



Faculty of Science



**Master**

**Study Guide 2011 - 2012**

**Computer Science  
Media Technology  
ICT in Business**



**Universiteit Leiden**  
The Netherlands

Leiden University. The university to discover.

## ***Important disclaimer!***

This guide provides useful information in compact form. After printing changes may occur. For this reason, the text of this study guide is not binding. The latest valid information on schedules, programmes, rules and regulations can always be found on-line on the websites of the Leiden Institute of Advanced Computer Science (LIACS), the Faculty of Science, and Leiden University

## ***Student Manual***

This Student Manual has been written for prospective and incumbent master degree students in Computer Science. In it you will find a description of the MSc programmes in Computer Science, in Media Technology and in ICT in Business; furthermore, you will find information about the admission requirements, the application procedure and the graduation procedure. An overview of the courses catalogue, a schedule of classes and a list of lecturers are provided as well.

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# *Introduction to the Leiden Institute of Advanced Computer Science (LIACS)*

LIACS, the computer science Institute of Leiden University, has a strong tradition in combining the theoretical, applied and experimental approaches to the subject field. This is reflected in the research profile of the institute and the curriculum it offers to students. LIACS has numerous international collaborations and maintains excellent contacts with other Dutch university research groups, as well as with Dutch industry.

LIACS is housed just outside the centre of Leiden, amidst other research institutions and high-tech enterprises. More information can be found on our website at [www.liacs.nl](http://www.liacs.nl).

## *Word of Welcome*

I would like to welcome you to the Master of Science programmes of the Leiden Institute of Advanced Computer Science (LIACS), the Computer Science Institute of Leiden University.

LIACS offers you an exciting environment with a strong focus on the interaction between education and research. You will have many opportunities to interact with research groups at LIACS and to discover the exciting research done here.

On behalf of the staff of LIACS I wish you a successful and exciting academic year,

Prof. Dr. Thomas Bäck  
Director of Education  
LIACS

## *Personal Information*

name		
address		
postal code/place		
date of birth		
home phone	mobile	
email *		
student no.		
bank account		
passport no.	expires after	
drivers licence no.	expires after	
citizen service no. (BSN)		
general practioner/family doctor		
medication		
adverse medication		
blood type	rh-factor	organdonor: yes/no

### IN CASE OF EMERGENCY CONTACT:

name		
address		
postal code/place		
home phone	mobile	

In case of loss the owner of this calender/study guide requests the finder to contact him/her.

\* Note to students:

The University uses your U-mail account as primary mailaddress. If you do not check this mail account regularly, consider forwarding this account automatically to another mailaddress to keep receiving all official mail (including uSis mail).

# *The People of the Computer Science, ICT in Business and Media Technology Programmes*

The Leiden Institute of Advanced Computer Science (LIACS) is located in the Snellius Building, Niels Bohrweg 1, 2333 CA Leiden  
Mailing address: LIACS, Leiden University, PO Box 9512, 2300 RA Leiden

## **Director of Education:**

Prof. dr. Th. Bäck  
Room 169  
Telephone (071) 527 7108  
Email: baeck@liacs.nl

## **Academic Adviser MSc Programme Computer Science:**

Dr. J.M. de Graaf  
Room 151  
Telephone (071) 527 7051  
Email: graaf@liacs.nl

## **Programme Coordinator MSc Programme Computer Science:**

Mrs. M. Derogee  
Room 119  
Telephone (071) 527 5780  
Email: derogee@liacs.nl

## **Chair Department Teaching Committee:**

Dr. W.A. Kusters  
Room 159  
Telephone (071) 527 7059  
Email: kusters@liacs.nl

## **Chair of the Board of Examiners:**

Prof. dr. H.A.G. Wijshoff  
Room 145a  
Telephone (071) 527 7055  
Email: harryw@liacs.nl

**Chair of the Board of Admissions:**

Dr. D.P. Huijsmans  
Room 152  
Telephone (071) 527 7052  
Email: huijsman@liacs.nl

**Coordinator Bioinformatics Specialisation of MSc Programme  
Computer Science:**

Dr. E. M. Bakker  
Room 147  
Telephone 06-21827989  
Email: erwin@liacs.nl

**Programme Director MSc Programme ICT in Business:**

Dr. M.R.V. Chaudron  
Room 165  
Telephone (071) 527 7060  
Email: chaudron@liacs.nl

**Programme Coordinator MSc Programme ICT in Business:**

Mrs. J. Havelaar LL.M  
Room 119  
Telefoon (071) 527 5780  
E-mail: ictinbusiness@liacs.nl

**Director of Education of Media Technology:**

Prof.dr. S. Haring  
Room 131  
Telephone (071) 527 5420  
Email: haring@liacs.nl

**Programme Coordinator MSc Programme Media Technology:**

Ms. A. Heun, MSc  
Room 106  
Telephone (071) 5276994  
mediatechnology@leiden.edu

**Graduate School Office:**

Ms. B. ten Hove  
Gorlaeus Laboratoria, HB2.06  
Einsteinweg 55  
2333 CC Leiden  
Telefoon (071) 527 4282  
E-mail: Hove@edufwn.leidenuniv.nl

## The MSc Programmes

The Leiden Institute of Advanced Computer Science (LIACS) is the Computer Science Institute of Leiden University.

The curriculum of LIACS includes five MSc specialisations in Computer Science. Moreover, two other MSc programmes are available: *Media Technology* and *ICT in Business*. See the table below for a bird's eye view of the eight programmes.

### OVERVIEW OF THE MSc PROGRAMMES OF LIACS

MSc Programmes (2 years; 60 EC per year; 120 EC in total)		
Name	specialisation	Diploma
<b>Computer Science</b>	Core Computer Technologies	MSc in Computer Science
	Computer Science Theory and Advanced Technologies	
	Bioinformatics	
	Computer Science and Science Based Business	
	Computer Science, Communication and Society	
<b>Media Technology</b>		MSc in Media Technology
<b>ICT in Business</b>		MSc in ICT in Business

The main 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 Computer Science Theory and Advanced Technologies specialisation has the following research clusters: Algorithms and Foundations of Software Technology. The research clusters included in the Core Computer Technologies specialisation are: Computer Systems, and Imagery and Media.

The Bioinformatics specialisation is a joint research specialisation of Leiden University and Delft University of Technology. This specialisation specializes mainly in Data Analysis and Modeling – the expertise of the participating institutions.

In addition to the research clusters mentioned so far (Algorithms, Foundations of Software Technology, Computer Systems, Imagery and Media), since 2009 there is also a research cluster focusing on Technology and Innovation Management (TIM) at LIACS. This cluster is strongly involved in the ICT in Business MSc education and the Informatica en Economie specialisation of the BSc education, and collaborates with the other clusters in research projects.

The aim of the TIM cluster is to understand the co-evolution of technology and social structures by researching phenomena at the intersection of science and information technology on the one side and social and business science on the other side.

Doing research is also the most important component of the other three specialisations. The research pertains to the areas described for the first three specialisations. In addition, one specializes in respectively Business, Didactics or Communication in and about science. The master specialisation Computer Science and Science Based Business provides opportunities mainly in industry based research, but also in consultancy and management. The master specialisation Computer Science and Communication prepares for positions with a focus on knowledge management and knowledge transfer and/or (re)interpretation of research.

The main goal of the MSc in MediaTechnology is innovative application of new and existing technology. The MSc in ICT in Business aims at providing a deeper understanding of the issues, challenges and opportunities in information and communication technology, with a specific focus on the alignment of ICT and management.

It is worth mentioning that the second characteristic of the MSc programmes (the first is their predominant focus on research) is the ample individual freedom in determining one's own educational programme.

