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A1
GENERAL INFORMATION

A1.1 INTRODUCTION
Welcome to the Study Guide for all degree programmes offered by the Faculty of Mathematics and Natural Sciences (FMNS). This Study Guide aims to provide students and lecturers with information about the various degree programmes. The Study Guide comprises a general section, which is identical for all FMNS degree programmes, and a programme-specific section.

The general section of this Study Guide contains a wide range of information, for example about facilities, student matters and what to do if you run into problems, whereas the degree programme-specific section discusses matters such as the study programme, study associations and important addresses.

A1.2 FACULTY ORGANIZATION
The Bachelor’s and Master’s degree programmes are offered by the Faculty of Mathematics and Natural Sciences (FMNS). FMNS is one of the largest natural sciences faculties in the Netherlands. Teaching within FMNS is organized in an Undergraduate and a Graduate School of Science. The Undergraduate School of Science organizes the teaching of Bachelor’s programmes, while the Graduate School of Science organizes the teaching of Master’s programmes and PhD projects in strong relationship with the research institutes. In general the lecturers of the programmes are researcher in one of the research institutes as well.

All Bachelor’s degree programmes within FMNS except Biology, Life Science and Technology, and Pharmacy are offered in English. All Master’s degree programmes, except Education and Communication and Pharmacy, are offered in English as well. This increases student exchange and reflects the international character of research within the faculty.

A1.3 DEGREE PROGRAMMES IN BRIEF
All FMNS degree programmes start with a three-year (180 ECTS) Bachelor’s phase, each year comprising two semesters. A completed Bachelor’s degree can be followed by a Master’s degree programme lasting at least two years (120 ECTS). Students who successfully complete an FMNS degree programme are awarded the title of Bachelor of Science (BSc) or Master of Science (MSc). In addition, some degree programmes also lead to the conferral of the Dutch ‘ingenieur’ degree, a teaching qualification or a pharmacist’s diploma.

<table>
<thead>
<tr>
<th>Bachelor</th>
<th>ECTS</th>
<th>Bachelor</th>
<th>ECTS</th>
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<tr>
<td>Applied Physics</td>
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<td>Industrial Engineering and Management</td>
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<tr>
<td>Artificial Intelligence</td>
<td>180</td>
<td>Life science and technology *</td>
<td>180</td>
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<tr>
<td>Astronomy</td>
<td>180</td>
<td>Mathematics</td>
<td>180</td>
</tr>
<tr>
<td>Biology *</td>
<td>180</td>
<td>Pharmacy *</td>
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<tr>
<td>Chemical Engineering</td>
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*Only offered in Dutch.*
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<td>Education and Communication**</td>
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<td>Energy and Environmental Sciences</td>
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<td>Artificial Intelligence</td>
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<td>Astronomy</td>
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<td>Industrial Engineering and Management</td>
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<tr>
<td>Behavioural &amp; Cognitive Neurosciences *</td>
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<td>Marine Biology</td>
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<tr>
<td>Biology</td>
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<td>Mathematics</td>
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<td>Medical Pharmaceutical Sciences</td>
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<td>Molecular Biology and Biotechnology **</td>
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<td>Nanoscience *</td>
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<td>Computing Science</td>
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<tr>
<td>Ecology and Evolution #</td>
<td>120</td>
<td>Water Technology (Joint Degree) ***</td>
<td>120</td>
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</tbody>
</table>

* Top/Research master.
** Only offered in Dutch.
*** The Joint Degree programme is offered in collaboration with other institutions skilled in this field of expertise: two other Dutch universities (Wageningen University, University of Twente) and the Technological Top Institute for Water Technology Wetsus, Leeuwarden.
# The top track Evolutionary Biology is part of the master Ecology & Evolution.
## The top track Biomolecular Sciences is part of the master Molecular Biology and Biotechnology.

A1.3.1 Research and academic skills in undergraduate education

Introduction

Since the introduction of the undergraduate and graduate educational degree-programmes at the University of Groningen in 2002, bachelor and master studies are essentially separate and independent degree-programmes. As the University of Groningen is an academic institution, the education of both graduate and undergraduate degree-programmes thus need to be thoroughly intertwined with academic research and students should be familiarized with academic research skills.

Academic skills cannot be regarded as just a separate learning pathway in academic education in which students are trained to retrieve information, communicate, reflect etc., but these skills should be fully connected to and embedded in the academic context in which they are practiced. Academic skills are thus an important precondition and a logical consequence of academic training.

Finally, research and academic skills require an academic attitude, which can be described as a positive predisposition and orientation towards an academic approach of research problems and issues. It requires the tendency to be curious and critical and to work analytical, systematical, fact-based and accurate.

Research-based undergraduate education at the Faculty of Mathematics and Natural Sciences

At the Faculty of Mathematics and Natural Sciences (FMNS) the education of undergraduate programmes is based on the latest academic theories and research outcomes, in the sense that these form an integral part of courses and research projects of bachelor degree-programmes. Furthermore, each undergraduate programme contains an explicit learning pathway introducing, practicing and assessing research and academic skills such as:

- Formulating adequate research goals, questions and/or hypotheses;
- Searching for, assessing and reflecting on scientific literature;
- Setup of basic research experiments, analysis of and reflection on its outcomes and drawing appropriate conclusions;
- Critical thinking, reflection, analytic attitude and capacity;
Reflecting on research methods and research methodology;
Communicate about research progress and outcomes (both orally and in writing);
Cooperate in a (multi-disciplinary) team.

The educational mission of the FMNS is to train students to be able to perform scientific research independently, with a critical and academic attitude, accompanied with a clear ethical conduct, thus preparing them for an excellent starting position for an academic or professional career.

**Implementation of research-based education in curricula of FMNS undergraduate studies**
Research-based education is implemented in virtually all teaching methods used at the faculty; each with its own specific learning objectives, as exemplified below:

- Lectures: The vast majority of lecturers of the FMNS (>95%) are actively involved in academic research and thus are inspired to present the latest academic theories and research outcomes within lectures.
- Initial literature (re)search, analysis and assessment is carried out already in first year symposium type of courses. These assignment-based courses connect students closely to research groups of the FMNS, carrying out literature research linked to or relevant for these research groups.
- Practical courses, tutorials and assignments have the following objectives:
  - Practicing and familiarizing students with experimental work and skills
  - Designing and executing basic research experiments
  - Analysis of data and outcome of these experiments
  - Draw adequate conclusions from and reporting on experimental data
  - Reflect and report on experimental results and conclusions
- Science, Ethics, Technology, and Society course: In this course basic concepts of science philosophy, ethics, innovation theory, argumentation theories and policy making are introduced. This course not only introduces important philosophical and societal considerations and implications of research on society, but also aims to create awareness on ethical and societal conduct of students.
- Bachelor research thesis: During the Bachelor thesis, students are actively involved in research carried out in research groups of the FMNS. Students are challenged as much as possible to excel in their research assignment, while getting regular feedback from their supervisor(s) and other members of research groups in which they are allocated.

As the degree programme progresses, the complexity of the research pathway increases, while the students' involvement will shift from a more passive to a more active stance. Each degree-programme has realized and detailed its research learning line in its own specific way, depending on the focus, scope, and learning outcomes of the study. More details on the research learning pathway are available in the programme-specific study guide of each degree-programme or in the digital course catalogue Ocasys:

- [www.rug.nl/ocasys/fwn](http://www.rug.nl/ocasys/fwn)

**A1.3.2 Erasmus programmes**
At the moment FMNS participates in two Erasmus+ (formerly known as Erasmus Mundus) Master's degree programmes:

- MEME (as part of the Master's programme Ecology and Evolution), [www.evobio.eu](http://www.evobio.eu)
- TCCM (as part of the Master's programme Chemistry), [tccm.qui.uam.es](http://tccm.qui.uam.es)
Erasmus Mundus aims to enhance quality in higher education through scholarships and academic cooperation between Europe and the rest of the world by supporting joint programmes provided by academic consortia. Erasmus Mundus offers financial support for institutions and scholarships for individuals.

**A1.3.3 Science, Business and Policy profile**
The Science, Business and Policy profile (SBP-variant) is the option to choose if you are interested in the social and commercial aspects of your subject. This profile will prepare you for a career within a company or policy organization. In addition to gaining scientific knowledge, you will learn effective presentation skills, how to deal with tough deadlines, how to apply for an internship at a company or organization outside the University, how to give and receive feedback, and how to work efficiently in groups.
The Science, Business and Policy profile is part of many of the Master’s programmes of FMNS and consists of one year of course units and research in the field of your Master’s degree programme complemented with one year of course units and internship focusing on business and policy.

For more information, consult the website: [www.rug.nl/fwn/sbp](http://www.rug.nl/fwn/sbp) and the programme-specific part of the study-guide to see whether the Science, Business and Policy profile is part of your Master's degree programme.

**A1.3.4 How to become a high school teacher**
Since the different trajectories for becoming a high school teacher are taught in Dutch only, this subsection is in Dutch.

Altijd al gewild...
- Voor de klas staan;
- Je kennis van het vak delen, maar ook je passie;
- Leerlingen motiveren en inspireren.

In dat geval zijn de hieronder genoemde mogelijkheden om een onderwijs-bevoegdheid te behalen wellicht interessant voor jou.

**Minor Educatie**
Als je de mogelijkheid hebt om binnen je Bacheloropleiding een vrije minor te kiezen, kun je kiezen voor de Educatieve Minor. Deze minor is een intensieve fulltime opleiding van een halfjaar die - in combinatie met een Bacheloropleiding in een schoolvak - opleidt tot leraar. Je gaat drie dagen per week aan de slag op een middelbare school. Daarnaast verdiep je je bij de Lerarenopleiding in vakdidactiek, ontwikkelingspsychologie en onderwijskunde.

Als je de Educatieve Minor en je Bacheloropleiding met goed gevolg hebt doorlopen, krijg je een onderwijsbevoegdheid ‘beperkt tweedegraads’ voor de onderbouw van zowel vmbo-tl als havo-vwo.

Voor meer informatie zie:
- [www.rug.nl/lerarenopleiding/onderwijs/educatieveminor](http://www.rug.nl/lerarenopleiding/onderwijs/educatieveminor)

**Master Educatie en Communicatie**
De richting Educatie van de Master Educatie en Communicatie in de wiskunde en natuurwetenschappen biedt je een twejarige Masteropleiding tot eerstegraadsleraar in de bovenbouw havo-vwo. Met deze opleiding verdiep je je bètakennis én leer je hoe je die kennis kunt delen, communiceren en onderwijzen.

Voor meer informatie zie:
**Master LVHO**

Behalve via een tweejarige opleiding, kun je ook eerstegraads docent worden via een éénjarige variant, Leraar Voorbereidend Hoger Onderwijs (LVHO). Voorwaarde daarvoor is dat je een Masterdiploma hebt in de richting van het schoolvak waarvoor je een eerstegraads lesbevoegdheid wilt halen. Dus als je eerst een Masteropleiding in je eigen wetenschappelijke discipline wilt volgen en daarna pas een lerarenopleiding wilt doen, kun je voor de Master LVHO kiezen. Je wordt dan eerstegraadsleraar in bovenbouw havo-vwo.

Voor meer informatie zie:
- [www.rug.nl/fwn/beta-master/postmaster](http://www.rug.nl/fwn/beta-master/postmaster)

**A1.4 UNIVERSITY OF GRONINGEN HONOURS COLLEGE**

If you would like an extra intellectual challenge in addition to your regular degree programme, the Honours College may be just what you are looking for. Talented and ambitious students are offered the opportunity to participate in the University of Groningen Honours College during their Bachelor’s and Master’s phases.

**A.1.4.1 Honours College during the Bachelor’s phase**

The Bachelor’s honours programme comprises an extra 45 ECTS in addition to your regular Bachelor’s programme. Within this interdisciplinary programme, 25 ECTS are intended for in-depth study and 20 ECTS for broadening your horizon. The deepening part consists of course units offered by your own faculty in which you get the opportunity to develop and experience research on a subject of your interest. The broadening part consists of course units (unrelated to your faculty), development of a range of skills and also attention is paid to your personal development.

Next to this interdisciplinary programme, the Honours College offers also a Honours programme in Philosophy.

Admission to the programme is by selection, since the number of places available is limited. The top 15% of students on the Bachelor's degree programme are invited to apply, but students who have not received an invitation can also apply (on a ‘wild card’ basis).

For more information on the application procedure see:
- [www.rug.nl/education/honours-college](http://www.rug.nl/education/honours-college)

Or contact the coordinator Han van der Strate:
- [fwn.honours@rug.nl](mailto:fwn.honours@rug.nl)

**A.1.4.2 Honours College during the Master’s phase**

The Master's honours programme is a one-year extracurricular programme with a student workload of 15 ECTS. It offers students who are able and willing to excel, the possibility to deepen their theoretical knowledge about leadership and to improve their leadership skills. This programme will provide a solid starting point for your future academic or social career and it will contribute to your personal development.

For information, see:
- [www.rug.nl/education/honours-college](http://www.rug.nl/education/honours-college)

Or contact the coordinator Han van der Strate:
- [fwn.honours@rug.nl](mailto:fwn.honours@rug.nl)
A.1.4.3 HTSM Honours programme

The focus of this Master’s honours programme is on High Tech Systems and Materials (HTSM). The HTSM honours programme is offered by the University of Groningen – in cooperation with Philips Consumer Lifestyle, University Campus Fryslân and University of Twente – and aims to equip talented, motivated students with the knowledge and skills needed to excel at the frontiers of High Tech Systems and Materials (HTSM).

The 1.5 year HTSM honours programme worth 20 ECTS is followed in addition to the standard Master’s programme. It has been developed especially for students who want to get more from their studies. The Honours programme offers intensive, small-group teaching with a group of like-minded, motivated students. Furthermore, it offers a unique opportunity to collaborate with students from different disciplines on challenging, real-life product development assignments by the industry.

For more information, see:
- www.rug.nl/education/honours-college/htsm-masterprogramme

Or contact the coordinator Vanessa van Hest:
- htsm-honours@rug.nl
A2 STUDENT MATTERS

A2.1 ADMISSION TO THE PROGRAMME
In order to be able to participate in course units and examinations, you must be registered at the University of Groningen as a student of a certain degree programme. Registration for a programme is done via Studielink (www.studielink.nl). You must reregister every year. Please contact the University Student Desk if you have any questions concerning your registration.

Practical information, such as application procedures, can be found on the University website. The University website can also be consulted for the top programmes and the Erasmus Mundus deadlines.

International students please look at:
- www.rug.nl/fwn/fmns-programme
- www.rug.nl/education/international-students/application-procedure

Dutch students please look at:
- www.rug.nl/fwn/beta-studie
- www.rug.nl/education/nederlandse-studenten/inschrijven/

For international students, sufficient proficiency in English (a minimum IELTS test score of 6.5 or a TOEFL test score of 580 (paper-based)) is required for the English taught programmes and sufficient proficiency in Dutch (NT2-II) is required for the Dutch taught programmes.

A2.1.1 Admission to bachelor’s programmes
In case you have a Dutch diploma that according to Dutch higher education law gives entry to the degree programme of your choice, admission is automatic and is handled by Studielink:
- www.studielink.nl

In all other cases (e.g. when you have a non-Dutch diploma or a Dutch diploma that does not give automatic access to the degree programme), besides registering through Studielink, you have to go through an admission procedure in which the Admission Board BSc Programmes of FMNS based on information provided by you, decides whether or not you meet the admission requirements of the programme of your choice.

A2.1.2 Admission to master’s programmes
Students can be admitted to a Master’s degree programme once they have successfully completed a related Bachelor’s degree programme at the University of Groningen.

Students with a Bachelor’s degree from another Dutch or foreign university may also qualify for admission. However, admission is then granted on an individual basis by the Admissions Board. The Admissions Board will check whether you have the appropriate qualifications. In case of a Bachelor’s degree from a foreign university after registration in Studielink you will be contacted by the Admissions Office who will provide you with information on how to proceed with the admissions process. In case of a Bachelor’s degree from another Dutch university please contact the relevant academic advisor for information on how to proceed with the admissions process.
Pre-master programme
In certain cases a pre-master programme is required for Dutch students with a partially suitable Bachelor of Science or a suitable Bachelor's degree in Applied Sciences (HBO). For more information and assistance with applying ask the relevant academic advisor.

A2.2 ACADEMIC YEAR
The general academic year overview for FMNS is set out on the next page. The course units offered by the Life Science programmes are offered in blocks. Each block takes three weeks. During a block a student is engaged in one course unit. The course units offered by the other degree programmes are offered in periods of ten weeks (eight weeks of classes followed by two weeks of exams). A student is in general engaged in three course units during a period.

Some course units, for example for the degree programmes in Artificial Intelligence and Industrial Engineering and Management, are offered by other faculties. As their academic year overviews may differ from the one set out in the schedule presented here, for these course units you should consult the timetables on the web or the programme-specific part of this Study Guide.

