

UNIVERSITY OF AMSTERDAM
FACULTY OF SCIENCE
TEACHING AND EXAMINATION REGULATIONS
PART B: programme-specific section
Academic year 2017-2018
MASTER'S PROGRAMME IN LOGIC

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Chapter 1. General Provisions

Article 1.1 – Definitions

Track Specialisation area with prescribed components.

Article 1.2 – Study programme information

1. The Master's programme in Logic, CROHO number 60226, is offered on a full-time basis and the language of instruction is English. This means that the Code of Conduct for Foreign Languages at the UvA applies for this programme (see Code of Conduct Governing Foreign Languages at the University of Amsterdam 2000 at the website: <http://www.uva.nl/en/about-the-uva/organisation/legal-affairs/regulations/regulations.html>).
2. The MSc Logic is a two-year programme with a total study load of 120 EC.
3. Within the programme the following tracks are offered:
 1. Logic and Computation (L&C)
 2. Logic and Language (L&L)
 3. Logic and Mathematics (L&M)
 4. Logic and Philosophy (L&P)

Article 1.3 – Enrolment

The programme is offered starting in the first semester of the academic year (1 September) and starting in the second semester (1 February).

Chapter 2. Programme objectives and exit qualifications

Article 2.1 – Programme 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 2.2 – 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;
 - specialised 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 specialisation area.

Chapter 3. Further admission requirements

Article 3.1 – Admission requirements

1. Students have to apply for admission to the Master's Programme in Logic. For a detailed description, see <http://www.ilc.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
 - linguisticsApplicants with a first degree in another field may also be considered, provided they have an appropriate formal background. The final decision lies with the Admissions Board of the Master's Programme in Logic, which consists of the programme director and the chair of the Examinations Board of the Master of Logic.
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 incoming students are expected to 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.

Article 3.2 – Pre-Master's programme

Not applicable.

Article 3.3 – Limited programme capacity

Not applicable.

Article 3.4 – Final deadline for registration

1. A request for admission to the Master's programme starting in September must be received before 1 April in the case of EU students (including Dutch students) and before 1 February in the case of non-EU students. For the programme starting in February, applications must be received before 1 December for EU students (including Dutch students) and before 1 October for non-EU students.
2. The Admissions Board may consider a request submitted after this closing date.

Article 3.5 – English language requirements

1. The proficiency requirement in English as the language of instruction can be met by the successful completion of one of the following examinations or an equivalent:
 1. IELTS-test: minimum score 6.5, at least 6 on each sub-score (listening/reading/writing/speaking).
 2. TOEFL Test: the minimum scores required are:
 - Internet-based test (iBT): 90
 - Computer-based test (CBT): 235
 - Paper-based test (PBT): 580
 3. A Cambridge Examination Score with a minimum test result of CAE B will also be accepted. For the CPE test a minimal score of C is required.
2. Those who have taken English at VWO level at a school in the Netherlands, have an English-language 'international baccalaureate' diploma, or have had secondary or tertiary education in a country where English is a native language satisfy the requirement of sufficient command of the English language.

Article 3.6 – Free curriculum

1. Subject to certain conditions, the student has the option of compiling a curriculum of his/her own choice which deviates from the curricula prescribed by the programme.
2. The concrete details of such a curriculum must be approved beforehand by the most appropriate Examinations Board.
3. The free curriculum is put together by the student from the units of study offered by the University of Amsterdam and must at least have the size, breadth and depth of a regular Master's programme.
4. The following conditions must at least have been met in order to be eligible for the Master's degree:
 1. at least 60 EC must be obtained from the regular curriculum;
 2. the level of the programme must match the objectives and exit qualifications that apply for the programme for which the student is enrolled.

Chapter 4. Curriculum structure

Article 4.1 – Tracks

Every student has to select one of the following tracks:

1. Logic & Computation,
2. Logic & Language,
3. Logic & Mathematics, or
4. Logic & Philosophy.

Article 4.2 – Composition of programme

1. The programme of the MSc Logic consists of the following components:
 1. Core components (at least 72 EC)
 - a. Obligatory components
 - b. Track components
 - c. Research projects
 - d. Electives
 2. Thesis Master of Logic (30 EC)
 3. Free choice (no more than 18 EC)
2. In order to graduate, a student needs to have at least 120 EC in total, of which 72 EC have to be core components, and has to satisfy the requirements of at least one track.
3. A complete list of components provided by the Master's programme can be found in Appendix 1.
4. Every component will be tested. Within the MSc Logic different types of testing are used: classroom exam, take-home exam, term paper, oral exam, homework, presentation and various combinations of these. In the course catalogue this is described per component.
5. Within the MSc Logic different types of teaching methods are used. In the course catalogue this is described per component.

