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Chapter 1  Objectives and Exit Qualifications of the Study Programme

Article 1.1   Objectives
The aim of the Master of Science in Logic programme is to create an international, interdisciplinary and research-oriented learning environment in which students are educated as researchers in the area of Logic, Language and Information. Graduates will obtain the degree of Master of Science.

Article 1.2   Exit qualifications
On the basis of the acquired knowledge, understanding and skills, students that have successfully completed the programme are able to carry out interdisciplinary research in the area of Logic, Language and Information, either as a PhD student or in an application-directed environment.

1. The insight of a graduate of the MSc Logic is based on
   - a solid foundation in the most important aspects of logic, and its applications in computer science, linguistics, philosophy and mathematics;
   - specialized knowledge at an advanced level of one or more of the following research areas: Logic & Computation, Logic & Language, Logic & Mathematics, Logic & Philosophy.

2. The acquired skills lie in the area of research and communication. More specifically, a graduate of the MSc Logic is able to
   - formulate research questions, and address these in a research plan;
   - make a contribution to the theories and research methods in the area of expertise;
   - critically evaluate contributions to their field of expertise, based on an awareness of its research traditions and conventions;
   - collaborate with others in a multidisciplinary team;
   - deliver and defend presentations of their own work, both orally and in writing.

3. Finally, a graduate possesses
   - the intellectual mobility to transcend traditional boundaries between the academic disciplines that border the specialization area.
Chapter 2  Admissions Requirements

Article 2.1  Admission to the study programme
1. Students have to apply for admission to the Master’s Programme in Logic (application form, accompanied by a letter of motivation, transcripts, two letters of recommendation; see http://www.illc.uva.nl/MScLogic/application/).
2. Applicants must have at least a Bachelor's or equivalent degree in one of the following fields:
   • computer science
   • artificial intelligence
   • mathematics
   • philosophy
   • linguistics

Applicants with a first degree in another field may also be considered, provided they have an appropriate formal background. The final decision lies with the Board of Examiners.
3. All applicants must have a reasonable background in logic, affinity with mathematical and formal thinking and some familiarity with mathematical proofs. In practice, this means that we expect that incoming students have had a formal introduction to logic up to the completeness theorem for first-order logic and have taken courses requiring mathematical or formal reasoning.
4. In addition, applicants are required to have a strong academic record, and must satisfy the English language requirements.
5. Advanced students (typically students who already have an MSc or MA degree in a related subject) can request the Board of Examiners to accept some of their European Credits (EC) from a different programme as transfer EC, exempting them from part of the 120 EC of the MSc in Logic on the basis of a strong academic record and relevant courses they have taken. Each application will be individually judged by the Board of Examiners. Depending on the number of transfer EC it is possible to complete the MSc programme in three or even two semesters.

Chapter 3  Organisation of the Curriculum

Article 3.1  The final examination of the study programme
The Master’s Programme consists of a two-year programme with a total study load of 120 EC.

Article 3.2  Full-time / part-time
The study programme is provided on a full-time basis only.

Article 3.3  Semesters
The academic year is divided in two semesters. Each semester is divided in three periods of 8, 8, and 4 weeks (period a, b and c) respectively.
Students can start the study programme in semester 1 (September) or in semester 2 (February).
Chapter 4  Content and Study Load of the Components

Article 4.1  General
The MSc Logic is a two-year research master with four specialization areas (‘tracks’):
- Logic and Computation (L&C)
- Logic and Language (L&L)
- Logic and Mathematics (L&M)
- Logic and Philosophy (L&P)