Information about timetables and national holidays can be found via the following website:
- rooster.rug.nl
### Academic calendar 2016–2017

<table>
<thead>
<tr>
<th>Week Nr.</th>
<th>Start &amp; end date</th>
<th>Life Science degree programmes</th>
<th>Non-life Science degree programmes</th>
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<td>mo. 12-09-16 - fri. 16-09-16</td>
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<td>mo. 12-12-16 - fri. 16-12-16</td>
<td>L5</td>
<td>L5/R**</td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>mo. 19-12-16 - fri. 23-12-16</td>
<td>L6/E</td>
<td>L6</td>
<td></td>
</tr>
<tr>
<td>PERIOD 1.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PERIOD 2.1</td>
<td>Vacation</td>
<td>Vacation</td>
<td>Christmas and New Year</td>
</tr>
<tr>
<td>52-1</td>
<td>mo. 26-12-16 - fri. 06-01-17</td>
<td>L7</td>
<td>L7</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>mo. 09-01-17 - fri. 13-01-17</td>
<td>L8</td>
<td>L8</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>mo. 16-01-17 - fri. 20-01-17</td>
<td>L8 (Resits AI*)</td>
<td>L8</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>mo. 23-01-17 - fri. 27-01-17</td>
<td>L9/E</td>
<td>L9/E</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>mo. 30-01-17 - fri. 03-02-17</td>
<td>Resits 1.2</td>
<td>Resits 1.2</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>mo. 06-02-17 - fri. 10-02-17</td>
<td>L1</td>
<td>L1 (Resits***3)</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>mo. 13-02-17 - fri. 17-02-17</td>
<td>L2</td>
<td>L2</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>mo. 20-02-17 - fri. 24-02-17</td>
<td>L3/E</td>
<td>L3/R**</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>mo. 27-02-17 - fri. 03-03-17</td>
<td>L4</td>
<td>L4/R**</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>mo. 06-03-17 - fri. 10-03-17</td>
<td>L5</td>
<td>L5/R**</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>mo. 13-03-17 - fri. 17-03-17</td>
<td>L6/E</td>
<td>L6</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>mo. 20-03-17 - fri. 24-03-17</td>
<td>L7</td>
<td>L7</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>mo. 27-03-17 - fri. 31-03-17</td>
<td>L8</td>
<td>L8</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>mo. 03-04-17 - fri. 07-04-17</td>
<td>L9/E</td>
<td>L9/E</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>mo. 10-04-17 - th. 13-04-17</td>
<td>Resits 2.1</td>
<td>Resits 1.2**</td>
<td>Fri. 14-04 Good Friday</td>
</tr>
<tr>
<td>16</td>
<td>tu. 18-04-17 - fri. 21-04-17</td>
<td>L1</td>
<td>L1 (Resits**3)</td>
<td>Mo. 17-04 Easter Monday</td>
</tr>
<tr>
<td>17</td>
<td>mo. 24-04-17 - fri. 28-04-17</td>
<td>L2</td>
<td>L2</td>
<td>Th. 27-04 Kings Day</td>
</tr>
<tr>
<td>18</td>
<td>mo. 01-05-17 - th. 04-05-17</td>
<td>L3</td>
<td>L3/R**</td>
<td>Fr. 05-05 Liberation Day</td>
</tr>
<tr>
<td>19</td>
<td>mo. 08-05-17 - fri. 12-05-17</td>
<td>L4/E</td>
<td>L4/R**</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>mo. 15-05-17 - fri. 19-05-17</td>
<td>L5</td>
<td>L5/R**</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>mo. 22-05-17 - fri. 26-05-17</td>
<td>L6</td>
<td>L6</td>
<td>Th. 25-05 Ascension Day</td>
</tr>
<tr>
<td>22</td>
<td>mo. 29-05-17 - fri. 02-06-17</td>
<td>L7/E</td>
<td>L7</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>tu. 06-06-17 - fri. 09-06-17</td>
<td>L8</td>
<td>L8</td>
<td>Mo. 05-06 Whit Monday</td>
</tr>
<tr>
<td>24</td>
<td>mo. 12-06-17 - fri. 16-06-17</td>
<td>L9</td>
<td>L9 (Resits AI*)</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>mo. 19-06-17 - fri. 23-06-17</td>
<td>L10</td>
<td>L10</td>
<td>Examinations 2.2</td>
</tr>
<tr>
<td>26</td>
<td>mo. 26-06-17 - fri. 30-06-17</td>
<td>L11/E/R</td>
<td>Resits 2.1**</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>mo. 03-07-17 - fri. 07-07-17</td>
<td>Resits 2.2</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>mo. 10-07-17 - fri. 14-07-17</td>
<td>-</td>
<td>-</td>
<td>Resits 2.2,</td>
</tr>
<tr>
<td>29-35</td>
<td>mo. 17-07-17 - fri. 01-09-17</td>
<td>Vacation</td>
<td>Summer holidays</td>
<td></td>
</tr>
</tbody>
</table>

L: lectures E: exams R: resits;  
* For Artificial Intelligence courses the resits are scheduled in the last week of the following block.  
** For Computing Science courses the resits are scheduled either in week 3, 4, 5 of the following block or at the end of the next exam period.  
*** For some Non-Life Sciences courses (mainly IEM and (Applied) Physics) the resits will take place in the first lecture week of the following block.
A2.3 FINANCIAL MATTERS
The University Student Desk (USD, see C2.2) provides information about registration procedures, tuition fees and everything you need to do to ensure that your registration becomes and remains valid. They also provide students who have paid their fees and have registered as students at the University of Groningen with a University Pass, the so called RUG-pass.

A2.3.1 Tuition fees
Information regarding tuition fees can be found on the website:
- myuniversity.rug.nl/infonet/studenten/inschrijving/collegegeld/
International students can find information on tuition fees on the following website:
- www.rug.nl/education/international-students/financial-matters
You can also contact the USD for further information.

A2.3.2 Student finance – DUO grants
For more information about Student Finance and grants (and the changes as of 1 September 2015 in this system) for Dutch students, please contact the Dienst Uitvoering Onderwijs (DUO) Groningen office:
- www.duo.nl

A2.3.3 Study costs
The University of Groningen has a policy on study costs. The policy aims to control costs so that the study cost component does not exceed the grant/loan budgets for Dutch students. The amount that students are required to spend on study materials will therefore not exceed the government grant. The standard sum for 2016-2017 is € 740,-. Each programme phase has a cost ‘ceiling’ (standard sum x length of programme phase, i.e. propaedeutic, bachelor, master, major, minor).

Sometimes it is not possible to avoid exceeding the ceiling amount. In such cases it is possible to apply to the Faculty Board for reimbursement of half the extra expenditure on the basis of receipts submitted as proof. Sometimes other arrangements may be possible. Students can obtain information on the cost policy at www.rug.nl/insandouts or Frequently asked questions on /myuniversity. They can also visit the University Student Desk or their academic advisor.

A2.4 REGISTRATION FOR COURSE UNITS AND EXAMS
Registration for course units and exams is compulsory and should be completed in time and is done via ProgRESS WWW:
- progRESSwww.nl/rug
- Timely registration for course units is considered to be registration at least 4 weeks before the period the relevant course unit starts in.
  - Registration for a course unit obliges the registered person to appear for the first session of the course unit.
  - ProgRESS WWW does not allow you to register for more than four courses in a period. In case you want to register for more courses in a period please contact your academic advisor.
  - Please deregister for a course unit in case you decide not to attend.
- Registration for written examinations is coupled to the registration for course units! Students are responsible for a timely registration at least one week before the date of the exam:
  - In case you attend a (re-)exam you need to be present at the start of the (re-)exam.
In case you register for a course unit you will automatically be registered for the exam.
In case you fail the exam you will automatically be registered for the re-exam.
It is possible to register separately for an exam or re-exam, i.e. you can register for a (re-)exam without registering for the course.
Despite the automatic exam registration the student remains responsible for being properly registered for (re-)exams.
**Please deregister for a (re-)exam in case you decide not to attend.** There is an opportunity to sign out until at least 1 week before the date of the (re-)examination.

**Note:** Some degree programmes, for example Artificial Intelligence and Industrial Engineering and Management, include a lot of course units offered by other faculties. Different registration procedures apply to these course units! Please check the programme-specific section of this Student Handbook for the registration deadlines for these course units, or contact the Education Office of the relevant degree programme or faculty.

You can always contact the student information desk of the faculty that offers the course unit, i.e. the Education Support Desk (see Section A3.1.1) for courses offered by the Faculty of Mathematics and Natural Sciences, if you have trouble registering.

The Board of Examiners may grant permission to take a course unit or examination, even when a student is not properly registered, in special cases of force majeure. Please contact the academic advisor for more information.

**Coupling between ProgRESS WWW and Nestor**

*Nestor* is the electronic learning environment of the University of Groningen (see Section A4.3.6) and is used by the lecturer of a course to provide course material (like slides, reader, exercises) and post announcements.

Registration in *ProgRESS WWW* and enrolment in a *Nestor* course are coupled:
- Registration in *ProgRESS WWW* for a course or exam automatically results in enrolment in the corresponding *Nestor* course.
- Enrolment in a *Nestor* course does not mean you are allowed to participate in the course itself, therefore you need to be registered in *ProgRESS WWW* for the course.
- If you are planning a resit only, please do not register in progress for the whole course unit (including practicals and or group assignments) but send a request to be admitted to Nestor to have access to the learning environment of the course unit.

<table>
<thead>
<tr>
<th>Registered/access in</th>
<th>I have access to the course in <em>Nestor</em></th>
<th>I am allowed to participate in the course</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>ProgRESS WWW</em></td>
<td>Course</td>
<td>Yes (if available)</td>
</tr>
<tr>
<td><em>ProgRESS WWW</em></td>
<td>Exam</td>
<td>Yes (if available)</td>
</tr>
<tr>
<td><em>Nestor</em></td>
<td>Course</td>
<td>Yes (if available)</td>
</tr>
</tbody>
</table>
A2.5 CREDIT POINTS AND MARKING SYSTEM

University degree programmes comprise several course units. Each course unit is awarded a number of ECTS credit points (ECTS: European Credit Transfer and Accumulation System). ECTS is an EU standardized system for measuring student workload as a means of facilitating international mobility. One ECTS credit point represents 28 hours of full-time study (including contact hours, reading, independent study, preparation for exams, etc.). 60 ECTS credit points represent one year.

A2.5.1 Marking system

After an exam is completed, the results are administered in the automated results registration system (ProgRESS WWW). A list of the results you have achieved can be found on the internet:

- progRESSwww.nl/rug

Please contact the Education Support Desk (ESD) immediately if you find an error in your registered marks.

If an official results transcript is required, a printout can be requested from the Education Support Desk (ESD, see Section A3.1.1).

In general, each course unit is examined either by an examination (written or oral), a written assignment, or a presentation. The Dutch marking scale ranges from 1 (lowest) to 10 (highest). As an indication, 6 is the minimum pass mark, and 10 and marks lower than 3 are highly exceptional:

10 Outstanding; a remarkable performance; seldom given
9 Excellent
8 Very good
7 Good
6 Satisfactory
<6 Unsatisfactory

A mark below 6 requires the course unit to be repeated until a 6 or higher is achieved. The final cumulative mark for the whole programme is the weighted average of the individual marks for each of the elements, taking into account the student workload. Alternatively, an assessment can be registered as pass or fail only. This type of assessment is used for practicals and also for the registration of results from abroad (based on the transcript of records of the foreign University).

A2.5.2 Fraud

Fraud and plagiarism are not accepted at this University or anywhere else in the academic community. In all cases where plagiarism is found or suspected, the Board of Examiners will act accordingly. If the Board decides that plagiarism has occurred, it will impose a sanction in accordance with the Rules and Regulations (see Section C1.3). In general, this will result in the student being excluded from participation in examinations or other forms of testing for the relevant course unit for the current academic year.

A2.6 BINDING STUDY ADVICE: THE BSA SYSTEM

A binding (negative) study advice is a binding decision regarding the continuation of the Bachelor’s degree programme.

To be allowed to continue your Bachelor’s degree programme, you must have earned at least 45 ECTS credit points by the end of your first year and have gained your propaedeutic certificate by the end of your second year.

If you fail to satisfy these requirements, you will be issued a binding (negative) study advice. This means you are not allowed to continue your degree programme and will not
be allowed to register for the same Bachelor’s degree programme for the next two years. You can, however, register for other degree programmes. However, a negative BSA for a certain degree programme may also apply to a cluster of related degree programmes (see the website below for the clusters within FMNS).

If you decide in your first year to deregister for your degree programme before the 1st of February, it is possible to register in a later academic year for the same degree programme again, thereby avoiding a binding study advice in the academic year of deregistration.

If you fail to satisfy the BSA requirements due to personal circumstances, you can apply for an adapted BSA threshold. Please contact the academic advisor as soon as the circumstances arise.

More information about the BSA system can be found on:
- myuniversity.rug.nl/infonet/studenten/bindend-studie-advies/

A2.7 STUDY DELAY AND GRADUATION FUND (PROFILERINGSFONDS)

If circumstances beyond your control affect your progress during your studies, you may be eligible for financial assistance from the Graduation Fund (Profileringsfonds). The conditions are set out in the regulations pertaining to the Fund:
- myuniversity.rug.nl/infonet/studenten/profileringsfonds/

If you experience study delay due to circumstances beyond your control, and if the delay is expected to amount to more than four weeks, you must report this immediately to the academic advisor. The following can constitute grounds for financial assistance:
- Illness;
- Family circumstances;
- A disability (physical limitations);
- Pregnancy;
- Lack of a degree programme that meets objective standards;
- Loss of certification for your degree programme;
- Other circumstances of an exceptional nature.

The academic advisor will direct you to a student counsellor if your delay amounts to or is expected to amount to more than 15 ECTS credit points. You will have to make an appointment with a student counsellor for a follow-up report yourself. If during the academic year the delay amounts to more than 15 ECTS after the first report to the academic advisor, you must contact a student counsellor immediately, even if you have not been told to do so by the academic advisor.

You must follow the advice of and the agreements made with the academic advisor and the student counsellor or you will not be eligible for financial support from the Graduation Fund.

Apply in good time for financial assistance. If you apply late you will not receive any financial compensation.
A2.8 GRADUATION AND APPROVAL OF STUDY PROGRAMME

The degree application comprises two steps:
1. The approval of your study program by the Board of Examiners.
2. The actual degree application ultimately resulting in the graduation ceremony.

Starting the application process takes place by means of registration in ProgRESS WWW the same way you register for a module, exam or re-sit, and subsequently composing your study program in ProgRESS WWW (see Section A4.3.7).

In ProgRESS WWW you go to:
Enrolments RuG > Mathematics and Nat. Sciences > (Under)Graduate school > BSc /MSc “Program” > Aanvraag examen BSc/MSc “Program”
Once you have submitted your programme the Board of Examiners will decide about approval of your programme.

ProgRESS WWW detects when you have finished all modules of your approved study programme. The administration will than start the process of the degree application. You can follow the progress of this process in the degree application module in ProgRESS WWW.

Information regarding ceremony dates can be found on the Student Portal or the programme-specific section of the Study Guide.

On request, students who drop out can receive a statement of their academic record including the course units passed.

Honours predicate
In some cases a student will be awarded an honours predicate, Cum Laude or Summa Cum Laude. The specific guidelines for this predicate can be found for the Bachelor’s programmes in the Teaching and Examination Regulations (see Section C1.2) and for the Master’s programmes in the Rules and Regulations of the Board of Examiners (see Section C1.3).

A2.9 OBJECTION AND APPEAL PROCEDURES

If you have a complaint, or if you disagree with a certain decision, you can voice your concerns in an informal and/or a formal way:

- Informal - The quickest way to solve a problem is to talk to the person or body with whom you have the problem. If the relationship or atmosphere between you and the person in question does not allow for informal talks, you can ask your academic advisor or the SSC student counsellors for advice.
- Formal - You can lodge an official complaint, objection or appeal if there are degree programme-related matters that you are not happy with or do not agree with.
A2.9.1 Board of Appeal for Examinations (CBE)
The Board of Appeal for Examinations (CBE) is an independent body where administrative appeals can be lodged against individual decisions by Boards of Examiners, examiners and Admissions Boards on the basis of Article 7.60 of the Higher Education and Research Act (WHW). This may concern decisions about subjects specifically related to teaching, such as:
- Marking of examinations and final assessments;
- Admission to examinations;
- Admission to a degree programme;
- Assessment of the entrance examination (colloquium doctum);
- Establishing the number of ECTS credits earned;
- Granting of exemptions.

For more information, see the Student Portal.

Appeals can be submitted to the Central Portal for the Legal Protection of Student Rights (CLRS, see A2.9.3).

