advanced courses (at least 60 EC) on differential equations, dynamical systems, analysis of industrial problems, measure and integration theory, probability theory, statistics, functional analysis, numerical analysis, operations research; a research project in mathematics (at least 40 EC, including 7 EC for the thesis and an oral presentation) and a free choice of courses from any field (maximum 20EC); required is a total of at least 120 EC.

Specialisation Statistical Science

The MSc programme Statistical Science provides students with a thorough introduction to the general philosophy and methodology of statistical modelling and data analysis. Students gain knowledge of statistical methods and research designs as used in a broad range of empirical research, and practical skills such as statistical programming, statistical consultation, and written and oral presentation of research results. Students can specialise in applications pertaining to the life sciences or the behavioural sciences.

Qualifications for admission

Students with a wide range of bachelor degrees may apply for admission, but the bachelor's degree must include at least one introductory course and a more advanced course in statistics or probability. The candidate student should submit a letter (1 page) stating the student's motivation to apply to the programme, and a Curriculum Vitae, including the courses and credits in the Bachelor programme.

The courses will be taught in English, so proven proficiency in English is required for non-native English speakers. For information:
www.math.leidenuniv.nl/statscience/.

Programme

The nominal duration of the programme will be two years (120 ECTS). The study time may be substantially reduced for students with particular prior knowledge. The programme consists of courses and colloquia (84 EC), and an internship and writing of a Master Thesis (36 EC).

When this study guide went to press, no further details of the programme were known.

Specialisation Mathematics and Science-Based Business

The MSc programme Mathematics and Science-Based Business (SBB) prepares students for a career in science-related business and administration and for innovation and enterprise from a mathematical perspective. In addition to knowledge in mathematics, students obtain competence with respect to organisations, people in organisations, and establishment and management of processes. Students with a MSc in Mathematics and Science-Based Business are also admissible to a PhD programme.

In order to get a SBB Master annotation, a minimum programme consisting of the course SBB Fundamentals and the SBB training period must be completed (see below). The course SBB Fundamentals can also be taken in the “free choice” part of the research MSc programmes “Algebra, Geometry and Number theory” and “Applied Mathematics”.

Qualifications for admission

Students from any university in The Netherlands with a BSc degree in Mathematics or with a BSc major in Mathematics will be admitted to the programme. For all other (international) candidates, the Board of Admissions will judge the equivalence of their previous training to these BSc degrees. The choice in optional courses in the MSc programme may be limited by the need to adapt the programme to the actual knowledge of the candidate.

Programme

Mathematics

The Mathematics component of the Science-Based Business (SBB) specialisation consists of

- a research project of 40 EC in one of the research groups of the Leiden Mathematical Institute, including a master’s thesis and an oral presentation,
- 20 EC of courses to be selected in correspondence with the research topic, and
- a mathematical project connected with the SBB training period (see below).

Science Based Business

The Business-related part of the complete SBB programme consists of 40 to 60 EC of the following components:

<i>Mandatory:</i>	level	EC
SBB Fundamentals	400	15
SBB Internship	500	23-34
<i>Optional:</i>		
Orientation on Entrepreneurship: Entrepreneurial Management	400	5
Orientation on Entrepreneurship: Business Planning	400	5
SBB electives	500-600	0-20
Extension of the mathematic component		0-20

See for more information on Science-Based Business the following website:
www.sbb.leidenuniv.nl/.

Specialisation Mathematics and Communication

The MSc programme Mathematics and Communication concerns science communication in a broad sense. The programme prepares students for a career in popularisation of science, for example, as a scientific writer or public relations officer. The programme includes a 60 EC Mathematics component. Students with a MSc in Mathematics and Education are also admissible to a PhD programme in Mathematics or in Science Communication.

Qualifications for admission

Students from any university in The Netherlands with a BSc degree in Mathematics or with a BSc major in Mathematics will be admitted to the programme. For all other (international) candidates, the Board of Admissions will judge the equivalence of their previous training to these BSc degrees. Preferably, the BSc programme has included the 10 EC course Learning, Presentation and Communication, offered by the Leiden Graduate School of Education (ICLON) or an equivalent course. Applicants must provide proof of proficiency in Dutch.

Programme

Mathematics (60 EC)

The Mathematics component of the Communication specialisation consists of

- a research project of 40 EC in one of the research groups of the Leiden Mathematical Institute, including a master's thesis and an oral presentation, and
- 20 EC of courses to be selected in correspondence with the research topic.

Communication (60 EC)

Language: Fluency in Dutch is required; the MSc-course Science Communication & Society fundamentals will be given in Dutch.

The Master specialisation 'Science & Communication is offered by lecturers in Science Communication & Society (SCS). Students participating in one of the MSc-programme's of the Faculty of Sciences and the MSc Biomedical Sciences (LUMC) are admitted to this MSc-specialisation.

The first year of the MSc-programme (60 EC) focuses on scientific topics (e.g. Physics, Astronomy or Biology). Specialization in communication (60 EC, *with a minimum of 40 EC*) will be achieved in the second year.