The duration of the programmes is two years (120 EC). Students who complete the programme receive the degree Master of Science in Computer Science for the five specialisations of the MSc programme in Computer Science, Master of Science in Media Technology for the MSc programme in Media Technology and lastly Master of Science in ICT in Business for the MSc programme in ICT in Business.

All specialisations of the MSc Computer Science programme, the Media Technology programme, and the ICT in Business programme have the Same Board of Examiners and the same Department Teaching Committee. The Director of Education for Computer Science and ICT in Business is Prof.Dr. T. Back. The director of Education of the Media Technology Programme is Prof.Dr. S. Haring. A Board of Admissions will review the application dossier of an applicant and determine the admissibility to the relevant programme of study. The admission guidelines are given below. The admission process may include an interview with the Board of Admissions. Foreign applicants must provide proof of proficiency in English.

## *Programme Prerequisites*

Students from any well-established university in The Netherlands with a BSc degree in Computer Science or with a BSc major in Computer Science can be admitted to the programme.

For all other (international) candidates, the Board of Admissions will determine the equivalence of their previous training to these BSc degrees. The choice of the specialisation courses in the MSc programme may be limited by the need to adapt the programme to the actual knowledge of the candidate.

Further requirements are – in case the BSc degree is not conferred by a Dutch university: 1) proof of English proficiency (IELTS / TOEFL) and 2) General Record Examination (GRE) and Subject Test in Computer Science. These qualification requirements apply for all of the MSc programmes offered at LIACS.

Details of the application procedure and dates can be found on the website: [www.science.leidenuniv.nl/graduateschool/](http://www.science.leidenuniv.nl/graduateschool/). There, the required application form can be downloaded and application/registration/tuition fees are indicated.



# Description of the Programme MSc in Computer Science

## Specialisation Core Computer Technologies

### DESCRIPTION

This MSc programme is intended to provide students with a thorough computer science background that will allow them to pursue careers in research or industrial environments. The strength of the programme is its individual approach: for each student an individually tailored programme will be designed. This programme consists of courses, research and a Master's thesis project. The research clusters are Computer Systems, and Imagery and Media. Students with a MSc in Computer Science are admissible to a PhD programme.

### PROGRAMME

The programme is 120 EC in extent, and consists of specialisation courses (42 EC to 60 EC in total depending on whether a software project or project study is done by the student), a project (software project or project study, 18 EC), and two research projects (60 EC in total). Students can choose to do extra specialisation courses (18 EC in total) instead of the software project/project study.

Components	Level	EC
Specialisation courses (see elsewhere in this guide)	500	42
<i>Option: software project or project study or specialisation courses</i>	500	18
Research project	600	18
Master's research project Incl 7 EC for thesis and oral presentation	600	42

During the first year, the programme consists of a project study, worth 18 EC, in addition to the coursework. The main characteristic of a project study is synthesis. Students work on a topic or problem in which they bring to bear the skills and knowledge previously acquired in the programme and/or bachelor phase of their studies. Typical examples are writing a survey article or designing and/or implementing a software system. The project study gives students the opportunity to build skills with which they can function successfully in an academic environment

and industrial settings. Innovation is not part of the requirements. An alternative to the project study is the completion of a software project or specialisation courses of 18 EC. In case of a software project, a software system is designed and/or built according to standard software engineering principles. The software systems which are entertained are driven by demands of research or commerce or industry.

During the second year, part of the programme consists of a research project, worth 18 EC, and a final masters research project of 42 EC.

A research project, as the name suggests, is about research and innovation. The research conducted is part of the research focus and effort of the Institute. As a rule a written report and oral presentation explaining the results and methods are required.

The major requirement of a masters research project is original research. The research is intimately related to the research at the department of Computer Sciences. The major difference between a master's research project and the first research project is its scope. An oral presentation and a written report detailing the results and methods of the conducted research are mandatory.

## **MASTERCLASS**

The master class for computer science students in the second year of their master studies takes place every second week and is a mandatory class for all master students who are working on their Master Thesis (42 EC), i.e., who have agreed with a supervisor on their topic and have started their work. The master class aims at stimulating active interaction of students with their classmates, discussing open problems, issues, etc., and helping master students to stay on track. Each student is asked to give two brief presentations in the master class about their work, namely one presentation in the beginning of their Master Thesis work about the research topic and goals, and one presentation towards the end of their Thesis work about the status and expected results. The master class is also open to LIACS staff members and of course to the Thesis supervisors.

# Specialisation Computer Science Theory and Advanced Technologies

## DESCRIPTION

The MSc programme is intended to provide students with a thorough computer science background that will allow them to pursue careers in research or industrial environments. The strength of the programme is its individual approach: for each student an individually tailored programme will be designed. This programme consists of courses, research and a Master's thesis project. The research clusters are Algorithms and Foundations of Software technology. Students with an MSc in Computer Science are admissible to a PhD programme.

This specialisation is almost the same as the Specialisation Core Computer Technologies only the research Clusters involved are different.

## PROGRAMME

The programme is 120 EC in extent, and consists of specialisation courses (42 to 60 EC in total depending on whether a software project or project study is done by the student), a project (software project or project study, 18 EC), and two research projects (60 EC in total). Students can choose to do extra specialisation courses (18 EC in total) instead of the software project/project study.

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A research project, as the name suggests, is about research and innovation. The research conducted is part of the research focus and effort of the Institute. As a rule, a written report and oral presentation explaining the results and methods are required.

The major requirement of a Masters research project is original research. The research is intimately related to the research of the department. The major difference between a Master's research project and the first research project is its scope. An oral presentation and a written report detailing the results and methods of the conducted research are mandatory.

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## *Specialisation Bioinformatics*

Within the MSc in Computer Science students can opt for the specialisation Bioinformatics. This master specialisation is organized by the Computer Science Institute of Leiden University (LIACS) and the Faculty of Electrical Engineering, Mathematics and Computer Science (EEMCS) of Delft University of Technology (DUT) in close co-operation with three centers of excellence of the Nationaal Regie Orgaan Genomics:

- Centre for Medical Systems Biology
- Kluwyer Centre for Genomics of Industrial Fermentation
- Cancer Genomics Centre

More information at: <http://bio.leidendelft.nl/>.

Bioinformatics is the research, development or application of computational tools and approaches for expanding the use of biological, medical, behavioural or health data, including those to acquire, store, organize, archive, analyze, or visualize such data [[www.bisti.nih.gov/](http://www.bisti.nih.gov/)]. Bioinformatics includes computational biology: the development and application of data-analytical and theoretical methods, mathematical modelling and computational simulation techniques for the study of biological, behavioural and social systems. It is the science of the use of mathematical, statistical and computational techniques to extract meaning from biological, biochemical, biophysical, and biomedical data. Bioinformatics integrates concepts and methods from both mathematics and computer science with (molecular) biology and biochemistry.

### **OBJECTIVES AND PHILOSOPHY**

Students who successfully complete the Bioinformatics programme will be able to design and apply novel computer science methods and techniques to handle the complex data analysis problems from molecular biology. They will be able to adapt, implement and apply existing algorithms for scientific research in bioinformatics. They will also be able to design and implement novel algorithms to solve the complex technical and scientific data analysis problems in molecular biology and medicine. They can formulate hypotheses and problems in molecular biology that will be solved by using sophisticated data analysis methods and tools.

## **DURATION**

The Bioinformatics specialisation is a two-year research oriented study programme consisting of a core programme, specialisation courses, and relevant cutting edge research projects. It emphasizes the underlying mathematical theory and fundamental algorithmic methods from computer science. Students will determine a personal study programme in communication with the Bioinformatics specialisation study advisor Dr E.M. Bakker (E-mail: [erwin@liacs.nl](mailto:erwin@liacs.nl)). He will assist them in setting up the programme of study, monitor their progress and structure the activities of the student.