A2.9.2 Complaints, concerning sexual harassment, aggression, violence and discrimination (SIAGD)
Complaints concerning, for example, sexual harassment, aggression, violence or discrimination should be reported to the University of Groningen Confidential Advisor. The Confidential Advisor is available to both students and staff members. The Confidential Advisor has an independent position within the University and all consultations are treated confidentially. For more information, see the Student Portal.

If you feel you are the victim of unwanted behaviour, you can also submit a written complaint to the Central Portal for the Legal Protection of Student Rights (CLRS, see A2.9.3). All documents related to such complaints are treated strictly confidentially.

A2.9.3 Central Portal for the Legal Protection of Student Rights (CLRS)
Appeals against individual decisions by Boards of Examiners or official complaints concerning sexual harassment, aggression, violence or discrimination can be submitted in writing to the Central Portal for the Legal Protection of Student Rights at the following address:

CONFIDENTIAL University of Groningen
Central Portal for the Legal Protection of Student Rights (CLRS)
P.O. Box 72
9700 AB Groningen
the Netherlands

Every complaint will be treated as confidential. More information can be found on:
- www.rug.nl/education/laws-regulations-complaints/complaintobjectionappeal

A2.10 COMMITTEES
The Faculty of Mathematics and Natural Sciences has a number of managerial bodies, including:

A2.10.1 Board of Examiners
The Board of Examiners [Examencommissie, EC] draws up rules related to the practical aspects of examinations, such as how exams may be taken, what the criteria for a ‘cum laude’ predicate are and how registration is arranged. In addition to these general rules, the Board of Examiners is also responsible for individual matters such as approval of individual study programmes, granting exemption from course units, admission to course units to which you would normally not be admitted, assessing force majeure in
situations related to registration and examinations and investigating potential cases of fraud. The Board of Examiners is also your point of call for complaints about examinations and marking.

Each degree programme has its own Board of Examiners, which is only authorized to rule in matters concerning that specific degree programme. Some degree programmes include course units offered by other degree programmes. The Board of Examiners for the degree programme setting the examinations is authorized to assess the examinations, deal with any complaints and decide upon requests for alternative exam regulations. Course units taught by other degree programmes or faculties are the responsibility of the Board of Examiners of the degree programme in question.

The Board of Examiners comprises at least of one member who is a lecturer in the degree programme and one member from outside the programme. Please see the programme-specific section of the Study Guide for more information and a list of members of the relevant Board of Examiners.

**A2.10.2 Programme Committee**
The Programme Committee [PC, Opleidingscommissie, OC] handles all important matters regarding a degree programme, with the exception of individual problems. This committee directly advises the Faculty Council with regard to the content of the Teaching and Examination Regulations [OER, onderwijs- en examenregeling]. Additionally, the Committee is responsible for the evaluation of course units and the evaluation of the degree programme. It also issues solicited and unsolicited advice to the Programme Director about educational issues. A Programme Committee consists of both staff members and students. Information on the Programme Committee members for your degree programme can be found in the programme-specific section of the Study Guide.

**Student platforms and Bètastuf**
Most degree programmes also have a student platform, in which students from all cohorts meet to discuss their degree programme. This way, problems can be identified at an early stage and possibly even resolved before the end of the course unit in question. Student representatives from the Programme Committees (OCs) also attend these meetings, which may therefore also serve as input for the OCs. Please check the programme-specific section of the Study Guide for more information about your degree programme’s student platform and how to contact it. Bètastuf is the overarching organisation for all the student-representation in FMNS.

See for more information:
- [www.rug.nl/fwn/organization/betastuf](http://www.rug.nl/fwn/organization/betastuf)

**A2.10.3 Admission Board BSc Programmes**
Students who apply for admission to a Bachelor’s degree programme based on prior education that according to Dutch higher education law does not give entry to the degree programme of your choice (e.g. a non-Dutch diploma, Dutch diploma without the proper profile, or Dutch propaedeutic certificate of a university of applied sciences) will be assessed by the Admission Board BSc Programmes (CBT, Commissie Bijzondere Toelating). For more information about the admissions procedure, see Section A2.1.

Contact information can be found on the FMNS website:
- [www.rug.nl/fwn/beta-studie/praktisch/toelating-inschrijving/](http://www.rug.nl/fwn/beta-studie/praktisch/toelating-inschrijving/)
A2.10.4 Admissions Board for the Master’s programme
Students can be admitted to a Master’s degree programme once they have successfully completed a related Bachelor’s degree programme at the University of Groningen. Students with a Bachelor’s degree from another Dutch or foreign university may also qualify for admission. However, admission is then granted on an individual basis by the Admissions Board of the programme. Each (cluster of) Master’s degree programmes has its own Admissions Board. For more information about the admissions procedure, see Section A2.1.

A2.10.5 Faculty Board
The Faculty Board (Faculteitsbestuur, FB) is responsible for the management and administration of the Faculty, and for the supervision of the quality of the teaching and research. The FB also draws up the budgets and allocates the staff.

After each meeting, the Faculty Board sends an overview of the topics discussed and decisions taken to the Faculty Council, the Director of Undergraduate and Graduate Studies and the directors of the research institutes for their information, unless the interests of the University or of the involved persons preclude this.

A2.10.6 FMNS Faculty Council
The Faculty Council [Faculteitsraad] is FMNS’s consultative participation body. It has staff and student members and is authorized to discuss the general affairs of the Faculty with the Faculty Board, to make suggestions and to voice its opinions.

The Faculty Council has rights of approval and rights to advise the Faculty Board about matters that are specifically relevant to the Faculty. In addition, the Faculty Council has rights of approval with regard to the Faculty Regulations and a large part of the Teaching and Examination Regulations. Where the Faculty Board has the right to take certain measures independently, the staff section of the Faculty Council has rights to advise as well as rights of approval.

More information can be found on the website:
- www.rug.nl/about-us/organization/administrative/participation/faculty-councils/faculty-council-fwn
A3
STUDENT SUPPORT

A3.1 EDUCATION SUPPORT CENTRE
The staff of the FMNS Education Support Centre (ESC) provides support to the teaching organization. Staff members are academic advisors, degree programme coordinators, schedulers, exchange coordinators, student administration, and secretaries. Their support involves:

- Providing information for students and prospective students about the teaching programme;
- Helping students with study-related problems;
- Organizing registration for course units and examinations;
- Administering examination results and degree certificates;
- Compiling lecture and examination timetables;
- Providing information about study abroad and financial support;
- Formulating and implementing education policy, etc.;
- Conducting and processing surveys in the field of teaching quality assurance;
- Supporting the Programme Committees and Board of Examiners.

The ESC has offices at Zernike and at the A. Deusinglaan (ADL) location. Although FMNS students are welcome to visit both locations if they have general questions, programme-specific knowledge is mainly concentrated at the location where the students follow most of their course units.

A3.1.1 Education Support Desk
The Education Support Desk (ESD) is the ESC’s front office. This is where students can turn to with questions and comments about the teaching organization. Please feel free to contact the ESD via e-mail or phone, or drop by during opening hours.

You may visit the ESD for the following kind of matters:

- To hand in programme-related forms or documents;
- To get a certified transcript of records (free of charge);
- In case of questions about the processing of grades in ProgRESS WWW;
- In case of enrolment problems in ProgRESS WWW;
- If you have questions about graduation (after reading the relevant information on this Nestor page).

**ESD Zernike**
Location: Bernoulliborg, Nijenborgh 9, building 5161, first floor
Opening hours: 10:30 – 12:00 (all week days)
                      13:00 – 15:00 (not on Wednesday and Friday)
Telephone: (050) 363 4422
          (between 9.00 – 12:00 and 13:00 – 16.00)
E-mail: esc.fwn@rug.nl
ESD ADL  
Location:  UMCG, Antonius Deusinglaan 1, building 3214, ground floor  
Opening hours:  12:00 – 14:00  
Telephone:  (050) 363 3315 or (050) 363 3343  
(between 9.00 – 12:00 and 13:00 – 16.00)  
E-mail:  esc.fwn@rug.nl  

For detailed information about closing days (for instance due to holidays) see the Student Portal.

A3.1.2 Academic Advisor  
Successful study depends on many different factors, and it is therefore understandable that students sometimes need to consult an impartial expert. The task of the academic advisor [studieadviseur] is to assist students in finding solutions to any problems encountered while studying. In practice, this concerns matters like the choice of degree programme, study pace or an improvement in study methods. You can visit the open office hours of an academic advisor or make an appointment via the Education Support Desk or using youcanbook.me. For an overview of the academic advisors see the Nestor page of the Education Support Centre and for the contact information of the academic advisor relevant for you see the programme-specific section of the Study Guide.

During the academic year academic advisors organize meetings to support students with certain aspects of their study. In the Thesis Support Group students, who have problems keeping pace when working on a large research project, meet weekly under the supervision of an academic advisor. They discuss their progress and set goals for the coming week. Similarly, other groups of students meet on a regular basis to increase their general study progress.

Problems of a more general nature (e.g. the financial consequences of study delay) are often dealt with by consulting the University student counsellors. You can also discuss social matters with the academic advisor if you need a confidant for personal problems. In some of these cases the academic advisor will recommend the more specialized assistance provided by the Student Service Centre (SSC, see section A3.4.2).

Students can book their own appointment with an academic advisor, using an online booking system (https://youcanbook.me), for which the specific URL can be found at Nestor.

A3.1.3 Degree Programme Coordinator  
The degree programme coordinator [onderwijscoördinator] supports the teaching process within the programme, is the secretary of the Board of Examiners and advises the Programme Committee. Consult the contact information in the programme-specific section of the Study Guide if you wish to contact the degree programme coordinator.

A3.2 STUDYING WITH A PERFORMANCE DISABILITY  
Sometimes personal circumstances necessitate adjustments in teaching or testing. This can occur when students have dyslexia or performance disabilities due to a physical disability, a psychiatric problem or a chronic illness. Adjustments usually involve:

- Making certain facilities available (extra exam time, adapted exam material, etc.) permitting exceptions from the Teaching and Examination Regulations (see section C1.2);
- Extracurricular individual examinations;
- Different examination time or place;
- Relaxation of study progress rules;
- Replacement assignment for compulsory lectures or practical’s, etc.

In consultation with the academic advisor, you can examine what is necessary or determine which facilities you can use, which departures from the OER will be requested, whether it will be necessary to adapt your study pace or study planning, etc.

Please inform as soon as possible the academic advisor in case you have a performance disability.

A3.3 STUDYING ABROAD

Several FMNS Bachelor’s and/or Master’s degree programmes offer students the opportunity to gain academic and social experience abroad. Next to attending regular courses at a host university, you can also opt for other projects, such as: work placements, minors (3rd year BA) or MA research projects. Please ask your academic advisor whether an exchange period or a project fits in your programme. If your academic advisor finds your project feasible, go to the Exchange Office (see A3.3.2) who will tell you how to proceed.

A3.3.1 Organizing study period abroad

Where can you go?
If you want to study at another European university, you can be hosted at the following Erasmus partner universities of the FMNS Faculty: check the Student Portal.

Note: contact the Exchange Office (Bernoulliborg) to know whether you are eligible for an Erasmus exchange period and to check which places are still available.

If you would like to spend a study period outside Europe, you could leave within the framework of the Multi-Faculty Exchange (MFE). The RUG has university-wide agreements with some highly ranked universities worldwide, see the Student Portal.

Bear in mind that the deadline for MFE is extremely early (last year: February 1st) and that many documents (as an official language test) should be handed in by then. The deadline for the academic year 2015-16 was not known at the moment this study guide was prepared.

In case you wish to conduct an internship, be aware that you can go anywhere in Europe (with an Erasmus funding) or outside Europe (with a Marco Polo scholarship). For information about funding and/or eligibility, contact the Exchange Office.

How can you finance your study period abroad?
The easiest way to finance a study period or a work placement abroad - within Europe - is with an Erasmus grant. This scholarship entitles you to an allowance of 12 months, which you can use in several (interrupted) times. For destinations outside Europe (be it for a study programme or for an internship), you can apply for a grant from the University's Marco Polo travel fund. Know that a combination of both these grants (Erasmus and Marco Polo) is not possible. For more details about these grants or any additional funding, please contact the Exchange Office (see A3.3.2).

Are you eligible for a grant?
To be eligible for an Erasmus or Marco Polo grant, you must at least have completed the first year Bachelor’s degree programme.
Besides, the following conditions apply to both grants:

- Internship duration: min. 2 months/ max. 12 months.
- Study period: min. 3 months/ max. 12 months.
Which requirements must your study programme abroad meet?
Before your departure, the Board of Examiners must approve the study programme you compiled for your study period at the hosting university. Be aware that, without this approval, your results will not be included in your list of marks after your return.

How do you prepare your stay abroad?
There are a number of things to arrange before you can go abroad: the application procedure at the host universities, a housing request, etc. Keep in mind that hosting universities all have different application deadlines. The deadlines for the grants also vary according to your dates of departure and arrival.
This being said, remember that you first have to be officially nominated as an exchange student by the Exchange Office before you can start applying at the host university.

When should you start preparing your stay abroad?
For an Erasmus exchange, it is recommended to contact the Exchange Office at least 8 months before the start of the semester abroad.
For a MFE application, please pass by 4 months before the deadline.

A3.3.2 Exchange Office
The Exchange Officers for FMNS are:
- Henriëtte Mulder (at Zernike)
- Margriet Hulshof (at ADL)
They can advise and help you complete all the necessary procedures.

You can contact them by e-mail:
- exchange.science@rug.nl
- m.a.hulshof@rug.nl

Or come by during the Office Hours:
- Exchange Office, Bernoulliborg, room 5161.0050
- ADL 1, room 3213.0017

For additional information, see:
- www.rug.nl/fwn/informatievoor/studenten/studerenbuitenland

A3.4 NON-DEGREE-PROGRAMME-RELATED SUPPORT
During your studies you may run into all kinds of problems and questions. The following organizations may be able to help you:

A3.4.1 University Student Desk
If you have any questions about application, admission, registration or deregistration, study delay, student finance and other financial matters, please consult the knowledge base at:
- www.rug.nl/education/hoezithet

If you cannot find the answer to your question, just click the contact button to send an e-mail.

You can also contact the University Service Desk (USD) at the Academy Building about any of these issues. If the USD cannot help you, they will refer you on, for example to the Student Service Centre. You can make an appointment for the SSC student counsellors’ office hours via the USD. At the end of August and the first weeks of the academic year the USD holds office at the Zernike Complex as well.

For the contact details and the opening hours of the USD, go to:
- www.rug.nl/usd
A3.4.2 Student Service Centre (SSC)
The Student Service Centre is the student counselling expertise centre of the University of Groningen. The student counsellors, psychologists and trainers work together to provide an integrated package of student support with the aim of helping students with their studies. They can prevent or remove possible impediments to your study progress so that you can develop fully during your time at university. The SSC has a wide range of support facilities – information and advice, individual sessions, short-term therapy and a wide variety of workshops and training courses.

For more information see the Student Portal.

Information, advice and counselling
The student counsellors have been appointed by the University to provide confidential counselling for students. They deal with all kinds of non-degree-programme-related matters such as significant study delay (more than 3 months (15ECTS)), legal matters, complaints, objections and appeals, but also questions concerning choice of degree programme, financial help and personal and confidential matters.

You can make an appointment with a student counsellor via the Student Service Centre, Uurwerkersgang 10, telephone: (050) 363 8066 or via the University Student Desk (USD), Broerstraat 5, telephone: (050) 363 8004.

Short-term therapy
Not everyone will have an easy time adjusting to a new environment, strange customs and a different language. This does not necessarily mean that you will need professional help, but if problems begin to affect your studies and your personal life, you can always ask the psychological counsellors for help. This help is available to all students at the University. An initial assessment is free of charge, follow-up sessions will cost EUR 40 (once-off payment).

For more information, see the Student Portal.

You can make an appointment with a psychological counsellor via the Student Service Location: Uurwerkersgang 10, 9712 EJ Groningen Telephone: (050) 363 8066 E-mail: ssc-secretariaat@rug.nl

Training courses and workshops
Do you have a tendency to procrastinate? Are you not sure how to deal with Multiple-choice exams? Is learning how to study effectively still a challenge for you? For all these study issues and more you can find a course or workshop at the Student Service Centre.

Please visit the Student Portal for more information.
**Open office hours for International Students**
Living and studying in a foreign country is a great experience, but sometimes problems can stand in the way of studying successfully. Do you doubt your study methods? Are you encountering study problems? Or are you experiencing personal difficulties? Come to the open office hours for international students at the Student Service Centre of the University of Groningen. An expert from the Student Service Centre will try to help you solve your problems. In some cases they might refer you to a student counsellor, a psychological counsellor or one of the workshops of the Student Service Centre. Participation is free. You don't have to register. Just come in during the hours that are stated on the Student Portal and report to the information desk at the Student Service Centre, Uurwerkersgang 10 in Groningen.