Article 4.2  Content of the programme

Article 4.2.1  Programme structure and content
1. The MSc Logic programme consists of:
   - Obligatory courses
   - Track Courses (varied number of EC; see 4.3)
   - Electives (varied number of EC; see 4.3)
   - Thesis Master of Logic (30 EC)
2. Obligatory Courses:
   - “Logic, Language and Computation” (3 EC)
   - “Research Project Master of Logic” (6 EC). Each student will have to take a total of at least 6 EC in research projects. These projects can either be done in period c of the first, second or third semester or as individual research projects at any time.
3. Track Courses:
   The courses in the obligatory part are determined by the student’s area of specialization:
   - Track Logic and Computation: “Computational Complexity” (6 EC) and “Recursion Theory” (6 EC).
   - Track Logic and Language: “Meaning, Reference and Modality” (6 EC), and “Structures for Semantics” (6 EC).
   - Track Logic and Mathematics: “Model Theory” (6 EC), and “Proof Theory” (6 EC).
   - Track Logic and Philosophy: “Meaning, Reference and Modality” (6 EC), “Kant, Logic and Cognition” (6 EC), and “Philosophical Logic” (6 EC).
4. Elective courses: to be chosen out of the courses in table 4.4. Up to 20 EC may be chosen from other master programmes.
5. Thesis Master of Logic (30 EC).
6. Students are expected to attend at least ten research colloquia and to participate in seminars such as: DIP colloquium; Logic Tea; Colloquium on Mathematical Logic; Computational Social Choice Seminar; Algebra|Coalgebra Seminar; Computational Linguistics Seminar, Dynamic Logic Seminar. This is a requirement for starting the Thesis Master of Logic.
7. The MSc Logic offers an additional course 'Basic Logic' (6 EC) covering the basics of mathematical logic for students from a humanities background. In the admission process, the Board of Examiners can require students to follow Basic Logic, or recommend that the student follows 'Basic Logic'. Other students need permission from the Board of Examiners to use 'Basic Logic' as part of their course list for graduation.

Article 4.2.2  Undergraduate level courses
Up to 12 EC of the elective EC can be used for undergraduate level courses (BA or BSc) to make up for deficiencies in the student’s education prior to joining the MSc Logic. These will be determined in agreement with the student’s academic mentor. The Board of Examiners can allow the inclusion of more than 12 EC of undergraduate EC.

Article 4.2.3  Elective courses
Elective courses will be chosen with the consent of the Board of Examiners.
Article 4.2.4 Transfer credits and exemptions
1. A student may apply to the Board of Examiners for the approval of transfer credits for courses taken at a different programme. This is only possible for courses at Master's level that are directly relevant to the MSc Logic programme and only in case there is no overlap with other courses taken by the student. By default, all transfer credits are registered with a pass grade and will not be taken into account to compute the student's grade point average. At most 40 EC of the student's course programme can consist of such transfer credits.

2. A student may also apply to the Board of Examiners for exemption from the requirement to take a track-specific obligatory course if they already possess the knowledge taught in that course. Such requests will only be granted in highly exceptional circumstances. If such a request is granted, the student must take additional elective course to obtain a sufficient number of ECs for graduation.

Article 4.3 Study Programme

Article 4.3.1 Track Logic and Computation

<table>
<thead>
<tr>
<th>Semester 1:</th>
<th></th>
<th>Semester</th>
<th>period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logic, Language and Computation</td>
<td>3</td>
<td>1</td>
<td>ab</td>
</tr>
<tr>
<td>Computational Complexity</td>
<td>6</td>
<td>1</td>
<td>b</td>
</tr>
<tr>
<td>(Inleiding Modale Logica/Introduction to Modal Logic)**</td>
<td>(6)</td>
<td>1</td>
<td>ab</td>
</tr>
<tr>
<td>(Research Project Master of Logic)*</td>
<td>(6)</td>
<td>1</td>
<td>a, b or c</td>
</tr>
<tr>
<td>Elective courses</td>
<td>9/15/21</td>
<td>1</td>
<td>a, b or c</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2:</th>
<th></th>
<th>Semester</th>
<th>period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recursion Theory</td>
<td>6</td>
<td>2</td>
<td>b</td>
</tr>
<tr>
<td>(Research Project Master of Logic)*</td>
<td>(6)</td>
<td>2</td>
<td>a, b or c</td>
</tr>
<tr>
<td>Elective courses</td>
<td>18/24</td>
<td>2</td>
<td>a, b or c</td>
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<table>
<thead>
<tr>
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<th>Semester</th>
<th>period</th>
</tr>
</thead>
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<tr>
<td>(Research Project Master of Logic)*</td>
<td>(6)</td>
<td>1</td>
<td>a, b or c</td>
</tr>
<tr>
<td>Elective courses</td>
<td>24/30</td>
<td>1</td>
<td>abc</td>
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<table>
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<tr>
<th>Semester 4:</th>
<th></th>
<th>Semester</th>
<th>period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thesis Master of Logic</td>
<td>30</td>
<td>2</td>
<td>abc</td>
</tr>
</tbody>
</table>