The main elements of the MSc-specialisation SCS are (as defined by the Education and Examination Regulation; OER in Dutch):

- Science Communication & Society fundamentals – (level 400/500); 17 EC
- Internship – (level 500/600); 23 EC

The total adds up to a minimum of 40 EC.

The following options are possible to fill in the remaining 20 EC of the second year of the MSc-programme:

- Extension of the internship to a maximum of 34 EC – (level 500/600); 0-11 EC
- Masterthesis – (level 500/600); 5 EC
- Communication research connected to the internship, in preparation of the masterthesis – (level 500/600); 4 EC
- Electives in communication – (minimum level 400); 0-8 EC
- Courses within own scientific background – 0-20 EC

An internship can be done in the follow areas of expertise:

- Journalism, e.g. at a:
 - Popular-scientific magazine
 - Scientific editorial board of a newspaper
 - At a scientific programme on radio or TV
 - Including website content management
- Museology, e.g. at a:
 - Science-museum
 - Scientific centre
 - Zoo
 - Educational programme
 - Exhibitions
 - Websites
- Communication and Education, e.g. at a:
 - Nature conservation organisation
 - Agency for science-communication and education
 - Educational programme's
 - Materials for educational purposes

SCS closely cooperates with the MSc-specialisation 'Journalistiek & Nieuwe Media' (MSc Dutch Language and Culture, Faculty of Humanities, Leiden University). Courses in scientific communication can be taken at other universities (e.g. TU Delft, Wageningen UR or Vrije Universiteit). The minimal level of the electives is 400.

Before participating in the MSc-specialisation 'Science & Communication' the complete programme, including electives, should be presented to the SCS-coordinator (prof. dr. Jos van den Broek and the study-coordinator of the own MSc-programme for approval.

Specialisation Mathematics and Education

The MSc programme Mathematics and Education prepares students for a career in teaching Mathematics. The programme includes a 60 EC Mathematics part. Students with a MSc in Mathematics and Education are also admissible to a PhD programme.

Qualifications for admission

Students from any university in The Netherlands with a BSc degree in Mathematics or with a BSc major in Mathematics will be admitted to the programme. For all other (international) candidates, the Board of Admissions will judge the equivalence of their previous training to these BSc degrees.

Preferably, the BSc programme has included the 10 EC course Learning, Presentation and Communication, offered by the Leiden Graduate School of Education (ICLON) or an equivalent course. Applicants must provide proof of proficiency in Dutch.

Programme

Mathematics

The Mathematics component of the Education specialisation consists of

- a research project of 40 EC in one of the research groups of the Leiden Mathematical Institute, including a master's thesis and an oral presentation, and
- 20 EC of courses to be selected in correspondence with the research topic.

Education

The Education part of the MSc programme Mathematics and Education is offered by the Leiden Graduate School of Education (ICLON) and consists of the following components:

	level	EC
Teaching methodology	500	10
Professional functioning	300	12
Specialisation	600	8
School training	400	30

In their specialisation, student teachers develop their competences to innovate their practice (e.g., by developing and testing instruction on a specific topic).

This programme is adequate to obtain the so-called "eerste graads lesbevoegdheid" in mathematics needed for teaching at Dutch high schools.

The Master Exam

At least **5 weeks** before the intended date of the exam, the candidate informs the study advisor for master students about the planned exam, and registers for it at the Graduate School Office ('Educatief Centrum') by means of uSis. All grades of the courses and projects completed in the MSc degree programme, as well as the bachelor diploma or any other proof of admission to the master programme, must have been registered at that time.

At the time of registration for the exam, the thesis advisor must have certified that the master thesis meets the requirements for the exam, in particular that it is worth 40 EC. The thesis advisor declares the thesis ready for examination only if

- the thesis is completed,
- a public talk by the student about the thesis has been scheduled before the exam.

If the thesis is to be prepared within the framework of an internship, at the beginning of the project the thesis advisor must make an arrangement with the enterprise or organisation in case the project will hit at confidential information. In particular, it must be guaranteed that the talk, thesis and presentation resulting from the project are suitable for public presentation and demonstrate the mathematical quality of the work.

The thesis advisor asks at least two other faculty members to read the thesis and to become members of the committee for this exam. In any case, a member of the Board of Examiners, preferably the Director of Education, will act as chairman of the committee. If the thesis has been written within the framework of an internship, the external advisor as well is asked to become a member of the committee.

The study advisor checks, in consultation with the Graduate School Office, if all requirements (sufficient credits for the right courses, including the thesis, etc.) are met and discusses the results with the Board of Examiners. If this Board approves the exam, the student agrees with the thesis advisor and the other members of the committee on a date and time and reports this to the student advisor.

The exam takes place in the classroom reserved for it, and is publicly accessible, in particular for friends and relatives of the candidate.

Before the exam takes place, the candidate delivers two hard copies of the thesis to the student advisor and an electronic version (preferably in PDF-format) for publication in the online archive of the MI.