**A3.4.3 International Service Desk (ISD)**
The International Service Desk (ISD) provides information to foreign students, prospective students and foreign researchers, specifically with regard to studying, doing a PhD and temporary residence at the University of Groningen for research or other purposes. The ISD also assists foreign guests staying in Groningen or those responsible for their stay with any queries they may have about issues such as regulations relating to foreigners, study advice, medical care, financial matters, accommodation, and facilities and official organizations within the city. The ISD also organizes and coordinates a number of introductory and social activities jointly with organizations such as Wings, the Global Club and the Foreign Guest Club. In some cases, the ISD is solely responsible for looking after foreign guests – if, for example, they have been invited to Groningen as guests of the Board of the University or have come to the University of Groningen within the framework of a joint project with a developing country.

For more information, see:
- [www.rug.nl/education/international-students/international-service-desk](http://www.rug.nl/education/international-students/international-service-desk)

**A3.4.4 International students' association ESN-Groningen**
ESN-Groningen coordinates and stimulates the international activities of the student community in Groningen. It was founded in 1988. ESN-Groningen is part of the Erasmus Student Network (ESN) and works closely with the University of Groningen. One of the functions of ESN-Groningen is to support international students. This includes finding a student mentor – a Dutch student who can help with practical matters and aid foreign students in getting to know the city of Groningen and student facilities such as the libraries and the sports centre. ESN mentors also ensure that the first taste of student life in Groningen is an enjoyable one. During your stay in Groningen, ESN-Groningen will organize various activities to make you feel at home, such as an introductory weekend, a weekly social in the pub Rumba, trips to the island of Schiermonnikoog and to Amsterdam, ice-skating, sailing, theme parties and much more. ESN-Groningen wants you have a great time in Groningen. A small-scale activity such as a dinner or movie is organized every Sunday. And last but not least, ESN-Groningen publishes a magazine especially for international students, the WaM.

Location: Pelsterstraat 23, 9711 KH Groningen  
Telephone: (050) 363 7176  
E-mail: info@esn-groningen.nl  
Website: [www.esn-groningen.nl](http://www.esn-groningen.nl)

If you want to be kept informed of all the upcoming events and activities send a mail to their e-mail address.
A3.4.5 Careers advice before, during & after your degree

NEXT

The University of Groningen wants to offer its students the best possible facilities to prepare and develop their careers. Within the framework of NEXT, various activities are organized to help students make choices – and study choices in particular – and prepare them for the job market. In order to achieve this, NEXT is working actively with faculties, study associations, alumni organizations and other providers in the field of careers services. Announcements can be recognized by the NEXT logo.

Visit for more information:
- www.rug.nl/next

The Faculty of Mathematics and Natural Sciences will make student career events, student-assistant positions and regular job vacancies related to their degree programmes available in the Student Portal at the tab Career.

A3.5 HEALTH AND SAFETY

A3.5.1 Fire and emergencies

Dial (050 363) 8050 in the event of fire or an accident. Clearly explain the situation and location. For other less urgent matters, call (050 363) 5520 to report malfunctions or irregularities.

A3.5.2 Computers and RSI

Students spend a lot of time working at computers and are at risk of developing RSI complaints. RSI is the abbreviation for Repetitive Strain Injury and is a generic term for all conditions involving the neck, shoulders, arms, wrists and hands. These conditions can become chronic and lead to incapacity for work and cause serious limitations to everyday life.

Symptoms

RSI symptoms may vary from stiffness, pain and tingling sensations to loss of strength in the above-mentioned body parts. Initially, the symptoms occur only while working at a computer, but at later stages they also occur during rest. Ultimately, the complaints can occur continuously, causing pain during even the simplest of actions or even rendering them completely impossible.

How to prevent RSI

There is no standard method to prevent RSI. The measures you can take mainly involve relaxation of the muscles and the mind, and stimulation of blood flow. To minimize the risks of developing RSI, five points should be considered. This is also known as the ‘5W approach’.

Workload

Undertake regular time planning and prevent creating peaks in workload. If necessary, take a ‘study skills’ course at the Student Service Centre (tel. (050) 363 8066). Realize that your productivity is higher if you take regular breaks than if you work without interruption. Try to keep things in perspective – it will help you avoid working for too long, stimulate you to take regular breaks and help you unwind. If you do not feel on top of things drop by your academic advisor, student counsellor or student psychologist.
Work organization
Incorporate as much variation in your work as possible: reading, writing, typing and browsing on the internet. Also alternate between easy and difficult tasks. Use the shortcut keys on your keyboard more often than your mouse. Take regular breaks. Alert your tutors if you are allocated too many deadlines or too many writing assignments at the same time.

Working hours
Do not work on your computer for more than five or six hours a day. Do not forget to count the hours spent gaming and browsing on the internet. Special software has been developed to remind you to take breaks. Take regular breaks. Take a minimum break of ten minutes every two hours of work at a computer.

Workplace
Locate the screen directly in front of you, not too close. Avoid having to work with a turned neck. Ensure the top of the screen is at eye level. Avoid annoying reflections from windows. Use large font sizes, so that you do not have to lean forward to read the letters. You need a good chair that permits the height of the back and armrests to be adjusted. The back of the chair should mainly provide support to your lower back. Armrests relieve the shoulders. Adjust them so that the upper arms loosely touch them and form a right angle with your forearms. If necessary, search for more information on the internet on how to equip your workplace. Report unsatisfactory computer workplaces to the Occupational Health, Safety and Environment Coordinator. Never work for longer than two hours a day at a laptop. Connect an unattached keyboard and mouse to your laptop, and place the screen at eye level. Ensure you have a good workplace at home.

Work posture
See to it that you are in good physical condition. Sit upright and make sure that your upper and lower legs are at right angles when your feet are flat on the ground. Keep your wrists extended when using the keyboard and mouse. Perform regular physical exercise during work on the computer.

Finally
Drink a lot of water (the resulting visits to the toilet make natural breaks). Take early complaints seriously, check the risks applicable to your situation and find a solution. Do not ignore your body’s warning signals. If necessary, visit your family doctor or the physiotherapist at your sports centre.
A lot of information about RSI can be found on the internet. For further questions or advice, contact the Occupational Health, Safety and Environment Coordinator:
Mr A. Weitenberg, or the Head of the Department of Occupational Safety, Mr J. Jager.
E-mail: a.c.d.weitenberg@rug.nl       Telephone: (050) 363 4618
E-mail: jack.jager@rug.nl          Telephone: (050) 363 4427
A4
FACILITIES

A4.1 BUILDINGS
The teaching and support facilities of the faculty are accommodated in a number of buildings:

- **Linnaeusborg** (buildings U, 5171–5174): Centre for Life Sciences, Nijenborgh 7, 9747 AG Groningen; telephone reception (050) 363 2021. Open: 8:00 – 20:00.

- **Bernoulliborg** (building V, 5161): ESC – Mathematics – Computing Science Artificial Intelligence, Nijenborgh 9, 9747 AG Groningen; telephone reception (050) 363 6868. Open: 8:00 – 20:00.


- **Kapteynborg** (building J, 5419): Astronomy, Landleven 12, 9747 AD Groningen; telephone secretary (050) 363 4074. Open during office hours, ring the bell to enter the building.

- **ADL1** (buildings 3211–3217/3219): ESD, Medical Sciences, Dentistry and Pharmacy, Antonius Deusinglaan 1, 9713 AV Groningen; telephone reception (050) 363 8000. Open: Mon–Thurs: 8:00 – 20:30; Fri: 8:00 – 17:30.

For a map, route description and more information about the buildings, see:
- [www.rug.nl/fwn/organization/locaties](http://www.rug.nl/fwn/organization/locaties)

A4.1.1 House rules, regulations
Staff, students, visiting researchers and visitors are required to obey the facility house rules.

- Smoking ban. In accordance with Dutch law there is a general ban on smoking in public buildings;
- Mobile phones should be switched off in teaching rooms, libraries, laboratories and rooms with computer facilities;
- It is absolutely forbidden to eat or drink in the laboratories, teaching rooms, libraries and rooms with computer facilities;
- Bikes must be stored in the bicycle racks;
- The University accepts no liability for theft or lost property.

Everyone who works or studies at FMNS will come into contact with matters of safety, health and the environment. Many national rules and regulations about health have been formulated in the Working Conditions Act. The Environmental Protection Act contains a lot of rules concerning the environment. The consequences of these regulations for students and staff members are described in several manuals available on the internet:
- [myuniversity.rug.nl/infonet/medewerkers/fwn/arbomilieuveiligheid](http://myuniversity.rug.nl/infonet/medewerkers/fwn/arbomilieuveiligheid)

You will be expected to have read these rules, particularly those concerning important matters such as the location of emergency exits, evacuation procedures and the location of the fire extinguishers. The rules on safety and care for the environment must be observed and complied with.
It is absolutely forbidden:
- To eat or drink in the laboratories;
- To drink from laboratory glasswork;
- To store food in laboratory fridges;
- To prepare food in laboratory ovens.

Before you start working in a laboratory:
- Take note of the safety regulations;
- Locate the emergency exits and escape routes;
- Locate the fire extinguishers, absorption equipment for chemicals, fire blankets, fire showers, first-aid boxes and eye-wash fountains;
- Always wear safety goggles and a cotton laboratory coat;
- Working in a laboratory without the supervision of a staff member is not permitted!

**Building rules: Faculty of Medical Sciences**
- All bikes should be placed in the bike parking facilities below building 3219 or in the bicycle racks next to this building. Nowhere else!
- Food and drink are prohibited in the lecture halls with the exception of bottled water;
- All lectures start at the time indicated in the timetables. Someone from the Education Support office will be present (Keuningzaal and 3219.0061) 15 minutes before the scheduled start of the lecture to give technical support where required;
- Doors to the lecture halls will be closed shortly after the start of the lecture to avoid interruption from late comers. It is possible to leave the room at any time;
- Please be quiet. Noise, even whispering is distracting for lecturers and fellow students.

**Protocol for removal of bikes at Faculty of Medical Sciences**
The Faculty of Medical Sciences has strict rules for the management of bike parking around the Antonius Deusinglaan 1 and 2 buildings because bikes which are not parked in the parking facilities cause a lot of inconvenience: bikes which are not parked correctly will be fixed on the spot and removed upon repeated violation.

**A4.2 LIBRARIES**
The mission of the library of the University of Groningen is to support and promote academic teaching and research by providing high-quality information services, the aim is to achieve this by adopting a demand-oriented and innovative approach.

The University of Groningen has one central University Library (UL) and three location libraries: the University Library Zernike, the Central Medical Library and the Library of Behavioural and Social Sciences. Many facilities are provided collectively by these libraries. There is, for example, one central catalogue and one lending system, and a large number of online databases can be accessed through the university network.

**A4.2.1 University Library**
The central University Library (UL, or in Dutch ‘UB’) functions as a facility centre for the entire university community – for faculties and library users. The collections of Arts, Archeology, Law, Philosophy, Theology and Religious Studies have been moved to the UL recently, and are available in the study halls. For students there are lots of facilities and there is room to study. Furthermore, the library holds vast collections of reference and teaching material, either available in the study halls or in the closed depots. Interdisciplinary works, bibliographical material and a number of special collections can also be found in the UL.
**Electronic library**
An important facility is the electronic library, for consulting catalogues, e-books and e-journals, online databases, etc. Word processing facilities are also provided. Access to this information is limited to students and staff of the University of Groningen, and is for personal study or research only.

A new catalogue has been introduced recently, **SmartCat**: a catalogue containing all printed and electronic works owned by the University of Groningen libraries, with direct links to the full text. Furthermore, the University Library provides access to a large number of academic journals online, see:
- myuniversity.rug.nl/infonet/studenten/bibliotheek/zoeken/elektijdsschr/

You can access almost all online catalogues, databases, e-books, e-journals, etc. from any computer within the RuG network, and, even outside the campus through Connect, see:
- myuniversity.rug.nl/infonet/studenten/bibliotheek/zoeken/connect

**Borrowing**
You can use your University Card to borrow publications from the libraries of the University of Groningen. The loan period for books is four weeks unless otherwise stated. Please return books or renew the loan before the loan period expires.
In general, loans can be renewed online through SmartCat by clicking on Borrower Information, provided that the loan period has not expired, that nobody has put a hold on the book and there are no fines outstanding. Borrowed material can be returned to any UL location. You can e-mail any questions to:
- bibliotheek@rug.nl

For more information, go to the Student Portal.

**Address University Library**
Location: Broerstraat 4, 9712 CP Groningen
Telephone: (050) 3635020 and/or (050) 3635000
E-mail: bibliotheek@rug.nl

**A4.2.2 Library at Zernike campus**
The UL Zernike is the joint library of three faculties located on the Zernike Campus: Economics and Business, Mathematics and Natural Sciences and Spatial Sciences. The library is responsible for the scientific information supply for students and staff of these faculties, and offers an extensive collection of journals, books and databases, printed and/or electronic. The electronic collection can be found through the Student Portal.

You can access most databases from anywhere, using the internet. For instance your home computer. In the UL Zernike you can find literature in one of the discipline-related collections, you can borrow or return books, you can use one of the 84 university workstations, or simply find a quiet place to study. The library offers tutorials and support in literature searches. For instance an information literacy training and RefWorks workshops.
Visit our library and have a look at what it has to offer. You are very welcome!

For current opening hours, address details and a range of scientific information and workshops, please go to the Student Portal.
Here you will find both general and location-specific information.

**Address University Library Zernike**
Location: Nettelbosje 2, 9747 EA Groningen  
2nd floor of the Duisenberg building  
Telephone: (050) 363 3708  
E-mail: zernike-bibliotheek@rug.nl

**A4.2.3 Library of the University Medical Center Groningen**
More information on the Central Medical Library can be found on the Student Portal.

**Address Central Medical Library**
Location: Hanzeplein 1, 9713 GZ Groningen  
Winkelstraat 1 or Poortweg 12, 4th floor, Y 4.202  
Telephone: (050) 363 3048 and/or (050) 361 2596  
E-mail: cmb@umcg.nl

**A4.3 INFORMATION AND COMMUNICATION CHANNELS**

**A4.3.1 Personal account**
After enrolment, you will receive a student number and a personal computer account by email. A student computer account, consisting of a login name and a password, provides access to several web-systems and storage servers. This includes:
- Access to the Faculty Novell servers, for the use of computer applications;
- Access to the Internet;
- Use of a personal data storage server;
- Use of an e-mail account;
- Access to Nestor, the electronic learning environment of the University of Groningen;
- Access to ProgRESS WWW, where you can enrol in courses and exams, and view your study results.

You will need the following to log in: the name or address of the server, a login name and a password. Your login name is made up of your student number preceded by an ‘s’. Your initial password will be sent per email. You can change your password at:
- [myuniversity.rug.nl/infonet/studenten/ict/werkplek/](http://myuniversity.rug.nl/infonet/studenten/ict/werkplek/)

For information about IT facilities for students accessible with your account see the IT knowledge base for students on the Student Portal.

**A4.3.2 Student Portal**

The Student Portal is a protected environment that contains information for students of the University of Groningen. You can log in with your student number.

**Personalize your dashboard**
Once you log in to the Student Portal, you will be taken straight to your personal homepage, known as the Dashboard. A small part of the Dashboard contains information for everyone. The rest can be furnished to taste, using what are known as widgets. You can, for example, install widgets for Twitter, the UK, the CIT Service Desk, the Library or My News. Have a look in the Widget Store (via the button Options on the Dashboard) to get an idea.
All information from the RUG Planner, ProgRESS WWW and Nestor, to name but a few applications, are also easily accessible via your own Dashboard.

_The Student Portal_ is also the primary source for the Education Support Desk to provide you with up-to-date information concerning your study program. This involves important announcements about your program (such as deadlines, procedures, changes, workshops), but also documents that you will need to apply for graduation, a minor or a bachelor project, documents about studying abroad, information about minor, master possibilities, etc.

Students are urged to check this site daily, to avoid missing important events. All information that is published on _the Student Portal_ is considered to be known by students. Practically, this means that any problems arising from not having read the information on _the Student Portal_, will be solely the responsibility of the student.

### A4.3.3 E-mail

- [googleapps.rug.nl](http://googleapps.rug.nl)

Your e-mail address is one of the primary means of personal communication of the University and the Faculty. For example, if one of the University employees (teacher, academic advisor, etc.) would like to send you a personal message, he/she will send it to your University e-mail address. Your e-mail address consists of name@student.rug.nl. Your name is made up of your initials and your surname, separated by dots.

Your University e-mail may also be used by the university to send you important messages such as requests for enrolment for certain courses or alterations to the timetables.

Students are expected to check their mailbox every day. For your own convenience, you may choose to forward your University mail to your private mail (use the settings after login).