Article 4.3 – Core components (at least 72 EC)

1. Obligatory components.
 - a. Logic, Language and Computation (3 EC)
 - b. Mathematical Proof Methods for Logic (6 EC)
2. In the admission process, the Examinations Board can grant an exemption from the obligation to take the course Mathematical Proof Methods for Logic. Students exempted from Mathematical Proof Methods for Logic are not allowed to take this course for credit.
3. Track components. Track components are obligatory courses determined by the student's area of specialisation:

| Track Logic & Computation | EC |
|--------------------------------------|-----------|
| Computational Complexity | 6 |
| Information Theory | 6 |

| Track Logic & Language | EC |
|-----------------------------------|-----------|
| Meaning, Reference and Modality | 6 |
| Structures for Semantics | 6 |

| Track Logic & Mathematics | EC |
|--------------------------------------|-----------|
| Set Theory | 8 |
| Model Theory | 6 |
| Proof Theory | 6 |

| Track Logic and Philosophy | EC |
|-----------------------------------|-----------|
| Meaning, Reference and Modality | 6 |
| Philosophical Logic | 6 |

4. Students in the tracks L&C and L&M who lack knowledge in the mathematical theory of modal logic are additionally required to take the course Inleiding Modale Logica / Introduction to Modal Logic (6 EC). The Examinations Board decides for all students in the tracks L&C and L&M whether they are required to take the course Inleiding Modale Logica / Introduction to Modal Logic (6 EC). Students who are not required to take the course can take it as an Elective course.

5. Research Projects. Every student must have at least 6 and at most 24 EC in research projects. Projects can either be done in period c of the first, second or third semester or as individual research projects at any time. Credits for any learning activity that is not taught in the usual style of courses and/or that is not part of a regular Master's programme of a university, like for example , internships and summer schools, are counted towards the maximum of 24 EC in research projects.

6. Electives. Students can choose elective components from the list below.

| List of Elective Components | EC |
|--|-----------|
| Advanced Topics in the Philosophy of Language | 6 |
| Basic Probability: Theory | 3 |
| Basic Probability: Programming | 3 |
| Category Theory (not taught in 2017-2018) | 6 |
| Category Theory and Topos Theory | 8 |
| Causal Inference: Philosophical Theory and Modern Practice | 6 |
| Cognition and Language Development | 6 |
| Cognitive Models of Language and Music | 6 |
| Computability and Interaction (not taught in 2017-2018) | 6 |
| Computational Complexity | 6 |
| Computational Semantics and Pragmatics | 6 |
| Computational Social Choice | 6 |
| Concurrency Theory | 6 |
| Distributed Algorithms (VU) | 6 |
| Dynamic Epistemic Logic | 6 |
| Foundations of Neural and Cognitive Modelling | 6 |
| Game Theory | 6 |
| Homotopy Type Theory | 6 |

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|--|---|
| Information Theory | 6 |
| Inleiding Modale Logica (Introduction to Modal Logic) | 6 |
| Introduction to the Philosophy of Language | 6 |
| Kant, Logic & Cognition | 6 |
| Knowledge Representation | 6 |
| Knowledge Representation on the Web | 6 |
| Kolmogorov Complexity | 6 |
| Lambda Calculus | 6 |
| Logic and Conversation | 6 |
| Logic, Knowledge and Science | 6 |
| Logical Methods in Cognitive Science (not taught in 2017-2018) | 6 |
| Logical Verification (VU) (not taught in 2017-2018) | 6 |
| Machine Learning Theory | 6 |
| Mathematical Structures in Logic | 6 |
| Meaning, Reference and Modality | 6 |
| Model Theory | 6 |
| Music Cognition | 6 |
| Natural Language Processing 1 | 6 |
| Natural Language Processing 2 | 6 |
| Ontology: Philosophical Perspectives | 6 |
| Philosophical Logic | 6 |
| Philosophy of Cognition | 6 |
| Philosophy of Mathematics | 6 |
| Possible Worlds: Logic and Metaphysics | 6 |
| Protocol Validation | 6 |
| Proof Theory | 6 |
| Quantum Computing | 8 |
| Radical Interpretation, Hermeneutics and Forms of Life | 6 |
| Rationality, Cognition and Reasoning | 6 |
| Recursion Theory | 6 |
| Seminar Mathematical Logic | 3 |
| Set Theory | 8 |
| Structures for Semantics | 6 |
| Syntax and Semantics 1 | 6 |
| Syntax and Semantics 2 | 6 |
| Term Rewriting Systems (VU) | 6 |
| Time | 6 |
| Topics in Modal Logic | 6 |
| Unsupervised Language Learning | 6 |