The thesis is written in English unless the Board of Examiners allows another language.

On the title page (see www.math.leidenuniv.nl/~lubke/MScPhD/title.html for an example) are mentioned:

- name of author, title of thesis, name of thesis advisor and date of exam;
- Master thesis, Mathematisch Instituut, Universiteit Leiden.

Protocol of exam:

- The chairman asks the candidate to explain the contents of the thesis in approximately 15 minutes.
- The members of the committee for this exam ask the candidate some questions about the thesis.
- The committee adjourns for deliberation. The thesis advisor proposes a grade for thesis and presentation. The board decides on the definite grade.
- In the classroom, the chairman announces the overall grade with which the exam has been passed.
- The master diploma is handed over by the thesis advisor, after which he makes a short personal speech.

Studying abroad during your Leiden MSc Programme

Students who are enrolled in one of the Leiden University MSc-programmes can choose to spend some time abroad. It is the policy of the University to stimulate this, in order to broaden the students' horizon and improve their academic and language skills. Especially students who are enrolled in a 2-year (research) master programme are advised to spend some time abroad.

Leiden has many bilateral exchange and cooperation agreements with universities all over the world, including many who belong to the top. First of all, Leiden University participates in the European Union's Erasmus programme. This programme offers many possibilities to follow courses or to do a research training project at one of the universities in the European Union, please see:

http://science.leidenuniv.nl/index.php/faculteit/onderwijs/studeren_in_buitenland/contracten

Beside this, there are many exchange agreements with universities outside of Europe such as the United States, Canada, Australia, Japan, South Africa and Korea. Students can also ask their academic staff members to recommend an international institute. A list of the non-European partner universities can be found at www.buitenland.leidenuniv.nl (in Dutch, choose "Uitwisselingsprogramma's buiten Europa").

Conditions:

Students who want to spend some time abroad have to meet certain conditions first: your Board of Examiners has to approve the study program you intend to follow. Furthermore, you must have the right academic qualifications and language skills for the intended programme. You can study abroad one semester or a full academic year. Students of the Faculty of Science should always contact Ms. Gloria Schildwacht for information, registration, selection, introduction to host university, safety regulations, scholarships, etc.

Scholarships and tuition fee:

There are several scholarships for outgoing students, such as the Erasmus scholarship if you stay in Europe and the Lustra scholarship if you go outside of Europe. Students enrolled in a 2-year (research) master programme can apply for the Outbound Study Grant. Selected students who go abroad to an exchange partner institute don't have to pay tuition fee to the guest university, because they are already enrolled at Leiden University.

Contact and Information:

Ms. Gloria Schildwacht,
International Office of the Faculty of Science
Huygens Lab, Niels Bohrweg 2, room 127
2333 CA Leiden, Phone: 071-527 57 83
Email: schildwacht@edufwn.leidenuniv.nl

Courses of the DUTCH MASTER PROGRAMME IN MATHEMATICS

You find below a list of all master courses offered in 2010/2011 in the framework of the Dutch Master Programme in Mathematics. For descriptions of these courses and further details see

www.mastermath.nl

or, even better, ask the study advisor or a staff member for advice.

Please notice: registration via www.mastermath.nl is compulsory.

Details in the schedules below may be subject to change; for up-to-date information please visit the website.

Abbreviations:

- UT** Universiteit Twente (Enschede)
- UU** Universiteit Utrecht
- UvA** Universiteit van Amsterdam
- VU** Vrije Universiteit Amsterdam

Fall 2010

	EC
Crash course	
Introduction to Stochastic Processes (UU) 6, 7, 13 and 14 september 2010	4
Monday (UU):	
Continuous Optimization	6
Discrete Optimization	6
Heuristic Methods in Operations research	6
Maandag (UU/UT):	
Systems and Control (Intensive course)	6
Tuesday (UU):	
Conservative Dynamical Systems	8
Functional Analysis	8
Introduction to numerical bifurcation analysis and Maps	8
Tuesday (VU):	
Algebraic Number Theory	8
Representation Theory	8
Wednesday (UvA):	
Measure Theoretic Probability	8
Asymptotic Statistics	8
Wednesday (UU):	
Algebraic Topology	8
Numerical Linear Algebra	8
Parallel Algorithms	8
Symplectic Geometry	8
Friday (UU):	
Didaktiek (course given in Dutch)	6
Number Theory and Cryptography	6

Spring 2011

EC

Monday (UU):

Advanced Linear Programming	6
Applied Statistics	6
Nonlinear System Theory	6
Queueing Theory	6
Scheduling	6
Stochastic Differential Equations	6

Monday (UU/UT):

Advanced Modelling in Science (Intensive course)	6
Applied Finite Elements	6

Tuesday (UvA):

Asymptotic Methods for differential equations	8
Complexity Theory	8
Diophantine equations	8
Partial Differential Equations	8

Wednesday (UvA):

Algebraic Geometry	8
Semisimple Lie Algebras	8

Wednesday (UU):

Proof Theory	8
Set Theory	8

Wednesday (VU):

Empirical Processes and Statistical Learning	8
Numerical Methods for Time-dependent PDE's	8
Stochastic Processes	8

Friday (UU):

Geometry	6
Historical Aspects of Classroom Mathematics	6

Master courses in Leiden

The following courses offered in Leiden can be part of a master programme.