The University of Groningen uses Google Apps for Education which gives students permanent access to their e-mail (Gmail), calendar (Google Calendar), chat (Google Talk), documents (Google Drive) and web pages (Google Sites).

For more information, see the Student Portal.

You can access your Google Apps University of Groningen account via:

- [googleapps.rug.nl](http://googleapps.rug.nl)

This is where you log in with your student number and password (RUG account). The first time you log in, you will see a screen with a request from SURFconext. Click on _Yes, share this information_ to activate your Google Apps for Education account.
A4.3.4 Ocasys
- www.rug.nl/ocasys

Ocasys is the university course catalogue. It contains information about the content of courses, learning objectives of courses, necessary literature of courses, assessment form and computation of final grade of courses, and the general outline of the degree programmes. You can search in Ocasys for courses as well as for degree programmes. However, the full description of the degree programmes can only be found in the programme specific part of the studyguide. Ocasys serves with regard to the assessment form of courses as an appendix of the Teaching and Examination Regulations (see Section C1.2). It contains the official information about the way courses are assessed.

A4.3.5 Schedules
- rooster.rug.nl

You can compose your own schedule by searching for courses or a degree programme. Please check the schedules on a regular basis, changes are still being made.

A4.3.6 Nestor
- www.nestor.rug.nl

Nestor is the electronic learning environment of the University of Groningen. Lecturers use Nestor to provide information about courses, to set electronic examinations and to exchange documents within their students. Students use Nestor to read important announcements, to cooperate with group members and to submit assignments.

You will be enrolled in a Nestor-course environment after you enrol for the specific course or corresponding exam in ProgRESS WWW. However, enrolment in a Nestor course does not mean you are allowed to participate in the course itself, therefore you need to be registered in ProgRESS WWW for the course (see also Section A2.4).

A4.3.7 ProgRESS WWW
- progRESSwww.nl/rug

ProgRESS WWW is a web-based application used by the University of Groningen. Students need to register for modules and exams well in advance. You may also use ProgRESS WWW to view your study results.

A4.3.8 Student PCs

You can use PCs at various University facilities by logging onto the student network. You will then have access to applications, your own data on the home directory (X:\) and the internet. Some of the rooms are used for practicals and courses, but when these are not scheduled you can use the room for self-study. Printers are also available for students.

A4.3.9 Usage rules

Using the University IT facilities implies that you agree to the usage rules for University IT facilities as published on:
- www.rug.nl/rc/security/aup

Users of the university computer systems should be aware they are not the only users of these computers. Many computers are multi-user systems, and the users of these computers belong to a community. Therefore, the ground rule on which this AUP (Acceptable Use Policy) is based is similar to the ground rule on which traffic is based:
users of the University computer systems may not endanger these systems, nor may they hinder other users. Some of the implications of this ground rule are that users are not allowed to send unsolicited e-mail or try to obtain or use other users' passwords, either accidentally or ‘for fun’. *Abusing University computer systems may result in disciplinary action!*

**A4.4 PRINTING, COPYING AND SCANNING**

Students can use the multifunctional printers for printing, copying and scanning. Printing facilities are located close to the student computer rooms. The printers and copiers for students have equipment for reading and devaluating the card and choosing the job to print.

You can pay your printouts with a credit on your University Card. This credit can be topped up through MyOrder or through Webdeposit. Identify yourself at a printer with a University Card or by entering your student number and password, to release the machine or print job.

For more information, see the Student Portal.
B
Master’s degree programme
Computing Science
INTRODUCTION
Welcome to the degree programme-specific section of the study guide, which supplements the faculty-wide general part (part A). This section contains information specific to the Master's degree programme in Computing Science (CS), such as the aims and structure of the degree programme, the curriculum and other practicalities. Announcements and other relevant information concerning the programme will be available on the Student Portal (see the Study Info tab in particular).

Please read the degree programme-specific section of the study guide carefully!
B1
COMPUTING SCIENCE:
BROAD, DYNAMIC AND INNOVATIVE
In today's world, the way in which people communicate with each other has changed dramatically. Both in science, companies and in daily life, mobile phones, SMS, email Twitter, chat and the Internet have become standard methods for communication. This has all been made possible by huge strides made in the area of computing science in the past decades. The impact of computing science does not end there, of course. It is hard to find a sector in society or in other sciences in which computing science does not play a huge and innovative role. The way we do business, the way we entertain ourselves, the way we plan our holidays, the way scientists measure and analyse data, and even the way programmers develop software are continually evolving due to new developments in computing science.

The rapid technological and societal developments, along with the continuous growth of the field of computing science itself means that the computing science professional will be involved in life-long learning, continually adapting to new challenges. The computing scientist with a university background is characterised by curiosity, creativity, and an analytic mind, looking for generic solutions.

B1.1 AIM OF THE PROGRAMME
The Master degree programme in Computing Science aims to impart knowledge, skills, understanding and attitude by means of a broadly based curriculum such that Master graduates are able to be independent professionals in the computing science field. To that end, graduates must have an understanding of the fundamentals of computing science and specialized knowledge in a subfield of computing science. Master graduates must be able to assess the value of the scientific literature and thus keep their knowledge up to date. They must be able to describe problems and solutions in both general and formal mathematical terms. They must not only have mastered English to a high level in both written and spoken form, but also be able to function in an (intercultural) multidisciplinary team. Finally, a Master graduate must be familiar with the societal, ethical and social aspects of the application of computing science in actual practice.

In the Master's degree programme in Computing Science in Groningen you will develop and increase your in-depth knowledge within the areas of Software Engineering and Distributed Systems, Intelligent Systems and Visual Computing, or Data Science and Systems Complexity. Most courses offer insightful lectures covering both theory and practice. Apart from acquiring core computing science skills, mathematics and research methodology are also important.

In student colloquia research and presentation skills are developed. For those aiming to go into business rather than academia, project management and related topics are also offered. All skills acquired are actively used in research projects, either within the university or during business and industrial internships.

Because computing science is pivotal in many areas of research, students can easily participate in one of many research collaborations with other fields, such as bioinformatics, medicine and astronomy. In addition, contacts with many businesses facilitate internships in a variety of fields, matching the interests of most students.

A detailed overview of courses and the structure of the degree programme can be found in Chapters B2 and B3.
B1.1.1 Learning outcomes of the degree programme
The Master graduate in Computing Science:

• Is fully acquainted with the basic terms and techniques used in Computing Science, and is familiar with a number of classical problems and their solutions;
• Is experienced in the effective use of the tools available in solving Computing Science problems, such as compilers, theorem proofs, visualisation software, case-tools and domain specific software and hardware;
• Is familiar with Computing Science applications in several other scientific fields of study;
• Is capable of clear communication (both oral and in writing) on the subject of Computing Science and its applications;
• Is capable of working in a team and in various projects;
• Is sensitive to the social aspects of Computing Science applications and his/her own responsibilities therein;
• Has specialized knowledge of theories, methods and techniques in one of the following subfields of Computing Science:
  o Intelligent Systems and Visual Computing
  o Software Engineering and Distributed Systems
  o Data Science and Systems Complexity
  o Science, Business and Policy
• Is able, by using scientific data and assessments, to analyse problems in Computing Science or a related scientific field of study, to provide specified solutions to the problem, and – if possible – to materialise these solutions (in the shape of an algorithm or program or an implementation in software or hardware);
• Is able to critically read professional literature and to assess its correctness, usability and relevance;
• Is able to contribute to the enhancement of scientific understanding in a subfield of Computing Science;
• Has a proper understanding of the scientific relevance of problem definitions and results, and of the validity of the scientific method used.

The first six learning outcomes are similar to those of the Bachelor programme in Computing Science.

Some subfields in the Computing Science master degree have the following additional learning outcomes:

The Master in Computing Science graduated in the subfield of Software Engineering and Distributed Systems (SEDS):
• Is capable of systematically designing and implementing software systems in cooperation with interested parties;
• Is capable of integrating existing and new software components into a system that meets the quality criteria that were agreed upon.

The Master in Computing Science graduated in the subfield of Science, Business & Policy (SBP):
• Has a full understanding of the way in which businesses and policy organisations are functioning (governments and nongovernmental organisations, NGO's);
• Understands the connections between natural science research, trade and industry and governmental policies;
• Is able to integrate aspects of natural science, business and management;
• Is able to translate a concrete problem definition in business or management into a natural science problem definition;
• Is able to connect problem aspects of natural sciences to other relevant subject fields;
• Is able to put research data and conclusions into a business or policy context;
• Has developed his/her social and communicative skills:
• Is able to write texts that are effective and to the point;
• Is able to draw up an innovation plan or management plan for either a business or a government organisation;
• Is able to give convincing oral presentation;
• Is able to deliver an active contribution to plenary discussions;
• Familiar with techniques used in business meetings and is capable of chairing a meeting;
• Is able to work on a project as part of a team;
• Is able to give and receive feedback concerning his/her way of functioning in a team;
• Can work in a project;
• Is able to fully consider the interests or objectives of the ordering customer;
• Is able to plan a project independently;
• Is able to cooperate with the relevant parties involved in the project;
• Is able to adequately deal with limitations in time, information and means;
• Is able to prepare the implementation of a project result;
• Is capable of taking professional responsibility;
• Is able to take responsibility on behalf of the organisation;
• Is able to recognize the strategic aspects of his/her own project;
• Is able to provide practical solutions in matters concerning the ethical and professional codes of his/her own field of expertise and of the professional organisation.

B1.1.2 Overview of research and academic skills of the programme

During the two year Master’s degree training, students will not only become familiar with Computing Science skills, but they will also acquire more general scientific and professional skills at an academic level. These general skills are integrated in the various Computing Science courses.

The table below presents an overview of these scientific and professional skills and shows how they are integrated in a few example courses of the Computing Science Master’s degree programme. The following skills are distinguished:

1. Formulating adequate research and design goals, questions and/or hypotheses;
2. Searching for, assessing and reflecting on scientific literature;
3. Critical thinking, reflection, analytic attitude and capacity;
4. Reflecting on research and design methods and methodology;
5. Communicating research/design progress and outcomes (both orally and in writing);
6. Cooperating in a (multicultural) team;
7. Software implementation and validation;
8. Software design and design validation.

Table: Overview of the research and academic skills in a few example courses of the Master’s degree programme.

<table>
<thead>
<tr>
<th>Study year</th>
<th>Course</th>
<th>Research/academic skills (see list above)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1.  2.  3.  4.  5.  6.  7.  8.</td>
</tr>
<tr>
<td>1</td>
<td>Student Colloquium</td>
<td>X  X  X  X  X  X</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Advanced Computer Graphics</td>
<td>X  X  X  X  X  (X)  X  (X)</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Introduction to Computational Science</td>
<td>X  X  X  X  X  (X)  X  (X)</td>
</tr>
<tr>
<td>2</td>
<td>Master Thesis</td>
<td>X  X  X  X  X  X  (X)  (X)</td>
</tr>
</tbody>
</table>

More details on these academic research skills and the way they are assessed can be found in the course descriptions in Ocasys:

- www.rug.nl/ocasys/fwn/vak/showpos?opleiding=3255
B1.2 SCIENTIFIC NATURE OF THE PROGRAMME

The master programme intends to instil a scientific attitude into the students. E.g., in the first-year course Student Colloquium, the students are trained in writing and presenting a scientific paper, reviewing papers and organizing a scientific conference. All courses of the master programme are based on scientifically acquired knowledge and insights. The students are not merely required to reproduce this knowledge and insights, but they will apply it in assignments and projects according to scientific methods and practices, with the critical attitude that is essential for all scientific endeavours.

The specialisation Software Engineering & Distributed Systems has strong links to industry, but here too academic skills play an important role. The ability to work in (often multicultural) teams is trained in software development projects that form an important part of this domain. Working to industrial software quality standards is also taught in these projects.

The scientific nature of the master programme is most clearly seen in the final research project. In this 30 EC project the students must individually tackle a real-life research project, either from within the research institute or in industry. In some cases of more extensive and complicated projects students will work in pairs, but each student must deliver a clearly identifiable part of the project, and is graded individually. Master's projects are science driven (insight, theory, analysis) or more engineering driven (developing new products). In either case the main aim is to integrate and use the knowledge and skills acquired during the master programme in a substantial, independent research and development project. The results are presented in writing in a report and software documentation, and orally in a presentation for students and staff members.

B1.3 LINK TO RESEARCH AT THE UNIVERSITY OF GRONINGEN

The degree programmes within the Groningen Department of Computing Science are particularly – although not exclusively – suitable as preparation for a career in the world of research. The teaching is closely connected to the research conducted at the University of Groningen, which means that graduates of Computing Science are able to start careers as researchers in one of the research groups that are active in the fields of Computing Science. However, the close links that the department maintains with various research groups at the University are not only beneficial to students who would like to start a research career – the excellent contacts also enable students of Computing Science to gain practical experience via various projects or internships.

A key characteristic of academic teaching is that the lecturers themselves also actively conduct research. Computing Science is a rapidly developing field, and only active participation in these developments will ensure current and up-to-date teaching.

CS research is currently concentrated in a research institute called The Johann Bernoulli Institute for Mathematics and Computer Science, and focuses on the following themes:
- Intelligent Systems;
- Scientific Visualization and Computer Graphics;
- Fundamental Computing;
- Software Engineering;
- Distributed Systems.

The research institute has strong links and partnerships with various groups elsewhere, including, for example, Wuhan University (China), University of Luxembourg (Luxembourg), Swinburne University (Australia), University Rey Juan Carlos (Spain), ITU Copenhagen (Denmark), Limerick University (Ireland), University of Vienna (Austria), Katholieke Universiteit Leuven (Belgium), University of Canterbury (New Zealand), Tampere University of Technology (Finland), Linnaeus University (Sweden), Open University (UK), Chalmers University of Technology (Sweden), HSR (Switzerland),
Polytechnic University of Catalunya (Spain), University of Macedonia (Greece), University of British Columbia (Canada), University of Helsinki (Finland), University of South Brittany (France), University of Sao Paulo (Brazil), University of Pretoria (South Africa).

In addition, partnerships are also regularly formed with ‘the industry’, including companies such as ABB research (Germany), Siemens AG (Germany), Oce (The Netherlands), Philips (The Netherlands), ASML (The Netherlands), Astron (The Netherlands) and other national and international enterprises.

B1.4 CAREER PERSPECTIVES

Having completed the Master’s degree programme in Computing Science, you will be spoilt for choice regarding future employment. There are hardly any areas of business or research which do not require computer scientists, either software engineers and architects, or researchers. Usually our students are offered suitable jobs within one month of graduating (or even before graduating).

After graduating, most of our alumni move on to software companies (or found their own) or to academia, usually by entering into PhD programmes.

Those in industry are generally promoted to managerial roles after a few years and, for example, become project managers. In academia the usual path is from PhD via post-doctoral researcher to university staff member, though quite a few of our successful PhD students have moved on to industry as well. Many MSc and PhD students have gone into the field of medical imaging, either at various universities or in the research labs of large companies. More and more are moving into bioinformatics.
STRUCTURE OF THE PROGRAMME

The Master’s degree programme in Computing Science takes two years. Each year comprises 60 ECTS credit points, which means that you must earn a total of 120 ECTS. The structure of the programme is set out in this chapter. In the next chapter the courses in the curriculum are outlined.

Talented and ambitious students are offered the opportunity to participate in the Honours College, alongside their Master’s degree programme, in which they can take 15 ECTS worth of extra-curricular more in-depth and comprehensive courses. More information about the Honours College can be found in the faculty-wide general part of this study guide (part A).

The following sections will discuss the structure of the Master’s degree programme. Any regulation variations for different groups of students are indicated.

B2.1 SPECIALISATIONS

The Master’s degree programme in Computing Science currently offers four specialisations. All specialisations will introduce students to academic research, particularly in the sense that they acquire academic research skills. Great emphasis is placed on learning how to tackle problems that have not been previously solved: thinking about a plan of approach, designing simple example situations or test problems, solving sub-problems and drawing conclusions from unsuccessful approaches.

The ISVC and DSSC specialisations focus mainly on research, enabling them to assess students’ skills in research, which is relevant with an eye to a possible subsequent degree programme in academic research. The SEDS and SBP specialisations also pay attention to the social context of academic research, teaching students to apply their academic knowledge and skills in a business or policy environment.

B2.1.1 Intelligent Systems and Visual Computing (ISVC)

The Intelligent Systems and Visual Computing specialisation focuses on research areas such as image processing and analysis, computer vision, pattern recognition, machine learning and brain-like computing, scientific visualization, information visualization, software visualization, multiscale shape analysis, illustrative computer graphics, and innovative interfaces using large displays, with fundamental and practical problems from the life sciences (functional brain imaging, bioinformatics), health care and astronomy. Students of this specialisation will participate in the grand challenge of giving computers the abilities to perceive (e.g. see), analyse, learn and enhance human creativity. The ISVC specialisation aims to impart specialized knowledge, skills, understanding and attitude in such a way that Master graduates can be considered for further training as an academic researcher. Courses cover topics such as computer vision, pattern recognition, scientific visualization and neural networks. The course programme is outlined in Table B3.1.

