

MASTER OF SCIENCE IN LOGIC  
UNIVERSITY OF AMSTERDAM  
SELF-ASSESSMENT 2025

**October 2025**

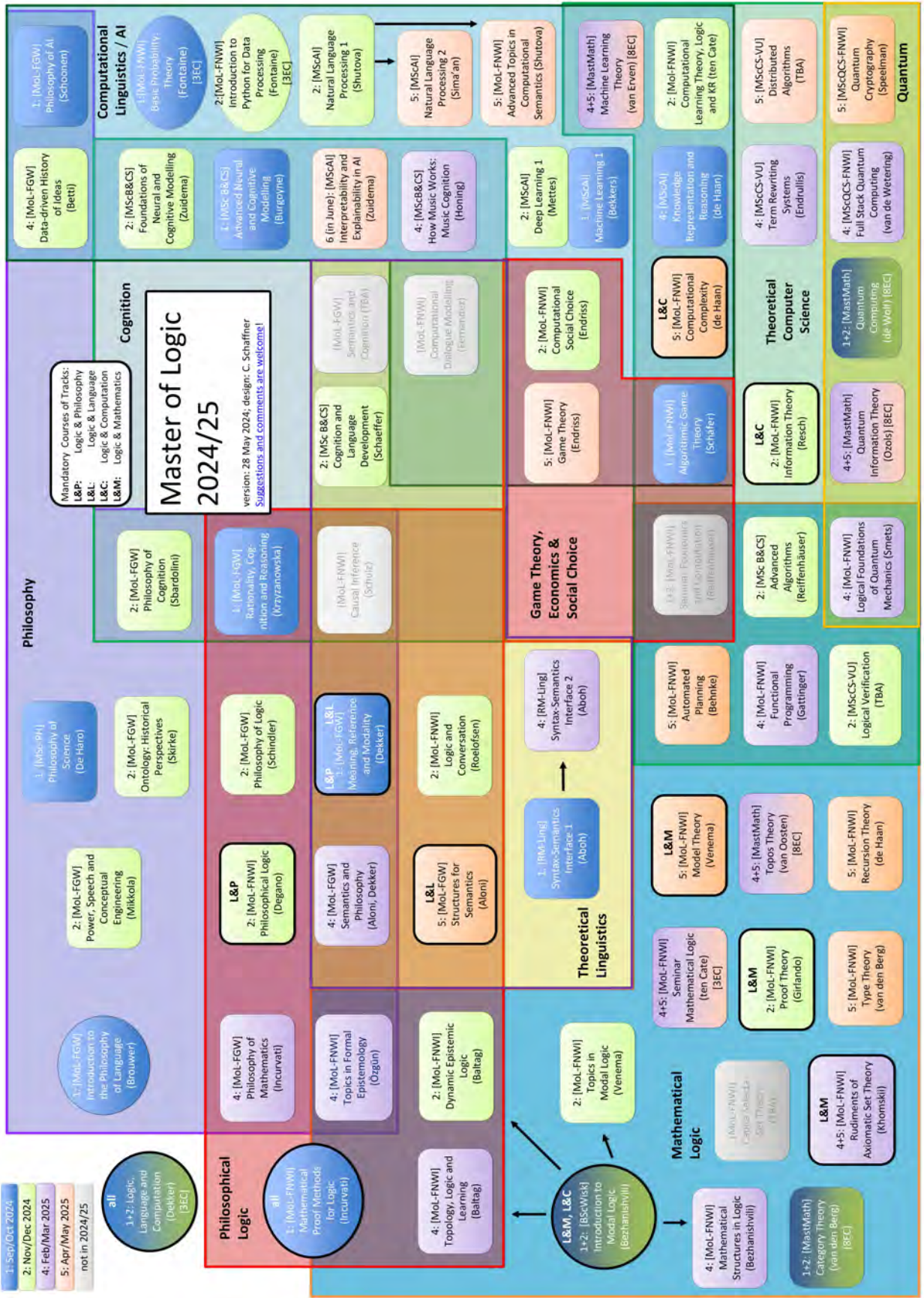


Figure 1: Overview poster of the MSc Logic 2024/25

# PREFACE

The MSc Logic (often referred to as the Master of Logic, or simply the MoL) is a two-year Master’s programme offering intensive interdisciplinary research training for students with a background in Mathematics, Computer Science, Philosophy, Linguistics, or related fields. Rooted in the Amsterdam tradition of combining philosophical inquiry with formal methods—going back to Brouwer, Heyting, and Beth—the MSc Logic focuses on the interdisciplinary domain of Logic, Language and Information. Within this domain, logic (broadly conceived) serves as the principal methodology for foundational and applied research across traditional disciplinary boundaries.

The programme’s overarching aim is to explore how both minds and machines represent, communicate, manipulate, and reason with information. Progress in this area requires input from a range of interconnected disciplines. In addition to mathematical and philosophical logic, the curriculum covers formal semantics and pragmatics, the philosophy of language, the philosophy of mathematics, and formal epistemology, along with theoretical computer science, quantum computing and information, and logic in artificial intelligence. It also embraces neighbouring disciplines such as cognitive science, computational linguistics, and mathematical economics. This distinctive blend of philosophical tradition, mathematical rigour, modern technologies, and empirical investigation makes logic a truly interdisciplinary field, bridging the humanities and the exact sciences in both its methods and motivations.

The MSc Logic has been offered by the Institute for Logic, Language and Computation (ILLC) at the University of Amsterdam (UvA) since 1995. In its most recent accreditation in 2019, the evaluation panel described the programme as “one of the best, if not the best, programme on logic in the world.” We are proud of this legacy, and in recent years have worked hard to maintain these high standards by deepening the integration of the programme with research at the ILLC and by enriching the curriculum with new themes and advanced courses—some drawn from neighbouring programmes.

Looking ahead, we hope to continue attracting talented and enthusiastic students from around the globe who, like us, are captivated by the beauty and foundational nature of logic, and inspired by its power as a tool to explore a wide array of phenomena across disciplines and traditions.

Nick Bezhanishvili, October 2025

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# PART I

# INTRODUCTION

The purpose of this report is to provide a description of the MSc Logic programme offered by the Institute for Logic, Language and Computation at the University of Amsterdam. On the basis of this report, the programme can be assessed by the *Nederlands-Vlaamse Accreditatieorganisatie* (NVAO, Accreditation Organisation of the Netherlands and Flanders) in view of its suitability for retaining its status as an accredited Master's programme in the Netherlands.

## Structure of this Document

The report follows the guidelines set out in the NVAO's Framework for Limited Programme Assessments. Under this framework, a programme is judged in terms of four so-called *standards*:

**Standard 1:** Intended Learning Outcomes.

**Standard 2:** Teaching-Learning Environment.

**Standard 3:** Student Assessment.

**Standard 4:** Achieved Learning Outcomes.

Part I of this document is a self-assessment of the MSc Logic in terms of these four standards. Part II consists of several appendices with additional information, including a SWOT analysis of the programme. Some of these appendices, together with the additional documentation are presented in electronic form on a dedicated site at:

[Accreditation – Master of Logic 2025](#)

## Genesis of this Document

This document has been written by Nick Bezhanishvili (programme director), with support from Maria Aloni (member of the Admissions and Examiners Boards and former programme director), Benno van den Berg (chair of the Examinations Board), Ulle Endriss (chair of the Admissions Board and former programme director), Ronald de Haan (chair of the Programme Committee), and Anne-Christine van der Bijl (programme coordinator). The [Student Chapter](#), has been written by Vighnesh Iyer (student member of the Programme Committee) with input from the community of MSc Logic students. The accreditation page was prepared by Anne Christine van der Bijl. Some of the text is based on the [self-assessment report](#) produced for the previous accreditation. Previous versions of this document have been read and commented on by representative groups of students as well as core members of the academic staff.

## Administrative Data

The MSc Logic is a two-year Master's programme offered by the Institute for Logic, Language and Computation (ILLC) at the University of Amsterdam (UvA). The MSc Logic is part of the Graduate School of Informatics (GSI) at the UvA's Faculty of Science, although many of its courses are taught by staff affiliated with the Faculty of Humanities. It is furthermore

embedded into the ILLC's Graduate Programme in Logic, which also includes the institute's PhD programme and a non-degree certificate known as the *Logic Year* (LY).

### Regarding the Programme

- Name of the programme: Master of Science in Logic
- CROHO registration number: 60226
- Level and orientation: Master's programme (academic orientation)
- Number of credit points: 120 EC
- Specialisations: Logic and Computation (L&C), Logic and Language (L&L), Logic and Mathematics (L&M), Logic and Philosophy (L&P)
- Mode of study: Full-time
- Language of instruction: English
- Programme website: <https://msclogic.illc.uva.nl>

### Regarding the Institution

- Name of the institution: University of Amsterdam
- Status of the institution: Publicly funded body providing higher education
- Outcome of the institutional quality assurance assessment: Positive (2024)

### Personalia

- Programme director: Dr. N. Bezhanishvili
- Programme coordinator: Drs. A-C. van der Bijl
- Director of the Graduate School of Informatics: Prof. P. Groth
- Chair of Examinations Board (EB): Dr. B. van den Berg
- Chair of the Programme Committee (OC): Dr. R. de Haan
- Chair of the Admissions Board (AB): Prof. U. Endriss

# CHAPTER 1

## INTENDED LEARNING OUTCOMES

### 1.1 Aims and Objectives of the Programme

The principal aim of the MSc 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*. The programme was established in 1995 with the goal of educating the next generation of researchers in the tradition of the ILLC—researchers who can integrate the rigour of the exact sciences with the inventiveness of the humanities; scholars who, in the best tradition of logic, search for foundations and aim at full understanding—not merely users of existing tools, but developers of new technologies and designers of entirely new areas of research.

We have been successful in pursuing these ambitious goals, as demonstrated by the significant number of MSc Logic graduates who now hold tenured faculty positions at leading universities all over the world;<sup>1</sup> and by the fact that every year a majority of our graduates obtain PhD positions in various disciplines, many at prestigious universities (see Section 4.4).

At the same time, we are aware that not all our graduates choose an academic career. However, we are convinced that research-oriented skills are also excellent preparation for professions outside academia—especially in fields frequently pursued by our graduates, such as management, consulting, teaching, data sciences, and the ICT industry at large.

### 1.2 Exit Qualifications

At the programme level, the goals described above are concretised by a number of intended learning outcomes referred to as “exit qualifications” in the Teaching and Examination Regulations (known as the OER), reprinted in Appendix F. As specified there: On the basis of the acquired knowledge, understanding and skills, students that have successfully completed the MSc Logic are able to

#### Interdisciplinary Research

[IR] carry out *research* in the *interdisciplinary* area of Logic, Language and Information making original contributions to the theories and research methods in their field of specialisation;

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<sup>1</sup>These include Stanford University, Carnegie Mellon University, University of Amherst, UCLA, Peking University, Tsinghua University, Carleton University, Universidade Federal do Rio de Janeiro, University of Oslo, University of Osnabrück, ENS Paris, University College London, University of Padua, Vrije Universiteit Amsterdam, University of Amsterdam, Utrecht University, University of Groningen, Radboud University Nijmegen, and more.

## Foundations and Advanced Knowledge

- [K1] explain and apply classical results and proof methods used in mathematical logic; apply proof-theoretic and model-theoretic techniques to prove theorems; explain applications of Logic in Philosophy, Mathematics, Computer Science, and Linguistics;
- [K2] critically evaluate, apply and integrate advanced results and theories in their field of specialisation (Philosophy, Mathematics, Computation or Language) based on an awareness of its research traditions and conventions;

## Formal Methods

- [FM] analyse and model complex structures using *formal methods*, which includes at least one of the following: develop predictive formal models of complex (linguistic) phenomena; study formal properties of mathematical structures; develop formal theories for philosophical issues; develop algorithms, information-theoretic, computational and probabilistic models;

## Skills

- [S1] formulate *research questions* placed in the correct scientific context and address these in a research plan;
- [S2] deliver and defend *presentations* of their own work, both orally and in writing, following the conventions of their field of specialisation; and
- [S3] collaborate with others in a *multidisciplinary team*.

Finally, a graduate of the MSc Logic

## Intellectual Mobility

- [IM] possesses the *intellectual mobility* to transcend traditional boundaries between the academic disciplines that border their specialisation area.

Items K1–2 and S1–3 refer to the generic dimensions of *knowledge* and *skills*, while items IR (“interdisciplinary research”) and IM (“intellectual mobility”) refer to characteristics that are very specific to the MSc Logic. IR stresses the ability to carry out research (particularly, but not only, in an interdisciplinary context), while IM highlights the ability to interact fruitfully with peers from neighbouring disciplines.

The intended learning outcomes specified above are appropriate in view of the requirements of the domain of Logic, Language and Information described in Appendix B.1: Any researcher in the field first and foremost requires solid foundations in logic and its applications (cf. K1). They also require advanced specialised knowledge in at least one specific branch of the field (cf. K2). The research-related skills listed (cf. S1–3) are of crucial significance for anyone engaged in scientific research, while the communication skills (cf. S2) are also important to a wide range of high-level professions beyond research. Items IR and IM, the ability to carry out interdisciplinary research and the intellectual mobility required to move beyond a narrowly defined area of specialisation, most directly address the requirements of the domain and are necessary prerequisites for a successful career as a researcher in Logic, Language and Information.

### 1.3 International Positioning of the Programme

The MSc Logic is the only Master’s programme of its kind in the Netherlands. Internationally, there are several other programmes that also cover significant parts of the field of Logic, Language and Information. A representative, albeit not exhaustive, list of such programmes is given in Appendix B.2. The MSc Logic is the oldest and largest (in terms of student numbers) programme in our list. It is the most comprehensive Master’s programme in Logic, Language and Information anywhere in the world and the only one that covers the four subfields of Logic & Computation, Logic & Language, Logic & Mathematics, and Logic & Philosophy as an area of specialisation.

The MSc Logic enjoys an outstanding reputation internationally. One clear indicator for this fact is that each year it attracts excellent students from all over the world (cf. Section 2.3). Another indicator is the fact that our graduates easily find PhD positions at leading universities and employment at highly respected companies (cf. Section 4.4). A third indicator is the fact that the MSc Logic has inspired the creation of similar programmes elsewhere.

### 1.4 Requirements of the Professional Field

As pointed out earlier, the chief aim of the MSc Logic programme is to educate future researchers. Therefore, the most relevant professional field for our graduates is **academia** itself. The close integration of the MSc Logic within the ILLC ensures that the learning outcomes defined above align with the expectations of the universities and research institutes that our students join after graduation. The ILLC maintains strong ties with many leading departments in Philosophy, Linguistics, Mathematics, and Computer Science, as well as with several interdisciplinary research centres. The lecturers in the MSc Logic programme are active researchers who stay up to date with the latest developments in their respective fields and often contribute to shaping them through their own work. These research insights—gained both through personal research and through collaborations with other institutions—directly influence teaching in the MSc Logic, thereby equipping our graduates to thrive in the competitive academic job market.

Of course, not all MSc Logic graduates stay in academia. The research-oriented and communication skills described in our exit qualifications are also relevant for several jobs **outside of academia**. The ability to formulate a plan of action based on the critical evaluation of a complex body of information (cf. S1), as well as the ability to write reports, give presentations and collaborate within an interdisciplinary and/or multidisciplinary team (cf. S2-S3) are vital skills for most of the professions favoured by our graduates, which include management, consulting, teaching, data sciences and the ICT industry at large (cf. again Section 4.4).

To further foster the alignment of the programme with the requirements of the professional field, since September 2019 the MSc Logic has a *Professional Advisory Board* consisting of three alumni: Thomas Icard (Stanford University); Annemieke Reijngoud (ProRail) and Yan-jing Wang (Peking University). In September 2025 we received the latest report from the Board (reproduced in Appendix M), which highlighted as strengths of our programme (i) the integration of coursework with research at ILLC; (ii) the strong and international student community and (iii) the interdisciplinarity of our curriculum. Based on the earlier advice of the board we created a non-academic mentorship programme (complementing our academic one) drawing from our alumni with the goal to strengthen the connections with industry and make it easier for our students to explore such opportunities. We now have a system of non-academic mentorship with a group of alumni who can be contacted by our students

for career advice. This group includes representatives of different professions in industry and the public sector. The full list of non-academic mentors of the MSc of Logic is available at <https://msclogic.illc.uva.nl/careers/Non-Academic-Mentors/>.