Article 4.4 – Research colloquia/seminars and the Thesis Master of Logic

1. As part of their research training students are expected to regularly attend 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; LEGO Seminar; Theoretical Computer Science Seminar; Seminar on Logic and Interactive Rationality.
2. The Thesis Master of Logic comprises 30 EC. The thesis is a report on a substantial piece of scientific work, usually including a significant amount of original research, that clearly demonstrates the student's capacity to independently conduct research in an interdisciplinary environment.
3. In their fourth semester students are required to (i) present their thesis project during a plenary MoL thesis presentation event or (ii) discuss their project once with an ILLC staff member outside of their supervisory team. Students are advised to do both.

Article 4.5 – Free Choice

1. In addition, students may choose components from other Master's programmes.

2. In terms of content, free choice components must not show too much similarity to the core components of the student's curriculum. The acceptable degree of similarity will be decided by the Examinations Board.

Article 4.6 – Practical exercise

Not applicable.

Article 4.7 – Sequence of 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 components stated in the course catalogue (per component), which are considered to be prerequisite knowledge for that course or component.
2. 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 Examinations Board to nevertheless permit an individual test and/or resit.

Article 4.8 – Participation in practical exercise and study group sessions

Not applicable.

Article 4.9 – Maximum exemption

1. A student may apply to the Examinations Board for the approval of transfer credits for components taken at a different programme, provided those components have not been used towards a degree. This is only possible for components at Master's level that are directly relevant to the MSc Logic programme and only if there is no overlap with other components 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.
2. At most 36 EC of the student's programme can consist of such transfer credits.
3. A student may also apply to the Examinations Board for exemption from the requirement to take a track-specific obligatory component if they already possess the knowledge taught in that component. Such requests will only be granted in exceptional circumstances. If such a request is granted, the student must take additional elective components to obtain a sufficient number of EC for graduation.
4. Components successfully completed elsewhere during the programme may supplement the student's examination programme, subject to permission from the Examinations Board.

Article 4.10 – Validity period of examinations

The validity period of interim examinations and exemptions from interim examinations is limited, as described in part A, article 4.8.

Article 4.11 – Degree

Students who have successfully completed their Master's examination are awarded a Master of Science degree. The degree awarded is stated on the diploma.

Article 4.12 – Graduation procedure

1. To be able to graduate, the student's overall study programme has to be approved by the Examinations Board. To request approval a student should submit an approval form (which can be downloaded from the ILLC website: <http://www.illc.uva.nl/MScLogic/>). Students can only do so when they have finished all coursework except for at most 18 EC.
2. The student may start with the Thesis only if no more than 18 registered EC of the total study programme excluding the Thesis is missing, and the student's study programme has been approved by the Examinations Board.

3. The student cannot defend his/her Thesis before all other components from his/her study programme are passed and all grades are registered.
4. The official graduation procedure of the MSc Logic is described in the document Rules and Guidelines of the Examinations Board MSc Logic available at the ILLC website:
<http://www.illc.uva.nl/MScLogic/>

Article 4.13 – Double Master’s Programme

In order to be awarded two Master’s degrees or to have stated on the Master’s diploma that two Master’s programmes have been completed within the discipline, the following requirements must be met:

1. The total programme of the candidate should amount to at least 180 EC credits.
2. The candidate’s work for the programme (lectures, research work, etc.), must be of such a standard that all the compulsory requirements of each of the two programmes have been met.
3. The candidate must have conducted separate research work for both Master’s degrees. This may consist of two separate Master theses with supervisors from the respective study programmes.
4. The Examinations Boards of both study programmes must approve the student’s double Master’s programme before the student commences the double Master’s programme.
5. The Examinations Board will require a student to satisfy the same conditions as regular students. In particular, they must write a relevant Master thesis and choose components from the MSc Logic programme adding up to a total of at least 102 EC (see also Article 4.4 on elective components).