B2.1.1 Data Science and Systems Complexity (DSSC)

In the Data Science and Systems Complexity specialisation there is a strong interaction between mathematics, computer science, and engineering, as well as the applied sciences. Many of the greatest mathematical and computational challenges faced in almost any science today stem from the combination of large amounts of data and the complexity of the systems under study. Students of this specialisation will work on developing new methods that help solve these challenges. The DSSC specialisation aims to impart specialized knowledge, skills, understanding and attitude in such a way that Master graduates can be considered for further training as an academic researcher. Courses cover topics such as introduction to data science, modelling and simulation, scalable computing and information systems. The course programme is outlined in Table B3.2.
B2.1.3 Software Engineering and Distributed Systems (SEDS)
The Software Engineering and Distributed Systems specialisation focuses on research in the areas of architectural knowledge, architecture reasoning process, technical debt, architecting critical embedded systems, object-oriented design and all aspects of distributed information systems with particular emphasis on service-oriented computing, pervasive middleware and energy distribution infrastructures. Students of this specialisation contribute to architecting industrial software-intensive systems that meet quality standards by carrying out joint research projects with industrial partners and other research institutes, thus combining academic know-how with industrial practice. The SEDS specialisation aims to impart specialized knowledge, skills, understanding and attitude in such a way that Master graduates can become independent software and systems engineers as well as be considered for further training as an academic researcher in this field. Courses cover topics such as software architecture, software maintenance and evolution, formal modelling of communicating systems and distributed systems. The course programme is outlined in Table B3.3.

B2.1.4 Science, Business and Policy (SBP)
The Master track Science, Business & Policy is for students who would like to focus on the business or policy side of science. In this programme, you combine the obligatory courses of one of the three Computing Science specialisations with the Science, Business & Policy track. During this track, you will be offered all the right tools to function as a professional in business or policy organisations, including a six-month internship as a scientific advisor. The SBP track has been proven to give students a head start in their careers; most students are offered a job by their internship organisation, right after graduating. More information, including the course programme, can be found on:
- [www.rug.nl/research/science-society-group/onderwijs/sciencebusinessandpolicy](www.rug.nl/research/science-society-group/onderwijs/sciencebusinessandpolicy)

B2.2 COMPULSORY AND OPTIONAL MODULES
The global structure of the ISVC, DSSC and SEDS specialisations is as follows:

<table>
<thead>
<tr>
<th>Module</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compulsory modules:</td>
<td></td>
</tr>
<tr>
<td>•  Compulsory courses</td>
<td>50</td>
</tr>
<tr>
<td>•  In-company or Research internship</td>
<td>15</td>
</tr>
<tr>
<td>•  Master Thesis</td>
<td>30</td>
</tr>
<tr>
<td>Optional modules:</td>
<td></td>
</tr>
<tr>
<td>•  Guided choice courses</td>
<td>10</td>
</tr>
<tr>
<td>•  Free choice courses</td>
<td>15</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>120</td>
</tr>
</tbody>
</table>

Each of the specialisations consists of 95 ECTS compulsory modules (including an internship and a thesis project), and 25 ECTS optional modules (guided and free choice courses). During the first months of the Master's degree programme each Master student draws up a concrete study programme (see section B3.2) by fleshing out one of the specialisations. This is done in consultation with the Computing Science academic advisor. This study programme must then be submitted for approval to the Board of Examiners (instructions can be found on the [Student Portal](#)).

It is also possible to do your free choice courses abroad. You may choose your course list yourself, but the Board of Examiners has to approve your programme before you go to the host university. You can discuss your plans with the academic advisor beforehand and receive advice. More information about studying abroad may be found on the [Student Portal](#) and in section B2.7 of this study guide.
If you find out within 2 weeks after the start of your choice courses that you have made a wrong choice, then you may still have the opportunity to change your programme. Contact your academic advisor as soon as possible! Note that changes also have to be approved by the Board of Examiners.

B2.3 TUTORIALS AND PRACTICALS
Some courses not only have lectures but also supervised exercises (tutorials) or practicals. Students are divided into groups for the exercises. The exercises are designed to familiarize students with the material. Based on the questions, students can check whether they have completely understood the relevant lecture material and whether they can apply it. In addition, students have the opportunity to discuss any difficulties with the lecturer, either individually or in small groups.

B2.4 COLLOQUIA
B2.4.1 Student Colloquium
One of the compulsory courses, the Student Colloquium, takes the form of a scientific conference. The aim of the Student Colloquium is to train the students in giving oral presentations, writing a scientific paper, and, more general, participate in and even organize a scientific conference. The colloquium is organised as a mini-conference, where students have to submit a proposal first, then the actual paper, present that paper and participate in the reviewing process. Also a 2 minute madness presentation is included and each students chairs one session and/or is involved in organizing the actual mini-conference. The paper is about 6 pages in length. The presentation should emphasize the most important conclusions from the paper. Each paper is reviewed by other students and one staff member, the expert reviewer.

B2.4.2 CS Colloquium (for staff and students)
During the lecture weeks, Computing Science colloquia are regularly held. The primary goal is to expand the view of the field of staff, PhD students and students. This is not only important for Computing Science staff but also for students. All colloquia will be announced in good time via e-mail and summaries on notice boards, most are also announced early on


B2.4.2 Graduation Colloquium
Once the student has obtained the 'green light' from the supervisors to defend the thesis, (s)he asks the Education Support Centre for an open presentation slot (typically, 1 hour) for a graduation colloquium, passing thereby the title + abstract of the final presentation, and names of the supervisors. The presentation is next scheduled by the ESC for public defense on the earliest date available.

During the presentation, the student gets typically 45-50 minutes to present his/her work, after which a session of typically 15-20 minutes of questions from the audience takes place. The defense is public, in the sense that any interested person (e.g. staff of Computer Science, other students, but also the grand public) can take part. The performance of the student during the actual defense and the questions session is assessed by the two supervisors.

B2.5 INTERNSHIP
The internship consists of 15 EC and takes place in year 1, semester IB, of the Master's degree programme. You can decide to do your internship in a different period, but it is recommended that you complete it during a teaching period and the following examination period. During the internship there will be no time for additional activities such as completing a course or taking resits.
In order to follow an internship, you must meet a number of requirements:
- You must have completed approximately six months of the Master’s programme, i.e. you must have obtained at least 30 ECTS.
- You must be available on a full-time basis for 10 weeks, i.e. you have no study activities or other activities planned.

There are two possibilities for an internship:
- In-company placement: The specialisation Software Engineering & Distributed Systems offers besides a research internship also the possibility of an in-company placement. The in-company placement is coordinated by dr. R. Smedinga.

B2.6 MASTER THESIS PROJECT
You should choose your preferred topic and find a supervisor for your master thesis project about a year before you plan to graduate. The topic of your thesis project depends on your own field of interest and your supervisor’s expertise. The topic must be relevant to your chosen master specialisation. An important requirement for the topic is that it must be scientifically relevant. Your supervisor can advise you on the scientific relevance of your topic. Once you have made your choice, contact your thesis supervisor to discuss your topic, starting date and the supervision method. A second supervisor from a different unit than the one in which you will be doing your final-year project is approached at the start of the project. You will then draw up a description of your thesis topic and a global planning in consultation with your supervisor. You will find the regulations for the thesis project on the corresponding Nestor page. Please download the ‘starting form’ at the start of your project, complete it in consultation with your supervisors and hand it in to the Computing Science secretary at the ESC.

The thesis gives you the opportunity to prove that you are able to conduct independent research and to report on this research. This also means that you are partly responsible for your own supervision.
- Make sure you regularly meet with your supervisor, for example by drawing up a time frame that indicates your appointment frequency. Needless to say, you should make sure you keep to all agreements and appointments made.
- If an external client is involved in your project, you should make clear agreements on the division of roles between the client and your supervising lecturer.
- Bear in mind that your supervisors have other commitments too. In other words, make appointments in good time and don't expect them to be available whenever you need them.
- If you like your supervisors to read and assess a part of your text, make sure you submit your text well in time before the day of your appointment and also indicate what you want to discuss (research question, literature, etc.).
- Make sure you have a clear picture of the assessment criteria in advance and discuss this subject during the first meeting with your supervising lecturer.

Halfway through the thesis project there will be an intermediate evaluation in consultation with your supervisors, on the basis of the ‘mid-term evaluation form’ which can be found on Nestor. Are you on schedule? Can you report any results yet? Do you think you will be able to finish everything on time and in a satisfactory way? Do you expect more (or less) from your supervisor? The supervisor will give a preliminary assessment of the quality of your work, your commitment, your skills and your progress. Please report any external circumstances that may have influenced the process. Has the thesis project remained unchanged or has it been adapted, and if so, why?
The thesis project is concluded by presenting your research in the form of a thesis and a presentation. Your supervisors will then mark your thesis project by means of filling out the 'final assessment form'. The assessment criteria can be found on the Nestor page of the master thesis project.

**B2.7 STUDYING ABROAD**

The degree programme in Computing Science offers students the opportunity to gain academic and social experience abroad within the framework of their studies. There are possibilities to study abroad at a number of partner institutions. Our partners include top-100 universities in Europe (for example in Germany, UK, and Sweden) and in the USA, China, South-East Asia, and South America.

Master students can for instance take their internship project (15 ECTS) abroad, or participate in courses at a foreign university for the period of one semester. Alternatively, you can perform your master thesis project in a foreign country. More information about studying abroad can be found in faculty-wide general part of this study guide.

**B2.8 STUDENT ASSISTANT POSITIONS**

At our faculty, the role of a student often extends beyond that of a ‘consumer’ who pays tuition fees in order to take courses at the University’s degree programmes. For example, students often take on the role of ‘student assistant’ in several courses as well. Student assistants perform various duties such as supervising practicals, correcting homework and examinations, and teaching tutorials. Naturally, student assistants receive a remuneration for this.

Student assistant positions are not only a useful source of income for the students, but also a valuable learning experience for the majority of people involved. Usually each period, the student assistant vacancies and instructions for applications are announced via mail or the Student Portal.

**B2.9 POST MASTER**

**B2.9.1 Job opportunities**

NEXT Career Services (see: www.rug.nl/next) is the central point of contact at the University of Groningen when it comes to starting your career. The NEXT network connects all the relevant parties. NEXT helps students to make well-informed choices and gives them the opportunity to put those choices into practice by offering workshops and training courses, and by providing help with writing a CV and letter of application. You can also come to NEXT for personal advice regarding your future career.

In the tab 'Career' on the Student Portal, NEXT posts job vacancies. Computing Science graduates (bachelor or master) can find many job opportunities relevant to them on this page. More information about NEXT can be found in the faculty-wide general part of this study guide.

**B2.9.2 A PhD position at the JBI**

The Dutch PhD system is held in high international regard. During a PhD programme you conduct your own research, and a Graduate School provides a balanced mix of expert supervision and tailor-made postgraduate training, whilst giving you the freedom to pursue your own ideas within the scope of a specific research theme. If you are passionate about doing research, a PhD programme might be the way to go for you.

The Graduate School of Science (GSS) is the graduate school for PhD students at the Faculty of Mathematics and Natural Sciences of the University of Groningen. The goal of the GSS is
to offer an inspiring environment for you to do exciting research, follow tailor-made postgraduate training, and prepare you for a high-level career in academia or beyond.

The Johann Bernoulli institute for Mathematics and Computer Science has several research groups that carry out research in a large variety of topics within the different disciplines of Computing Science, that might be of interest to you. The JBI has its main goal performing research at a high international level, leading to publications in international scientific journals and a steady stream of highly qualified researchers. The intended audience consists of the academic research community on one hand and social and professional practice (e.g. industry, hospitals and administration) on the other hand. The Institute aims to provide an attractive research environment for graduate students by maintaining a modern infrastructure and by appointing highly competent and active scientific staff members.

There are several categories of PhD students within the JBI, ranging from the regular (employed or scholarship) 4 year PhD students to the research fellows and the external candidates. In addition to the full-time programmes, other variants are possible, such as combining PhD training with work outside the university. Many international PhD candidates come to Groningen for a short stay, and you too may choose to carry out part of your research abroad. You write up the results of your research in your PhD thesis, which almost always comprises a number of papers that have been or will be published in scientific journals. After a successful defence, you will be awarded an internationally recognized PhD degree by an esteemed university. After obtaining a PhD degree, young researchers continue their professional career in various environments, such as academia, government, administration, and industry in the country and abroad.
B3
CURRICULUM AND STUDY PROGRAMME
You must successfully complete the entire study programme in order to be awarded a Master's degree in Computing Science. All students must complete the study programme as set out in the Teaching and Examination Regulations (abbreviated in Dutch: OER) for the year in which they started their degree. So the curriculum of your starting year will remain your curriculum for your entire two year Master's degree programme. The study programme for students who start their degree in 2016 can be found in this edition of the study guide. Students who started earlier should consult the OER for the academic year in which they first registered, which can be found online at:

- myuniversity.rug.nl/infonet/studenten/fwn/reglementen/oer-en

Students may switch to the study programme of a later year (please contact the academic advisor if you would like to do this).

B3.1 CURRICULUM 2016-2017
The complete study programme for Master students who start their degree in 2016-2017 is listed on the next pages. This is the list of compulsory courses for students starting in 2016–2017. Information about the content of the courses is available on Ocasys:

- www.rug.nl/ocasys/fwn/vak/showpos?opleiding=3255

Each Master specialisation consists of 95 ECTS compulsory courses (see Tables B3.1–3) and 25 ECTS choice courses:
- 15 ECTS can be chosen freely from any Master courses taught at the University
- 10 ECTS are guided choice courses, which means that three courses from the list of guided choice courses belonging to the Master specialisation have to be chosen (see Tables B3.4–6)

Please note that a few master courses will not be taught each year, but in alternating years, and in addition some new courses will not start until the year 2017-2018 (see Table B3.8, also indicated between brackets behind the course names in the other tables). Make sure that you take this into account when you make your two-year planning for all the courses that have to be completed.

In Tables B3.1–3, courses printed in bold are obligatory in all three master specialisations. All courses have a student workload of 5 ECTS, unless indicated otherwise. The periods in which all courses are taught can be found in section B4.1.2.
### Table B3.1: Compulsory courses master specialisation Intelligent Systems & Visual Computing

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester</th>
<th>Course</th>
<th>Course code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ia</td>
<td>Web and Cloud Computing</td>
<td>INMWCC-12</td>
</tr>
<tr>
<td>1</td>
<td>Ia</td>
<td>Pattern Recognition</td>
<td>INMPR-08</td>
</tr>
<tr>
<td>1</td>
<td>Ia</td>
<td>Free or guided choice course</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Ib</td>
<td>Introduction to Data Science</td>
<td>WMCS16002</td>
</tr>
<tr>
<td>1</td>
<td>Ib</td>
<td>Image Processing</td>
<td>INMIP-08</td>
</tr>
<tr>
<td>1</td>
<td>Ib</td>
<td>Neural Networks and Computational Intelligence</td>
<td>WMCS15001</td>
</tr>
<tr>
<td>1</td>
<td>IIa</td>
<td>Student colloquium CS</td>
<td>INMCOL-08</td>
</tr>
<tr>
<td>1</td>
<td>IIa</td>
<td>Scientific Visualization</td>
<td>INMSV-08</td>
</tr>
<tr>
<td>1</td>
<td>IIa</td>
<td>Computer Vision</td>
<td>INMVC-08</td>
</tr>
<tr>
<td>1</td>
<td>IIb</td>
<td>In-company or Research Internship (15 ECTS)</td>
<td>INMSTAG-08</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Ia</td>
<td>Data Science and Visual Analytics (17/18)</td>
<td>WMCS16000</td>
</tr>
<tr>
<td>2</td>
<td>Ia</td>
<td>Free or guided choice course</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Ia</td>
<td>Free or guided choice course</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Ib</td>
<td>Advanced Computer Graphics</td>
<td>INMACG-08</td>
</tr>
<tr>
<td>2</td>
<td>Ib</td>
<td>Free or guided choice course</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Ib</td>
<td>Free or guided choice course</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>IIa and IIb</td>
<td>Master Thesis (30 ECTS)</td>
<td>INMAFST-08</td>
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</tbody>
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### Table B3.2: Compulsory courses master specialisation Data Science & Systems Complexity