*: In the first, second or third semester.

**: Students with a deficiency in modal logic have to take the course “Introduction to Modal Logic” as an elective course.
### Article 4.3.2 Track Logic and Language

<table>
<thead>
<tr>
<th>Semester 1:</th>
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<th>semester</th>
<th>period</th>
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</thead>
<tbody>
<tr>
<td>Logic, Language and Computation</td>
<td>3</td>
<td>1</td>
<td>ab</td>
</tr>
<tr>
<td>Meaning, Reference and Modality</td>
<td>6</td>
<td>1</td>
<td>a</td>
</tr>
<tr>
<td>(Research Project Master of Logic)*</td>
<td>(6)</td>
<td>1</td>
<td>a, b or c</td>
</tr>
<tr>
<td>Elective courses</td>
<td>15/21</td>
<td>1</td>
<td>ab</td>
</tr>
</tbody>
</table>

#### Semester 2:

| (Research Project Master of Logic)* | (6) | 1 | a, b or c |
| Elective courses | 18/24 | 2 | ab |

#### Semester 3:

| (Research Project Master of Logic)* | (6) | 1 | a, b or c |
| Elective courses | 24/30 | 1 | ab |

#### Semester 4:

| Thesis Master of Logic | 30 | 2 | abc |

*: In the first, second or third semester.

### Article 4.3.3 Track Logic and Mathematics

<table>
<thead>
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<th>EC</th>
<th>semester</th>
<th>period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logic, Language and Computation</td>
<td>3</td>
<td>1</td>
<td>ab</td>
</tr>
<tr>
<td>Proof Theory</td>
<td>6</td>
<td>1</td>
<td>a</td>
</tr>
<tr>
<td>(Inleiding Modale Logica/Introduction to Modal Logic)**</td>
<td>(6)</td>
<td>1</td>
<td>ab</td>
</tr>
<tr>
<td>(Research Project Master of Logic)*</td>
<td>(6)</td>
<td>1</td>
<td>a, b or c</td>
</tr>
<tr>
<td>Elective courses</td>
<td>9/15/21</td>
<td>1</td>
<td>ab</td>
</tr>
</tbody>
</table>

#### Semester 2:

| (Axiomatische Verzamelingentheorie/Axiomatic Set Theory)*** | (6) | 2 | ab |
| (Research Project Master of Logic)* | (6) | 2 | a, b or c |
| Elective courses | 12/18/24 | 2 | ab |

#### Semester 3:

| (Research Project Master of Logic)* | 6  | 1 | c |
| Elective courses | 24/30 | 1 | ab |

#### Semester 4:

| Thesis Master of Logic | 30 | 2 | abc |

*: In the first, second or third semester.

**: Students with a deficiency in modal logic have to take the course “Introduction to Modal Logic” (6 EC) as an elective course.