## **STRUCTURE**

The main focus of the Bioinformatics specialisation is on Data Analysis and Modeling, which represents the unique expertise of the different research groups of Leiden University and the Delft University of Technology participating in this specialisation. This expertise is used to address issues like data capturing, data warehousing, data analysis and data mining that have become major challenges in the field of Bioinformatics due to the complexity and abundance of quantitative data in biology and medicine. On the other hand, bioinformatics heavily contributes to the identification of new fundamental computer science principles and the development of new informatics tools. Bioinformatics offers a unique new synthetic approach for formulating hypotheses and solving problems in (molecular-) biology versus the classical reductionistic approach.

## **CURRICULUM OVERVIEW**

The Bioinformatics programme is 120 EC in extent. During the first year the curriculum is divided in three main parts: the Core Programme, Specialisation Courses and the Support Programme. The Support Programme provides students with the right background for the programme. The second year consists of a Research Assignment (15 EC) followed by a Masters Research Project (45 EC). The curriculum stated below is tentative, and may be subject to change. For course descriptions, final schedule and locations, please visit our website at <http://bio.leidendelft.nl/>.

### **Core Programme (24 EC)**

Pattern Recognition (6 EC)

Databases and Data Mining (6 EC)

Functional Genomics and Systems Biology (6 EC)

Molecular Computational Biology (6 EC)

### **Specialisation Courses (20 EC)**

A choice can be made out of different specialisation courses. The specialisation courses have level 500, and range from 3 - 7 EC. The total of 20 EC is indicative and depends on the extent of the student's support programme and research assignment. The selection of the specialisation courses takes place in coordination with the Bioinformatics specialisation study advisor Dr. E.M. Bakker

(E-mail: [erwin@liacs.nl](mailto:erwin@liacs.nl)). More details can be found at our web-site: <http://bio.leidendelft.nl/>.

Advanced Bioinformatics (3 EC)

Advanced Image Processing (4 EC)

Bio-modelling and Petri nets (6 EC)

Evolutionary Algorithms (6 EC)

Mathematical Biology: Virtual Cell (6 EC)

Microscopy, Modelling and Visualization (7 EC)

Multimedia Information Retrieval (3 or 6 EC)

Neural Networks (6 EC)

Swarm-based Computation with Applications in Bioinformatics (6 EC)

### **Methodology of Science and Engineering (4 EC)**

This is a mandatory course that will provide the student with the necessary knowledge on how to organize, manage, and conduct research.

### **Support Programme (maximal 12 EC)**

The Support Programme is specifically designed to bolster the multidisciplinary background of the student. It is meant to achieve a more uniform background knowledge of all students. As a rule students will have to extend, complement and perfect their background in disciplines which were not included in one's bachelor phase of study.

The Support Programme consists of a selection out of three subjects:

1. Molecular Cell Biology 2. Mathematics 3. Computer Science.

Typically, Computer Science students will need to take Subjects from 1 and 2, Life Science students subjects from 2 and 3. Students with a rich multidisciplinary background take courses in the Free Choice part of the programme or extend their research project. It is a prerequisite that students finally master any of the courses within each of the three subjects.

The support programme will be tailor made and defined by the Bioinformatics specialisation study advisor Dr. E.M. Bakker (E-mail: [erwin@liacs.nl](mailto:erwin@liacs.nl)) for every student individually. Note that the major part of the support programme will be given in a tutor form. More details can be found at the website of the specialisation <http://bio.leidendelft.nl/>.

### **Research Assignment (15 EC)**

Doing and learning how to conduct research is a major goal of the Bioinformatics programme. This goal will be accomplished in several phases. During the first year, the course 'Methodology of Science and Engineering' will provide the student with a basic background for organizing, managing, and conducting research. During the start of the second year, students will do a small research project in which they learn how to organize and execute a research project, and most importantly will experience the excitement of doing research! In other words the Research Assignment aims at:

- getting students into contact with relevant research problems early on in their study;
- raising the understanding for the need of bioinformatics in biological problems;
- getting students acquainted with performing research.

### **Masters Research Project (45 EC)**

During the second year, the focus is mainly on the Masters Research Project. One or more research groups from the participating universities and institutes will supervise this project. In addition to their project, students may take a selection of courses from the elective part of the programme related to the research project. The research project has to be carried out using some basic project management: at the start students make a plan in co-operation with their (LIACS) thesis advisor. In the plan, several aspects of the thesis project are defined: the assignment, the frequency of interaction with the advisor(s), the milestones of the project, the resources and facilities offered by the faculty, etc.

In case the research project is carried out externally, there should also be a supervisor from LIACS. The research plan should be approved by the LIACS thesis advisor in advance. It is also possible to do one's research project abroad. This should also be arranged in consultation with a supervisor from LIACS and the Bioinformatics specialisation study advisor.

Finally, the research plan should always be communicated with the Bioinformatics specialisation study advisor.

Research projects will be available at the universities and institutes that organize the Bioinformatics programme: Leiden University, Delft University of Technology, LUMC and the Kluyver Center, amongst others.

The Masters thesis is written in English and at the end there will be an oral presentation of the work in the presence of the Exam Committee. The final mark will be based on the written report, the presentation and the project performance; it will be announced by the Exam Committee.

### **GRADUATION AND DEGREE**

Graduation of the student takes place after completing the CS Bioinformatics specialisation programme (120 EC), consisting of the core programme (24 EC), specialisation courses (20 EC), methodology of science and engineering (4 EC), a personal support programme (12 EC max), a research assignment (15 EC), and finally a masters research project (45 EC). Students who completed the MSc Computer Science Bioinformatics specialisation will receive an MSc degree in Computer Science with specialisation Bioinformatics.

### **QUALIFICATIONS FOR ADMISSION**

Students from any university in The Netherlands with a BSc degree in Computer Science or with a BSc major in Computer Science can be admitted to the programme. For all other (national and international) candidates, the Admission Committee will judge the equivalence of their previous training. 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.

### **APPLICATION**

For registering at Leiden University, please contact the Bioinformatics specialisation study advisor Dr. E.M. Bakker (E-mail: [erwin@liacs.nl](mailto:erwin@liacs.nl)) and send in your application using the Leiden University website <http://www.leiden.edu/>. (Please note that some of the courses will be given at Leiden University, while other courses will be given at Delft University!)

International students are kindly requested to contact the International Office at Leiden University, please go to the Leiden University website: <http://www.leiden.edu/>.

There you will find more information about the possible scholarships, the tuition fee and you can download the official application forms.

Dutch students who would like to participate in the Bioinformatics programme are requested to send in their application using the Leiden University website <http://www.leiden.edu/> and contact the Bioinformatics specialisation study advisor Dr. E.M. Bakker (E-mail: [erwin@liacs.nl](mailto:erwin@liacs.nl)) by sending an e-mail with:

- a Curriculum Vitae;
- a personal statement of motivation;
- a copy of academic records of all courses taken at an institute of higher education.

### **FURTHER INFORMATION**

Email for any further questions and information can be sent to:

Dr. Erwin M. Bakker (E-mail: [erwin@liacs.nl](mailto:erwin@liacs.nl) , Phone +31 (0) 681553284)  
Leiden Institute of Advanced Computer Science  
Bioinformatics, Niels Bohrweg 1, 2333 CA Leiden

See the website for the specialisation Bioinformatics:

<http://bio.leidendelft.nl/> for further information on schedules, course descriptions, etc.