## CHAPTER 2

# TEACHING-LEARNING ENVIRONMENT

### 2.1 Educational Vision

The MSc Logic benefits from an open, research-based and flexible teaching-learning environment where a diverse group of excellent students, in direct daily contact with world-leading researchers, can design their own curriculum advised by their personal academic mentor. In the MSc Logic the general methodology employed to create the best possible teaching-learning environment is the programme's **I<sup>3</sup> System**, stressing **I**nterdisciplinarity, **I**nternationality, and **I**ndividuality:

**Interdisciplinarity:** The knowledge imparted by the programme spans several disciplines and students are specifically trained to transcend disciplinary boundaries in their own work. This is facilitated by the embedding of the programme into the interdisciplinary research environment provided by the ILLC.

**Internationality:** The majority of the student population is drawn from outside the Netherlands and each cohort includes students from around 20 different countries. This creates a unique atmosphere in which highly motivated students form a strong social network that goes far beyond attending classes together.

**Individuality:** The central goal of the programme is the formation of a research personality on the basis of the strengths and interests on the individual student. Therefore, there are very few obligatory courses and each student can design their own individual curriculum. They do so with the help of a personal academic mentor.

### 2.2 The Programme

The MSc Logic is a two-year programme with four specialisation areas:

**L&C:** Logic and Computation;

**L&L:** Logic and Language;

**L&M:** Logic and Mathematics;

**L&P:** Logic and Philosophy.

The programme includes **obligatory courses** (roughly a quarter of the curriculum); **elective courses** (roughly half of the curriculum) spanning several disciplines and an intensive **research training** (roughly a third of the curriculum). The precise percentage depends on the track and on the background and individual choices of the student (cf. below). The focus on interdisciplinarity and research, with emphasis on formal methods, paired with a system of

mentorship providing academic guidance and individual attention, maximises the chances that students achieve the intended learning outcomes described in Section 1.2. Table 4.1, on page 19, represents which part of the curriculum contributes to which outcome.

Thanks to the strong international reputation of the ILLC, the MSc Logic attracts students from all over the world. In its first eight years (1995–2003), the programme was attended exclusively by international students. Today, approximately 70% of MSc Logic students come from outside the Netherlands. For these reasons, the programme has an English name and has always been taught in English. We also cite the previous accreditation [report \(2020\)](#), in which the panel stated: “*The panel agrees with the reasons programme management has given for the English name of the programme and English as the language of instruction.*” We highly value our international student population, which contributes to an inspiring and diverse learning environment (cf. Appendix N).

### 2.2.1 Curriculum

The full curriculum is 120 EC and consists of coursework and research projects (comprising totally 90 EC) and an MSc research thesis (30 EC). For a diagrammatic overview of the curriculum, refer to Appendix D; for a full description with an indication of how they contribute to the intended learning outcomes, refer to Appendix E.

**Coursework** The coursework (between 66 and 84 EC, based on the choice of the student concerning research projects) consists of an obligatory component in part determined by the student’s area of specialisation and a free-choice component. The **obligatory courses** include:

#### FOUNDATIONAL

Logic, Language and Computation (overview of the research areas of ILLC);  
Mathematical Proof Methods for Logic (training in proof techniques for logic).<sup>1</sup>

#### TRACK-SPECIFIC

**L&C:** Computational Complexity; Information Theory;  
**L&L:** Meaning, Reference & Modality; Structures for Semantics;  
**L&M:** Proof Theory; Model Theory; Rudiments of Axiomatic Set Theory;  
**L&P:** Meaning, Reference & Modality; Philosophical Logic.

The course *Introduction to Modal Logic* has a special status, as it is shared with the local Bachelor’s programme in Mathematics. Technically, it is a deficiency course: Students in the L&M or L&C track have to take the course if they have not covered this material in their undergraduate education. In practice, as the UvA is one of at best a handful of institutions in the world that teaches this kind of material at undergraduate level, almost all L&M and L&C students from outside of the UvA have to follow the course. Students from other tracks can follow the course as well (as elective), provided of course they do not yet possess the relevant knowledge.

In their free choice component, students can choose among the **electives** of the MSc Logic and relevant specialised courses at other Dutch universities (at most 18 EC). Track-specific obligatory courses of other tracks can be used as electives. Since 2015/16, the courses of the MSc Logic are displayed in an *overview poster* depicting the different areas represented in the curriculum (cf. Appendix D for the MoL overview poster 2024/25). The course offering

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<sup>1</sup>Students with a strong mathematical logic background, typically students with a BSc in Mathematics who have followed relevant Mathematical Logic courses during their Bachelor’s degree, are exempted from the obligation to take the course Mathematical Proof Methods for Logic.

reflects the interdisciplinary nature of the programme as many of the courses are placed at the intersections of different areas. The curriculum, however, also includes advanced specialised courses. Some of these are formally “owned” by other programmes, but available to our students without restrictions.<sup>2</sup>

**Research training** To graduate, each student must complete **research projects** for at least 6 EC in addition to their Master’s thesis, but students can choose to do more. In total, based on the choice of the student, between 6 and 24 EC of the curriculum can consist of research projects. Research projects come in two forms: *coordinated projects* offered in the periods free of regular teaching (January and June); and *individual projects* offered at any time of the year.<sup>3</sup> This is a great opportunity to bring students into direct contact with active researchers. We particularly encourage postdocs and PhD students to offer such projects. As part of their research training students are further expected to regularly attend local research colloquia and seminars. During term time there are several such events taking place almost every week. Students are also encouraged to participate in international summer schools, for example, the European Summer School in Logic, Language and Information (ESSLLI), and can obtain credits for such activities.

The final semester of the programme is dedicated to the thesis, which is worth 30 EC. An **MSc Logic thesis** is 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 the area of Logic, Language and Information.

## 2.2.2 Study Methods

The programme makes use of a wide range of study methods. Some regular courses are delivered in the form of classical *lectures*, others adopt more team-based-learning methods. Many of the courses are paired with *tutorials*, in which students work on exercises under the supervision and guidance of either the main teacher of the course or a teaching assistant. This is the case, in particular, for those courses that teach basic mathematical skills. Other courses are paired with *seminar* sessions, in which students engage in discussions. This is the case for some of the courses in philosophy or cognitive science. For some courses there are *computer lab sessions*. During coordinated and individual *research projects*, study methods can take an even wider range of forms.

## 2.2.3 Student Support and Guidance

Students receive support and guidance from a variety of sources. On top of the general provisions offered by the UvA and the Faculty of Science (cf. <https://msclogic.illc.uva.nl/current-students/facilities/facilities/> for a full list), the MSc Logic has three important special features:

**Academic mentors:** Upon arrival each new student is paired with an academic mentor from amongst the core staff of the programme. The mentor assists the student in the design of their personal study programme and they can mediate between the student and other teachers in case of problems. They also provide help with finding a thesis supervisor and can give career advice.

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<sup>2</sup>These other programmes currently are the *MA Philosophy*, the *MSc Artificial Intelligence*, the *MSc Brain and Cognitive Sciences*, the *Research Master in Linguistics*, the *MSc Mathematics*, the *MSc Computer Science* and the *MasterMath*. Similarly, the MSc Logic “lends” several of its courses to these programmes.

<sup>3</sup>Cf. <https://msclogic.illc.uva.nl/current-students/courses/projects/> for a list of all coordinated projects offered since 2004.

**Student mentors:** Each new student is furthermore assigned to a student mentor, i.e., a second-year student who provides guidance for incoming students during their first semester. Student mentors can help with many of the practical problems students face when starting at a new institution; they also provide a crucial social link between students from different cohorts.

**Non-academic mentors:** Since September 2019, current or recently graduated MSc Logic students interested in exploring the opportunities of the non-academic job market can contact a non-academic mentor for career advice. Non-academic mentors are MSc Logic alumni who successfully pursued a career outside of academia.

**Programme coordinator:** The programme coordinator for the MSc Logic until 1 September 2023 was Tanja Kassenaar, after which she moved on to become a study advisor at the Education Service Centre (ESC) of the Faculty of Science. In this role, she helps several programmes, including the Master of Logic.

From 1 September 2023 to 31 March 2025, the coordinator of the programme was Tuğba Altin. After her departure, the role of programme coordinator was transferred to the ESC. Since 1 April 2025, the coordinator has been Anne-Christine van der Bijl.

Starting from 1 March 2026, the programme coordinator will be Marije Kaan. The plan is for Marije to remain in this role long-term. We are certainly looking forward to more stability in the position of programme coordinator.

A further special feature of the MSc Logic is the *MoL Room*—a space with desks and blackboards, located in the heart of the ILLC, where students can work individually or in groups. Master of Logic students also have a social committee, *Ex Falso*, which regularly organizes gatherings and activities for the student community. We would like to point out two excellent initiatives by the MoL students, spearheaded by *Ex Falso* and fully supported by the MoL and ILLC management.

First, starting from September 2025, there is an ILLC magazine edited by MoL students and directed towards the MoL community. The first issue can be found at this link:

<https://resources.illc.uva.nl/TheIllogician/>

The magazine includes popular articles written by MoL students, as well as “logic cartoons” and other creative content.

Second, the MoL students also spearheaded the design and production of ILLC/MoL merchandise—such as hoodies, sweaters, bags, and more. All items feature the ILLC logo and/or logic-related content such as formulas, symbols, and inside jokes appreciated by the logic community. This initiative not only adds to the visibility of the Master of Logic programme, but also helps foster a sense of community within the MoL.

## 2.3 Admissions and Incoming Students

### 2.3.1 Admissions Procedure

The MSc Logic is a selective programme. Decisions about admissions are made by the Admissions Board (AB) following a procedure regulated by the OER (Part B, article 3). As specified in the OER and announced on the programme website (<https://msclogic.illc.uva.nl/application/requirements/>) successful applicants are expected to satisfy the following four admissions criteria:

- (1) *Relevant Prior Degree*: a student should have a completed Bachelor’s degree in Mathematics, Computer Science, Philosophy, or Linguistics (or equivalent qualifications);
- (2) *Logic background*: a student must have a strong logic background that includes the basics of mathematical logic such as the completeness and compactness theorem of first-order logic. They must have affinity with mathematical and formal thinking and sufficient familiarity with mathematical proofs;
- (3) *Academic excellence*: a student must have a strong academic record, usually witnessed by high grades, in particular in subjects relevant for the MSc Logic. We usually expect students to belong to the top group of students from their undergraduate degrees;
- (4) *English language requirement*: the UvA sets standards for English language requirements that all applicants must meet.

To apply, a student has to (i) fill in an online application form, which includes a list of questions concerning their technical background regarding basic logic and elementary mathematics, as well as existing knowledge in analytical philosophy, linguistics, and theoretical computer science and (ii) submit the following information: curriculum vitae; transcripts and diplomas; letter of motivation; contact of two faculty members who can act as reference; and results of English proficiency test (if applicable).

Each application is evaluated by the AB who check entry requirements (1) to (3) (the English language requirement is checked by the International Office and is not assessed by the AB). Students who meet all three criteria receive the recommendation “accept”. However, the AB is aware that some students who do not meet the admissions criteria still deserve to be admitted: e.g., some students come from universities where no courses were offered that would have allowed them to satisfy the criterion *logic background*. That means that the AB does accept some applicants who only meet two of the three criteria and in very rare cases only one of them. The AB usually insists strictly on *academic excellence* and is more flexible on *relevant prior degree*. The AB can waive the *logic background* requirement if there is sufficient evidence that the student will easily acquire the needed familiarity with basic mathematical logic in their first semester.

The procedure of the assessment of applications is as follows: at least two members of the AB write reports for each application, which evaluate the three admission requirements (1) to (3), and give a recommendation: “accept”, “borderline”, or “reject”. The chair of the AB makes the final decisions: applicants where the members of the AB agree on “accept” or “reject” are accepted or rejected, respectively. Borderline candidates or candidates where the members of the AB disagree are more closely evaluated. In these evaluations, as mentioned above, academic excellence weighs more than the other criteria. Indeed, the quality of the students selected is generally excellent. This is not only apparent from the results they achieve within the programme (cf. Section 4.3), but also by the fact that our students are often successful in obtaining competitive grants to support their studies, such as the UvA Amsterdam Merit Scholarship (AMS), and the Amsterdam Science Talent Scholarship<sup>4</sup> (ASTS). Another high-profile student grant programme is that of the [Evert Willem Beth Foundation](#), which offers two scholarships exclusively to MSc Logic students every year.

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<sup>4</sup>We have been notified by the university that ASTS has sadly been discontinued from the academic year 2025/26.

### 2.3.2 Selectiveness and Student Population

Table 2.1 presents statistics regarding admission to both the MSc Logic and the Logic Year programme from 2020/21 until 2024/25. Over the last five years we witnessed a steady inflow of the number of applications (with the average number of 122 applications) with a steady acceptance rate (68% on average). Every year a considerable percentage of students (average 37% of the admitted students) eventually decline our offer, mostly for personal or financial reasons and in a few cases because they were offered a PhD position elsewhere.

Year	Total	Rejected	Withdrawn	Admitted	Declined Offer
<b>20/21</b>	112	35 (31%)	2 (2%)	75 (67%)	23
<b>21/22</b>	104	26 (25%)	3 (3%)	75 (72%)	32
<b>22/23</b>	124	31 (25%)	6 (5%)	87 (69%)	31
<b>23/24</b>	138	47 (34%)	4 (3%)	87 (63%)	38
<b>24/25</b>	122	39 (32%)	0 (0%)	83 (68%)	31

Table 2.1: Applications to MSc Logic and Logic Year

The *annual intake* of students has been stable at around 50-55 students (this includes MoL and LY students, cf. Table 2.2 and the document [Statistics & Numbers: Annual Report MSc Logic 2023-2024](#)).

	20/21	21/22	22/23	23/24	24/25
<b>MoL</b>	48	41	51	47	46
<b>LY</b>	4	2	5	2	6
<b>total</b>	52	43	56	49	52

Table 2.2: Annual intake of MSc Logic (MoL) and Logic Year (LY)

Approximately 30% of our students are female and 70% are from outside of the Netherlands (45% from other European countries and 25% from outside of Europe). Please see [Statistics & Numbers: Annual Report MSc Logic 2023-2024](#) for more concrete data. Table 2.3 (based on the academic year 2022/23) shows that geographical origins of our students are varied, evidencing the strong international orientation of the programme.

## 2.4 Academic Staff

The MSc Logic programme is delivered by an experienced group of people with substantial research and teaching credentials. To support this claim, we offer data for two groups of individuals, those who taught in at least one of the elective courses in 2024/25 (55 individuals, referred to as the **lecturers** in Table 2.4) and those who acted as first supervisor of at least one MSc thesis in the last two academic years (35 individuals, referred to as the **supervisors**).<sup>5</sup> Since the MoL electives consist of more than 60 courses offered in different programmes, the

<sup>5</sup>Teaching in the MSc Logic is provided by a larger number of individuals. One of the strengths of the programme is that it is flexible enough to accommodate, for instance, one-off intensive courses and group projects offered by visiting scientists from abroad or joint research activities between Master's students and PhD students. This however makes it hard, if not impossible, to provide a full list of all teachers who have contributed to the programme over the years.

ARGENTINA	X		X	INDONESIA
CANADA	X		XXXX	ITALY
CHINA	XXXXXXXX		X	LATVIA
CROATIA	X		XX	LITHUANIA
FINLAND	X	XXXXXXXXXXXXXXXXXX		NETHERLANDS
FRANCE	XX		XXXX	ROMANIA
GERMANY	XXXX		X	SPAIN
GREECE	X		X	SWEDEN
HUNGARY	X		XX	SWITZERLAND
INDIA	X		XXXXXX	UNITED STATES

Table 2.3: Countries of origin for cohort 2022–23 (X = 1 student)

former group includes lecturers from outside ILLC and even UvA. The second group (the supervisors) instead mostly consists of ILLC researchers. At the union of these two groups we have 56 individuals (the **total staff**), a subset of which will be referred to as the **core staff** of the MSc Logic. This core group, which largely overlaps with the intersection of the lecturers and the supervisors, consist of permanent staff members of the ILLC (or IvI) and includes all programme officials and MoL academic mentors. All members of this core group hold a PhD, and 93% hold a Basic Teaching Qualification Certificate (BKO). The names, qualifications and expertise of the lecturers belonging to this core group are listed in Appendix H.