Najaar 2010

Vak	EC	level	Docent
Analytic Number Theory	6	400	J.-H. Evertse
First passage percolation	6	500	V. Sidoravicius
Introduction to dynamical systems	6	400	A. Doelman
Introduction to manifolds	6	400	M. Lübke
Linear analysis	6	400	O.W. van Gaans
Measure theory	6	400	E. Verbitskiy
Numerical methods for PDE's	6	400	B. Koren
Population Dynamics	6	300	S.C. Hille
Probability	6	400	W.Th.F. den Hollander
Statistical learning theory ¹	6	500	P.D. Grünwald
Stochastical models for genetic evolution	6	400	W.Th. F. den Hollander
Topics in elliptic curves	6	500	P. Stevenhagen

Voorjaar 2011

Vak	EC	level	Docent
Information theoretical learning	8	500	S. de Rooij
Information Theory, Coding, Cryptography	6	400	R. Cramer, S. Fehr
Introd. to perturbation methods	6	400	J. Rademacher, V. Rottschäfer
Mathematical biology: Metabolic network analysis	6	400	S.C. Hille
Oriëntatie op onderwijs	6	300	P.M.G.M. Kop
Topics in analysis	6	400	O.W. van Gaans
Topics in arithmetic geometry (seminar)	6	500	S.J. Edixhoven, P. Stevenhagen

Courses of the specialisation Statistical Science might also be suited for students following any other specialisation. If you are interested in one of these, contact your thesis- or study-advisor to make sure it fits in your programme. The courses offered in 2010/2011 are the following.

For descriptions of all courses see <http://www.studiegids.leidenuniv.nl>

¹ This course belongs to the Master specialisation Statistical Sciences

Master courses offered by TU Delft

The following courses offered by the Delft University of Technology can be used as part of a Leiden master programme. For description and precise information about dates and time of these courses, see <http://studiegids.tudelft.nl> and type in the "Vakcode."

Course	EC	Vakcode	Teacher
Fourier Analyse (Dutch)	6	WI3601	B. de Pagter
Special Functions	6	WI4006	R. Koekoek
Dynamical Systems ²	6	WI4042	R.J. Fokkink
Advanced Topics in Analysis ³	6	WI4211	B. de Pagter
Random Graphs and Fractals	6	WI4133	F.M. Dekking, G. Hooghiemstra
Control of Discrete-time Stochastic systems	6	WI4221	J.H. van Schuppen
Stochastic Operations Research	6	WI4057	G. Hooghiemstra
Voortgezette kansrekening (Dutch)	6	WI4614	L.E. Meester
Advanced Topics in Decision Theory	6	WI4139	D. Kurowicka

² This course is about ergodic theory and its applications to number theory. There is no overlap with the course "Introduction to Dynamical Systems given by A. Doelman in Leiden.

³ The topics of this course have not been fixed. If you want to follow this course, please check with the study advisor if there is no overlap with courses given in Leiden.

Master courses offered by other universities

MRI masterclass Moduli spaces 2010-2011 at Utrecht University (UU)

(see http://web.science.uu.nl/mri/documents/brochure2010_11.pdf)

Fall 2010

Course	EC	Teacher
Riemann Surfaces	8	G. Cavalcanti
Jacobians and theta-functions	8	R. de Jong
Introduction to conformal field theory	8	A. Henriques
Introduction to stacks (student seminar)	8	J. Heinloth

Spring 2011

Course	EC	Teacher
The moduli space of abelian varieties	8	G. van der Geer
The moduli space of curves: Geometric aspects	8	E. Looijenga
The moduli space of curves: Combinatorial aspects	8	S. Shadrin
Research seminar (talks by students and guest speakers)	8	

Interuniversity programme Stochastics and Financial Mathematics

(see <http://www.math.vu.nl/sto/onderwijs/sfm/index.html>)

Class schedules 2010-2011

All courses are given in the lecture rooms of the Snellius building.

In general, courses are given in blocks of two course hours of 45 minutes each, with a break of 15 minutes in between.

The course hours are as follows:

hour number	time
1	9:00-9:45
2	10:00-10:45
3	11:15-12:00
4	12:15-13:00

hour number	time
5	13:45-14:30
6	14:45-15:30
7	15:45-16:30
8	16:45-17:30

Lunch break is between the 4th and 5th hour.