## *Specialisation Computer Science and Science Based Business*

### **DESCRIPTION**

The MSc specialisation Computer Science and Science Based Business combines research training with education in business practices that are most relevant to science-driven and science-oriented organizations. In addition to knowledge in computer science, students obtain competence with respect to organisations, people in organisations, and establishment and management of processes. Students with an MSc in Computer Science and Science Based Business are admissible to a PhD programme.

In order to get an SBB Master annotation, a minimal 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 “specialisation” part of the research MSc programmes “Core Computer Technologies” and “Computer Science Theory and Advanced Technologies”.

### **PROGRAMME**

#### ***Computer Science***

The computer science part of the Science Based Business (SBB) specialisation consists of a research project of 40 EC in one of the research groups of LIACS, including a master’s thesis and an oral presentation, and 20 EC of level 500 courses to be selected in correspondence with the research topic. The choices for courses and research project will be made in consultation with a supervisor.

### **Science Based Business**

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

#### Specialisation Science Based Business: Courses

<b>Foundation:</b>	<b>Level</b>	<b>EC</b>
SBB Fundamentals	400	15
Research Based Business Opportunities	400	5
Research Based Business Ventures	400	5
Research Based Business Planning	400	5
<b>Advancement:</b>		
RBB New Business Development	500	3
RBB Technology Transfer	500	3
SBB Management	500	3
Learning from Silicon Valley: Innovation, Entrepreneurship & Successful Cluster Development	500	10
SBB Essay	500	3-7
SBB Elective	400-600	3-15
<b>Finishing:</b>		
SBB Internship	600	22-35
RBB Assignment	600	22-35

See for more information on Science Based Business the following website: <http://sbb.leidenuniv.nl/>.

## *Specialisation Computer Science, Society and Communication*

### **DESCRIPTION**

The MSc programme Computer Science, Society and Communication concerns science communication in a broad sense. The programme prepares students for a career in popularization of science, for example, as a science communicator, a science policymaker or a public relations officer, or for a career as a scientist with a communicating mindset. Students with an MSc in Computer Science, Society and Communication are admissible to a PhD programme in Computer Science or in Science Communication.

### **PROGRAMME**

#### ***Computer Science (60 EC)***

The research part consists of a research project of 40 EC in one of the research groups of the institute (incl. 7 EC for 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)***

The Communication part consists of the following components:

	<b>Level</b>	<b>EC</b>
Fundamentals of Science Communication and Society	400	17
Training Period	600	23-34
<i>Choice of</i>		
Computer Science courses	≥400	0-20
Courses in Communication	≥400	0-8
Communication Master thesis	500/600	5
Communication research project correlated to the Master thesis	500/600	4
<b><i>Total</i></b>		<b>60</b>

The training period can be in the field of Journalism, Museology or New media and includes a research project, a master's thesis ( 5 EC) and an oral presentation (2 EC).

The choice of the elective courses has to be in accordance with the subject of the chosen training period and should be approved beforehand by the specialisation coordinator.

For more information, see : [www.scs.leidenuniv.nl](http://www.scs.leidenuniv.nl).

# Course Catalogue of Computer Science

See course descriptions: <http://www.liacs.nl/>

Choose: education, master computer science, courses

## Specialisation courses 2011-2012

Vaktitel	Docent(en)	Level	EC
Advanced Compilers and Architectures	Prof.dr. H.A.G. Wijshoff / Dr. E.M. Bakker	500	6
Audio Processing and Indexing	Dr. EM. Bakker	500	6
Bayesian Networks	Prof.dr.P. Lucas	500	6
Bio-modeling and Petri Nets	Dr. H.C.M. Kleijn / Dr. F. Verbeek	500	6
Coordination and Component Composition	Prof.dr. F. Arbab	500	6
Databases and Datamining	Dr. E.M. Bakker	500	6
Embedded Systems and Software	Dr. T. Stefanov	500	6
Evolutionary Algorithms	Prof.dr. T. H.W. Bäck	500	6
Testing Object-Oriented Software	Prof.dr. F. de Boer / Dr. M.M. Bonsangue	500	6
Mathematica Biology, Virtual Cell	Dr. S.C. Hille	500	6
Microscopy, Modeling and Visualization	Dr. F. Verbeek	500	6
Molecular Computational Biology	Dr. E. Bakker	500	6
Multimedia Information Retrieval	Dr. M. Lew	500	6
Multimedia Systems	Dr. M. Lew & Dr. E. Bakker	500	6

Neural Networks	S. Bothe	500	6
Quantum Computing	Dr. A.A. Wolters	500	6
Seminar Combinatorial Algorithms	Dr. W.A. Kusters / dr. H.J. Hoogeboom	500	6
Seminar Grid Computing	Dr. A.A. Wolters	500	6
Seminar Swarm-Based Computation (Bio-inf.)	Prof.dr.T.H.W. Bäck / Dr. R. Li	500	6
Systems Development and Project Management	Prof.dr. T.H.W. Bäck	500	6

## *Description of the Programme MSc ICT in Business*

The MSc in ICT in Business is designed to provide a flexible framework for graduate study in Information Management. It is of particular interest to participants wishing to pursue an international career involving both ICT and Management. To that end, the programme combines the facilities, resources and strengths of the Leiden Institute of Advanced Computer Science (LIACS). A world-class faculty, the international student population, cross-cultural teamwork and study-abroad exchange opportunities all contribute to the international character.

### **OBJECTIVES AND PHILOSOPHY**

Rapid changes in information and communication technology (ICT) and its applications over the last years have caused major changes for individuals, organisations and industries. The internet and information systems and communication technology in general, have radically impacted our personal and professional lives and challenged our thinking on physical, geographical and industry boundaries, on distance, speed and communication. New business models have emerged, as have new types of entrepreneurship and new forms of leadership. The MSc in ICT in Business aims at providing a deeper understanding of the issues, challenges and opportunities in this area, with a special focus on ICT and management. The programme builds on a solid foundation of Computer Science that students bring from their Bachelor's education, and expands this knowledge and augments it with concepts and methods from the field of management.

### **STRUCTURE AND DURATION**

The M.Sc. in ICT in Business programme consists of five blocks of course work and 6 months thesis project. The courses cover business fundamentals, core ICT & Business topics and electives, and are normally offered in a combination of (guest)lectures, company visits, case work, lab work, and student presentations. Many activities are based on team work. At regular intervals colloquia are offered to supplement and enrich the programme. The programme structure is as follows:

### ***Business Fundamentals***

A set of courses that will bring students onto a basic level of business understanding, including a management simulation and courses on global marketing, financial accounting, international management and corporate finance.

### ***Core courses: ICT and Business***

A set of advanced courses that focus on the interrelationship between organizational processes, management and ICT. These courses presume an existing background in Computer Science at Bachelor's level. The courses focus on Software Engineering, ICT-enabled Business Process Innovation, ICT Strategy and Planning, System's Development and Project Management, ICT Infrastructure and a capstone integration course.

### ***Electives***

The electives allow students to individualize their programme and accommodate special interests. Examples of electives are entrepreneurship, supply chain management, operations management, legal aspects of ICT, human resource management, virtual organizations, and data warehousing.

### ***M.Sc. thesis research project***

Often based on an in-company project. Duration: 6 months.

The programme schedule is intense, allowing participants to complete the programme (with a regular course load of two academic years) in around 19 to 20 months of full-time study. The programme starts in September and February.

### **QUALIFICATIONS FOR ADMISSION**

In addition to the general prerequisites, students must be proficient in English as the entire programme is taught in English.

### **DEGREE**

Students who have completed the programme will receive a MSc in ICT in Business.