Chapter 5. Transitional and final provisions

Article 5.1 - Amendments and periodic review

1. Any amendment to the Teaching and Examination Regulations will be adopted by the dean after taking advice, and if necessary approval by the relevant Board of Studies. A copy of the advice will be sent to the authorised representative advisory body.
2. An amendment to the Teaching and Examination Regulations requires the approval of the authorised representative advisory body as stated in the WHW.
3. An amendment to the Teaching and Examination Regulations is only permitted to concern an academic year already in progress if this does not demonstrably damage the interests of students.

Article 5.2 – Transitional provisions

1. If the curriculum changes, the new curriculum and regulations also apply to students already enrolled. Students can however request the Examinations Board to have the curriculum as it was when they started their studies apply to them.
2. Transitional Provisions for students who started in 2016-2017 or earlier:
 - a. As of 2017/2018, Mathematical Proof Methods for Logic is an obligatory component replacing Basic Logic. Students who were required to take Basic Logic can take Mathematical Proof Methods for Logic instead. Students who were not allowed to take Basic Logic are exempted from the obligation to take Mathematical Proof Methods for Logic and are not allowed to take the course for credit.
 - b. As of 2017/2018, Set Theory is a new obligatory element in the track Logic and Mathematics, while the bachelor course Axiomatic Set Theory is no longer part of the curriculum. Students who were required to take Axiomatic Set Theory can take Set Theory instead.

Article 5.3 - Publication

1. The Dean of the faculty will ensure the appropriate publication of these Regulations and any amendments to them.
2. The Teaching and Examination Regulations will be posted on the faculty website and deemed to be included in the course catalogue.

Article 5.4 – Effective date

These Regulations enter into force with effect from 1 September, 2017.
Thus drawn up by the Dean of the Faculty of Science on 30 August 2017.