Master Mathematics Fall 2010

* Parallel courses on Thursday 1-2 h. IM, SM

w k	MO date	MONDAY						TUESDAY						WEDNESDAY						THURSDAY						FRIDAY														
		1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7
35																																								
36	6 Sep									PR							IDS																							
37	13			ANT	TEC					PR							IDS																							
38	20			ANT	TEC					PR							IDS																							
39	27			ANT	TEC					PR							IDS																							
40	4 Oct	Leiden's Liberation								PR	FPP						IDS																							
41	11			ANT	TEC					PR	FPP						IDS																							
42	18																																							
43	25			ANT	TEC					PR	FPP						IDS																							
44	1 Nov			ANT	TEC					PR	FPP						IDS																							
45	8			ANT	TEC					PR	FPP						IDS																							
46	15			ANT																																				
47	22			ANT	TEC					PR	FPP						IDS																							
48	29			ANT	TEC					PR	FPP						IDS																							
49	6 Dec			ANT	TEC					PR	FPP						IDS																							
50	13			ANT	TEC					PR	FPP						IDS																							
51	20			ANT	TEC																																			
52	27																																							

		room	teacher
ANT	Analytic Number Theory	402	Evertse
FPP	First Passage Percolation	402	Sidoravicius
IDS	Intr. to Dynamical Systems	402	Doelman
IM	Introduction to Manifolds	403	Lübke
LA	Linear Analysis	405	van Gaans
MT	Measure Theory	405	Verbitskiy

		room	teacher
NMP	Numerical Methods for PDE's	402	Koren
PD	Population Dynamics	401	Hille
PR	Probability	402	den Hollander
SM	Stoch. Mod. Genetic Evolution	405	den Hollander
TEC	Topics on Elliptic Curves	402	Stevenhagen

B 8 Sep. 17:00 h. drink and barbecue in Foo-bar and garden of Snellius. Registration: Tineke Bakker, 071-5277111, tineke@math.leidenuniv.nl

L 16 Dec. 13:00-14:00 h. Lunch meeting with teachers and students to evaluate the courses of the fall semester

Master Mathematics Spring 2011

	MO	MONDAY							TUESDAY							WEDNESDAY							THURSDAY							FRIDAY																																								
w k	date	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8																													
5	31 Jan			ICC		MB		TAG				ITL									TA																																																	
6	7 Feb			ICC		MB		TAG				ITL		<i>Dies celebr.</i>								TA																																																
7	14			ICC		MB		TAG				ITL									TA																																																	
8	21			ICC		MB		TAG				ITL									TA																																																	
9	28			ICC		MB		TAG				ITL									TA																																																	
10	7 Mar			ICC		MB		TAG				ITL									TA																																																	
11	14			ICC		MB		TAG				ITL									TA																																																	
12	21																																																																					
13	28			ICC		MB		TAG				ITL									TA																																																	
14	4 Apr			ICC		MB		TAG				ITL									TA																																																	
15	11			ICC		MB		TAG				ITL									TA																																																	
16	18			ICC		MB		TAG				ITL									TA																																																	
17	25	Easter Monday									ITL									TA																																																		
18	2 May															Liberation Day																																																						
19	9			ICC		MB		TAG				ITL									TA																																																	
20	16			ICC		MB		TAG																																																														

		room	teacher
ICC	Inform. Th., Coding, Cryptogr.	403	Cramer, Fehr
ITL	Inform. Theoretic Learning	401	de Rooij
IPM	Intr. Perturbation Methods	403	Rademacher, Rottschäfer
MB	Mathematical Biology: metabolic network analysis	401	Hille

		room	teacher
TA	Topics in Analysis	401	van Gaans
TAG	Topics in Arithmetic Geometry	401	Edixhoven, Steenhagen

L 12 May 13:00-14:00 h. Lunch meeting with teachers and students to evaluate the courses of the spring semester

Master specialisation Statistical Science Year 1 Fall 2010

w k	MO	Monday							Tuesday							Wednesday							Thursday							Friday										
	date	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7
35																																								
36	6 Sep			1		1					1		1						1		1						2		2						3		3			
37	13			1		1					1		1						1		1						2		2						3		3			
38	20			1		1					1		1						1		1						2		2						3		3			
39	27			1		1					1		1						1		1						2		2						3		3			
40	4 Oct	Leidens ontzet									1		1					1		1						2		2						3		3				
41	11			1		1					1		1						1		1						2		2						3		3			
42	18																																							
43	25																																							
44	1 Nov								4		4		4		4		4		4		4		4				2		2						3		3			
45	8								4		4		4		4		4		4		4		4				2		2						3		3			
46	15								4		4		4		4		4		4		4		4				2		2						3		3			
47	22								4		4		4		4		4		4		4		4				2		2						3		3			
48	29								4		4		4		4		4		4		4		4				2		2						3		3			
49	6 Dec								4		4		4		4		4		4		4		4				2		2						3		3			
50	13								4		4		4		4		4		4		4		4				2		2						3		3			
51	20																																							
52	27																																							

Nr		Coordinator
1	Statistics, Probability and Calculus	Erik van Zwet
2	Statistical Computing	Paul Eilers
3	Introduction to Life and Behavioural sciences	Theo Stijnen
4	Linear & generalized linear models and linear algebra	Gerrit Gort

All lectures in room 407

L Lunchmeeting evaluation masters

B 8 Sep. from 5pm drink and barbecue in Foo-bar and garden of Snellius. Register with Tineke Bakker, 071-5277111, tineke@math.leidenuniv.nl