Group	N	PhD	BKO	Male/Female
<b>Lecturers</b>	56	56	53 (95%)	40/16
<b>Supervisors</b>	35	35	32 (92%)	24/11
<b>Core staff</b>	44	44	41 (93%)	28/16
<b>Total staff</b>	<b>56</b>	<b>56</b>	<b>53 (95%)</b>	<b>40/16</b>

Table 2.4: Qualifications of MoL lecturers and supervisors

The group of lecturers and supervisors together deliver more than 90% of the teaching within the programme. The remaining percent consists of projects offered by other ILLC researchers (including PhD students) or visiting scientists, and tutorials offered by Teaching Assistants (TAs). TAs work under the close supervision of the lecturers. Furthermore all PhD candidates at ILLC are required to follow the course “Teaching Skills for PhD candidates” organised by the Faculty of Science before they start their first TA task.

We would like to point out two positive trends: an improvement in the number of BKO holders, especially among the core staff, compared to the previous accreditation; and a significant improvement in the male-to-female ratio, also compared to the previous accreditation (the percentage of BKO holders among the core staff increased from 81% to 93% and the male-to-female ration improved from 27/8 to 28/16).

We would also like to highlight that MSc Logic teachers score high in student evaluations, according to the Dutch National Student Enquête, our students (90% in 2023/24) are very satisfied with the lecturers of the MSc Logic (referred to as *docenten* in the table in Appendix L.1).

## 2.5 Quality Assurance

The quality of the MSc Logic is responsibility of the programme director who every year decides the curriculum, the regulations and other features of the programme, advised by various actors but mostly by the **OC** (*Opleidingscommissie* or Programme Committee) of the MSc Logic.

The OC of the MSc Logic, which consists of four students, four teachers and a student secretary, meets at least four times a year to discuss the quality of the individual courses and the regulations and has the right to advise the director on all aspects of the programme.

An important instrument of quality assurance are the evaluations students are asked to fill in after every course and when requesting their diploma. These **student evaluations** are discussed by the OC, who, for each course, produces further an additional succinct *course report* containing positive and negative feedback for the course coordinator. The latter is then invited to prepare a written reaction and to make both the report and their reaction available to the relevant students. In case these evaluations indicate problems, the programme director can take action, either on his own initiative or if asked to do so by the OC. The deliberations of the OC are recorded in its minutes and can be consulted in subsequent years to assess whether the suggested improvements have been implemented.

Here we include a table taken from the statistics report [Statistics & Numbers: Annual Report MSc Logic 2023-2024](#) to the report summarising the overall satisfaction rates of students with MoL courses over the last six years. We are again very pleased with high satisfaction rates.

### Essentiële uitkomsten studenten feedback op vakken

	18/19	19/20	20/21	21/22	22/23	23/24
Het vak had een duidelijke opbouw	74,1	87,1	82,4	83,0	88,4	90,1
Het vak was intellectueel uitdagend	86,8	85,9	79,7	76,2	84,1	85,7
Ik kreeg voldoende feedback op mijn werk	62,2	69,2	69,4	63,8	67,8	81,0
In dit vak werd ik gestimuleerd om actief deel te nemen	61,1	71,1	68,7	67,4	73,5	87,0
De werkdruk van dit vak vond ik	81,0	88,7	88,7	84,3	82,8	85,2
Het niveau van dit vak was voor mij	83,2	85,0	83,8	82,2	81,7	85,3
Ik heb veel geleerd door dit vak	82,5	85,2	81,6	80,4	84,0	86,4
<b>Aantal responses</b>	<b>199</b>	<b>243</b>	<b>289</b>	<b>181</b>	<b>235</b>	<b>288</b>

Bron: UvAdata/UvAQ; "Evaluaties reguliere vakken"; laatst geladen 11-11-2024, weergave van 11-11-2024

### Definitie: Essentiële uitkomsten studenten feedback op vakken

Het percentage (zeer) tevreden response voor de kernselectie van vragen uit de uitkomsten van de UvAQ vakken studenten feedback voor alle vakken van de opleiding M Logic van dat studiejaar.

Here are the English translations of the seven questions asked to students:: (1) The course had a clear structure; (2) The course was intellectually challenging; (3) I received sufficient feedback on my work; (4) This course encouraged me to participate actively; (5) I found the workload of this course to be; (6) The level of this course was for me; (7) I learned a lot from this course.

On top of the evaluation of individual courses, at the end of each semester the student members of the OC also organise two evaluations of the programme as a whole (aka **pizza evaluations**) and produce a report to which the director responds in written form. Besides the course offerings, these pizza evaluations also cover issues such as the mentor system and study facilities.

The OC further organises working-groups investigating and monitoring various aspects of the programme, including student well-being (see Section 4.2) and academic mentoring. These

investigations often lead to specific recommendations, which are almost always implemented by the director.

Besides these official means of quality assurance there are also several informal channels that in practice prove to be very important. For instance, the academic mentors will often be the first to hear about problems in a course and can alert the programme director long before the OC can. The programme coordinator is also in close contact with the student mentors and can sometimes identify problems that may not be easily visible to the academic staff.

## **2.6 Accessibility and feasibility for students with special needs**

The detailed guidelines on accessibility and feasibility for students with special needs can be found [here](#).

## CHAPTER 3

# STUDENT ASSESSMENT

### 3.1 Vision and Policy

The MSc Logic aims at conducting student assessments in a manner that (a) ensures that graduates achieve the appropriate level of competence, and also (b) is fair, coherent, transparent and accountable. In order to achieve these goals, a rich variety of testing methods are used and a system of regulations and procedures of quality assurance is in place, which will be illustrated below. We refer to Appendix G for more details on the assessment policy and how the programme addresses the rise of generative AI.

In designing these procedures, the MSc Logic management was guided by the following principles: (i) quality, selection requirements, fairness and transparency of examinations should be guaranteed; (ii) the independence and expertise of the individual lecturers should be respected and valued; (iii) clemency towards students in trouble due to circumstances beyond their control should be shown; and (iv) over-regulation should be resisted. By balancing these principles a light and efficient system of regulations and procedures has been installed where (a) the responsibility for the quality of the examinations is laid as close as possible to the individual actors (examiners but also students), but to guarantee overall coherence, a centralised system of assessment of the Master’s theses is in place; (b) rules and procedures are few and transparent, based on a large consensus and flexible enough to accommodate the individual needs of lecturers and students; and (c) top-down (often costly) measures of quality assurance are only enforced if their efficacy has been proven in an objective way.

Such a policy can only be successful in a programme like the MSc Logic where (i) staff and students feel strongly concerned and engaged with the quality of teaching and assessment and (ii) the lines of communication between management, lecturers and students are short and efficient. The strength of the MSc Logic lies with its individual actors. The main responsibility of the management is to foster an environment where everybody can contribute within their area of expertise and in an independent way and where everyone’s contribution is important and valued.

In particular, we aim at giving lecturers and examiners as much autonomy in their decisions as possible and empower them while keeping the administrative burden on them as small as possible. As a consequence, the assessment policy of the MSc Logic is in line with the policies of the Faculty of Science of the University of Amsterdam but diverges from other UvA Master’s programmes in that we do not ask lecturers to make so called “vakdossiers” (course dossiers), including “toetsmatrijzen” (exam matrices). The Examinations Board checks the exams and

grade statistics which are posted on DataNose<sup>1</sup> to guarantee overall coherence (cf. Section 3.3.2).

For the Master’s theses, the MSc Logic has a much more elaborate policy than other programmes with at least one member of the Examinations Board involved in the assessment of each thesis (cf. Section 3.2). Furthermore, while at the Faculty of Science each graduate school has one shared Examinations Board (hereafter, EB) which is responsible for the quality of the assessments of all programmes within the school, the MSc Logic has its own EB which operates independently from the Graduate School of Informatics.

## 3.2 Forms of Assessment

As the MSc Logic involves many different areas in science and humanities, and as it aims at achieving several different types of learning outcomes, there is a correspondingly rich variety of assessment methods used to account for this heterogeneity. Besides written exams, which are sometimes regarded as the standard way of assessing a student’s performance, other forms of assessment are used such as regular homework, term papers, in-class presentations, programming assignments, the design and execution of experiments, and combinations of several of these. Appendix E lists for the curriculum components the (main) form(s) of assessment used.

Of special significance is the assessment of the Master’s *thesis*. Each thesis is supervised by an experienced scientist who can guarantee that the chosen subject and the level of difficulty are appropriate. An additional level of assurance is provided by the following measures: in January, as part of the MoL graduation trajectory, every second year student is expected to discuss their preliminary thesis plans in an *informal presentation* attended by other graduating students; at the start of their thesis work (3 to 4 months before graduation) a student has to outline their research plan in a *Thesis Project* proposal, which needs to get countersigned by the main supervisor and a member of the Examinations Board (EB); two months before graduation a student is required to present their ongoing thesis project in a plenary *MoL thesis presentation* event where they can receive feedback from all ILLC researchers; students are further encouraged to discuss their thesis research with experts outside of their supervisory team in well-prepared *research meetings*. When completed each thesis is assessed by a *thesis committee*. This committee must consist of at least three people, including the supervisor(s). At least three members must have a PhD (all members must have a Master’s degree). At least two members must be experts who were not involved in the thesis supervision. Every thesis committee is chaired by a member of the EB; this is an important factor in ensuring the coherence of grading standards across thesis projects. Since 2012 the committee produces a short text that justifies the grade given to the student, by relating their performance to five criteria: technical correctness, quality of writing, level of difficulty, research contribution, and level of independence of the student. To further improve transparency and accountability, the description of these criteria has been made more precise in 2017 and, since 2018, the guidelines given to the committee members (with description of criteria) have been made available to students via the MSc Logic website. These guidelines are reproduced in Appendix G.2.

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<sup>1</sup>Datanose is an online scheduling and course planning tool of the Faculty of Science, which allows students and staff to view timetables, exam schedules, course information, and room reservations.

## 3.3 Regulations and Procedures of Quality Assurance

### 3.3.1 Regulations and the Examinations Board

The system of student assessment within the MSc Logic is regulated by the OER, Part A (faculty policies applicable to all Master’s programmes), the OER, Part B (policies determined at faculty level but applicable only to the MSc Logic), the Rules and Guidelines of the Examinations Board Logic (*regels en richtlijnen van de examencommissie*, or RRvE, policies determined by the EB itself, largely in line with the examination rules of the *Graduate School of Informatics*, except with respect to the examination of theses), and the Regulations of Fraud and Plagiarism (applying to all programmes at the University of Amsterdam). The first three documents are in Appendix F.

The Examination Board (EB) of the MSc Logic is independent from the Examinations Boards of other Master’s programmes within the Faculty of Science. It currently (as of June 2025) has seven members: the chair, five internal members who are also lecturers in the MSc Logic and one external member from Utrecht University. Members are appointed for a term of three years. Often they stay on the board for two consecutive terms, so for six years in total. This ensures sufficient continuity. The EB is assisted by an “*ambtelijk secretaris*” from the Faculty of Science. The chair of the EB also regularly meets with the programme director. Routine decisions (*cum laude* requests, exemption requests, academic plans) are usually made by the chair of the EB without consultation of the entire Board. Any decisions that the chair considers likely to generate discussion are discussed and decided by the whole Board, often by email. The EB usually meets twice a year to discuss matters of general policy and issues which cannot be decided by email. In the academic year 2024/25, two meetings were held, on 27 January 2025 and 18 June 2025.

### 3.3.2 Quality Assurance

The quality of assessments in the MSc Logic is a shared responsibility of all members of the teaching-learning community but its formal responsibility lies with the EB and it is further assured by a number of procedures which involve, besides the EB, different institutional actors (Programme Director, Examiners, OC, Students, Academic Mentors). In what follows, we illustrate what measures are in place to guarantee *fairness*, *coherence*, *transparency*, and *accountability* of assessments within the MSc Logic, as well as the *validity* of the exams and the *reliability* of their evaluations. In Appendix G, we summarise the specific roles of the various actors in our quality assurance procedures.

**Fairness** in examinations means that individual students are evaluated based on their academic performance alone (taking into account disabilities; for example, at the UvA, students with dyslexia or other conditions may be given more time during a written exam). Fairness of assessments is a shared responsibility of lecturers and students. Should a student feel that a particular examination has been inappropriate or that they have been treated unfairly, they can lodge a formal complaint with the EB. This hardly ever happens, also because given the short communication line between students, lecturers and management, these issues are normally settled before leading to a formal complaint, but when it does, the Board has the means to resolve such problems. Suspected cases of plagiarism or fraud are also handled by the EB.

**Coherence** means that the assessment standards across curriculum components are comparable and that a similar performance results in a similar grade. To guarantee coherence across the curriculum, every final thesis assessment is closely monitored by an EB member (as described above); furthermore, the EB checks the exams of courses which either present

an abnormal profile (e.g., a success rate lower than 40% or a mean grade above 8.5) or have been reported to the programme director by the OC, the academic mentors or the students themselves as diverging from the norm. In addition to these regular checks, the EB can carry out spot checks and, if required, intervene. To facilitate these checks, since 2019, lecturers post their exams on DataNose where they are accessible to members of the EB.

**Transparency** means that students understand how they are being assessed and what the evaluations they receive are based on. To guarantee transparency, following UvA regulations, the MSc Logic requires that the assessment method to be used for a curriculum component has to be announced by the start of that component; and that students have the right to inspect their marked work and to discuss the assessment criteria with the lecturers until 20 days after the grades have been announced. The latter measure further guarantees **accountability**, that is, examiners should be able to justify the evaluations they give towards the students and the programme. Fairness, transparency and accountability are further guaranteed by the four-eyes principle, which is largely adopted within the MSc Logic: Master's theses are assessed by a committee consisting of at least three members and the large majority of our courses has one or more TAs, which guarantees that each assessment is viewed and approved by at least two people. Exceptions to the four-eyes principle are advanced research seminars where nobody besides the lecturer has enough expertise to peer-review the examinations.

Finally, we summarise the measures adopted by the EB to guarantee the **validity** of the exams and the **reliability** of their evaluations: (a) The EB encourages "peer validation" of exams before the examination takes place. In particular, lecturers are encouraged to ask their TAs to test the exam and identify potential problems well before the actual examination takes place. (b) The chair of the EB checks the grade statistics of all courses. In the case of outliers he talks to the examiner in question. (c) The EB also hears about potential problems through (i) the programme director, (ii) the OC, and (iii) the academic mentors. The chair of the EB is in close contact with the programme director, the chair of the OC, and also meets with the academic mentors twice a year. (d) The EB asks all examiners to make their exams available to the EB through DataNose. If needed, these exams can then be checked by the EB without consultation with the examiner, though in practice potential problems (and possible solutions) are usually discussed with the examiner directly.

## CHAPTER 4

# ACHIEVED LEARNING OUTCOMES

In this section, we document the fact that our graduates achieve the intended learning outcomes specified in Section 1.2. The main indicators for success that we cite are the quality of the Master’s theses (Section 4.3) and our graduates’ placement record (Section 4.4). But equally importantly, our students and graduates themselves are satisfied with the education received. We substantiate this claim in Appendix L, where we reproduce (a) a recent survey amongst graduates that gives our programme a grade of 8.87 (on a scale from 1 to 10); (b) the latest report of the Professional Advisory Board of the MSc Logic composed by MoL alumni who describe the programme as “thriving” (Appendix M); and (c) the results of the Dutch National Student Enquête (NSE) for the years 2018/19–2023/24 according to which more than 90% of the MSc Logic students are *very satisfied* with the content of the programme (90.1% in 2023/24).

### 4.1 Level Achieved

MSc Logic graduates achieve the learning outcomes of the programme as specified in Section 1.2 and the OER (cf. Appendix F). The following table represents which part of the curriculum contributes to which outcome. Details on which individual courses cater for which type of knowledge or skill are given in Appendix E.