Website: <http://www.liacs.nl/edu/iib/>

Email: [ictinbusiness@liacs.nl](mailto:ictinbusiness@liacs.nl)

## CURRICULUM OUTLINE ICT IN BUSINESS

Course	Level	EC
Kick-off: Global Business game	400	1
Software Engineering	500	6
Global Marketing	500	3
Corporate Communications	500	3
Strategy Formation & Implementation	500	5
ICT-enabled Process Innovation	500	3
Process Modeling	500	3
Financial Accounting	500	4
Behavioural Decision Making	500	3
Organising	500	4
Research Methods	500	3
System's Development & Project Management	500	6
Management Science	500	3
Managing Innovations	500	3
Managing People	500	3
ICT Strategy and Planning	500	3
ICT Architectures	500	6
Corporate Finance	500	4
Research Seminar 1	500	2
Research Seminar 2	500	2
Research Colloquia 1	500	2
Research Colloquia 2	500	2
Capstone Cases	500	3
Electives (3x3 EC)	500	9
MSc Thesis (in-company/research project)	600	34

For detailed descriptions: see the website: <http://www.liacs.nl/edu/iib/>



# *Description of the Programme MSc Media Technology*

The Media Technology MSc programme is a common initiative of the computer science institute within the Faculty of Science and the Academy for Creative and Performing Arts. It is a place where students, artists and researchers are allowed to formulate their own scientific questions and are encouraged to translate personal inspirations and curiosities into their own manageable and compact research projects.

## **OBJECTIVES**

The programme recognizes creativity as an important factor in scientific innovation. It aims to be a place where students, artists and scientists do research by creating innovative solutions, inspired by results and principles of science. To achieve this, the curriculum focuses on creative exploration and on the understanding of science and technology. The programme encourages its students to draw from the knowledge available throughout Leiden University and the Art&Science programme of the Royal Academy of Arts in The Hague.

Keywords throughout the programme are creativity, technology and scientific research. The programme's goal is to stimulate innovation and creativity in scientific research by innovative application of technology. One might say that Media Technology delivers 'autonomous scientists', just as art academies deliver autonomous artists.

## **SCIENCE BY CREATING**

Science is meant to generate knowledge, in a rational and sensible way. Many research methods exist to do this. We believe that 'science by creating' can play an important role alongside other methods. By applying technology in fresh ways, one learns new things. New methods and alternative insights are discovered. We see this as a valid and productive way of doing research. As a result, student projects in which actual products are realised, are important in the Media Technology MSc programme. However, the process of researching while creating the product is as important as the product itself. The projects always lead to a working end product or proof-of-concept that contains a media component: visual, auditive or otherwise.

Most often, a scientific paper is also produced which describes the scientific advancements resulting from the project. Students are

encouraged to submit these papers to international journals, conferences, and art festivals.

### **STRUCTURE OF THE PROGRAMME**

The Media Technology MSc programme at Leiden University takes two years. However, by investing an appropriate amount of extracurricular time, the programme can be finished within 20 months. It is a relatively intense programme and students should be prepared to study full-time. The Media Technology MSc programme consists of three semesters and an extension. Each semester focuses on specific issues. During the first and second semesters, students take a number of basic courses and do several projects. For details, please see the courses descriptions at the website <http://mediatechnology.leiden.edu>

An overview of the basic courses is given below:

<b>Subject</b>	<b>Lecturer</b>	<b>Level</b>	<b>EC</b>
Visit to Ars Electronica Festival	n.a.	500	1
Introduction to Programmaming	n.a.	400	4
Human Computer Interaction	Fons Verbeek	500	6
New Media & New Technologies	n.a.	500	5
Creative Research	Bas Haring, Maarten Lamers	500	4
Cool Science	Bas Haring	500	6
Perceptualization	Maarten Lamers/ Edwin van der Heide	400	2
Sound, Space & Interaction	Edwin van der Heide	500	4
Web Technology	n.a.	500	4
Research Seminar Artificial Intelligence	Maarten Lamers	500	5
Image & Vision - Embodied Vision	Joost Rekveld, Academy for Creative and Performing Arts	500	4

Subject	Lecturer	Level	EC
Hardware & Physical Computing	Paul Jansen Klomp	500	3
Meta Media	Taco Stolk, Academy for Creative and Performing Arts	500	2
Language & Text	Crit Cremers, FoH	500	3
Essentials in Art & Music	Edwin van der Heide, Taco Stolk	500	2
Free choice courses	n.a.	500	15
Project	n.a.	500	20
Graduation Project	n.a.	600	30
<b>Total</b>			<b>120</b>

### ELECTIVE COURSES

Within the Media Technology curriculum a portion of the total credits can be obtained by following elective courses. Throughout the academic year, there are many electives available within several faculties and studies of Leiden University and the ArtScience programme of the Royal Academy of Arts in The Hague. Students are also allowed to take electives in for instance Computer Science, Psychology, Art History, Linguistics and Philosophy.

### PROJECTS

Besides courses, student projects are important in the Media Technology MSc programme. Many courses contain a project in which teams of students put their gained knowledge into practice, commonly resulting in some physical installation. In such projects, students must also research existing knowledge, and write papers that motivate their projects and discuss the results. During the third semester, a project is scheduled in which students create innovative concepts that result in an actual product. The process of researching while creating the product is as important as the product itself. All projects start from a specific theme and the resulting products are exhibited to the general public in an exposition.

## GRADUATION

Graduation takes the form of a similar research project in which the scientific aspects are prominent. Graduation theses within the Media Technology programme are publishable scientific papers, not lengthy dissertations. Students are encouraged to submit their graduation papers to international journals, conferences and art festivals.

## DEGREE

Students who complete the programme will receive a MSc in Media Technology.

## ACADEMIC REQUIREMENTS

- A BSc degree from Leiden University in Computer Science or a BSc major in Computer Science from Leiden University. **Students holding such a degree will directly be admitted to the programme.**
- For all other applicants, the Admission Committee will judge the equivalence of their previous training to these BSc degrees. The Media Technology MSc programme is a logical continuation for students with a background in: Computer Science, Performing and Creative Arts, Artificial Intelligence, Psychology (esp. Experimental Psychology), several exact sciences, Arts and Technology, Interaction Design, Communication Studies.
- The admission process may include an interview with the Admissions Committee. Applications are judged with observance of specific work- and training experience relating to the field of Media Technology.
- Most importantly, candidates should have a demonstrable interest in science and scientific research, but also affinity with technology and creativity. They must dare to go beyond established paths and enjoy critical thinking.
- The programme deals thoroughly with technology. Applicants must know computer programming or be willing to learn computer programming.
- Non-native speakers of English are required to submit proof of sufficient proficiency in English. Dutch students with VWO level English are exempt from this requirement. See Leiden University's general admission requirements for further details.

Having your own laptop computer is strongly recommended for students within the Media Technology MSc programme.

## APPLICATION

Applications should include:

- certified copies of university certificates, including copies of all academic records of all courses taken at every institute of higher education;
- a curriculum vitae;
- a copy of passport;
- a personal statement of motivation including the learning objective to participate in the MSc programme.

<http://mediatechnology.leiden.edu/admission/dutch-students/>

*Dutch students* can send their applications to:

Leiden Institute of Advanced Computer Science (LIACS)

Mw. Drs. Lianne Heun,

Niels Bohrweg 1, 2333 CA Leiden.

E-mail: [mediatechnology@leiden.edu](mailto:mediatechnology@leiden.edu)

If the Admission Committee thinks you are eligible, you will be invited for an interview in either June or August.

*International students* are requested to apply through the International Office of Leiden University.

Official application forms and more information about the exact procedures can be found on the website of the International Office:

[www.leiden.edu](http://www.leiden.edu).