Master specialisation Statistical Science Year 1 Spring 2011

	MO	Monday						Tuesday						Wednesday						Thursday						Friday																
w k	date	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	
4	24 Jan			5		5						6		6						7		7						8		8				9		9						
5	31			5		5						6		6						7		7						8		8				9		9						
6	7 Feb			5		5						6		Dins-viering							7		7						8		8				9		9					
7	14			5		5						6		6						7		7						8		8				9		9						
8	21			5		5						6		6						7		7						8		8				9		9						
9	28			5		5						6		6						7		7						8		8				9		9						
10	7 Mar			5		5						6		6						7		7						8		8				9		9						
11	14			5		5						6		6						7		7						8		8				9		9						
12	21																																									
13	28			5		5						6		6						7		7						8		8				9		9						
14	4 Apr			5		5						6		6						7		7						8		8				9		9						
15	11			5		5						6		6						7		7						8		8				9		9						
16	18			5		5						6		6						7		7						8		8				Good Friday								
17	25	Easter Monday								6		6						7		7						8		8				9		9								
18	2 May																									Bevrijdingsdag																
19	9			5		5						6		6						7		7						8		8				9		9						
20	16			5		5						6		6						7		7						8		8				9		9						

Nr		Coordinator
5	Multivariate analysis and multidimensional data analysis	Cajo ter Braak
6	Bayesian statistics	Emmanuel Lesaffre
7	Mixed and longitudinal modeling	Bas Engel
8	Survival Analysis	Hein Putter
9	Study design in the life and behavioural sciences	Saskia Le Cessie

All lectures in room 407

Master specialisation Statistical Science Year 2 Fall 2010

w k	MO	Monday							Tuesday							Wednesday							Thursday							Friday										
	datum	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7
35		Resite second semester M1																																						
36	6 Sep			1		1					1		1					2		2					3		3					3		3						
37	13			1		1					1		1					2		2					3		3					3		3						
38	20			2		2					1		1					2		2					3		3					3		3						
39	27			2		2					1		1					2		2					3		3					3		3						
40	4 Oct	Leidens ontzet																																						
41	11			4		4					4		4					4		4					3		3					3		3						
42	18																																							
43	25			4		4					4		4					4		4					3		3					3		3						
44	1 Nov																																							
45	8			5		5					5		5					5		5					6		6					6		6						
46	15			5		5					5		5					5		5					6		6					6		6						
47	22			5		5					5		5					5		5					6		6					6		6						
48	29			5		5					5		5					6		6					6		6					6		6						
49	6 Dec			5		5					5		5					6		6					6		6					6		6						
50	13			5		5					5		5					6		6					6		6					6		6						
51	20			5		5																																		
52	27																																							

NR

	Coordinator
1 SEM & GM	Ab Mooijaart
2 Psychometrics	Henk Kelderman
3 Statistical Consultance	Willem Heiser
4 Statistical learning theory	Peter Grünwald
5 Statistical genetics	Jeanine Houwingen
6 High dimensional data analysis	Jelle Goeman

3 in LUMC; other courses in 404

B 8 Sep. from 5pm drink and barbecue in Foo-bar and garden of Snellius. Register with Tineke Bakker, 071-5277111, tineke@math.leidenuniv.nl

Master specialisation Statistical Science Year 2 Spring 2011

	MO	Monday								Tuesday								Wednesday								Thursday								Friday							
w k	datum	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
4	24 Jan																																								
5	31																																								
6	7 Feb																																								
7	14																																								
8	21																																								
9	28																																								
10	7 Mar																																								
11	14																																								
12	21																																								
13	28																																								
14	4 Apr																																								
15	11																																								
16	18																																								
17	25																																								
18	2 May																																								
19	9																																								
20	16	<i>Internship and thesis</i>																																							

Public Holidays and other Events

Date	Event
October 4, 2010	<i>Leidens Ontzet</i> (local holiday)
December 25 & 26, 2010	Christmas
January 1, 2011	New Year
February 8, 2011 (after 13:00)	Dies Natalis Leiden University
April 22, 2011	Good Friday / Goede Vrijdag
April 25 & 26, 2011	Easter Sunday/Monday
April 30, 2011	<i>Koninginnedag</i> (Queen's Birthday)
May 5, 2011	<i>Bevrijdingsdag</i> (Liberation day)
June 7, 2011	Ascension Day (Hemelvaart)
June 12 & 13, 2011	Whitsunday/monday (1e en 2e Pinksterdag)

Leiden University

ICS Information desk

(enrolment and de-registration, tuition fees, student grants, special enrolment conditions, brochures)

Plexus Student Centre

Kaiserstraat 25, P.O. Box 9500, 2300 RA Leiden

Tel: 071-5278011

Opening hours: Monday, Wednesday, Friday 09.00 – 17.00,

Tuesday and Thursday 09.00 – 21.00

informatiecentrum@ics.leidenuniv.nl / www.leidenuniv.nl/ics/sz

PITSstop

(study guides for other universities in the Netherlands, info on studying abroad, the employment market, application procedures and university regulations).