<b>Component</b>	<b>Learning Outcomes</b>
<b>Obligatory courses</b>	
Foundational	K1, S3, IM
Track-specific	K1, K2
<b>Electives</b>	K1, K2, S1, S2, S3, IM
<b>Research training</b>	
Projects	IR, K2, S1, S2, S3, IM
Thesis	IR, K2, S1, S2, IM
Seminars	IM

Table 4.1: Achieved learning outcomes per component

## 4.2 Study Load, Feasibility and Success Rate

Statistical information about the programme’s success and dropout rates can be found at: [Statistics & Numbers: Annual Report MSc Logic 2023-2024](#). Here, we provide an analysis based both on that document and on data we have collected ourselves. The table below shows that the average time to complete the programme is approximately 30 months (2.5 years). While we aim to bring this closer to two years, we are quite satisfied with this statistics.

<b>Graduation Year</b>	<b>19/20</b>	<b>20/21</b>	<b>21/22</b>	<b>22/23</b>	<b>23/24</b>
<b>Diplomas</b>	22	34	34	51	35
<b>Average months</b>	30.7	28.6	30.6	30.7	32.1

Table 4.2: Diplomas and average time for finishing studies (data collected on 11-11-2024)

Table 4.3 further summarises the success and dropout rates for cohorts 2020–24 (this data was computed by the programme director and excludes Logic Year students). We are very pleased that around 85% of our students complete the programme.

Analysing potential delays in completing the studies within two years, we believe that the COVID pandemic was a significant negative factor (at least for the 2020/21 cohort). In addition, students often get stuck at the point when they have to switch from taking courses and doing small projects to committing to a large thesis project. To address this potential pitfall, we introduced the MoL graduation trajectory with the goal of offering additional support to students during their thesis-writing period.<sup>1</sup> This trajectory complements the individual guidance students receive from their academic mentors.

<b>Cohort</b>	<b>N</b>	<b>within 2 years</b>	<b>within 3 years</b>	<b>total</b>	<b>dropout</b>	<b>studying</b>
<b>20/21</b>	48	10 (21%)	35 (73%)	40 (83%)	8 (17%)	–
<b>21/22</b>	41	22 (54%)	35 (85%)	36 (88%)	3 (7%)	2 (5%)
<b>22/23</b>	51	16 (31%)	36 (71%)	38 (75%)	6 (11%)	7 (14%)
<b>23/24</b>	47	20 (43%)	–	–	5 (10%)	22 (47%)
<b>Average</b>	47	17 ( <b>36%</b> )	35 ( <b>75%</b> )	38 ( <b>81%</b> )	5 ( <b>11%</b> )	4 ( <b>8%</b> )

Table 4.3: Success and dropout rates not including LY students (data collected on 1-9-2025)

Another challenge concerns the difficulty experienced by some students to combine the demanding programme of the MSc Logic with a healthy (social) life. The Programme Committee of the MSc Logic has a sub-committee specifically addressing this issue. This sub-committee monitors the (mental) health of our students by conducting yearly surveys and organises extra-curriculum activities to foster social cohesion among students. These social activities complement those organised by the student mentors and by Ex Falso. All these extra-curriculum activities are financially supported by the ILLC.

## 4.3 Master’s Theses and Student Publications

Not only do our graduates achieve the learning outcomes specified by the programme, but they more often than not excel in their studies and reach a level well beyond what would usually be expected from a graduate of a Master’s programme. The clearest indicator of this

<sup>1</sup>Cf. <https://msclogic.illc.uva.nl/current-students/graduation/MoL-graduation-trajectory/>.

is the exceptionally strong performance of MSc Logic graduates when it comes to achieving original research results. This can be seen by studying the research theses written by MSc Logic graduates, but it is perhaps most immediately evident from the fact that around 30–40% of all MSc Logic theses result in an original research publication. In addition, several individual and group projects, as well as term papers written for advanced courses, have also led to publications. Appendix J lists a selection of the publications that resulted from research conducted by MoL students between 2019 and 2024.

This list includes journal papers, archival conference papers, and workshop papers (all peer-reviewed). Some of these publication venues are among the most prestigious in their respective disciplines. For instance, in recent years MSc Logic students have published their results in journals such as *The Journal of Symbolic Logic*, *The Review of Symbolic Logic*, *Annals of Pure and Applied Logic*, *Theory and Applications of Categories*, *The Journal of Philosophical Logic*, *Synthese*, *Australasian Journal of Logic*, *Notre Dame Journal of Formal Logic*, *Logical Methods in Computer Science*, *Journal of Logic and Computation*, *Journal of Semantics*, *Linguistics and Philosophy*, *Information and Computation*, *Mathematical Structures in Computer Science*, *ACM Transactions on Computational Logic*, *Social Choice and Welfare*, and others. They have also presented their work at selective conferences such as AAI, AAMAS, ACL, AiML, CLS, COMMA, CSL, EACSL, ECAI, FOSSACS, GEM, IJCAI, LICS, LORI, TABLEAUX, TbiLLC, and WoLLIC.

Besides demonstrating the *interdisciplinarity* of the programme, the publication record of MSc Logic students also shows that they are accustomed to working in *collaborative teams*: most publications based on research projects or advanced courses are joint work—sometimes by two or more students.

Another indicator of excellence is the fact that several MSc Logic students have won **prizes and awards** for their work (cf. Appendix K). Students from our programme won *thesis prizes* in 2022, 2023, and 2024 (Dutch Association for Logic and Philosophy of the Exact Sciences [VvL Master’s Thesis Prize](#), the Netherlands); and in 2019 and 2021 ([AILA Thesis Award](#) for the best Master’s thesis in Logic by an Italian student). Two Master of Logic graduates won the prestigious [Kleene Award for the Best Student Paper at LICS](#)—one in 2022 and another in 2024. In addition, one of our students received the highly competitive [Amsterdam Merit Scholarship \(AMS\)](#) in 2025, and another was awarded the Amsterdam Talent Scholarship (ASTS) in 2024.

A paper based on the thesis work of one of our students was a runner-up for the Best Paper Award at AAMAS 2023 (out of 1,015 submissions, 1 winner, 1 runner-up). This student also had an invited contribution to the IJCAI Best Paper Track. A paper co-authored by another MoL student received an ETAPS Best Paper Nomination. Moreover, each year around 10–15 Master of Logic students present various work done during their studies at important international conferences and workshops. These presentations are not always reflected in student publications (Appendix J), as not all of them are full papers.

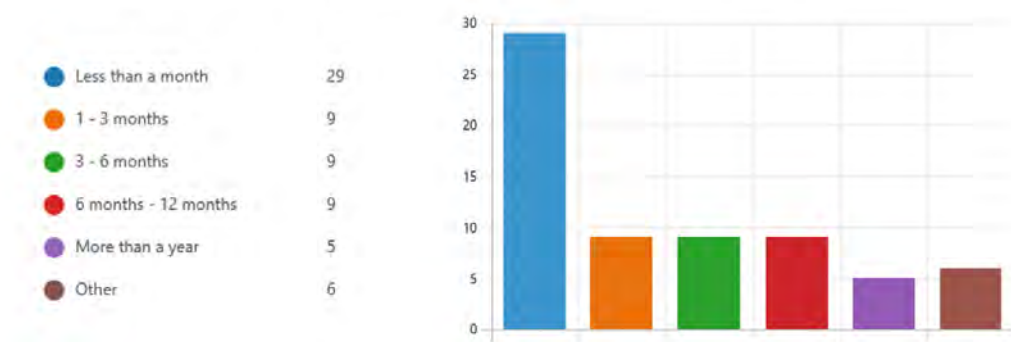
In summary, Master of Logic students are extremely productive in producing high-quality research, which is both highly valuable and quite remarkable—especially given that they are still at the Master’s level.

## 4.4 Job Market Performance

MSc Logic graduates enjoy excellent opportunities on the job market. Over 90% of our graduates, including those who opt for a career outside academia, easily find a job at graduate level after graduation. The majority of them receive their job offer before or directly after graduation.

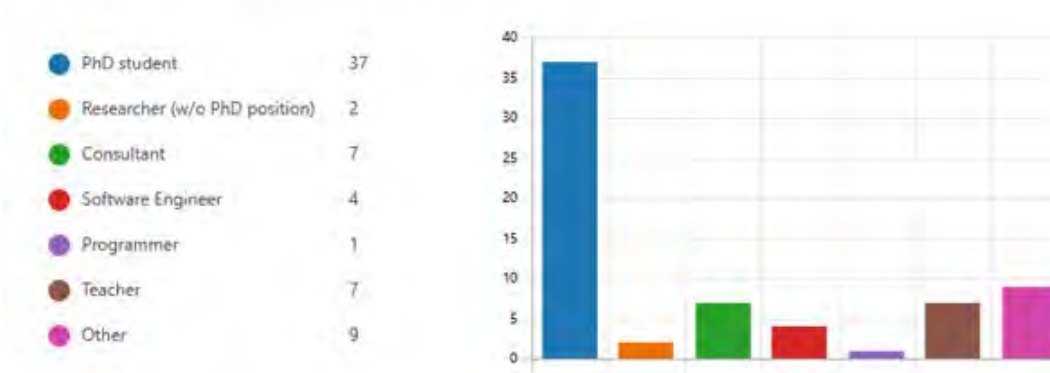
Based on the alumni survey, 43% of our graduates find a job within one month after graduation, 57% within 3 months, 70% within 6 months, and 84% within 12 months after graduation.

6. How long did it take you to get a job after graduating from the MSc of Logic?



According to the survey, 58% of our graduates continue their studies at the PhD level (or engage in research without a PhD), 10% work in consultancy, 7.5% in the ICT industry, and 10% are teachers at high schools or universities.

7. What was your first job after graduation?



PhD placements include Stanford University (Philosophy), University of California, Berkeley (Mathematics), University of Notre Dame (Mathematics), South California University (Philosophy), University of Pennsylvania (Computer Science), University of Pittsburgh (Philosophy), University of Oxford (Mathematics and Philosophy), University of Cambridge (Computer Science), Imperial College London (Computer Science), UCL (Computer Science), University of Sheffield (Computer Science), University of Bern (Computer Science), LMU Munich (Philosophy), University of Hamburg (Mathematics), TU Vienna (Computer Science), Lund University (Computer Science), University of Toulouse (Computer Science), University of Pavia (Philosophy), University of Amsterdam (ILLC, Informatics), University of Groningen (Computer Science), Utrecht University (Philosophy, Computer Science), Leiden University (Computer Science) and more.

## PART II: APPENDICES

## APPENDIX A

# DEVELOPMENTS SINCE PREVIOUS ACCREDITATION

In this appendix we summarise the most important developments since the previous accreditation, which was carried out in January of 2020.

### A.1 Specific Committee Recommendations

In 2020 the panel evaluating the MSc Logic concluded the summary of their findings as follows:

The majority of the graduates obtain PhD positions at renowned universities. This is another reason for the panel to assess this programme as one of the best, if not the best programme on logic in the world.

The main recommendation for improvements contained in their report was:

- (1) To have any further growth of the programme in student numbers be matched by recruitment of extra staff.

The management of the Master of Logic takes the recommendation very seriously. While the programme has grown slightly in student numbers (and we expect further growth in the coming years), this has been matched by an increase in the number of mentors and overall lecturers involved in the programme. The number of mentors rose from 17 in September 2019 to 23 in September 2025, and we expect this number to continue increasing in the coming years. Likewise, the number of lecturers in the programme grew from 50 in September 2019 to 56 in September 2025. In particular, the number of core lecturers increased from 37 in September 2019 to 44 in September 2025.

We also note that during the 2013 accreditation, the committee encouraged the MSc Logic programme to increase the number of BKO-certified lecturers. This recommendation was successfully implemented already by the time of the previous accreditation. We are pleased to report that the number of BKO-certified lecturers has continued to grow over the past six years. In particular, 93% of the core lecturers are now BKO certified—an almost perfect outcome (cf. Section 2.4). This can be attributed to the fact that many lecturers without the BKO-certificate have since retired, and the institute now requires all newly appointed lecturers in the programme to obtain BKO certification within two years of their appointment.

## A.2 Changes in the Programme

The objectives of the programme, its general structure, and its overall strategy have not changed in recent years. Only a few details have. In addition to the changes discussed above, we mention here some further developments:

**Obligatory Courses.** There have not been any major changes to the compulsory components of the programme since the last accreditation. We would only like to mention that, since 2022/23, the obligatory MasterMath course “Set Theory” has been replaced by the MoL course “Rudiments of Axiomatic Set Theory”.

**Elective Courses.** Over the years, we have discontinued some elective courses and introduced new ones. This is in line with the MSc Logic policy: to keep the programme up to date and to give individual teachers the freedom to quickly adapt their course offerings to developments in their own research areas and to changes in their research interests. This policy, combined with the many recent hires at the ILLC, has resulted in the introduction of multiple new courses. Just to mention a few additions to the MoL curriculum since the last accreditation: “Automated Planning”, “Functional Programming”, “Logic, Data Examples and Computational Learning Theory”, “Logic, Games and Automata”, “Philosophy of AI”, “Topics in Formal Epistemology”, and “Machine Learning and Language Models” (the last course is offered for the first time in 2025/26). The total number of courses in the MSc Logic offered in 2024/25 was 60.

## A.3 COVID-19 Pandemic

Like all other study programmes, the Master of Logic operated in a fully online mode after the COVID-19 pandemic began in early 2020. Starting from the fall semester of 2021, the university partially reopened and became fully operational again in February 2022. During the pandemic, all teaching and supervision were conducted via Zoom. This was clearly detrimental to the MoL community, for which social interaction is vital.

We are happy to report that the community survived this challenge and emerged even stronger from this difficult period. One positive outcome is that in-person supervision is now often complemented by online supervision via Zoom—useful, for example, when a student or supervisor is temporarily not in Amsterdam. This flexibility also enables joint supervision with experts at other leading institutions. We are quite pleased with the additional possibilities this brings. That said, all MoL courses are held in person, and most supervision is also conducted face-to-face.

## APPENDIX B

# REFERENCE FRAMEWORK

The MSc Logic is an interdisciplinary programme educating students in the research area of Logic, Language and Information. The overall goal in this area is to understand how humans and machines alike accomplish the tasks of representing, communicating, manipulating and reasoning with information. For this area, no widely accepted reference framework exists. To nevertheless provide a point of reference, in this appendix we first present a slightly modified version of the brief outline of the field which was produced for the previous accreditation and then present a number of Master's programmes from around the world that each cover a significant part of this area.

### B.1 Logic, Language and Information

Traditionally defined as the study of truth and reasoning, logic has throughout the centuries been associated with different disciplines. Its origins can be found in philosophy. To convince an opponent of the validity of one's arguments during a philosophical debate, one needs to develop a clear understanding of the structure of arguments and also of the notion of validity itself. That is, one is naturally driven towards formalising the process of argumentation, so as to be able to make unambiguous statements about what is true and what conclusions can be inferred from certain premises. One is also naturally driven towards examining the language in which people express their arguments more closely, and eventually towards studying the structure of well-formed discourse and the meaning of its constituents. Since Aristotle, logic has played a central role in many parts of philosophy, and particularly in the study of natural language, thought and knowledge.

In the (late) 19th century, logical reasoning started being studied in mathematical terms and logic found new applications outside of philosophy. As mathematicians were digging deeper into the foundations of mathematics, they found logic to be the appropriate tool to represent and reason about the body of mathematical knowledge they were examining. In a similar manner as philosophers had wanted to understand how a certain conclusion logically follows from a set of premises in the context of a philosophical debate, mathematicians now were seeking to clarify what theorems logically follow from which basic axioms. In the process, the tools and techniques of logic were further sharpened and diversified. Around the middle of the 20th century logic then played a central role in the creation of the new discipline of computer science (and a little later of artificial intelligence), as well as in the shaping of modern linguistic theory, being nowadays the tool of choice to study natural language meanings and their composition. Logic has maintained its position at the foundational core of computer science to this day.

It is this blend of a philosophical tradition, mathematical rigour and modern technical and theoretical applications that makes logic a uniquely interdisciplinary field, combining the humanities and the exact sciences in both methodology and motivation. Besides its intense contacts with analytical philosophy, theoretical and computational linguistics, mathematics, computer science, and artificial intelligence, in recent years logic has also interacted heavily with other fields. Prime examples include cognitive science and mathematical economics. Cognitive science, for instance, has been concerned with the description of everyday human reasoning (as opposed to the idealised forms of reasoning common in argumentation theory), while in mathematical economics, logic has been applied to the study of the epistemic foundations of game theory.