## *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](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](http://www.buitenland.leidenuniv.nl)

(in Dutch, choose "Uitwisselingsprogrammema'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 programme 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  
Gorlaeus Laboratories, room 2.05  
Einsteinweg 55  
2333 CC Leiden  
Phone: 071-527 57 83  
Email: [schildwacht@edufwn.leidenuniv.nl](mailto:schildwacht@edufwn.leidenuniv.nl)

# Organisation

## **RULES AND REGULATIONS**

In the Student Charter ('Studentenstatuut' in Dutch) all rights and obligations of students, the University, Faculty and the 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 deemed 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](http://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 and R&R a.o. the rules of the Faculty regarding admission, examinations, the degree programme and organisation are laid down.

The text of these documents can be found on the website of the faculty [www.science.leidenuniv.nl](http://www.science.leidenuniv.nl) >> Graduate School >> MSc Regulations

## **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) stations 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  
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.

## **uSis**

In uSis – [www.usis.leidenuniv.nl](http://www.usis.leidenuniv.nl) – all student information such as addresses, 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/>

## **STUDY REQUIREMENT (STUDYPLAN)**

For every student an advisement report with his/her study requirements are laid down. This report, also known as studyplan, is an overview of the master degree programme to which the student must comply in order to obtain the master degree.

The requirements are the most important elements for students in uSis. It is of the utmost importance that students are registered correctly for their degree programme and – if applicable – the specialisation.

The requirements comprise all compulsory elements, limited and free choice of the programme. By means of the advisement report an easy

overview can be obtained of all course registrations, obtained grades and outstanding elements, so progress is easily monitored.

Errors in the advisement report are best reported at the Graduate School Office via [uSis-FWN@edufwn.leidenuniv.nl](mailto:uSis-FWN@edufwn.leidenuniv.nl).

### **REGISTRATION FOR COURSES, EXAMINATIONS, TUTORIALS, PRACTICALS**

To be able to participate in educational programmes of the Faculty of Science students have to register via uSis. Without timely registration, participation may become impossible and potentially a grade cannot be registered.

Registration for courses opens six weeks before the start of the semester and closes one 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.

### **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

*Mention at which university the course is taught, the course name, lecturer, number of EC and the starting date.*

- Request for a (research) project or thesis.

*Mention at which university, institute and department the project will be carried out, the supervisor, number of EC and the starting date.*

## **RESULTS OF EXAMINATIONS**

Grades for examinations, as set by the examiner, will be registered in the Student Information System (uSis) by the Graduate School Office. Students can check their grades via [www.usis.leidenuniv.nl](http://www.usis.leidenuniv.nl) and keep track of their own progress and registration of their results.

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.

## List of Lecturers

In this list you find the rooms, the phone numbers and the email addresses of most lecturers and other people involved in the Master programmes. Unless stated otherwise, the room numbers pertain to the Snellius Building, Niels Bohrweg 1, Leiden.

Name	Telephone	Email	Room
Prof.dr. F. Arbab	527.7069	farhad@liacs.nl	163
Prof. dr. Th. Bäck	527.7108	baeck@liacs.nl	169
Dr. E. Bakker	527.7115	erwin@liacs.nl	147
Prof.dr. F.S. de Boer	527.7094	fdeboer@liacs.nl	163
Drs. F.A.J. Birrer	527.7113	birrer@liacs.nl	148
Dr.Ir. H.L.W. Blockeel	527.7108	blockeel@liacs.nl	169
Dr. M.M. Bonsangue	527.7061	marcello@liacs.nl	157a
Dr. M. Chaudron	527.7065	chaudron@liacs.nl	165
Prof.dr. E.F. Deprettere	527.5776	edd@liacs.nl	126
Dr. A.H. Deutz	527.7071	deutz@liacs.nl	116
Dr. M. Emmerich	527.7094	emmerich@liacs.nl	161
Dr. J.M. de Graaf	527.7051	graaf@liacs.nl	151
Dr. L.P.J. Groenewegen	527.7139	luuk@liacs.nl	132
Prof. dr. S. Haring	527.4520	haring@liacs.nl	131
Dr. H.J. Hoogeboom	527.7062	hoogeboom@liacs.nl	162
Dr. D.P. Huijsmans	527.7052	huijsman@liacs.nl	152
Dr. H.C.M. Kleijn	527.7064	kleijn@liacs.nl	164
Dr. A.J. Knobbe	527.8019	knobbe@liacs.nl	110

<b>Name</b>	<b>Telephone</b>	<b>Email</b>	<b>Room</b>
Prof.dr. J.N. Kok	527.7057	joost@liacs.nl	167
Dr. R.J. Kooman	527.7124	kooman@math.leidenuniv.nl	224
Dr. W.A. Kusters	527.7059	kusters@liacs.nl	159
Dr. M. Lew	527.7034	mlew@liacs.nl	134
Dr. R. Li	527.7060	ruili@liacs.nl	160
Dr. H.N. Nikolov	527.5775	hristo@liacs.nl	122
Dr. T. Stefanov	527.5776	stefanov@liacs.nl	126
Dr.ir. F.J. Verbeek	527.5773	fverbeek@liacs.nl	105
Prof.dr. H.A.G. Wijshoff	527.7055	harryw@liacs.nl	155
Dr. A.A. Wolters	527.7054	llexx@liacs.nl	154

# *List of Addresses of the Faculty of Science and the University*

Leiden University is a large institution with many organizations, many buildings, and a large amount of information being offered. It is often difficult for a student to find the right direction. If you don't know which department you need, the address list given below is quite useful. If you don't know where you can find an answer to your question, you can always knock on the door of your study advisor. The staff members of the Student Information Center (Studenteninformatiecentrum) can also provide answers to the many questions of the students and can point them in the right direction. A lot of important information which you need as a student enrolled at Leiden University can be found on the website of the University, [www.leidenuniv.nl](http://www.leidenuniv.nl), under 'students'.

## **FACULTY OF SCIENCE**

### **Graduate School Office (Educatief Centrum)**

Contact for students Computer Science, Media Technology and ICT in Business:

Ms. Bertie ten Hove

Gorlaeus Laboratories, room 2.06

2333 CC Leiden

Phone: (071) 527 5171

[hove@edufwn.leidenuniv.nl](mailto:hove@edufwn.leidenuniv.nl)

*Opening hours:* monday to thursday 10.00-15.00

### **International Office of the Faculty of Science**

Ms. G. Schildwacht

Gorlaeus Laboratories, room 2.05

Einsteinweg 55

2333 CC Leiden

Phone: (071) 527 57 83

Email: [schildwacht@edufwn.leidenuniv.nl](mailto:schildwacht@edufwn.leidenuniv.nl)

## **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](mailto:informatiecentrum@ics.leidenuniv.nl) / [www.leidenuniv.nl/ics/sz](http://www.leidenuniv.nl/ics/sz)

### **PITStop**

(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.