Plexus Student Centre, address: see above

Telephone: 071-5278025

The International Office holds a consultation session at the Meeting Point every Monday and Thursday from 13.00 – 17.00.

PITSstop@Plexus.leidenuniv.nl / www.pitstop.leidenuniv.nl

BUL – Study Options and Careers Advice

(study options and career advice, for € 3.50 a study options test is available; workshops: Career orientation, CV and job application letters, Interviews and the application procedure, Psychological tests and assessment centres)

Plexus Student Centre, address: see above

Telephone: 071-5278011

There is an open consultation session: Tuesday 10.00 – 11.00

bul@ics.leidenuniv.nl / www.bul.leidenuniv.nl .

Student Counsellors

(advice on financial problems, problems with study progress, legal position, students who are involved in top level sports, students with a handicap)

Plexus Student Centre, address: see above

Telephone: 071-527 8026 and 071-527 8011

Open consultation session: Monday to Friday 15.30 – 16.30

decanen@ics.leidenuniv.nl / www.leidenuniv.nl/ics/sz

Student psychologists

(advice on any problem, like family problems, concerns about social contacts, feelings of depression and relationship problems; there are courses and training sessions available)

Plexus Student Centre, address: see above

Telephone: 071-527 8026

Open consultation sessions: Monday to Friday 11.00 – 12.00 Appointments

possible: Monday to Friday 09.00 – 17.00

psychologen@ics.leidenuniv.nl / www.leidenuniv.nl/ics/sz

Ombudsperson

(for complaints about the behaviour of a staff member or an administrative body of Leiden University, one can apply to the ombudsperson. He or she is independent and handles complaints in strict confidentiality. Anonymous complaints cannot be dealt with.)

Postal address: P.O. Box 9500, 2300 RA Leiden

Telephone: 071-527 3657 (Monday to Friday 10.00 – 12.30)

Visiting address: Occupational Health Department (GBGD), Poortgebouw Zuid (3rd Floor), Rijnsburgerweg 10, 2333 AA Leiden

Telephone: 071-527 8015

ombudsfunctionaris@leidenuniv.nl

www.ombudsfunctionaris.leidenuniv.nl

(Sexual) Harrassment

(any cases of sexual harrassment, bullying at work, aggression, violence and discrimination)

Address:

Occupational Health Department (GBGD), Poortgebouw Zuid (3rd Floor),
Rijnsburgerweg 10, 2333 AA Leiden

Telephone: 071-527 8015

In addition

Information Management Group (Informatie Beheer Groep (IBG))

Regiokantoor IBG (Regional Office)

Koninginnegracht 12b/13, 2514 AA Den Haag,

tel. 050 599 77 55

Office hours: Monday through Friday from 9:00 to 17:00 o'clock.

vragen@ib-groep.nl / www.ib-groep.nl

Stichting Leidse Studentenhuisvesting (SLS) (Foundation for Leiden's Student Housing)

Visiting address: Doelengracht 4b, 2311 VM, Leiden

Postal address: Postbus 11275, 2301 EG, Leiden

Telephone (071) 516 1718

www.sls.nl

SAFETY INFORMATION LEIDEN UNIVERSITY

What to do in case of a fire, incident or other calamity?

DON'T CALL 112!

but

DO CALL THE EMERGENCY NUMBER (see the orange sticker on the phone or after office hours: 4444)

IN CASE OF FIRE

- ★ ACTIVATE the fire-alarm-button
- ★ In case of a STARTING OR SMALL FIRE
 - try to extinguish the fire
 - use the handheld extinguisher or the fire hose
- ★ In case of a LARGE FIRE
 - Close doors and windows
 - Go to the meeting point* (restaurant or car parking) and follow instructions of the first-aid-personnel (BHV-ers)

What to do if the Alarm Signal ("Slow Whoop") sounds?

CLOSE WINDOWS, LEAVE THE ROOM AND CLOSE THE DOOR.

- ★ Follow the ESCAPE ROUTE (green pictogram plates)
- ★ In CASE OF FIRE use the stairs and NEVER the elevator!

Go to the MEETING POINT* (restaurant or car parking)

- ★ Don't go home. All people who were present in the building have to be registered
- ★ Don't make the firemen look for you unnecessarily

Always FOLLOW THE INSTRUCTIONS of the firemen or the first-aid-personnel (BHV-ers)

What to do when a dangerous situation is discovered?