Today, logic is studied in many different parts of the university. A professor of logic in a philosophy department might specialise in argumentation theory, philosophy of language, philosophy of mathematics or in formal epistemology; a professor of logic in a mathematics department might be a set theorist or a proof theorist; a professor of logic in a computer science department might do research on the semantics of programming languages or in the area of knowledge representation for artificial intelligence; and a professor of logic may also be found in a linguistics department, working on the formal semantics and pragmatics of natural language. Some of these professors will see their field of research as being strictly included in the larger discipline represented by the department they work in. Others will emphasise the common interests that cut across the institutionalised disciplines.

It is this latter view that epitomises the field of Logic, Language and Information: the interdisciplinary study of all aspects of information, particularly languages (both natural and artificial) as carriers of information, in a manner that emphasises the use of logic and, more generally, formal methods.

While few universities can muster the capacity to offer a broad taught programme in this field, the significance of the research tradition in Logic, Language and Information is nevertheless widely accepted, both in academia and—to the extent to which such a thing is possible—also in society at large. Indeed, an often-told anecdote amongst those working in the field is the story of how the list of “the 20 most influential scientists, thinkers and inventors” of the 20th century published by *Time Magazine* in March 1999 included no fewer than three logicians: the logician and mathematician Kurt Gödel, the logician and computer scientist Alan Turing, and the logician and philosopher Ludwig Wittgenstein. All three of these intellectual giants are perfect examples of the open-minded approach to research that characterises the field of Logic, Language and Information, bridging the humanities and the sciences, and emphasising the use of formal methods.

Another indicator of the significance of the field is the fact that it is well represented in university education above the Master’s level. For instance, each year the European Summer School in Logic, Language and Information (ESSLLI) and, each two years, the North American Summer School in Logic, Language and Information (NASSLLI) attract participants (most of them PhD students) from all over the world, and there is a smaller but equally successful initiative of a similar kind in Asia (e.g., The Tsinghua Logic Summer Schools). ESSLLI is organised by a professional society, the Association for Logic, Language and Information (FoLLI), devoted to the advancement of the field. Finally, there is also a journal, the *Journal of Logic, Language and Information*, specifically dedicated to the publication of work in the field, although research in Logic, Language and Information is in fact published in a wide range of journals (and other publication outlets) across the humanities and the sciences, appropriately reflecting the nature and ambition of the field.

## B.2 Related Master's Programmes

The MSc Logic is the only Master's programme in Logic, Language and Information in the Netherlands. However, internationally there is a small number of other programmes that also cover significant parts of the field. Below we list some of the best known representatives of this group. This list is not intended to be exhaustive; rather we want to demonstrate the variety of (often very good) programmes that serve the area.

### B.2.1 Barcelona: Pure & Applied Logic / Cognitive Science & Language

The universities in and around Barcelona together boast a rich research community in Logic, Language and Information. They offer two Master's programmes that each cater for an important aspect of the field. The first is the Master's programme in Pure and Applied Logic (<https://web.ub.edu/en/web/estudis/w/masteruniversitari-MOCOD>) offered jointly by the University of Barcelona and the Technical University of Catalonia. It focuses specifically on the mathematical and computational aspects of the field:

“This Master aims to provide a thorough grounding in all aspects of advanced logic, both pure and applied. [...] [This includes] Algebraic Logic, Computational Complexity, History of Logic, Logical Foundations of Artificial Intelligence, Model Theory, Non-Classical Logics, Philosophy of Logic and of Mathematics, Proof Theory and Set Theory.”

The language aspect, particularly its connection to cognition, is served by the inter-university postgraduate programme in Cognitive Science and Language (<http://www.ub.edu/ccil/>), co-organized by five Catalan universities: Universitat de Barcelona, Universitat Autònoma de Barcelona, Universitat Pompeu Fabra, Universitat Rovira i Virgili and Universitat de Girona:

“The Cognitive Science and Language (CCiL) program is a postgraduate interdisciplinary program focused on language and cognition as approached from three different disciplines: Psychology, Linguistics and Philosophy. Its goal is to educate researchers in the field of Language and Cognition Studies with an interdisciplinary orientation, providing the scientific formation and the methodological tools necessary to carry out high level research in a specific subtopic.”

### B.2.2 Bristol: Logic and Philosophy of Mathematics

The University of Bristol offers a one-year MA in Logic and Philosophy of Mathematics. The website (<https://www.postgraduatestudentships.co.uk/masters-course/logic-and-philosophy-of-mathematics/24328>) describes the programme as follows:

“The Department of Philosophy has exceptional research strength in the fields of logic and the philosophy of mathematics, and very strong links with the School of Mathematics [...]. Our MA draws on these strengths and is open to students with first degrees in philosophy (subject to a suitable background in logic) or mathematics. It consists of six taught units, examined by essay, and a 15,000-word dissertation.”

### B.2.3 Budapest: Logic and Theory of Science

Launched in 2010, the Master's programme in Logic and Theory of Science offered by the Department of Logic at Eötvös University in Budapest covers a broad array of topics ranging

from mathematical logic to philosophy of science. Its website (<https://www.elte.hu/en/logic-and-philosophy-of-science-ma>) describes the programme as follows:

“The curriculum includes core courses in logic and formal approaches to philosophy of science, and advanced optional courses in logic, philosophy of mathematics, foundations of physics, logical methods in linguistics, philosophy of language, metaphysics, and formal models in social sciences. Students can choose a focus according to their own fields of interests. In general, the program is research oriented, aiming to prepare students for a PhD program.”

#### **B.2.4 Carnegie Mellon: Logic, Computation and Methodology**

The Department of Philosophy at Carnegie Mellon University in Pittsburgh offers a Master’s programme in Logic, Computation and Methodology (<https://www.cmu.edu/dietrich/philosophy/graduate/masters/lcm/index.html>):

“[This programme is intended] for students who are looking to enhance their training in selected areas of Formal Philosophy, in order either to pursue a vocation outside academe, e.g. designing expert systems for consulting firms that specialise in AI methods, or to prepare for further graduate study in Analytic Philosophy, Cognitive Psychology, Computer Science, Mathematics, or Statistics.”

This is a strong as well as broad programme covering many aspects of Logic, Language and Information. Of particular interest are its offerings around the topics of rational decision making and epistemology.

#### **B.2.5 Gothenburg: Logic**

In 2017, the Department of Philosophy, Linguistics, Theory of Science of the University of Gothenburg launched a new MA programme in Logic (<https://www.gu.se/en/study-gothenburg/logic-masters-programme-h2log>). The website advertises the programme to prospective students as follows:

“Do you see yourself thriving in an environment that fuses profound philosophical insights and striking mathematical methodology? Logic has developed beyond the traditional definition as the study of formal aspects of valid reasoning to be more widely applicable not only in the neighbouring disciplines of philosophy, mathematics, linguistics, and computer science, but also in industry and engineering. As a student of the programme, you will get a thorough education in the core topics in logic and will have the opportunity to explore applications in diverse areas including natural language processing, database design, and artificial intelligence.”

Very close in spirit to our programme, the Gothenburg MA in Logic is however younger and, at least so far, much smaller in terms of student numbers.

#### **B.2.6 Manchester: Pure Mathematics and Mathematical Logic**

The Department of Mathematics at the University of Manchester is offering a one-year programme leading to the degree of MSc in Pure Mathematics and Mathematical Logic (<https://www.manchester.ac.uk/study/masters/courses/list/09110/msc-pure-mathematics-and-mathematical-logic/>). Its stated aims are the following:

“The aims of the programme are to provide training in a range of topics related to pure mathematics and mathematical logic, to encourage a sophisticated and critical approach to mathematics, and to prepare students who have the ability and desire to follow careers as professional mathematicians and logicians in industry or research.”

### B.2.7 Munich: Logic and Philosophy of Science

Since 2012 the Munich Center for Mathematical Philosophy (MCMP) at Ludwig Maximilian University offers a Master’s programme in Logic and Philosophy of Science (<http://www.mcmp.philosophie.uni-muenchen.de/students/ma/>):

“The MCMP [...] offers a lively environment to study logic and philosophy of science [...] We offer world-class instruction and supervision in logic and computational philosophy, formal epistemology and decision theory, philosophical logic and philosophy of logic, general philosophy of science, philosophy of physics, philosophy of special sciences, and core analytic philosophy.”

One of the current lecturers in this programme is MSc Logic graduate Ivano Ciardelli.

### B.2.8 Paris: Logic and Philosophy of Science / Mathematical Logic and Foundation of Computer Science

Paris offers several opportunities to study logic, at different levels and with different specialisations. A programme of particular relevance is the *LoPhiSC* Master’s programme in Logic, Philosophy of Science (<https://formations.pantheonsorbonne.fr/fr/catalogue-des-formations/master-M/master-philosophie-KBUWM83E/master-parcours-logique-et-philosophie-des-sciences-KBUWP9PK.html>), which is offered by Paris 1–Sorbonne:

“Its objective is to provide a fundamental education of high standards that is both balanced and open, in the areas of philosophy of science and of logic. It also offers training in the history of science and social studies of science, as well as other contemporary dimensions of science, such as cognitive approaches.” [*our translation*]

Another very relevant programme is the Master’s in Mathematical Logic and Foundations of Computer Science (LMFI) (<http://master.math.univ-paris-diderot.fr/en/annee/m2-lmfi/>) organised by Paris 7–Diderot and the CNRS:

“LMFI is [...] dedicated to mathematical logic and its applications to computer science. It trains high-level logicians and prepares them to later obtain a PhD, have an academic career, teach or work in research and development.”

Other relevant programmes are the Parisian Master of Research in Computer Science (MPRI) (<https://www.universite-paris-saclay.fr/en/education/master/computer-science/m1-parisian-research-master-computer-science-mpri-0>) and the Master in Cognitive Science (<https://master-cognitive-science.ens.psl.eu/en/ens-psl-ehess-masters-degree-cognitive-science-17277>) jointly offered by University Paris Descartes, École des Hautes Études en Sciences Sociales and École Normale Supérieure. The latter programme offers interdisciplinary training in Linguistics, Philosophy, Cognitive Social Science, Psychology, Neuroscience, Modeling and Cognitive Engineering. One of the lecturers of this new Master’s programme is MSc Logic graduate Salvador Mascarenhas.

### B.2.9 Sofia: Logic and Algorithms

The Logic and Algorithms MSc programme offered by Sofia University is aimed at graduates of Bachelor's programmes in Mathematics and Computer Science. Their website (<https://store.fmi.uni-sofia.bg/fmi/logic/en-logic.html>) describes the programme as follows:

“During the curriculum, the students will have the opportunity to learn about the current trends in mathematical logic. The program provides a solid theoretical background indispensable for solving non-trivial algorithmic problems in the field of Mathematics as well as in the field of Computer Science.”

### B.2.10 St. Andrews: Logic and Metaphysics

The MLitt in Logic and Metaphysics at the University of St Andrews offers students a specialist education in various topics within both Logic and Metaphysics. The website (<https://e-vision.st-andrews.ac.uk/cview/specs/2018-19/TALFPHICLMP.html?1651536000982>) describes the curriculum as follows:

“[The programme] focuses on topics within metaphysics and logic. You can take classes covering logic and advanced logic, formal approaches to natural languages and contemporary and historical debates in metaphysics.”

### B.2.11 Trento: Cognitive Science

The Center for Mind/Brain Sciences (CIMEC) at the University of Trento offers a Master's course in Cognitive Science (<https://international.unitn.it/mcs>). The curriculum is described as follows:

“Students choose between two tracks: Cognitive Neuroscience (CN); Language and Multimodal Interaction (LMI). [...] The curriculum includes courses focusing on neurophysiological aspects of cognitive processes, the study of human behavior, and human-computer interaction.”

### B.2.12 Vienna: Logic and Computation

The Department of Informatics of the Technical University of Vienna offers a MSc in Logic and Computation (<https://informatics.tuwien.ac.at/master-ue066931>). The website describes the content of the programme as follows:

“Logic and Computation is crucial for today's infrastructure, industry, consumer products, etc. Formal methods in this field build the basis for tackling great challenges, such as storing and processing big amount of data, software verification for fail-safe software in critical environments, fast algorithms to solve computationally hard problems, etc. As a Master student you will learn basic and advanced methods in the field of Logic and Computation. [...] In addition to algorithm analysis and machine learning, you will be intensively involved with optimization and inference methods for knowledge processing, answer-set programming and truth-maintenance systems. In addition, your knowledge in the areas of requirements engineering, software testing or high-performance computing will be expanded to a high level. You complete the given courses with free electives, which allow you to expand and deepen your personal research focus.”

# APPENDIX C

## EXIT QUALIFICATIONS

In this appendix we reproduce (i) the exit qualifications (or learning outcomes) of the MSc Logic as reported in the OER 2023/24 (and previous editions); and (ii) an explanation of how the exit qualifications relate to the so-called Dublin descriptors. How the exit qualifications relate to the curriculum is illustrated in Section 4.1, Table 4.1.

### C.1 Exit Qualifications

On the basis of the acquired knowledge, understanding and skills, students that have successfully completed the MSc Logic are able to

#### Interdisciplinary Research

- [IR] carry out *research* in the *interdisciplinary* area of Logic, Language and Information making original contributions to the theories and research methods in their field of specialisation;

#### Foundations and Advanced Knowledge

- [K1] explain and apply classical results and proof methods used in mathematical logic; apply proof-theoretic and model-theoretic techniques to prove theorems; explain applications of Logic in Philosophy, Mathematics, Computer Science, and Linguistics;
- [K2] critically evaluate, apply and integrate advanced results and theories in their field of specialisation (Philosophy, Mathematics, Computation or Language) based on an awareness of its research traditions and conventions;

#### Formal Methods

- [FM] analyse and model complex structures using *formal methods*, which includes at least one of the following: develop predictive formal models of complex (linguistic) phenomena; study formal properties of mathematical structures; develop formal theories for philosophical issues; develop algorithms, information-theoretic, computational and probabilistic models;

#### Skills

- [S1] formulate *research questions* placed in the correct scientific context and address these in a research plan;

- [S2] deliver and defend *presentations* of their own work, both orally and in writing, following the conventions of their field of specialisation; and
- [S3] collaborate with others in a *multidisciplinary team*.

Finally, a graduate of the MSc Logic

#### Intellectual Mobility

- [IM] possesses the *intellectual mobility* to transcend traditional boundaries between the academic disciplines that border their specialisation area.

## C.2 Adequacy with Respect to Dublin Descriptors

The level of the MSc Logic meets the international requirements for a *Master's programme* as codified in the so-called *Dublin Descriptors*. Below we explain how the MSc Logic conforms to each of the Dublin Descriptors and refer to the relevant learning outcomes where appropriate.

- **Knowledge and understanding:** Graduates of the MSc Logic will have demonstrated knowledge and understanding going significantly beyond the Bachelor's level and have reached a level at which they can make original research contributions. [IR, K1, K2, FM]
- **Applying knowledge and understanding:** Graduates will be able to apply the knowledge and understanding acquired to solve problems in new and unfamiliar environments in a broad interdisciplinary and/or multidisciplinary context. [S1, S2, S3, IM]
- **Making judgements:** Graduates will be in a position to make informed judgments regarding complex questions, also in the face of incomplete information. [S3]
- **Communication:** Graduates will be able to clearly communicate results, as well as the background knowledge and insights that have led to these results, to both specialist and non-specialist audiences. [S2, S3, IM]
- **Learning skills:** Graduates will have acquired learning skills that allow them to further develop themselves in an autonomous and self-directed fashion. [IR, S1, IM]

# APPENDIX D

## CURRICULUM

On this appendix we reproduce (i) the overview poster of the MSc Logic 2024/25 displaying all electives in the programme according to the area they belong to and (ii) a high-level diagrammatic overview of the curriculum. Please also consult [Curriculum 2023–2024 Schematic Overview](#). The curriculum is further described in Section 2.2.1.