***: Students with a deficiency in set theory have to take the course “Axiomatische Verzamelingentheorie (Axiomatic Set Theory)” (6 EC) as an elective course.
**Article 4.3.4  Track Logic and Philosophy**

<table>
<thead>
<tr>
<th>Semester 1:</th>
<th>EC</th>
<th>semester</th>
<th>period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logic, Language and Computation</td>
<td>3</td>
<td>1</td>
<td>ab</td>
</tr>
<tr>
<td>Meaning, Reference and Modality</td>
<td>6</td>
<td>1</td>
<td>a</td>
</tr>
<tr>
<td>(Research Project Master of Logic)*</td>
<td>(6)</td>
<td>1</td>
<td>a, b or c</td>
</tr>
<tr>
<td>Elective courses</td>
<td>15/21</td>
<td>1</td>
<td>ab</td>
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</table>

<table>
<thead>
<tr>
<th>Semester 2:</th>
<th>EC</th>
<th>semester</th>
<th>period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kant, Logic &amp; Cognition</td>
<td>6</td>
<td>2</td>
<td>a</td>
</tr>
<tr>
<td>Philosophical Logic</td>
<td>6</td>
<td>2</td>
<td>ab</td>
</tr>
<tr>
<td>(Research Project Master of Logic)*</td>
<td>(6)</td>
<td>2</td>
<td>a, b or c</td>
</tr>
<tr>
<td>Elective courses</td>
<td>12/18</td>
<td>2</td>
<td>ab</td>
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<table>
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<th>Semester 3:</th>
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<table>
<thead>
<tr>
<th>Semester 4:</th>
<th>EC</th>
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<th>period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thesis Master of Logic</td>
<td>30</td>
<td>2</td>
<td>abc</td>
</tr>
</tbody>
</table>

*: In the first, second or third semester.

**Article 4.4  Electives Master of Science in Logic**

**First and third semester:**
- Basic Logic (6 EC) - only for students with a weak mathematical background, students require permission of the Board of Examiners to enroll.
- Capita Selecta: Modal Logic, Algebra, Coalgebra (6 EC)
- Capita Selecta: Set Theory (6 EC)
- Computational Complexity (6 EC; elective only for tracks L&L, L&M and L&P, compulsory for track L&C)
- Computational Semantics and Pragmatics (6 EC)
- Computational Social Choice (6 EC)
- Concurrency Theory (6 EC)
- Elements of Language Processing and Learning (3 EC)
- Inleiding Modale Logica (Introduction to Modal Logic; 6 EC)
- Introduction to Modern Cryptography (6 EC)
- Language and Games (12 EC)
- Language and Optimality (6 EC)
- Logic and Conversation (6 EC)
- Logic, Knowledge and Science (6 EC)
- Machine Learning: Principles and Methods (6 EC)
- Meaning, Reference and Modality (6 EC; elective only for tracks L&M and L&C, compulsory for tracks L&L and L&P)
- Philosophical Logic (6 EC; elective only for tracks L&C, L&L, L&M, compulsory for track L&P)
- Philosophy of Language: An Extensive Introduction (6 EC)
- Proof Theory (6 EC; elective only for tracks L&C, L&L and L&P, compulsory for track L&M)
- Radical Interpretation, hermeneutics and Forms of Life (12 EC)
• Rationality, Cognition and Reasoning (12 EC)