Fill out a REGISTRATION form

- ★ digital on amd.leidenuniv.nl
- ★ the red paper available at the reception

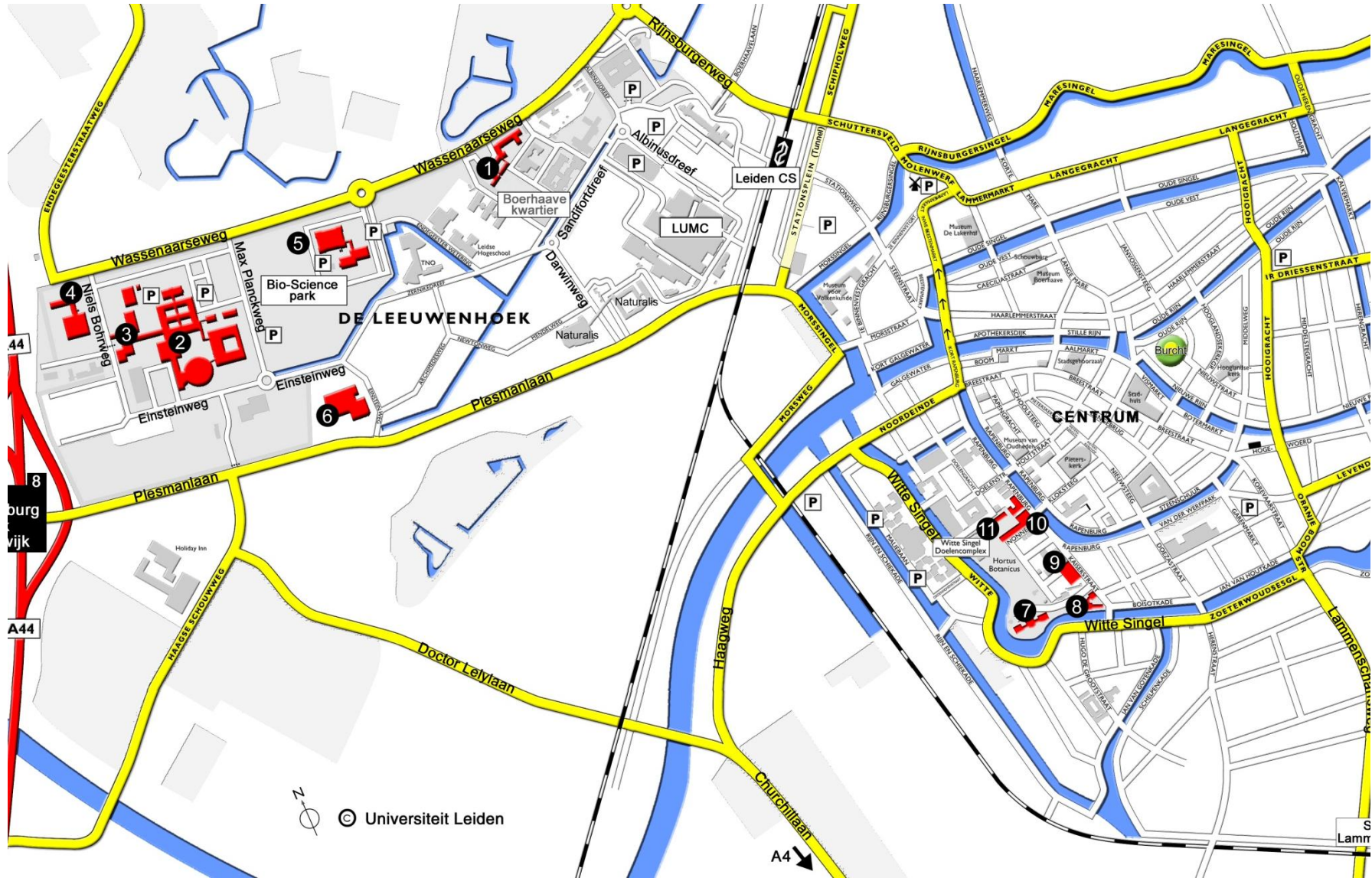
or

CONTACT the safety office of the faculty

- ★ amd@science.leidenuniv.nl
- ★ 071 – 527 4333

* MEETING POINTS are indicated in the EVACUATION PLAN (ontruimingsplan) of each building. This plan is available at the reception or on amd.leidenuniv.nl/e/

Map of the Faculty of Science and City of Leiden



- | | |
|---|---|
| 1 Clusius Laboratory
Wassenaarseweg 64
2333 AL Leiden | 6 Van Steenis Building
Einsteinweg 2
2333 CC Leiden |
| 2 Gorlaeus Laboratories
Einsteinweg 55
2333 CC Leiden | 7 Old Astronomy Observatory
Sterrewachtlaan 7
2311 GW Leiden |
| 3 Huygens Laboratory
Kamerlingh Onnes Laboratory
Oort-Building
Niels Bohrweg 2
2333 CA Leiden | 8 Van der Klaauw Laboratory
Kaiserstraat 63
2311 GP Leiden |
| 4 Snellius Building
Niels Bohrweg 1
2333 CA Leiden | 9 Plexus, Student Information Desk
Kaiserstraat 25
2311 GN Leiden |
| 5 Sylvius Laboratory
Wassenaarseweg 72
2333 AL Leiden | 10 Academie Building
Rapenburg 73
2311 GJ Leiden |
| | 11 Hortus Botanicus
Rapenburg 73
2311 GJ Leiden |