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester</th>
<th>Course</th>
<th>Course code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ia</td>
<td>Web and Cloud Computing</td>
<td>INMWCC-12</td>
</tr>
<tr>
<td>1</td>
<td>Ia</td>
<td>Pattern Recognition</td>
<td>INMPR-08</td>
</tr>
<tr>
<td>1</td>
<td>Ia</td>
<td>Modelling &amp; Simulation</td>
<td>INMMS-08</td>
</tr>
<tr>
<td>1</td>
<td>Ib</td>
<td>Introduction to Data Science</td>
<td>WMCS16002</td>
</tr>
<tr>
<td>1</td>
<td>Ib</td>
<td>Neural Networks and Computational Intelligence</td>
<td>WMCS15001</td>
</tr>
<tr>
<td>1</td>
<td>Ib</td>
<td>Free or guided choice course</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>IIa</td>
<td>Student colloquium CS</td>
<td>INMCOL-08</td>
</tr>
<tr>
<td>1</td>
<td>IIa</td>
<td>Scientific Visualisation</td>
<td>INMSV-08</td>
</tr>
<tr>
<td>1</td>
<td>IIa</td>
<td>Scalable Computing</td>
<td>WMCS16003</td>
</tr>
<tr>
<td>1</td>
<td>IIb</td>
<td>In-company or Research Internship (15 ECTS)</td>
<td>INMSTAG-08</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Ia</td>
<td>Data Science and Visual Analytics (17/18)</td>
<td>WMCS16000</td>
</tr>
<tr>
<td>2</td>
<td>Ia</td>
<td>Free or guided choice course</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Ia</td>
<td>Free or guided choice course</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Ib</td>
<td>Information Systems (17/18)</td>
<td>WMCS16001</td>
</tr>
<tr>
<td>2</td>
<td>Ib</td>
<td>Free or guided choice course</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Ib</td>
<td>Free or guided choice course</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>IIa and IIb</td>
<td>Master Thesis (30 ECTS)</td>
<td>INMAFST-08</td>
</tr>
<tr>
<td>Year</td>
<td>Semester</td>
<td>Course</td>
<td>Course code</td>
</tr>
<tr>
<td>------</td>
<td>----------</td>
<td>---------------------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>1</td>
<td>Ia</td>
<td><strong>Web and Cloud Computing</strong></td>
<td>INMWCC-12</td>
</tr>
<tr>
<td>1</td>
<td>Ia</td>
<td>Software Architecture</td>
<td>INMSA-08</td>
</tr>
<tr>
<td>1</td>
<td>Ia</td>
<td>Software Maintenance &amp; Evolution</td>
<td>INMSME-08</td>
</tr>
<tr>
<td>1</td>
<td>Ib</td>
<td><strong>Introduction to Data Science</strong></td>
<td>WMCS16002</td>
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<tr>
<td>1</td>
<td>Ib</td>
<td>Software Patterns</td>
<td>INMSP-08</td>
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<tr>
<td>1</td>
<td>Ib</td>
<td>Free or guided choice course</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>IIa</td>
<td><strong>Student colloquium CS</strong></td>
<td>INMCOL-08</td>
</tr>
<tr>
<td>1</td>
<td>IIa</td>
<td>Formal Modeling of Communicating Systems</td>
<td>WMCS14001</td>
</tr>
<tr>
<td>1</td>
<td>IIa</td>
<td>Scalable Computing</td>
<td>WMCS16003</td>
</tr>
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<td>1</td>
<td>IIb</td>
<td><strong>In-company or Research Internship (15 ECTS)</strong></td>
<td>INMSTAG-08</td>
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<td>2</td>
<td>Ia</td>
<td>Distributed Systems</td>
<td>INMDSY-08</td>
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<td>Ia</td>
<td>Free or guided choice course</td>
<td></td>
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<tr>
<td>2</td>
<td>Ia</td>
<td>Free or guided choice course</td>
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</tr>
<tr>
<td>2</td>
<td>Ib</td>
<td>Information Systems (17/18)</td>
<td>WMCS16001</td>
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<td>2</td>
<td>Ib</td>
<td>Free or guided choice course</td>
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<td>2</td>
<td>Ib</td>
<td>Free or guided choice course</td>
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<td>2</td>
<td>IIa and IIb</td>
<td><strong>Master Thesis (30 ECTS)</strong></td>
<td>INMAFST-08</td>
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</table>
## Table B3.4: Guided choice courses **Intelligent Systems & Visual Computing**

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester</th>
<th>Course</th>
<th>Course code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 or 2</td>
<td>Ia</td>
<td>Modelling &amp; Simulation</td>
<td>INMMS-08</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Ia</td>
<td>Robotics for IEM*</td>
<td>TBROB-12</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Ia</td>
<td>Computational Physics</td>
<td>NACP-11</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Ib</td>
<td>Computational Semantics</td>
<td>LIX021M05</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Ib</td>
<td>Cognitive Modeling: basic principles and methods</td>
<td>KIM.CMB11</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Ib</td>
<td>Statistical Signal Processing (MSc)</td>
<td>STMASP-12</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Ib</td>
<td>Dynamic Logic (16/17)</td>
<td>INMDL-08</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Ib</td>
<td>Robotics for IEM (17/18)</td>
<td>TBROB-12</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Ib</td>
<td>Computational Physics</td>
<td>NACP-11</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Ib</td>
<td>Cognitive Modeling: basic principles and methods</td>
<td>KIM.CMB11</td>
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<td>1 or 2</td>
<td>Ib</td>
<td>Statistical Signal Processing (MSc)</td>
<td>STMASP-12</td>
</tr>
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<td>Ib</td>
<td>Dynamic Logic (16/17)</td>
<td>INMDL-08</td>
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<td>1 or 2</td>
<td>Ib</td>
<td>Robotics for IEM (17/18)</td>
<td>TBROB-12</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Ib</td>
<td>Computational Physics</td>
<td>NACP-11</td>
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</tbody>
</table>

*Robotics for IEM (TBROB-12) requires prior physics knowledge

## Table B3.5: Guided choice courses **Data Science & Systems Complexity**

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester</th>
<th>Course</th>
<th>Course code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 or 2</td>
<td>Ia</td>
<td>Software Maintenance &amp; Evolution</td>
<td>INMSME-08</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Ia</td>
<td>Robotics for IEM*</td>
<td>TBROB-12</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Ib</td>
<td>Image Processing</td>
<td>INMIP-08</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Ib</td>
<td>Machine Learning</td>
<td>KIM.ML09</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Ib</td>
<td>Learning from Data</td>
<td>STMASP-12</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Ib</td>
<td>Adv. self-organisation of social systems</td>
<td>MLBI0801</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Ib</td>
<td>Contemporary Statistics with Applications (16/17)**</td>
<td>STMASP-12</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Ib</td>
<td>Fitting dynamical models to data</td>
<td>TBAFPE-11</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Ib</td>
<td>Statistical genomics (17/18)**</td>
<td>WISG-09</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Ib</td>
<td>Ubiquitous Computing (17/18)</td>
<td>INMUBC-09</td>
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<tr>
<td>1 or 2</td>
<td>Ib</td>
<td>Natural Language Processing</td>
<td>LIX001M05</td>
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</tbody>
</table>

*Robotics for IEM (TBROB-12) requires prior physics knowledge

**Contemporary Statistics with Applications (WICSA-10) and Statistical Genomics (WISG-09) require prior mathematical knowledge that is not covered by the Bachelor CS programme in Groningen
Table B3.6: Guided choice courses Software Engineering & Distributed Systems

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester</th>
<th>Course</th>
<th>Course code</th>
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</thead>
<tbody>
<tr>
<td>1 or 2</td>
<td>Ia</td>
<td>Pattern Recognition</td>
<td>INMPR-08</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Ia</td>
<td>Robotics for IEM*</td>
<td>TBROB-12</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Ib</td>
<td>Machine Learning</td>
<td>KIM.ML09</td>
</tr>
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<td>1 or 2</td>
<td>Ib</td>
<td>Advanced Software Architecture</td>
<td>INMASA-10</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Ib</td>
<td>Ubiquitous Computing (17/18)</td>
<td>INMUBC-09</td>
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<tr>
<td>1 or 2</td>
<td>IIa</td>
<td>Scientific Visualisation</td>
<td>INMSV-08</td>
</tr>
<tr>
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<td>IIa</td>
<td>Multi-Agent Systems</td>
<td>KIM.MAS03</td>
</tr>
<tr>
<td>1 or 2</td>
<td>IIb</td>
<td>Systems Engineering</td>
<td>TBSE05E</td>
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</tbody>
</table>

*Robotics for IEM (TBROB-12) requires prior physics knowledge

Table B3.7: Optional free choice course provided by Computing Science

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester</th>
<th>Course</th>
<th>Course code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 or 2</td>
<td>IIa</td>
<td>Advanced Computer Ethics</td>
<td>WMCS13001</td>
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</table>

Table B3.8: Courses taught *in alternating years* (biennial courses), and *new courses* that will start in the year 2017-2018

<table>
<thead>
<tr>
<th>Biennial/new</th>
<th>Course</th>
<th>Taught in</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>16-17</td>
</tr>
<tr>
<td>biennial</td>
<td>Ubiquitous Computing</td>
<td>NO</td>
</tr>
<tr>
<td>biennial</td>
<td>Dynamic Logic</td>
<td>YES</td>
</tr>
<tr>
<td>biennial</td>
<td>Contemporary Statistics with Applications</td>
<td>YES</td>
</tr>
<tr>
<td>biennial</td>
<td>Statistical genomics</td>
<td>NO</td>
</tr>
<tr>
<td>new</td>
<td>Data Science and Visual Analytics</td>
<td>NO</td>
</tr>
<tr>
<td>new</td>
<td>Information Systems</td>
<td>NO</td>
</tr>
</tbody>
</table>
B3.2 APPROVAL OF YOUR STUDY PROGRAM
In the course of your degree programme, you will have to submit an overview of all your courses (a so-called study programme) to the Board of Examiners for official approval. This must be done two months before the expected graduation date at the latest, but it is highly advisable to submit it before you start your first elective courses. That way you will know beforehand that your elective courses have been approved. Please note that you cannot graduate without an approved study programme!

B3.2.1 Instructions for submitting your study program
Your study programme should be based on the curriculum of one specific academic year. Usually, this is the curriculum of the year in which you started your studies. This curriculum of the current academic year can be found in this study guide and on the Student Portal. Students who started earlier should consult the OER for the academic year in which they first registered, which can be found online at:

- myuniversity.rug.nl/infonet/studenten/fwn/reglementen/oer-en

Students may switch to the study programme of a later year (please contact the academic advisor if you would like to do this).

You can submit your study programme via ProgRESS WWW. You should fill in all the courses that you have taken, but also all the courses that you are still going to take in the future. The study programme should mention all the courses of your two-year Master programme (120 ECTS).

Once you have submitted the study programme to the system, it will be sent to the Board of Examiners for approval. The board will check whether all the obligatory courses are listed on your programme and they will judge whether your elective courses meet the requirements. If your programme has been approved, then it has become the official list of courses that you have to finish in order to obtain your Master’s degree.

After your programme has been approved, it is still always possible to submit a change to your program, for instance when you have changed your mind about an elective course. In case you wish to change your previously approved study program, you will have to send an email to the Board of Examiners, explaining the change you want to make.

More detailed instructions on how to submit a study programme can be found on the Student Portal. In case you need help with the content of your programme, you can consult the academic advisor.

B3.3 REGISTRATION FOR COURSES AND EXAMS
Registration takes place via ProgRESS WWW:

- progRESSwww.nl/rug

See Part A of this Study Guide for more details about course and exam registration. Note that there are registration deadlines, so that appropriate rooms can be booked and sufficient student assistants hired. Please deregister if you decide not to take a course or exam that you have signed up for.

ProgRESS WWW does not allow you to register for more than four courses in a period (this only holds for courses which are offered in a period of 8-10 weeks). In case you want to register for more than 4 courses in one period, please contact your academic advisor. Students who have registered for a course are automatically provided with access to the corresponding course information in Nestor. Lecturers can post important information about their courses on Nestor, including changes to the timetable, homework, the assessment procedure, lecture slides, etc. In addition, they can also send e-mails to all
students registered for their courses via Nestor. In other words, if you are not registered for a course in ProgRESS WWW, you may miss out on important information from the lecturer about your courses and/or exams in Nestor.

If you have any questions or problems related to registering in other degree programmes, please contact the Education Support Desk.

The Board of Examiners may grant permission to take an extra examination in special cases of force majeure:
- excie-informatica@rug.nl

Practicals are only offered once per academic year and there are no resits. Homework assignments, computer assignments, etc. are also regarded as practicals.

### B3.4 CHANGES IN THE CURRICULUM

Changes to the curriculum compared to the previous academic year and the transitional rules that go along with them can be found on the Student Portal. In principle, you should use the curriculum of your first year as a Master student. This curriculum is valid for your entire two-year Master's degree programme. So if you started your Master’s degree programme in September 2014, then your curriculum is that of 2014-2015 for the duration of your entire Master programme. You can consult the curricula of previous years online at:
- myuniversity.rug.nl/infonet/medewerkers/fwn/reglementen/oer-en

If changes to the curriculum are announced in your second year (or third year) of study, then these changes do not apply to you, unless:
- A course that you still have to take has been permanently cancelled. In that case find out what the replacement course is (this information can be found on the Student Portal) and include that course in your programme as a replacement for the original course.
- A course has been moved from one block (period or half-semester) to another block. In that case make sure you adjust your planning schedule accordingly. Sometimes it may be wise to move the planning of your project or to choose another minor course that fits better in your schedule. If you choose to change your minor courses, always ask prior approval at the Board of Examiners.

### B3.5 PROCEDURES FOR REQUESTING DEGREE CERTIFICATES

#### B3.5.1 Applying for your degree

When you have finished all the courses (120 EC) of your approved study program, the system in ProgRESS WWW automatically continues with the procedures for the application of your degree. The Board of Examiners will then check your completed study programme. If everything is in order, the judicium can be determined and the degree application will be submitted to the central student administration, and you will be informed of the outcome. Next you will be invited for the graduation ceremony, during which you will receive your degree.

#### B3.5.2 Bachelor and Master graduation ceremony

A few times a year, there is a festive graduation ceremony during which the Bachelor and Master degrees are handed out to the students. These ceremonies take place in the Academy Building, Broerstaat 5 in the city centre. Students, family and friends are very welcome to attend this ceremony.

Please note that the date of the graduation ceremony is NOT the date on which you graduate. Your graduation date is always the date on which your last grade of the programme was obtained. So if your last grade was obtained in March and the ceremony is in June, than you will have graduated in March, but you will obtain the official degree document in June. Of
course, if you need proof of your graduation before the date of the ceremony, then it is always possible to receive an official letter stating that you have met all the requirements of the Master’s degree program, that you have officially graduated and that the degree will be handed out to you soon. You can use this letter as proof of your graduation until you receive the official document. If you cannot attend the graduation ceremony and/or you wish to receive your degree earlier than the date of the graduation ceremony, then this can be arranged as well, but we do encourage everyone to attend the festive ceremony and to bring family and friends.

The ceremony is organized by Ms. Holkema (secretarial support of the Board of Examiners). Any questions concerning the ceremony can be addressed to her (contact details can be found in section B4.2.4).
**B4**

**FURTHER INFORMATION**

This chapter discusses some practical information, such as lecture timetables, the structure of the academic year and contact details of supporting staff and committees.

**B4.1 DATES AND TIMETABLES**

**B4.1.1 Lecture and examination timetables**

The lecture timetables are published on the University timetable page:

- [rooster.rug.nl](http://rooster.rug.nl)

There is also the Faculty page about schedules, the academic year calendar and holidays:

- [www.rug.nl/fwn/roosters](http://www.rug.nl/fwn/roosters).

As changes may be made to a course’s timetable in the course of the academic year, you are advised to check the timetables regularly. Notifications concerning (changes of) the setup and organization of courses will be posted on the **Student Portal**.

**B4.1.2 Structure of the academic year 2016-2017**

An academic year at the University of Groningen consists of two semesters. The start and end dates of the semesters are:

- Semester 1: 5 September 2016 – 3 February 2017

Each semester comprises 20 lecture weeks and is divided into two periods, each lasting 10 weeks. The start and end dates of the periods are the same for all Groningen University degree programmes. In the Computing Science department, lectures are held during the first 8 weeks, whereas the last 2 weeks are reserved for exams. Resits are held in the fourth lecture week of the next period, in the evenings.

**B4.2 SUPPORTING STAFF AND COMMITTEES**

The tasks of the supporting staff and committees listed below are described in the faculty-wide general part of this study guide.

**B4.2.1 Academic advisor Computing Science**

The academic advisor (Dutch: studieadviseur) for the Bachelor and Master Computing Science is: Hanneke Niessink:

- Email: j.h.niessink@rug.nl
- Location: Bernoulliborg (Nijenborgh 9), room 5161.0075
- Open Office Hours: Friday 10.30 - 12.00 hr, Bernoulliborg.
- Telephone: 050 363 7132.
- Appointments: jhniessink.youcanbook.me

You may basically ask your academic advisor any study- or programme-related questions, in person (for complicated issues) or by email (for small issues/questions). Just make sure that before you contact your advisor to ask a question, you have actively searched for answers yourself (for example by reading the study guide or by consulting the information on the **Student Portal**). To contact your academic advisor, you may drop by during open office hours (for short questions, max 10 minutes), or make an appointment via jhniessink.youcanbook.me.