Second and fourth semester:
• Advanced Strategic Game Theory (6 EC)
• Axiomatische Verzamelingentheorie (Axiomatic Set Theory; 6 EC)
• Combinatorics with Computer Science Applications (6 EC; will be given in 2013-2014, will NOT be given in 2012-2013)
• Cognitive Models of Language (6 EC)
• Cooperative Games (6 EC)
• Ethics, ontology, life – Wittgenstein’s later work (12 EC)
• Formal Learning Theory (6 EC)
• Kant, Logic and Cognition (6 EC; elective only for tracks L&M, L&L and L&C, compulsory for track L&P)
• Kolmogorov Complexity (6 EC)
• Mathematical Structures in Logic (6 EC)
• Model Theory (6 EC; elective only for tracks L&L, L&C and L&P, compulsory for track L&M)
• Music Cognition (6 EC)
• Neural Nets & Symbolic Reasoning (6 EC)
• Neurophilosophy of Free will (6 EC)
• Neurophilosophy of Self (6 EC)
• Pragmatics and the Lexicon (6 EC)
• Quantum Computing (6 EC)
• Reasoning with Uncertainty (6 EC)
• Recursion Theory (6 EC; elective only for tracks L&L en L&P, compulsory for tracks L&M and L&C)
• Seminar Mathematical Logic (3 EC)
• Statistical Structure in Language Processing (6 EC)
• Structures for Semantics (6 EC; elective only for tracks L&M, L&P and L&C, compulsory for track L&L)
• Topics in Dynamic Epistemic Logic (6 EC)
• Transcendental Logic, Space and Time (6 EC)
• Unsupervised Language Learning (6 EC)

Article 4.5  Graduation Procedure Master of Science in Logic
1. The official graduation procedure MSc in Logic (approved by the Board of Examiners) can be read and downloaded from the ILLC website: http://www.illc.uva.nl/MScLogic/graduation/index.html.
2. Before starting with the Thesis students have to fill in the 'Approval of individual programme content MSc Logic' (to be downloaded from the website). Students can only do so when they have finished all coursework except for at most 20 EC. See Article 5.1.2.

Article 4.6  Transitional provisions
1. These regulations have been laid down in writing and formally approved by the Board of Examiners.
2. Students who started before 2010 and still need to pass the course 'Core Logic' can satisfy this requirement by passing 'Logic, Language, and Computation' instead.
3. In situations that are not covered by these regulations, the Board of Examiners will decide.
Chapter 5  Additional Regulations

Article 5.1  Order of the examinations
1. The student may participate in examinations of a component only after the student has shown that he/she has the necessary prerequisite knowledge. To that end, a student must have passed the subjects stated in the study guide (per course or component), which are considered to be prerequisite knowledge for that course or component.
2. The student may start with the thesis only if no more than 20 registered EC of the total of 90 EC for all courses are missing, and the student’s study programme has been approved by the Board of Examiners.
3. The student cannot defend his/her thesis before all other courses from his study programme are passed and all grades are registered.
4. At the request of a student, the Board of Examiners may deviate from the provisions of paragraphs 1 and 2 for the benefit of this student.

Article 5.2  Number of examination opportunities
1. In accordance with Part A of these Regulations, a student will have the opportunity two times a year to take examinations.
2. Contrary to the provisions of paragraph 1, the assessment of projects in which several students have worked on an assignment will only be made at the end of the relevant teaching period. In principle, an individual resit is not possible.
3. If a student feels that on account of exceptional circumstances the assessment, referred to in paragraph 2, is not a realistic assessment of his/her effort, knowledge, skills or insights, the student may request the Board of Examiners to nevertheless permit an individual test and/or resit.

Article 5.3  Traineeship
1. A part of the free elective space may be used for an external traineeship.
2. For that purpose the student will prepare a subject description including the aim and content of the traineeship. The student will seek a supervisor for the traineeship amongst the staff of the master programme (or the staff of the related research institute).
3. A traineeship may amount to a maximum of 10 EC.
4. Participation in a summer school may also be regarded as an external traineeship.
5. The approval of the Board of Examiners is required for a traineeship to be included in the student's study programme.

Article 5.4  Double Master’s Programme
1. In order to obtain two Master’s degrees the student must pass the compulsory components of both programmes.
2. Students first have to follow the other programme completely, and then the MSc Logic as "fast track student" (according to which 40 EC will be exempted).
3. If a component is compulsory in both study programmes, the number of EC to be obtained in the set of elective courses of one of the two study programmes will be increased by the number of EC of that compulsory component, to be determined by the Board of Examiners.
4. The student must conduct two research theses with two separate defences.
5. The Boards of Examiners of the two study programmes must both approve the student’s study programme.