[PITStop@Plexus.leidenuniv.nl](mailto:PITStop@Plexus.leidenuniv.nl) / [www.pitstop.leidenuniv.nl](http://www.pitstop.leidenuniv.nl)

### **Student Career Centre (SLS)**

(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 and Friday  
10.00 – 11.00

[www.sls.leidenuniv.nl](http://www.sls.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](mailto:decanen@ics.leidenuniv.nl) / [www.leidenuniv.nl/ics/sz](http://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**

### **'Dienst Uitvoering Onderwijs' (formerly IBG)**

Regiokantoor DUO (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@ocwduo.nl](mailto:vrAGEN@ocwduo.nl) / [www.ocwduo.nl](http://www.ocwduo.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](http://www.sls.nl)

## Who can help you with your questions?

<b>PERSONAL CIRCUMSTANCES</b> (illness etc.)	improving your <b>PERSONAL FUNCTIONING</b>	<b>PLANNING &amp; STUDY SKILLS</b>
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- student adviser
- student counsellor
- supervisor
- Fenestra

- student adviser
- courses Plexus

- student adviser
- courses Plexus
- student counsellor
- supervisor

<b>CHANGE OF ADDRESS</b>	<b>FINANCES</b>	<b>REGISTRATION</b>
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- studielink
- student adviser
- (DUO)

- international office
- student adviser
- DUO
- student counsellor

- studielink
- Plexus
- student adviser

<b>study/research ABROAD</b>	<b>GRADUATION</b>	information about <b>REGULATIONS REGISTRATION</b>
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- international office
- student adviser
- funds

- uSis
- student adviser
- Graduate School Office

- student adviser
- international office
- uSis
- student counsellor

<b>possibilities on the JOB MARKET</b>	<b>LEGAL POSITION</b>
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- student adviser
- Student Career Centre
- Plexus

- student adviser
- student counsellor
- ombudsperson

For courses offered by Plexus see <http://students.leiden.edu/1>

For contact information see page 8, 40 and 47.



# *Graduation Schedule MSc in Computer Science*

## **GRADUATION PROCEDURE**

The formal date of graduation is the date on which you have met all the requirements of the MSc in Computer Science programme. This date is recorded in your transcripts and also on your diploma. This date coincides with the date on which you have received a satisfactory grade for the last required component of your approved programme of study.

## **MASTER'S GRADUATION CEREMONY**

### **AND APPLICATION FOR THE MASTER'S GRADUATION CEREMONY**

Students who are graduating or who are close to graduation can apply for participation in the Master's Graduation Ceremony. The Graduation Ceremony takes place five times a year (see dates below). At this ceremony you will receive the MSc in Computer Science diploma from the chairman of the Board of Examiners. Friends and family are welcome to witness this formal and festive occasion.

### **DATES FOR THE MASTER'S GRADUATION CEREMONY IN COMPUTER SCIENCE**

Friday 28 October 2011  
Friday 27 January 2012  
Friday 27 April 2012  
Friday 29 Juni 2012  
Friday 31 August 2012  
Friday 28 September 2012

## **APPLICATION PROCEDURE**

Students who are close to graduation, apply for the Master's Graduation Ceremony in the following way:

- Contact Mrs. M. Derogee (programme coordinator) or Dr. J.M. de Graaf (study adviser) who will verify that you have met (or soon will meet) the requirements of your approved programme of study. A statement to that effect will be given to you so that you can go ahead with the application at the Graduate School Office (Educatief Centrum) of the Graduate School of the Faculty of Science.

- At the latest **five weeks before your chosen date** of the Master's Graduation Ceremony (see dates above) submit your application to Mrs. B. ten Hove, at the Graduate School Office (Educatief Centrum) and via uSis by providing her with the following:
  - the statement written by your study coordinator or academic adviser
  - Cover page of the Master Thesis
- you have to hand an electronic version of your Master Thesis to Mrs. M. van der Nat, room 155. The front page of your Thesis will have to be made according to strict lay out rules and Mrs. M. van der Nat will do that for you.
- all examination results should be handed in to Mrs. B. ten Hove of the Graduate School Office (including the grades for your master's thesis or other projects or course work).

## *Graduation Schedule MSc in ICT in Business*

The final research project can only be started once all other courses have been completed. In exceptional cases the programme director, Dr. M.R.V. Chaudron, may allow a student to start the final project when one (1) course is still not completed, but only when this course is near completion and only with a prior written agreement.

1. It is up to the individual student to define a suitable research topic and to find a supervisor. In case of an in-company project, it is again the student's responsibility to define and acquire the project and to find a supervisor who is willing to take on this project (these two processes need to go hand-in-hand in order to avoid that students accept in-company projects which are not suitable for a thesis project). The course co-ordinator, Dr. M.R.V. Chaudron, may be of help in this process. Faculty members may also propose topics and companies may approach LIACS for in-company projects, but ultimately the responsibility for securing a project and securing a supervisor remains with the student.
2. After identifying a suitable topic and supervisor the next step is to complete a thesis research proposal. This proposal should contain, as a minimum, the proposed title of the thesis, a well-defined research question, a clear description of both the academic as well as the practical relevance of the research question (why this research question and what will you contribute), a convincing methodology section (research approach and setup) plus a detailed outline of the thesis. The proposal needs to be signed for approval by the supervisor as well as by a second faculty member who will act as an advisor during the process and as an examiner during the final defence. In most cases the supervisor can help in identifying a suitable second faculty member. The signed proposal needs to be submitted to the programme director, Dr. M.R.V. Chaudron, for final approval.
3. During the research process students should keep in close contact with their supervisor, and also periodically update the second faculty advisor about their progress. Should there be major changes in the research question, a new research proposal needs to be submitted to the programme manager for approval.

## *Applying for a Master Diploma*

### **GRADUATION PROCEDURE**

The formal date of graduation is the date on which you have met all the requirements of the ICT in Business programme. This date is recorded in your transcripts and also on your diploma. This date coincides with the date on which you have received a satisfactory grade for the last, required component of your approved programme of study.

### **MASTER'S GRADUATION CEREMONY**

#### **AND APPLICATION FOR THE MASTER'S GRADUATION CEREMONY**

Students who are close to graduation can apply for participation in the Master's Graduation Ceremony. The Graduation Ceremony takes place five times a year (for dates see below) in the Academic Building, Rapenburg 70. In this ceremony you will receive the MSc in ICT in Business diploma from the Board of Examiners. Friends and family are welcome to witness this formal and festive occasion.

#### **DATES FOR THE MASTER'S GRADUATION CEREMONY IN ICT IN BUSINESS**

Friday October 28, 2011, 15.00hrs  
Friday January 27, 2012, 15.00hrs  
Friday April 27, 2012, 15.30hrs  
Friday June 29, 2012, 15.00hrs  
Friday August 31, 2012, 15.00hrs  
Friday September 28, 2012, 15.00 hrs.

### **APPLICATION PROCEDURE**

Students who are close to graduation, apply for the Master's Graduation Ceremony in the following way:

- Contact Judith Havelaar (Programme Co-ordinator) who will verify that you have met (or soon will meet) the requirements of your approved programme of study.
- At the latest **five weeks before the date** you choose for the graduation ceremony, submit your application to Mrs. Bertie ten Hove, the secretary of the Graduate School Office (Dutch: Educatief Centrum) by providing her with:
  - The statement written by your study coordinator or academic adviser
  - Cover page of the Master Thesis
- You have to hand in a hard copy and an electronic version of your Master Thesis to Judith Havelaar.

At the latest five weeks before your chosen date of the Master's Graduation Ceremony, all examination results should be handed in by the lecturers to Mrs. Bertie ten Hove of the Graduate School Office (including the grades for your master's thesis or other projects or course work).

### **THE THESIS DEFENCE**

The thesis defence (which will take about one hour) will be organized separately. You can reserve a room for your defence in the Snellius building via Abdel El Boujadayni (abdel@liacs.nl, telephone number 071-527 7096). The date of your thesis defence should be at least 25 working days before the graduation. Otherwise, the date for the defence can be scheduled in cooperation with your thesis supervisors. The members of your examination committee (present at thesis defence) should get a paper copy of your final version of the thesis at least 5 working days before your thesis defence.