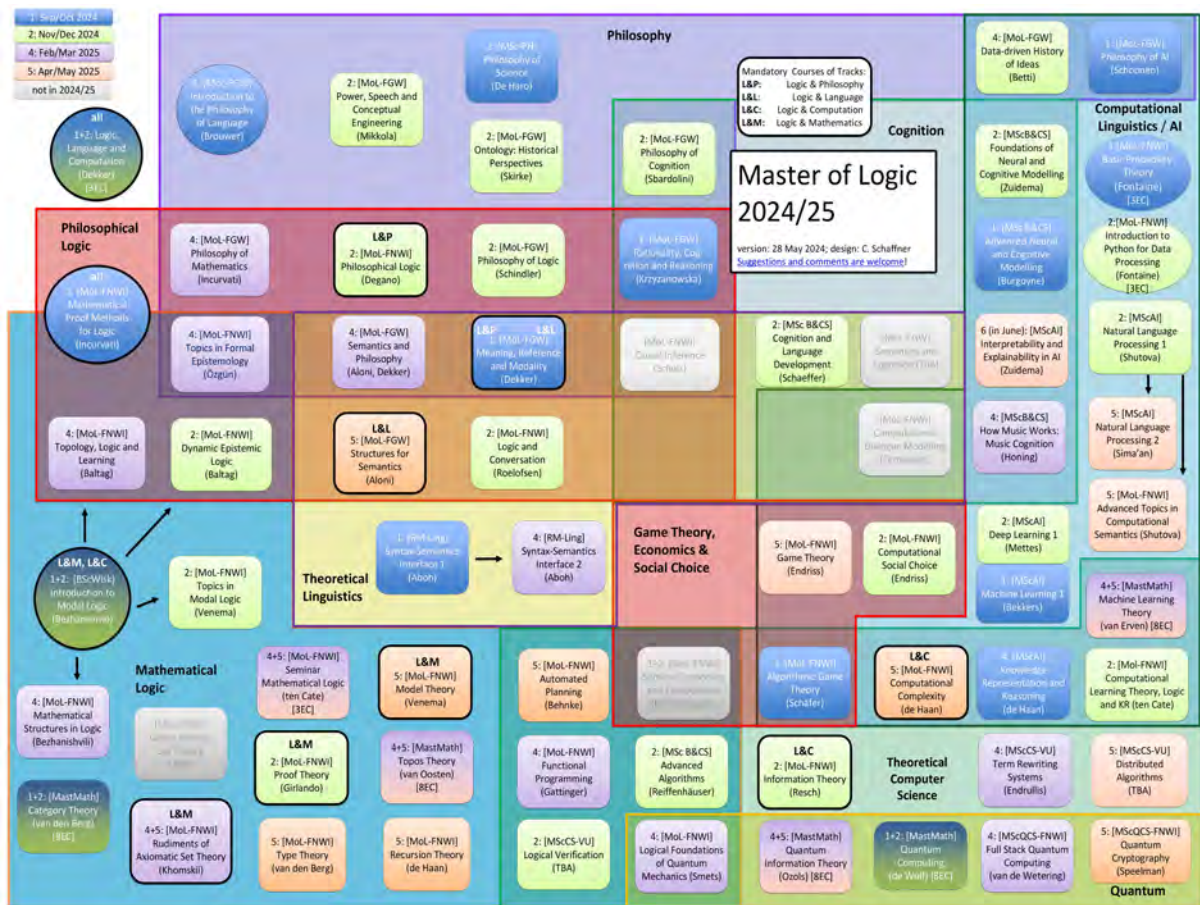


Figure D.1: Overview Poster of the MSc Logic 2024/25

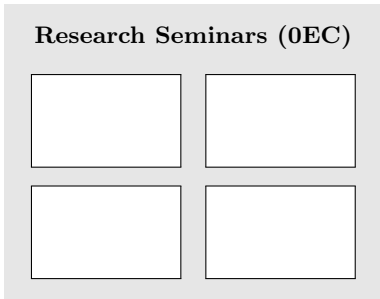
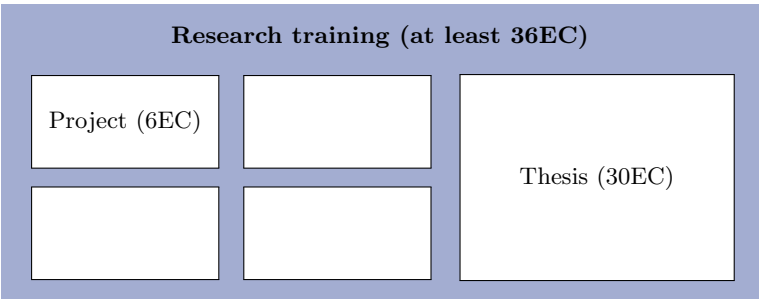
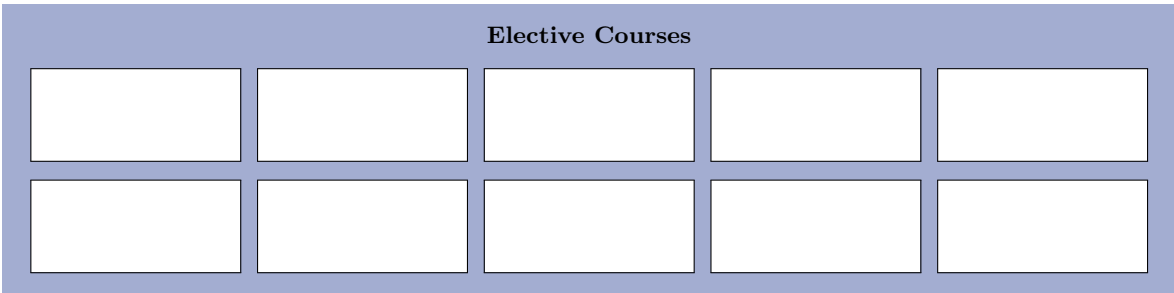
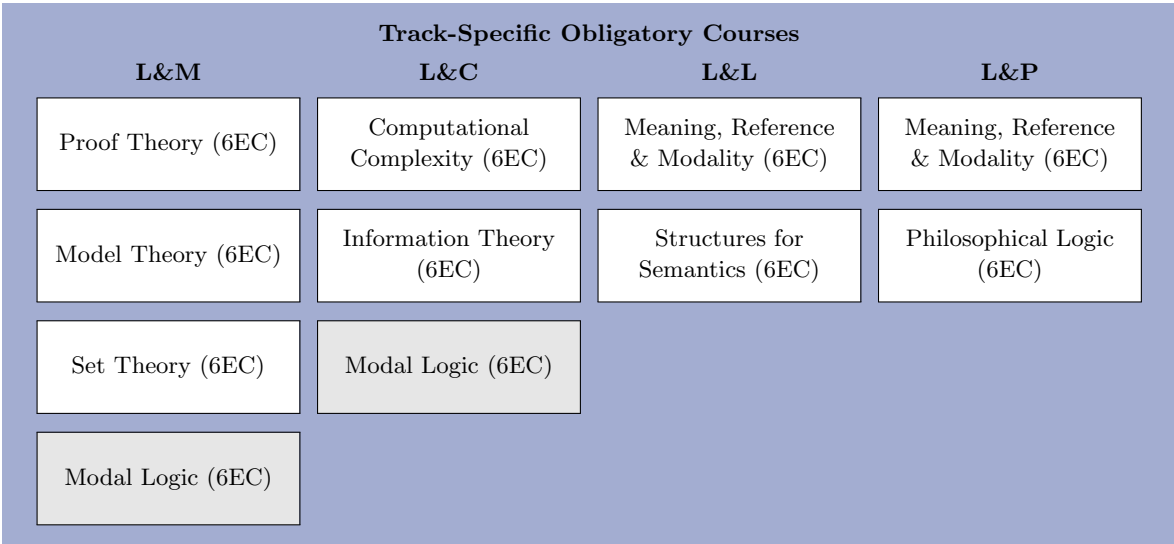
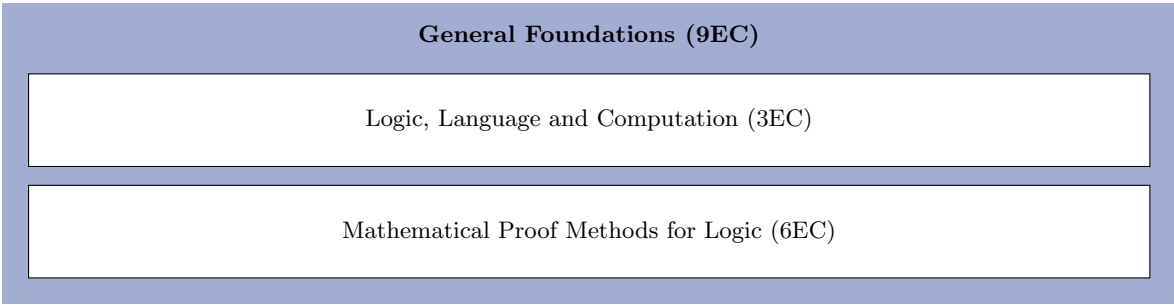


Figure D.2: Diagrammatic Overview of the Curriculum

# APPENDIX E

## CURRICULUM COMPONENTS

In this appendix we describe the individual components of the curriculum of the MSc Logic. These are the obligatory and elective courses, the research projects and the thesis. For each component we list the general learning outcomes the component is contributing to (cf. Appendix C for the meaning of the abbreviations used), the specific objectives of the component, a brief outline of the technical content of the component, the teaching methods used, the form of assessment employed, the mandatory and recommended literature (where applicable), the name of the teacher(s), and the number of credit points awarded. Information about the obligatory courses and the research training is copied below. The reported information is in part based on the UvA's online *Study Guide* (<http://studiegids.uva.nl/>). We use the academic year of 2024/25 as our point of reference.

### E.1 Obligatory Courses: Foundational

#### E.1.1 Logic, Language and Computation

<b>Learning outcomes:</b>	K1, IM
<b>Teaching methods:</b>	Lectures; one-to-one research meetings
<b>Assessment:</b>	Written summaries of guest lectures; reports on research meetings
<b>Teacher:</b>	Paul Dekker (coordinator)
<b>Credit points:</b>	3 EC

**Objectives:** The course provides an overview of different research lines within the area of Logic, Language and Information. After the course students can summarise and critically evaluate contributions in different fields including mathematics, linguistics, philosophy and computer science transcending the traditional boundaries between these disciplines.

**Content:** The course consists of a series of guest lectures introducing some of the areas of research that members of the ILLC are involved in. Additionally, as part of this course, each student will have an individual research meeting with a senior member of staff of the ILLC and with a PhD student. This course is the central obligatory course of the programme, running throughout the first semester. It is the time and place to meet for all MSc Logic students.

## E.1.2 Mathematical Proof Methods for Logic

<b>Learning outcomes:</b>	K1
<b>Teaching methods:</b>	Lectures; tutorials
<b>Assessment:</b>	take-home exams; in-class exam
<b>Teacher:</b>	Giorgio Sbardolini
<b>Credit points:</b>	6 EC

**Objectives:** By the end of the course, students will have: (i) learned the statements and proofs of the basic results of mathematical logic; (ii) mastered the basic proof-theoretic and model-theoretic techniques used in mathematical logic; (iii) developed their abilities to prove theorems through the study of these techniques.

**Content:** The course is an introduction to the proof methods used in mathematical logic and to how these methods are used in the proofs of the basic results of mathematical logic. Topics to be covered include classical propositional and predicate logic, soundness, completeness, compactness, the Löwenheim-Skolem Theorems and applications thereof.

**Study material:** Dirk van Dalen, *Logic and Structure* (5th edition) Springer, 2013; as well as course notes.

## E.2 Obligatory Courses: Track-Specific

### E.2.1 Computational Complexity (L&C)

<b>Learning outcomes:</b>	K1, K2, FM
<b>Teaching methods:</b>	Lectures; tutorials
<b>Assessment:</b>	Exercises; in-class exam
<b>Teacher:</b>	Ronald de Haan
<b>Credit points:</b>	6 EC

**Objectives:** To familiarise students with basic and advanced concepts in the theory of computational complexity.

**Content:** Complexity theory deals with the fundamental question of how many resources, such as time, memory, communication, randomness, etc., are needed to perform a computational task. A fundamental open problem in the area is the well-known P versus NP problem, one of the Clay Millennium problems. In this course we will treat the basics of complexity theory, NP-completeness, diagonalization, Boolean circuits, randomized computation, interactive proofs, cryptography, quantum computing, and circuit lower bounds.

**Study material:** S. Arora and B. Barak. *Computational Complexity: A Modern Approach*. Cambridge University Press, 2009.

### E.2.2 Information Theory (L&C)

<b>Learning outcomes:</b>	K2, FM, S3
<b>Teaching methods:</b>	Lectures; tutorials
<b>Assessment:</b>	Homework; final exam
<b>Teacher:</b>	Nicholas Resch
<b>Credit points:</b>	6 EC

**Objectives:** At the end of the course students will be able to compute various entropic quantities of discrete random variables; work with the core concepts and theorems for the scenarios of data compression and noisy-channel coding; collaborate (under guidance of teachers) in small groups and present solutions of mathematical problems orally to peers.

**Content:** Information theory was developed by Claude E. Shannon in the 1950s to investigate the fundamental limits on signal-processing operations such as compressing data and on reliably storing and communicating data. These tasks have turned out to be fundamental for all of computer science. In this course, we quickly review the basics of probability theory and introduce concepts such as (conditional) Shannon entropy, mutual information and entropy diagrams. Then, we prove Shannon's theorems about data compression and channel coding. An interesting connection with graph theory is made in the setting of zero-error information theory. We also cover some aspects of information-theoretic security such as perfectly secure encryption, and draw some connections to machine learning and artificial intelligence.

**Study material:** Course lecture notes interactively presented on Canvas.

### E.2.3 Introduction to Modal Logic (L&C, L&M)

<b>Learning outcomes:</b>	K1
<b>Teaching methods:</b>	Lectures; tutorials
<b>Assessment:</b>	Homework; midterm and final in-class exam
<b>Teacher:</b>	Nick Bezhanishvili
<b>Credit points:</b>	6 EC

**Objectives:** At the end of the course the students should be able to (a) point out when a modal formula is satisfied/valid on a given Kripke model/frame; (b) compute standard translations of modal formulas and first-order correspondents of Sahlqvist formulas; (c) produce a completeness proof via the canonical model construction for some basic systems of modal logic; (d) derive finite model property of such systems via the method of filtration; (e) argue about decidability of simple systems of modal logic by combining finite axiomatization and the finite model property of these systems; (f) solve basic problems involving more complex modal systems such as PDL.

**Content:** The course covers the basic notions of modal logic: syntax, relational semantics, models and frames, bisimulations, model theoretic and frame theoretic constructions, completeness. More advanced topics include expressive power and neighbourhood frames.

**Study material:** Blackburn, de Rijke & Venema. *Modal Logic*. CUP, 2001.

### E.2.4 Meaning, Reference and Modality (L&L, L&P)

<b>Learning outcomes:</b>	K1, K2, FM
<b>Teaching methods:</b>	Lectures; seminars
<b>Assessment:</b>	Take-home exams
<b>Teacher:</b>	Paul Dekker
<b>Credit points:</b>	6 EC

**Objectives:** To acquire a working knowledge of the history, background, and current issues in semantic and pragmatic debates concerning *Meaning, Reference and Modality*.

**Content:** In this course classical intensional semantics and dynamic semantics are approached from a philosophical-logical perspective. The philosophical backgrounds of the two paradigms

are studied as well as their logical formulation. We will study classical texts on intensionality from Frege, Lewis, Stalnaker and Kripke, and zoom in on long-standing issues such as sense and reference; naming, identity and necessity; context and context change; modality and discourse.

**Study material:** L.T.F Gamut. *Logic, Language and Meaning* (volume II). The University of Chicago Press, 1991; and a collection of articles.

### E.2.5 Model Theory (L&M)

<b>Learning outcomes:</b>	K1, K2, FM
<b>Teaching methods:</b>	Lectures; tutorials
<b>Assessment:</b>	Homework; in-class exam
<b>Teacher:</b>	Yde Venema
<b>Credit points:</b>	6 EC

**Objectives:** The main aim of the course is to provide the students with an overview of classical model theory; additionally, the course will give either an introduction to modern model theory (leading up to Morley's Theorem) or treat a special topic (for instance, finite model theory or nonstandard analysis).