In case of illness or personal circumstances that may influence your study results, you should always inform the academic advisor as soon as possible. This is of importance with regard to the Binding Study Advice and with regard to possible extra financial support.
B4.2.2 Deputy director and degree programme coordinator Computing Science
The deputy director of education (Dutch: adjunct opleidingsdirecteur) of the Computing Science degree programme is Prof. dr. G. Renardel de Lavalette. The degree programme coordinator (Dutch: Onderwijscoördinator) is Drs. N. Meulman. If you want to report general, i.e. not individual, (timetabling) issues or bottlenecks in the teaching programmes, please contact the degree programme coordinator:
- n.meulman@rug.nl

B4.2.3 Education Support Desk
You can consult the Education Support Desk for all other matters such as requesting a certified list of grades, questions about courses and exam registration, the administration of study results, general questions about lectures or the degree programme, and scheduling a date for your graduation colloquium.
You can reach the Education Support Desk via:
- esc.fwn@rug.nl
- 050 363 44 22
The desk is located on the first floor of the Bernoulliborg. See the faculty-wide general section of the study guide for more information (part A).

B4.2.4 Board of Examiners Computing Science
The Board of Examiners (Dutch: Examencommissie) is composed of the following people:
- Prof. Dr. A.C. Telea (chairman);
- Prof. Dr. M. Biehl;
- Dr. A. Meijster;
- (External member not yet appointed at the time of writing).

Staff members supporting the Board of Examiners in specific tasks:
- Drs. N. Meulman (formal secretary and general advisor);
- Drs. J.H. Niessink (advisor student matters);
- Ms. H.P. Holkema (secretarial support).

Correspondence with the Board of Examiners can be conducted via:
- excie-informatica@rug.nl, for the attention of Ms. H.P. Holkema.

B4.2.5 Programme Committee Computing Science
The Programme Committee (Dutch: Opleidingscommissie) is composed of the following staff members:
- Prof. Dr.ir. M. Aiello (chairman);
- Prof. Dr.ir. P. Avgeriou;
- Dr. M.H.F. Wilkinson.

Staff members supporting the Programme Committee in specific tasks:
- Drs. N. Meulman (general advisor)
- Drs. J.H. Niessink (advisor student matters)
- Ms. H.P. Holkema (secretarial support)

Also members of the Programme Committee are three students for the Bachelor programme and two students for the Master programme. These student members are elected each year by the students.

You can contact the Programme Committee if you have a complaint about teaching in general, specific courses or related matters such as facilities. The student members of the Programme Committee can be reached via:
- ocinformatica@betastuf.nl
**B4.2.6 Study Support Group**
The Study Support Group (Dutch: Studieondersteuningsgroep, abbreviated as SOG) is intended for students who have difficulty maintaining the necessary study discipline and who would benefit from some supervision on their progress. All Computing Science students are welcome to join this group, which is supervised by the academic advisor. Students are helped to make a good and realistic planning for the entire period, and during weekly group sessions, each student is asked to state his/her weekly progress. This will help to keep up the study discipline. In addition, the group exchanges all kinds of useful information and tips about courses and projects.

With the SOG’s help you will be able to motivate yourself to work and exchange information with other students, thus significantly increasing your chances of passing exams and projects. Joining the group can be a real support, but remember that it is definitely not without obligations! If you decide to join, you will be expected to actively participate, attend all meetings and fulfil your obligations towards the group. Each new period, the group members decide together which day and time suits everyone best for the weekly sessions.

If you would like to join the SOG, send an e-mail to the academic advisor. If you have any questions or comments, please don’t hesitate to contact your academic advisor.

**B4.3 STUDENT SOCIETIES**

**B4.3.1 Cover: Student Association**
Cover is the study association for students of Artificial Intelligence and Computing Science. Cover organizes a wide range of degree-programme related as well as social activities for its members, such as an introduction camp at the beginning of each academic year where first-year students of Computing Science and Artificial Intelligence can get to know each other as well as senior students.

Cover also organizes lots of social activities, including drinks every first Wednesday of the month, and monthly games and film nights. In addition, Cover has many specialized committees that organize fun activities for members, for example a LAN party twice a year. Besides social activities, Cover also organizes several study-related activities, including monthly activities in collaboration with companies, such as lectures and workshops. In addition, an excursion abroad is held once a year. Previous excursions have visited Stockholm, Moscow and Dublin, to name just a few.

Cover maintains lively contacts with many universities and companies both in the Netherlands and abroad, and thus offers its members a wide knowledge network. Lectures about interesting topics are regularly held, and once a year a large symposium about a degree programme-related theme is organized.

Members of Cover are also entitled to discounts on textbooks. For more information you can contact the books committee of Cover at:

- bookcee@svcover.nl

Cover has about 360 student members, about one-sixth of whom are active in committees or on the board. A committee consists of a number of members who perform certain duties for the association. For example, the book committee organizes book sales each period, the activities committee organizes the majority of all social activities, the study committee is responsible for study-related activities and the excursion committee organizes the annual excursion abroad. Joining a committee will enable you to contribute to the study association in a fun way.
Cover’s aim is to work on making the degree programmes even bigger, broader, better and more fun, and the society is looking forward to welcoming a whole new cohort of enthusiastic members again each year!

More information on Cover and its committees can be found on the website:

- [www.svcover.nl](http://www.svcover.nl)

This is also where you will find our activities schedule. For more information about the study association or if you would like to attend one of our activities, you can also send an e-mail to:

- [bestuur@svcover.nl](mailto:bestuur@svcover.nl)

**B4.3.2 Invariant: Alumni Association**

Invariant is the alumni association for Computing Science at the University of Groningen. The association was founded at the end of 2013. Invariant’s goal is to bring young and old Computing Science alumni together for fun and work related activities.

More information about Invariant can be found on the website:

- [www.invariant.nl](http://www.invariant.nl)

For more information you can also send an email to:

- [board@invariant.nl](mailto:board@invariant.nl)

**B4.4 FURTHER QUESTIONS**

Announcements and other relevant information concerning the programme are available on the [Student Portal](http://www.studentportal.nl) (see the ‘Study Info’ tab in particular). There is also a list of frequently asked questions. Please check this list regularly.
C
Rules, Regulations and Addresses
C1

RULES AND REGULATIONS

Many things treated in this Study Guide are based on formal documents approved on the basis of the Higher Education Act by the Board of the University, the board of the faculty, the faculty council or by the Board of Examiners. In case of doubt or in case of conflicts it is advisable the refer to these formal documents. Of importance are the following.

C1.1 STUDENT CHARTER

The Student Charter

The Student Charter provides an overview of the rights and obligations of both students and the University. It is based on national legislation, particularly the Higher Education and Research Act (WHW), supplemented by regulations that are specific to the University of Groningen. These latter regulations are set out in the appendices to the Student Charter.

The Act stipulates that the Student Charter comprises two sections: a university-wide section and a programme-specific section.

- The university-wide section describes the rights and obligations that apply to the University as a whole, such as registration and protection of rights. You can find this section on the Student Portal. The university-wide section of the Student Charter does not literally quote the articles from acts and regulations but describes them as clearly as possible. The various topics are accompanied by links to the relevant articles of the act or regulation in question.

- The programme-specific sections describe the rights and obligations that apply to specific degree programmes. These sections include the Teaching and Examination Regulations (OER), Rules and Regulations for examinations and final assessment and other regulations and provisions set by the various degree programmes and faculties. You can consult your programme-specific section at the faculty Education Offices and in the Study Guides.

Applicability

The Student Charter applies to academic year 2015-2016. The university-wide section of the Student Charter is approved annually by the Board of the University and endorsed by the University Council. In the event that the Charter challenges or contradicts any legal regulations, these legal regulations will take priority.

Publication

At the start of the academic year all students will be sent an e-mail by the Board of the University informing them where they can find the Student Charter on the internet and where they can consult a hardcopy of the Student Charter.

Using the Student Charter

All students are expected to be familiar with the contents of the Student Charter. Not complying with the rules in the Charter may affect your rights, for example the right to financial support from the Graduation Fund.

Some of these regulations may not be as hard and fast as they sound. Rules and regulations are by definition general in character, and this Student Charter is no exception. This means that the applicability of these regulations in concrete situations and individual instances is not always a predictable and straightforward matter. Students who have registered for the first time this year may find that the regulations that apply to them are different to those for students who have reregistered. Make sure you are provided with the right information by your faculty and/or University Student Desk and read the Student Charter and the associated regulations carefully.
Items in the Student Charter
The university-wide section of the Student Charter contains information on the rights and obligations of students regarding the following items:
- Admission;
- Registration and deregistration;
- Tuition fees;
- Teaching, including the binding study advice;
- Examinations and final assessments;
- Financial assistance;
- Consultative participation;
- Rules of behaviour;
- Legal rights.

C1.2 TEACHING AND EXAMINATION REGULATIONS (OER)
The Teaching and Examination Regulations is established by board and council of the faculty. It contains a number of regulations with respect to structure and content of the degree programmes, form and frequency of examinations, admission regulations, tutoring, cum laude, etc.

The OER can be found at the Student Portal.

C1.3 RULES AND REGULATIONS OF THE BOARD OF EXAMINERS
The Rules and Regulations of the Board of Examiners contain a number of additional regulations concerning examinations: e.g. registration for examinations, procedures for exemptions, assessment, fraud, cum laude, etc.

The Rules and Regulations of the Boards of Examiners of the degree programmes of the Faculty of Mathematics and Natural Sciences can be found at the Student Portal.
\textbf{C2}

\textbf{ADDRESSES CENTRAL BODIES UNIVERSITY OF GRONINGEN}

\textbf{C2.1 GENERAL ADDRESSES}

\textbf{Board of the University} (CvB)
Postal address: P.O. Box 72, 9700 AB Groningen, the Netherlands
Telephone: (050) 363 5285

\textbf{University Council} (U-raad)
Postal address: P.O. Box 72, 9700 AB Groningen, the Netherlands
Telephone: (050) 363 8535
E-mail: uraad@rug.nl
Website: www.rug.nl/uraad

\textbf{Legal Affairs Office} (ABJZ)
Postal address: P.O. Box 72, 9700 AB Groningen, the Netherlands
Telephone: (050) 363 5440

\textbf{Donald Smits Center for Information Technology} (CIT)
Visiting address: Zernikeborg, Nettelbosje 1
Postal address: P.O. Box 11044, 9700 CA Groningen, the Netherlands
Telephone: (050) 363 9200
E-mail: secretariaat-cit@rug.nl
Website: www.rug.nl/cit

\textit{CIT Helpdesk}
Telephone: (050) 363 3232
E-mail: servicedesk.cit@rug.nl

\textbf{Health, Safety and Environment Service} (AMD)
Visiting address and postal and address:
Visserstraat 49, 9712 CT Groningen, the Netherlands
Telephone: (050) 363 5551
E-mail: amd@rug.nl
Website: www.rug.nl/amd

\textbf{Office of the Confidential Advisor}
Marijke Dam, Confidential Advisor

Visiting and postal address:
Visserstraat 47, 9712 CT Groningen, the Netherlands
Telephone: (050) 363 5435
E-mail: j.m.dam@rug.nl
Website: www.rug.nl/vertrouwenspersoon

\textbf{Complaints Committee for harassment, sexual harassment and aggressive, violent or discriminatory behavior} (SIAGD)
Postal address: Antwoordnummer 172, 9700 AB Groningen, the Netherlands
C2.2 ADDRESSES FOR STUDENTS

**University Student Desk (USD)**
Visiting address: Broerstraat 5  
Postal address: P.O. Box 72, 9700 AB Groningen, the Netherlands  
Telephone: (050) 363 8004  
Website: [www.rug.nl/insandouts](http://www.rug.nl/insandouts)  
[www.rug.nl/usd](http://www.rug.nl/usd)  
Or myuniversity > frequently asked questions

**International Service Desk (ISD)**
Visiting address: Broerstraat 5  
Postal address: P.O. Box 72, 9700 AB Groningen, the Netherlands  
Telephone: (050) 363 8181  
E-mail: isd@rug.nl  
Website: [www.rug.nl/isd](http://www.rug.nl/isd)

**Student Service Centre**
Visiting address: Uurwerkersgang 10  
Postal address: P.O. Box 72, 9700 AB Groningen, the Netherlands  
Telephone: (050) 363 8066  
E-mail: ssc-secretariaat@rug.nl  
Website: [www.rug.nl/ssc](http://www.rug.nl/ssc)

**NEXT Career Services**
Visiting address: Uurwerkersgang 10  
Postal address: Postbus 72, 9700 AB Groningen  
E-mail: next@rug.nl  
Website: [www.rug.nl/next](http://www.rug.nl/next)

**Central Portal for the Legal Protection of Student Rights (CLRS)**
Postal address: P.O. Box 72, 9700 AB Groningen, the Netherlands  
Website: [www.rug.nl/clrs](http://www.rug.nl/clrs)

**University Funds Committee (UFC)**
Postal address: P.O. Box 72, 9700 AB Groningen, the Netherlands  
E-mail: ufc@rug.nl
C3
FACULTY ADDRESSES

C3.1 BUILDINGS

- **Linnaeusborg** (buildings U, 5171–5174): Centre for Life Sciences, Nijenborgh 7, 9747 AG Groningen; telephone reception (050) 363 2021. Open: 8:00 – 20:00.

- **Bernoulliborg** (building V, 5161): ESC – Mathematics – Computing Science Artificial Intelligence, Nijenborgh 9, 9747 AG Groningen; telephone reception (050) 363 6868. Open: 8:00 – 20:00.


- **Kapteynborg** (building J, 5419): Astronomy, Landleven 12, 9747 AD Groningen; telephone secretary (050) 3634074 Open during office hours, ring the bell to enter the building.

- **ADL1** (buildings 3211–3217/3219): ESD, Medical Sciences, Dentistry and Pharmacy, Antonius Deusinglaan 1, 9713 AV Groningen; telephone reception (050) 363 8000. Open: Mon–Thurs: 8:00 – 20:30; Fri: 8:00 – 17:30.

For a map, route description and more information about the buildings, see:
- [www.rug.nl/fwn/organization/locaties](http://www.rug.nl/fwn/organization/locaties)

See Chapter C4 for maps of the buildings of the faculty.

C3.2 LIBRARY

Central Medical Library

- Location: Hanzeplein 1, 9713 GZ Groningen
- Winkelstraat 1 or Poortweg 12, 4th floor, Y 4.202
- Telephone: (050) 363 3048 and/or (050) 361 2596
- E-mail: cmb@umcg.nl

University Library Zernike

- Location: Nettelbosje 2, 9747 EA Groningen
- 2nd floor of the Duisenberg building
- Telephone: (050) 363 3708
- E-mail: zernike-bibliotheek@rug.nl

C3.3 EXCHANGE OFFICE

Henriëtte Mulder

- Location: Bernoulliborg, Nijenborgh 9, room 5161.0050,
- E-mail: exchange.science@rug.nl

Margriet Hulshof

- Location: Antonius Deusinglaan 1, room 3213.0017
- E-mail: m.a.hulshof@rug.nl

See:
- [myuniversity.rug.nl/infonet/studenten/fwn/studeren-buitenland/algemeneinformatie/contactexchange](http://myuniversity.rug.nl/infonet/studenten/fwn/studeren-buitenland/algemeneinformatie/contactexchange)
C3.4 EDUCATION SUPPORT DESK

ESD Zernike
Location: Bernoulliborg, Nijenborgh 9, building 5161, first floor
Opening hours: 10:30 – 12:00 (all week days)
13:00 – 15:00 (not on Wednesday and Friday)
Phone: (050) 363 4422 (9.00 – 12:00 and 13:00 – 16:00)

ESD ADL
Location: UMCG, Antonius Deusinglaan 1, building 3214, ground floor
Opening hours: 12:00 – 14:00
Telephone: (050) 363 3315 or (050) 363 3343
(9.00 – 12:00 and 13:00 – 16:00)
E-mail: esc.fwn@rug.nl
C4
LOCATIONS

C4.1 ZERNIKE

Translation:
- Ingang = Entrance
- Chemie-Fysica-Milieukunde = Chemistry – Physics – Environmental Sciences – Industrial Engineering and Management – Nanoscience
- Tentamenhal = Examination building, Aletta Jacobs
C4.2 ADL

Medical Sciences, Dentistry and Pharmacy (ADL1)
Ant. Deusinglaan 1
9713 AV Groningen
phone 050 363 8000

University Medical Center Groningen (UMCG)

ADL2
Ant. Deusinglaan 2
9713 AW Groningen
phone 050 363 3270 / 8000