Appendix 1 List of components provided by the study programme

| Component | Code | Study load (ECTS) | Semester | Teaching method | Assessment |
|--|-------------|--------------------------|-----------------|------------------------|-------------------|
| Advanced Topics in Philosophy of Language | 187413186Y | 6 | 2 | PR | Written, oral |
| Basic Probability: Theory | 53141BPC3Y | 3 | 1 | PR | Written |
| Basic Probability: Programming | 53142BPC3Y | 3 | 1 | PR, CP | Written |
| Category Theory (not taught in 2017-2018) | 5314CATH6Y | 6 | 2 | L | Written |
| Category Theory and Topos Theory | 5334CTTT8Y | 8 | 2 | | Written |
| Causal Inference: Philosophical Theory and Modern Practice | 187413216Y | 6 | 1 | PR | Written, oral |
| Cognition and Language Development | 5244COLD6Y | 6 | 1 | L | Written, oral |
| Cognitive Models of Language and Music | 5244CMLM6Y | 6 | 2 | L, PR | Written, oral |
| Computability and Interaction (not taught in 2017-2018) | 5314COIN6Y | 6 | 2 | L, GP | Written |
| Computational Complexity | 5314COCO6Y | 6 | 2 | L, PR | Written |
| Computational Semantics and Pragmatics | 5314COSP6Y | 6 | 1 | L, PR | Written, oral |
| Computational Social Choice | 5314COSC6Y | 6 | 2 | L, PR | Oral |
| Concurrency Theory | 5284COTH6Y | 6 | 1 | L, PR, CP | Written |
| Distributed Algorithms (VU) | 52848DIA6Y | 6 | 2 | L, PR | Written |
| Dynamic Epistemic Logic | 5314DYEL6Y | 6 | 1 | L, PR | Written |
| Foundations of Neural and Cognitive Modelling | 5244FNCM6Y | 6 | 1 | PR, CP | Written, oral |
| Game Theory | 5314GATH6Y | 6 | 2 | L | Written |
| Homotopy Type Theory | 5314HOTT6Y | 6 | 1 | L | Written |
| Information Theory | 5314INTH6Y | 6 | 1 | L, PR | Written, oral |
| Inleiding Modale Logica (Introduction to Modal Logic) | 5122INML6Y | 6 | 1 | L, PR | Written |
| Introduction to the Philosophy of Language | 187413017Y | 6 | 1 | L, PR | Written |
| Kant, Logic & Cognition | 187413066Y | 6 | 2 | L, PR | Written, oral |
| Knowledge Representation | 5204KNRE6Y | 6 | 1 | L, PR, CP | Written |
| Knowledge Representation on the Web | 5204KROT6Y | 6 | 2 | L, CP, GP | Written |
| Kolmogorov Complexity | 5314KOCO6Y | 6 | 2 | L, PR | Written |
| Lambda Calculus | 5314LACA6Y | 6 | 1 | L, PR | Written |
| Logic and Conversation | 5314LOCO6Y | 6 | 1 | L | Written |
| Logic, Knowledge and Science | 5314LOKS6Y | 6 | 2 | L | Written |
| Logic, Language and Computation | 5314LOLC3Y | 3 | 1 | L | Written |
| Logical Methods in Cognitive Science (not taught in 2017 – 2018) | 5314LMIC6Y | 6 | 2 | L | Written |
| Logical Verification (VU) (not taught in 2017-2018) | 52848LOV6Y | 6 | 2 | L, PR | Written |
| Machine Learning Theory | 5334MALT8Y | 8 | 1 | L | Written |
| Mathematical Proof Methods for Logic | 5314MPMF6Y | 6 | 1 | L, PR | Written |
| Mathematical Structures in Logic | 53148MAS8Y | 8 | 2 | L, PR | Written |
| Meaning, Reference and Modality | 187413096Y | 6 | 1 | L | Written |
| Model Theory | 5314MOTH6Y | 6 | 2 | L, PR | Written |
| Music Cognition | 5244MUCO6Y | 6 | 2 | L, PR | Written |
| Natural Language Processing 1 | 52041NLP6Y | 6 | 1 | L, CP | Written |
| Natural Language Processing 2 | 52042NLP6Y | 6 | 2 | L, CP | Written, oral |
| Ontology: Philosophical Perspectives | | 6 | 2 | | Written |
| Philosophical Logic | 5314PLO6Y | 6 | 1 | L, PR | Written |
| Philosophy of Cognition | 187413256Y | 6 | 1 | L | Written |
| Philosophy of Mathematics | 187413176Y | 6 | 2 | L, PR | Written, oral |
| Possible Worlds: Logic and Metaphysics | 187415116Y | 6 | 2 | L | Written |
| Proof Theory | 5314PRTH6Y | 6 | 2 | L, PR | Written |
| Quantum Computing | 5334QUCO8Y | 8 | 2 | L | Written |
| Radical Interpretation, Hermeneutics and Forms of Life | 187413026Y | 6 | 2 | L, PR | Written |
| Rationality, Cognition and Reasoning | 187413086Y | 6 | 1 | PR | Written, oral |
| Recursion Theory | 5314RETH6Y | 6 | 1 | PR | Written |
| Research Project Master of Logic | 53142RPL6Y | 6 | 1&2 | IC | Written |
| Seminar Mathematical Logic | 5314SEML3Y | 3 | 1 | L | Oral |
| Set Theory | 53348SET8Y | 8 | 1 | L | Written, oral |
| Structures for Semantics | 187413106Y | 6 | 2 | L | Written, oral |

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|--------------------------------|------------|----|-------|-------|---------------|
| Syntax and Semantics 1 | 184410156Y | 6 | 1 | L | Written |
| Syntax and Semantics 2 | 184410166Y | 6 | 2 | L | Written |
| Term Rewriting Systems (VU) | 52848TER6Y | 6 | 2 | L, PR | Written |
| Thesis Master of Logic | 5314TML30Y | 30 | 1 & 2 | IC | Written, oral |
| Time | 187413077Y | 6 | 2 | PR | Written |
| Topics in Modal Logic | 5314TIML6Y | 6 | 1 | L | Written |
| Unsupervised Language Learning | 5204UNLL6Y | 6 | 2 | L, CP | Written, oral |

L = Lectures, LS = Lab sessions, CP = Computer practical, PR = practical, IC = Individual coaching, GP = Group project