**Content:** In this course we will give a general introduction to the methods and results of classical model theory including games, compactness, the Loewenheim-Skolem theorems, and various preservation theorems, illustrated by examples and applications in algebra and discrete mathematics. Various model theoretic techniques for constructing models will be introduced and applied, such as unions of elementary chains, omitting types construction, ultraproducts and saturated models.

**Study material:** W. Hodges. *A Shorter Model Theory*. CUP, 1997.

### E.2.6 Philosophical Logic (L&P)

<b>Learning outcomes:</b>	K1, K2, FM
<b>Teaching methods:</b>	Lectures; tutorials
<b>Assessment:</b>	Homework
<b>Teacher:</b>	Robert van Rooij; Marco Degano
<b>Credit points:</b>	6 EC

**Objectives:** In this course students learn how to build and evaluate logical theories for philosophical issues.

**Content:** The course discusses the use of logic(s) to tackle philosophical issues, especially ones concerning metaphysics and the philosophy of language. The topics dealt with include (i) vagueness; (ii) truth (the liar paradox); (iii) conditionals and modalities.

**Study material:** Lecture notes.

### E.2.7 Proof Theory (L&M)

<b>Learning outcomes:</b>	K1, K2, FM
<b>Teaching methods:</b>	Lectures; tutorials
<b>Assessment:</b>	Homework; in-class exam
<b>Teacher:</b>	Marianna Girlando
<b>Credit points:</b>	6 EC

**Objectives:** Present formal derivations in different proof calculi (Hilbert-style proof calculi, natural deduction and sequent calculus); Explain the main properties of these calculi (such as normalisation and cut elimination); Understand the difference between constructive and non-constructive reasoning; Recreate key concepts and techniques in proof theory; Demonstrate an understanding of proof theoretic methodology; Carry out combinatorial analyses of the structure of formal proofs; Critically compare different logics and proof calculi; Explain the role of proof theory in relation to other logical disciplines.

**Content:** As objects that witness validity of arguments, proofs are a central concept in logic and, more broadly, mathematics. Formal proofs come in many styles each equipped with their own toolkit. In this course we will look at some of the standard proof systems of classical and intuitionistic logic and develop an appreciation for pros and cons surrounding the different formalisms.

Main theorems covered in the course include Gentzen's Hauptsatz (cut elimination) and a number of its consequences (subformula property, Herbrand's theorem, existence and disjunction property, interpolation). Consistency, computational content, ordinal analysis (measuring strength of formal theories) will also be central to the curriculum.

In the second half of the course further advanced topics will be discussed including (but not limited to) omega logic, infinitary and cyclic proofs, predicative proof theory and unprovability results.

**Study material:** Syllabus.

### E.2.8 Rudiments of Axiomatic Set Theory (L&M)

<b>Learning outcomes:</b>	K1, K2, FM
<b>Teaching methods:</b>	Lectures; tutorials
<b>Assessment:</b>	Homework, in-class exam
<b>Teacher:</b>	Yurii Khomski
<b>Credit points:</b>	6 EC

**Objectives:** Understanding the main issues in the foundation of mathematics, the problems with naive set theory, and the solution to these problems provided by the Zermelo-Fraenkel Axioms. Understanding the importance of formalizing mathematics in first order logic and the distinction between sets and proper classes. Applying the ZFC axioms to formally construct the objects used in mathematics and to prove foundational theorems on which the rest of mathematics is built. Understanding more advanced concepts of abstract set theory, such as ordinals, cardinals and the Axiom of Choice.

**Content:** This course provides an introduction to Axiomatic Set Theory comparable with standard courses of this type. Topics covered are: Naïve set theory and Russell's Paradox; The ZFC axioms; Construction of basic mathematical objects in ZFC; Construction of the natural numbers and other number systems; Ordinals and well-orders; Ordinal arithmetic; Transfinite

induction and recursion; The von Neumann Hierarchy and ranks of sets; Cardinality; The Axiom of Choice; Cardinals and cardinal arithmetic; Cofinality, regular and singular cardinals; Inaccessible cardinals and a brief introduction to “models of set theory”.

**Study material:** Azriel Levý, “Basic Set Theory”, Dover Books on Mathematics, Revised Edition 2002.

Keith Devlin, “The Joy of Sets”, Fundamentals of Contemporary Set Theory 1993.

### E.2.9 Structures for Semantics (L&L)

<b>Learning outcomes:</b>	K1, K2, FM
<b>Teaching methods:</b>	Lectures, tutorials, individual supervision
<b>Assessment:</b>	Take home exams; in-class exam; presentations; research project
<b>Teacher:</b>	Maria Aloni
<b>Credit points:</b>	6 EC

**Objectives:** Gaining working knowledge of the logical/ mathematical techniques employed in formal semantics.

**Content:** We will study mathematical techniques that are used in formal semantics to model natural language meanings. We will discuss, among others, type theory, the lambda calculus, generalized quantifiers, intensional logic, partial orders and lattices. In all cases we will motivate the techniques from a semantic point of view and discuss linguistic applications of the tools.

**Study material:** L.T.F Gamut. *Logic, Language and Meaning* (volume II). The University of Chicago Press, 1991; and a collection of articles.

## E.3 Elective Courses

A complete list of the courses offered as electives is available [here](#).

## E.4 Research Training

### E.4.1 Research Project

<b>Learning outcomes:</b>	RI, A2, FM, S1, S2, S3, IM
<b>Teaching methods:</b>	Various
<b>Assessment:</b>	Various
<b>Teacher:</b>	Nick Bezhanishvili (coordinator)
<b>Credit points:</b>	6 EC

**Objectives:** To gain experience with conducting independent research.

**Content:** Every January and June, the MSc Logic offers a small number of *coordinated projects* for students to choose (a full list is available at <https://msclogic.illc.uva.nl/current-students/courses/projects/>). Students can also approach a potential project supervisor (a senior member of staff, a postdoc, a PhD student, or an academic visitor at the ILLC) and enquire about doing an *individual project* with them. Individual projects can be undertaken at any time (not necessarily in January or June) and, depending on the workload, can be worth more or fewer credits than 6 EC. Projects often, but not always, include the writing of a report. Each student must complete at least one research project worth 6 EC to

be able to graduate, but may do more (students typically complete 2–3 projects before starting their thesis work).

We list the **coordinated projects** offered in 2024/25:

- Effective Kan Fibrations: A Categorical Adventure
- Forcing and Independence Proofs
- Formalisation of Gameplay Strategies in a Memory-based Listening Paradigm
- Introduction to Topology in and via Logic
- Program Induction and the ARC Challenge
- Reasoning in Social Context
- Anti-exceptionalism About Logic
- Automated Equational Reasoning via Rewriting
- Beyond Standard Syllogistic
- Measuring Meaning: Proof-Theoretic Semantics and Substructurality
- Meta-Complexity
- Topics in Algebraic Logic and Duality
- Wittgenstein Project

The following are examples of recent **individual projects**:

- The Liar Paradox
- Theorem Proving in Lean: PDL Interpolation
- Action Parallelism in SAT-based Planning
- Algebraic theories and algebraic weak factorisation systems
- Judgment Aggregation
- Online Auctions for Value Maximizers
- Expressive power of query algorithms based on homomorphism counts
- Language Emergence
- Arithmetic and syntax: philosophical and mathematical issues
- Categorical Foundations of Structuralism
- Epistemology of Information
- Degrees of incompleteness in modal logic
- Introduction to Large Cardinals
- Introduction to Higher-order Metaphysics

#### E.4.2 Thesis

<b>Learning outcomes:</b>	RI, A2, FM, S1, S2, IM
<b>Teaching methods:</b>	Individual research supervision
<b>Assessment:</b>	Written thesis; oral defense
<b>Teacher:</b>	Maria Aloni (coordinator)
<b>Credit points:</b>	30 EC

**Objectives:** To fully master the skills required to carry out interdisciplinary research in Logic, Language and Information.

**Content:** A thesis in the MSc Logic 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 interdisciplinary research in the area of Logic, Language

and Information. The thesis represents the equivalent of one semester of full-time work. This work may be of a theoretical or a more applied nature.

During the whole year a number of events are organised as part of a [graduation trajectory](#) with the aim to provide students with information and extra support in their graduation year. The MSc Logic graduation trajectory includes meetings on how to find a supervisor; how to apply for PhD positions; how to write a Master's thesis and a series of events where students present their ongoing thesis projects first, informally, to other students and the programme director, and later to the whole ILLC community. Academic mentors are further available to assist the students with finding a supervisor. The choice of a supervisor, who will usually be a member of the senior scientific staff of the Institute for Logic, Language and Computation (ILLC), requires the approval of the chair of the Examinations Board.

### **E.4.3 Research Seminars**

Each student is expected to regularly attend local research seminars. No credit points are assigned for this activity. During term time, there are several such seminars taking place at the ILLC almost every week and students are free to attend any of these events. Students are also encouraged to attend similar events elsewhere and to participate in workshops and conferences. The following webpage lists all regular event series that take place at the ILLC: <https://www.illc.uva.nl/NewsandEvents/Events/Regular/>

## APPENDIX F

# TEACHING AND EXAMINATION REGULATIONS

On the following pages we reproduce the official Teaching and Examination Regulations of the MSc Logic (*Onderwijs- en Examenregeling*, or simply OER, in Dutch). The OER is split into two parts. Part A concerns general regulations that apply to all Master's programmes offered at the UvA's Faculty of Science, while Part B is specific to the MSc Logic.

### **F.1 OER, Part A (General)**

[OER Part A 2023–24 \(PDF\)](#).

### **F.2 OER, Part B (MSc Logic)**

[OER Part B 2023–24 \(PDF\)](#)

### **F.3 Rules and Guidelines of the Examinations Board MSc Logic (RRvE)**

[Rules and Guidelines \(Examinations Board\)](#)

## APPENDIX G

# ASSESSMENT POLICY

### G.1 Quality Assurance: Institutional Actors and Their Roles

**Examinations Board** The Examinations Board (EB) is formally responsible for the quality of examinations in the MSc Logic. Every Master's thesis examination is closely monitored by a member of the EB who composes the thesis committee, monitors plagiarism control, collects pre-assessments from committee members, chairs the thesis defense and produces the final assessment report. As for other examinations, in day-to-day practice, this responsibility is largely delegated to the individual examiners. Nevertheless, the EB has the right to carry out spot checks and it can, if required, intervene. To facilitate these checks since 2018/19 examiners are required to upload their written exams in DataNose where the EB can inspect them. Since 2018/19, the EB further collects information about pass percentage and average grades for all MSc Logic courses and further investigates those which deviate from the norm (i.e., a passing rate of less than 40% and an average grade higher than 8.5). The EB further handles cases of suspected plagiarism or fraud and informs the programme director of any further violation of the regulations and the principles of MSc Logic, indicating any need for corrections or improvements. The EB finally advises the director about the contents of the OER and its annual update and produces the updates of the RRvE.

**Programme Director** The programme director annually updates the regulations in consultation with the EB, and informs the teaching staff about its contents and role. The director can further ask the EB to investigate examinations for which they have received either positive or negative feedback from the OC, the students, the academic mentors or other sources.

**Examiners** The MSc Logic places the responsibility of the assessment of the student performances as close as possible to the individual examiners, who are appointed at the faculty level. Examiners have full autonomy in the choice of the assessment forms that match better the learning outcomes of their course and are responsible for ensuring that their examinations are carried out in line with the regulations (OER and RRvE) and the principles of the MSc Logic.

**Programme Committee, Students and Academic Mentors** The **programme committee** (*Opleidingscommissie* (OC)) reports to the programme director how each course is evaluated by students and teaching staff. As these evaluations, by default, address assessment issues, these reports also address the quality of assessment in courses. Besides filling in course evaluations and participating in the regularly organised curriculum evaluations (aka

*pizza evaluations*, cf. Section 2.5), **students** can provide feedback on assessments directly to the examiners, (the student members of) the OC, their academic mentors and directly to the programme director or the EB. And, finally, the **academic mentors** meet with the programme director twice a year to discuss the progress of their individual students but also general issues including the quality of assessments.

## G.2 Assessment of MSc Theses

In this section we refer to the guidelines given to the members of a MSc Logic thesis committee, available at the following address:

<https://msclogic.ilc.uva.nl/current-students/graduation/assessment/>

A first version of this document was approved by the MSc Logic’s Board of Examiners on 14 December 2011 and has been operative since August 2012. The original document was revised and made more precise in 2017 (approved on 18 December 2017) and has been operative since June 2018. Minor adjustments were further made by the Examinations Board on 21 November 2018. To guarantee transparency, this document is available for students and supervisors on the MSc Logic website.

## G.3 Self-assessment on AI

The advances in the power of generative AI, and its increasingly widespread adoption by students, presents a growing concern for the Examinations Board. While these developments have many positive and useful applications for teaching and research, they can be and are also increasingly abused for committing fraud, thus complicating the fair assessment of students. For this reason the University of Amsterdam has several initiatives with the aim of coming up with a good policy to make sure that generative AI can benefit teaching and research at the University, while circumventing its dangers and abuses. [See the “*Beleidskader en richtlijnen GenAI in het onderwijs*”, with an “*Addendum Toetsbeleid*”, made available to all members of the UvA on 20 June 2025.] In these discussions the implications for assessment of students and quality assurance of the programmes play a prominent role.

The Examinations Board of the Master of Logic is closely following these developments. We are also in a good position to assess the danger and potential of generative AI as there is expertise available within the Examinations Board, as well as within the ILLC at large.

In light of these developments, we have decided to add an article to our Rules and Regulations saying that students will not be allowed to use generative AI for assignments, unless explicitly stated otherwise by the lecturer of the course. This is in line with the policy of the University (see the “*Beleidskader...*” cited above) and the Faculty of Science. This new article will probably need refinement in the coming years, as will the general policy of the University, as the technology develops.

At the same time, we feel that the dangers to the Master of Logic should not be exaggerated. Supervised written exams are a standard form of examination within the Master of Logic, as are written essays where students have to develop new ideas. The programme is also small with a lot of personal contact between students and lecturers/supervisors, also when writing the MSc thesis. When the supervisor is guiding the writing process, suspicious behaviour can be more easily detected. Also, no suspected cases of fraud using generative AI have been brought to the attention of the Examinations Board of the Master of Logic.

Still, we clearly have to remain vigilant as matters develop. But the Examinations Board of the Master in Logic is in a good position to monitor developments as technology progresses, and we are closely following the guidelines proposed by the University.

# APPENDIX H

## ACADEMIC STAFF

### H.1 Staff Listing

In this appendix we provide an overview of the academic staff allocated to the MSc Logic. For each member of the core staff (as defined in Section 2.4) we list their name, their position, the extent of their appointment (number of FTE at the UvA, covering both teaching and research), their teaching qualifications and their area of expertise. We do not explicitly list the highest academic qualification for each member of staff; it is the PhD in all cases.<sup>1</sup> A comprehensive list including all lecturers (academic year 2024/25) is also available at the following address:

#### [List of teaching staff](#)

- (1) **Name:** Raquel G. Alhama (PhD Amsterdam, 2017)  
**Position:** Assistant Professor (UD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Computational linguistics; cognitive modeling; language emergence
- (2) **Name:** Maria Aloni (PhD Amsterdam, 2001)  
**Position:** Associate Professor (UHD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Formal semantics and pragmatics; philosophy of language; philosophical logic
- (3) **Name:** Alexandru Baltag (PhD Indiana-Bloomington, 1998)  
**Position:** Associate Professor (UHD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Modal logic; formal epistemology; logic in computer science
- (4) **Name:** Gregor Behnke (PhD Ulm, 2019)  
**Position:** Assistant Professor (UD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Artificial intelligence; automated planning

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<sup>1</sup>To be precise, some members of staff are also in possession of a *habilitation* degree, on top of the PhD.