## *Graduation Schedule MSc in Media Technology*

Part of every graduation is a public presentation of the examination project. It is compulsory, which means that without such a presentation it is not possible to receive a grade for your research project. The presentation must be at least 20 minutes and followed by a discussion with those attending. It is advised to gear the level of detail and complexity at fellow students and Media Technology staff. The examination supervisor of the student will preside over the event.

Also, a committee of four “reviewers” must be selected and attend the presentation. Their task is to critically evaluate the student’s graduation work and give feedback during the discussion following the presentation. Others attending the presentation may also provide feedback. The supervisor is free to consult with the reviewers in order to determine the final grade for the project. The four reviewers are selected by the student and supervisor, and must be so-called peers: fellow students, teaching- and scientific staff, or individuals who have otherwise knowledge of the presented topic area.

All graduation presentations must be held on one of the pre-determined dates, posted on the website of the programme (<http://mediatechnology.leiden.edu>). Participation of a student must be agreed upon by the graduation supervisor. For the formal administrative steps the Graduate School Office of the Faculty needs five weeks, so make sure that the Media Technology coordinator is able to inform them in due time. A request for participation must be submitted to [mediatechnology@leiden.edu](mailto:mediatechnology@leiden.edu). All requests must be accompanied by the title of the project, student name, supervisor name, 150-word abstract, and names of the four critics. If these documents are not complete at least five weeks in advance, the graduation will be postponed to a later date. An invitation to attend the graduation presentations is distributed by the Media Technology coordinator. The graduating students and supervisors are welcomed to invite others on their own initiative (family, colleagues, friends, etc).

## STEPS FOR THE STUDENT AND SUPERVISOR

- ▶ agree on participation in the graduation presentation day
- ▶ select four peers who will form the committee of critics, and inform them
- ▶ send this information to [mediatechnology@leiden.edu](mailto:mediatechnology@leiden.edu), accompanied by a title and abstract, minimally three weeks in advance!

Before you can be registered for the Graduation Ceremony, you have to take the following into account:

- ▶ In order to receive your MSc in Media Technology diploma you have to hand in a copy of your paper/article to the Media Technology coordinator,
- ▶ Make sure there is an abstract of your graduation work on the Media Technology website,
- ▶ All courses and projects should be completed (including the graduation presentation), all grades and credits must be registered at the Graduate School Office.
- ▶ For an advance check whether you meet the curriculum requirements you have to provide a clear overview (grades and credits) of all obtained courses (including elective courses) to the Media Technology coordinator. You will be informed about your status.
- ▶ Together with the overview of your curriculum provide a copy of the decision for admission to the master's programme and your student administration number.

All procedures mentioned above should be completed at least 3 weeks before the Graduation Ceremony.

At least **five weeks before** the desired graduation dates, which are iposted on the website of the programme (<http://mediatechnology.leiden.edu>), a request should be sent via uSis. All grades of the MSc degree programme have to be registered at that time.

Other dates will be announced during the year. Information about such possibilities can be obtained from the coordinator of Media Technology.

## *Graduation Dates*

### **MASTER'S GRADUATION CEREMONY IN COMPUTER SCIENCE**

Friday 28 October 2011  
Friday 27 January 2012  
Friday 27 April 2012  
Friday 29 Juni 2012  
Friday 31 August 2012  
Friday 28 September 2012

### **MASTER'S GRADUATION CEREMONY ICT IN BUSINESS**

Friday 28 October 2011  
Friday 27 January 2012  
Friday 27 April 2012  
Friday 29 Juni 2012  
Friday 31 August 2012  
Friday 28 September 2012

### **MASTER'S GRADUATION CEREMONY IN MEDIA TECHNOLOGY**

Dates are posted on the website of the programme:  
<http://mediatechnology.leiden.edu>

## *Public Holidays & Other Events 2011/2012*

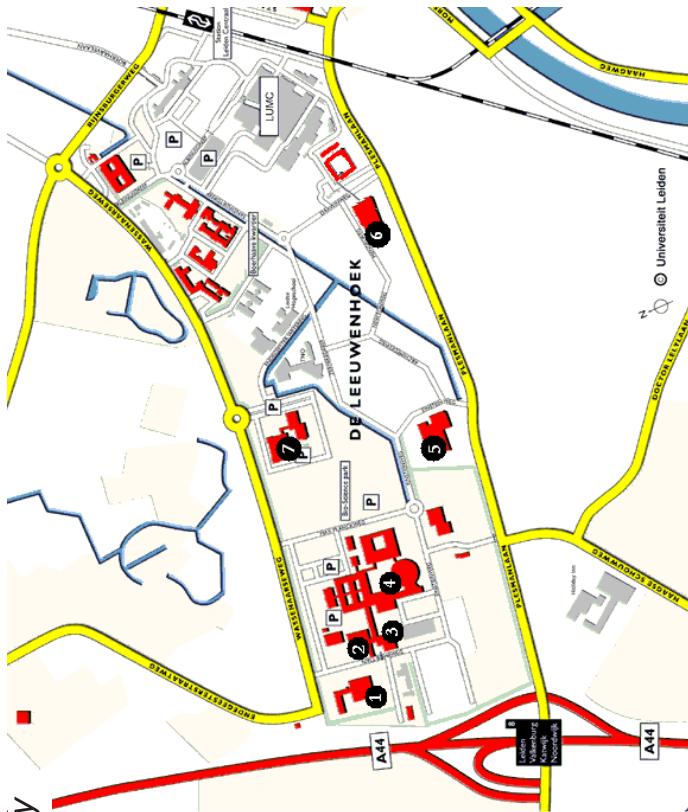
15 to 19 August	El Cid introduction	Leiden (city)
22 to 31 August	Acculturation week international students	Leiden (city)
01 & 02 September	Introduction Days international students	Leiden (city)
September, 05	Opening Academic Year	Pieterskerk
October, 03	Leidens Ontzet Relief of Leiden	Leiden (city)
December, 25 2011 to January 01, 2012	Christmas holidays	Holiday
<b>2012</b>		
02 & 03 February	Introduction Days international students	Leiden (city)
February, 02	Dies Natalis	Leiden University
March, 14	Bètabanenmarkt Science Career Event	Gorlaeus Labs
16 to 19 April	Goede Vrijdag & Pasen Good Friday & Easter	Holiday
April, 30	Koninginnedag (Queen's Day)	Holiday
May, 05	Bevrijdingsdag (Liberation Day)	Holiday
May, 17 (and 18)	Hemelvaartsdag (Ascension Day)	Holiday
27 & 28 May	Pinksteren (Whit-Sun- & Monday)	Holiday





## Map of the Faculty

1. Snellius Building  
Niels Bohrweg 1  
2333 CA Leiden
2. Kamerlingh Onnes  
Laboratory &  
Oort Building  
Niels Bohrweg 2  
2333 CA Leiden
3. Huygens Laboratory  
Niels Bohrweg 2  
2333 CA Leiden
4. Gorlaeus Laboratories  
Einsteinweg 55  
2333 CC Leiden
5. Van Steenis Building  
Einsteinweg 2  
2333 DC Leiden
6. Naturalis  
Darwinweg 2  
2333 CR Leiden
7. Sylvius Laboratory  
Sylviusweg 72  
2333 BE Leiden



# Safety Information Leiden University

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

Do NOT CALL 112!

*but*

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 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

- ★ digitally on [amd.leidenuniv.nl](http://amd.leidenuniv.nl)
- ★ the red paper available at the reception

*or*

CONTACT the safety office of the faculty

- ★ [amd@science.leidenuniv.nl](mailto: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/](http://amd.leidenuniv.nl/e/)

[liacs.nl](http://liacs.nl)  
[iib.liacs.nl](http://iib.liacs.nl)  
[mediatechnology.leiden.edu](http://mediatechnology.leiden.edu)