- (5) **Name:** Benno van der Berg (PhD Utrecht, 2006)  
**Position:** Associate Professor (UHD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Proof theory; category theory; foundations of mathematics
- (6) **Name:** Arianna Betti (PhD Genova, 2000)  
**Position:** Full Professor (HGL)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** History and philosophy of logic; philosophy of language; metaphysics
- (7) **Name:** Nick Bezhanishvili (PhD Amsterdam, 2006)  
**Position:** Associate Professor (UHD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Modal logic; algebraic logic; duality theory
- (8) **Name:** Alexi Block Gorman (PhD Urbana-Champaign, 2021)  
**Position:** Assistant Professor (UD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** (in progress, joined the ILLC on 01/09/2025)  
**Expertise:** Model theory; o-minimal structures
- (9) **Name:** Elsbeth Brouwer (PhD Amsterdam, 2003)  
**Position:** Instructor (*docent*)  
**Appointment:** 0.8 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Philosophy of language; philosophy of mind and cognition; epistemology
- (10) **Name:** Ashley Burgoyne (PhD Montréal, 2012)  
**Position:** Assistant Professor (UD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Music information retrieval; psychometrics; representation learning
- (11) **Name:** Balder ten Cate (PhD Amsterdam, 2005)  
**Position:** Associate Professor (UHD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Logic in computer science, databases, machine learning
- (12) **Name:** Paul Dekker (PhD Amsterdam, 1993)  
**Position:** Assistant Professor (UD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Philosophy of language; formal semantics and pragmatics
- (13) **Name:** Ulle Endriss (PhD London, 2003)  
**Position:** Full Professor (HGL)  
**Appointment:** 1.0 FTE

- Teaching qualifications:** BKO, SKO  
**Expertise:** Artificial intelligence; economics and computation; knowledge representation; multiagent systems
- (14) **Name:** Raquel Fernández (PhD London, 2006)  
**Position:** Full Professor (HGL)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Computational linguistics; semantics and pragmatics; dialogue modelling
- (15) **Name:** Wilker Ferreira Aziz (PhD Wolverhampton, 2014)  
**Position:** Assistant Professor (UD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Natural language processing; deep learning
- (16) **Name:** Gaëlle Fontaine (PhD Amsterdam, 2010)  
**Position:** Instructor (*docent*)  
**Appointment:** 0.7 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Modal logic; fixpoint logic; database theory
- (17) **Name:** Malvin Gattinger (PhD Amsterdam, 2018)  
**Position:** Assistant Professor (UD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Dynamic epistemic logic; model checking; epistemic planning; gossip protocols
- (18) **Name:** Marianna Girlando (PhD Marseille & Helsinki, 2019)  
**Position:** Assistant Professor (UD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Proof theory; modal logic; cyclic proofs
- (19) **Name:** Ronald de Haan (PhD Vienna, 2016)  
**Position:** Assistant Professor (UD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Complexity theory; computational social choice; knowledge representation
- (20) **Name:** Sebastian de Haro (PhD Cambridge, 2020)  
**Position:** Assistant Professor (UD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Philosophy of science; philosophy of physics; theoretical physics
- (21) **Name:** Henkjan Honing (PhD London, 1991)  
**Position:** Full Professor (HGL)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO, SKO  
**Expertise:** Music cognition

- (22) **Name:** Luca Incurvati (PhD Cambridge, 2010)  
**Position:** Associate Professor (UHD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Philosophy of mathematics; philosophy of logic; philosophical logic; philosophy of language; metaphysics
- (23) **Name:** Karolina Krzyżanowska (PhD Groningen, 2015)  
**Position:** Assistant Professor (UD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Philosophy of language; cognitive science; conditionals
- (24) **Name:** Martha Lewis (PhD Bristol, 2015)  
**Position:** Assistant Professor (UD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Artificial Intelligence; cognitive science; quantum theory
- (25) **Name:** Aybüke Özgün (PhD Amsterdam & Nancy, 2017)  
**Position:** Assistant Professor (UD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Formal epistemology; philosophical logic; formal learning theory
- (26) **Name:** Maris Ozols (PhD Waterloo, 2012)  
**Position:** Associate Professor (UHD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Quantum computing; quantum information; quantum algorithms
- (27) **Name:** Sandro Pezzelle (PhD Trento, 2018)  
**Position:** Assistant Professor (UD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Natural language processing; language and vision; cognitive science
- (28) **Name:** Rebecca Reiffenhäuser (PhD Aachen, 2018)  
**Position:** Assistant Professor (UD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Algorithmic game theory, algorithms under uncertainty, algorithmic fairness
- (29) **Name:** Nicolas Resch (PhD Carnegie Mellon, 2020)  
**Position:** Assistant Professor (UD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Coding theory; cryptography
- (30) **Name:** Floris Roelofsen (PhD Amsterdam, 2008)  
**Position:** Full Professor (HGL)

- Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Formal semantics; inquisitive logic
- (31) **Name:** Robert van Rooij (PhD Stuttgart, 1997)  
**Position:** Full Professor (HGL)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Philosophical logic; formal semantics and pragmatics; philosophy of language
- (32) **Name:** Giorgio Sbardolini (PhD Ohio, 2019)  
**Position:** Assistant Professor (UD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Philosophy of language; logic; game theory
- (33) **Name:** Guido Schäfer (PhD Saarbrücken, 2004)  
**Position:** Full Professor (HGL)  
**Appointment:** 0.2 FTE  
**Teaching qualifications:** none (part-time)  
**Expertise:** Algorithmic game theory; discrete optimization; algorithms; complexity
- (34) **Name:** Jeannette Schaeffer (PhD UCLA, 1997)  
**Position:** Full Professor (HGL)  
**Appointment:** 0.1 FTE  
**Teaching qualifications:** Language acquisition; language disorders, autism  
**Expertise:** BKO
- (35) **Name:** Thomas Schindler (PhD Munich, 2015)  
**Position:** Assistant Professor (UD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Metaphysics, epistemology, philosophy of mathematics.
- (36) **Name:** Tom Schoonen (PhD Amsterdam, 2020)  
**Position:** Assistant Professor (UD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Epistemology; philosophy of mind; philosophy of AI
- (37) **Name:** Katrin Schulz (PhD Amsterdam, 2007)  
**Position:** Assistant Professor (UD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO, SKO  
**Expertise:** Formal semantics; philosophical logic; causality
- (38) **Name:** Katia Shutova (PhD Cambridge, 2011)  
**Position:** Associate Professor (UHD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Computational linguistics; natural language processing; machine learning; cognitive science

- (39) **Name:** Khalil Sima'an (PhD Utrecht, 1999)  
**Position:** Full Professor (HGL)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Natural language processing; computational linguistics
- (40) **Name:** Sonja Smets (PhD Brussels, 2001)  
**Position:** Full Professor (HGL)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Philosophical logic; philosophy of science; logical foundations of quantum physics; formal epistemology
- (41) **Name:** Martin Stokhof (PhD Amsterdam, 1984)  
**Position:** Professor Emeritus  
**Appointment:** 0.0 FTE  
**Teaching qualifications:** none (emeritus)  
**Expertise:** Philosophy of language; formal semantics
- (42) **Name:** Yde Venema (PhD Amsterdam, 1992)  
**Position:** Full Professor (HGL)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO, Eerstegraads Onderwijsbevoegdheid Wiskunde  
**Expertise:** Modal logic; fixpoint logics, automata theory; algebraic logic
- (43) **Name:** Ronald de Wolf (PhD Amsterdam, 2001)  
**Position:** Full Professor (HGL)  
**Appointment:** 0.2 FTE  
**Teaching qualifications:** none (part-time)  
**Expertise:** Quantum computing; algorithms and complexity theory
- (44) **Name:** Jelle Zuidema (PhD Edinburgh, 2005)  
**Position:** Associate Professor (UHD)  
**Appointment:** 1.0 FTE  
**Teaching qualifications:** BKO  
**Expertise:** Natural language processing; language cognition; evolution of language

## H.2 Student-Teacher Ratio

The NVAO defines the student-teacher ratio as “the ratio between the total number of full-time students enrolled and the total number of FTE’s logged by the teaching staff of the programme in the most recent academic year”. The student-teacher ratio of the MSc Logic in the academic year of 2023/24 has been **23.1** students per FTE of teaching effort logged. This number has been calculated by ESC staff based on DVM hours and student numbers; the method of calculation is somewhat different from the method used in the most recent self-evaluation. We note that due to the growing student numbers the student-teacher ratio has increased in recent years. Please see [here](#) the details of these calculations. This figure is broadly in line with what is considered normal and desirable at the University of Amsterdam.

### H.3 Contact Hours

The average amount of face-to-face instruction in the MSc Logic is **13 hours per week** during the first three semesters and **2 hours per week** during the final semester when students work on their thesis. We have calculated the former figure as follows: A standard 6 EC course running over a period of 8 weeks is scheduled with 4 hours of lectures per week. Depending on the type of course, this is supplemented with 4, 2 or no hours of tutorials per week (with the average being close to 2 hours per week). The amount of face-to-face instruction for projects is similar as for regular courses. A student is expected to take two such courses in parallel (or the equivalent in other types of courses), adding up to  $2 \times (4 + 2) = 12$  hours on average. We add to this 1 extra hour per week, which is a conservative estimate of the amount of time spent on individual guidance and mentoring per student.

# APPENDIX I

## PROGRAMME OFFICIALS

In this appendix we list the people occupying the various official positions in the MSc Logic programme by name. We take 31 August 2025 as our point of reference.

### I.1 Management & Administration

**Programme director:** Dr. Nick Bezhanishvili (2023–date),

**Programme director:** Dr. Paul Dekker (2020–2023),

**Programme coordinator:** Drs. Anne-Christine van der Bijl,

**Director of the Graduate School of Informatics:** Prof. Dr. Paul Groth.

### I.2 Examinations Board 2024/25

Dr. Benno van den Berg (chair),

Dr. Maria Aloni,

Dr. Balder ten Cate,

Dr. Malvin Gattinger,

Dr. Aybüke Özgün,

Dr. Petter Törnberg,

Dr. Fan Yang (external member).

### I.3 Admissions Board 2024/25

Prof. Dr. Ulle Endriss (chair),

Dr. Maria Aloni,

Dr. Nick Bezhanishvili.

### I.4 Programme Committee (OC) 2024/25

Dr. Ronald de Haan (staff, chair),

Lamarana Barrie (student),

Vighnesh Iyer (student),

Klarise Marais (student),

Lucrezia Mosconi (student),

Dr. Gregor Behnke (staff),

Dr. Marianna Girlando (staff),  
Dr. Marieke Schouwstra (staff),  
Thomas van der Leer (student, secretary).

## **I.5 Academic Mentors**

Dr. Maria Aloni,  
Dr. Alexandru Baltag,  
Dr. Gregor Behnke,  
Dr. Benno van den Berg,  
Dr. Nick Bezhanishvili,  
Dr. Balder ten Cate,  
Dr. Marco Degano,  
Dr. Paul Dekker,  
Prof. Dr. Ulle Endriss,  
Dr. Gaëlle Fontaine,  
Dr. Malvin Gattinger,  
Dr. Marianna Girlando,  
Dr. Ronald de Haan,  
Prof. Dr. Dick de Jongh,  
Dr. Karolina Krzyzanowska,  
Dr. Martha Lewis,  
Dr. Aybüke Özgün,  
Dr. Rebecca Reiffenhäuser,  
Dr. Giorgio Sbardolini,  
Dr. Thomas Schindler,  
Dr. Tom Schoonen,  
Dr. Marieke Schouwstra,  
Prof. Dr. Yde Venema.

## **I.6 Student Mentors**

Matteo Celli,  
Thiago Coco Roque,  
Estel Koole,  
Louise Wilk.

## **I.7 Professional Advisory Board**

Thomas Icard, Stanford University,  
Annemieke Reijngoud, ProRail,  
Yanjing Wang, Peking University.

## I.8 Non-academic Mentors

- Heleen Booy (MoL 2013), high-school teacher, [Hyperion Lyceum, Amsterdam](#).
- Andreea van Ham (MoL 2014), Chief of staff for the risk delivery team at [Oliver Wyman](#).
- Thom van Gessel (MoL 2016; PhD ILLC 2020), Researcher Data Science, at [TNO](#).
- Tikitou de Jager (MoL 2005; PhD ILLC 2009), Mobile Lead at [Minddistrict](#).
- Nal Kalchbrenner (MoL 2012), Deep Learning Scientist, Co-founder, Angel Investor at [Google Brain Amsterdam](#).
- Mrinalini Luthra (MoL 2018), Data-ethicist at the [Huygens Institute, KNAW](#).
- Lucy van Oostveen (MoL 2018), Data Scientist at [the Dutch Environmental and Transport Inspectorate](#).
- Annemieke Reijngoud (MoL 2011), Director of Strategy at [ProRail](#).
- Ana Lucia Vargas (MoL 2015, PhD ILLC 2020), Product Owner/Manager at [Sowiso](#).

## APPENDIX J

# STUDENT PUBLICATIONS

### Selected publications based on work produced in 2019

- (1) **Sam Adam-Day**, Nick Bezhanishvili, David Gabelaia, and Vincenzo Marra. Polyhedral completeness of intermediate logics: The nerve criterion. *The Journal of Symbolic Logic*, 89 (1), 342-382, 2024. Based on thesis work (2019).
- (2) **Sam Adam-Day**, Nick Bezhanishvili, David Gabelaia, and Vincenzo Marra. The intermediate logic of convex polyhedra. *Annals of Pure and Applied Logic*, Accepted for publication. Based on thesis work (2019).
- (3) Nick Bezhanishvili and **Tim Henke**. A model-theoretic approach to descriptive general frames: the van Benthem characterisation theorem. *Journal of Logic and Computation*, 30 (7), pp. 1331-1355, 2020. Based on thesis work (2019).
- (4) Nick Bezhanishvili, Gianluca Grilletti, and **Davide Quadrellaro**. An algebraic approach to inquisitive and DNA-logics. *The Review of Symbolic Logic*, 15(4), pp. 950-990, 2022. Based on thesis work (2019).
- (5) **Marco Degano** and Maria Aloni. Indefinites and free choice: When the past matters. *Natural Language & Linguistic Theory*, 40, 447-484, 2022. Based on thesis work (2019).
- (6) **Jacqueline Harding**. Proxy Selection in Transitive Proxy Voting. *Social Choice and Welfare*, 58:69-99, 2022. Based on thesis work (2019).
- (7) **Boas Kluiving**, Adriaan de Vries, **Pepijn Vrijbergen**, Arthur Boixel, and Ulle Endriss. Analysing Irresolute Multiwinner Voting Rules with Approval Ballots via SAT Solving. In *Proceedings of the 24th European Conference on Artificial Intelligence (ECAI-2020), August 2020*. Based on project work (2019).
- (8) **Mina Young Pedersen**, Sonja Smets and Tomas Ågotnes. Analyzing echo chambers: A logic of strong and weak ties. In *Logic, Rationality, and Interaction: 7th International Workshop, LORI 2019, Chongqing, China, October 18-21, 2019, Proceedings 7* (pp. 183-198). Springer Berlin Heidelberg. Based on thesis work (2019).
- (9) **Mina Young Pedersen**, Sonja Smets and Tomas Ågotnes. Further steps towards a logic of polarization in social networks. In *Logic and Argumentation: Third International Conference, CLAR 2020, Hangzhou, China, April 6-9, 2020, Proceedings 3* (pp. 324-345). Springer International Publishing. Based on thesis work (2019).

- (10) **Mina Young Pedersen** and Tomas Ågotnes. Modal logics and group polarization. *Journal of Logic and Computation*, 31(8), 2240–2269, 2021. Based on thesis work (2019).
- (11) Matteo Plebani, **Giuliano Rosella** and Vita Saitta. Incompatibility, and Modality. *Australasian Journal of Logic*, 31(8), 19(5): 214-253, 2022. Based on thesis work (2019).
- (12) **Giuliano Rosella** and Jan Sprenger. Causal modeling semantics for counterfactuals with disjunctive antecedents. *Annals of Pure and Applied Logic*, 175(9), 2024. Based on project work (2019).
- (13) **Giuliano Rosella** and Sara Ugolini. The algebras of Lewis’s counterfactuals: axiomatizations and algebraizability. *The Review of Symbolic Logic*, 1–27, 2025. Based on project work (2019).
- (14) **Zhuoye Zhao**. Bridging Distributivity and Free Choice: The Case of Mandarin Dou. In *Proceedings of the Amsterdam Colloquium 2019*. Based on thesis work (2019).

## Selected publications based on work produced in 2020

- (15) **Ignacio Bellas Acosta** and Yde Venema. Counting to infinity: Graded Modal Logic with an infinity Diamond. *The Review of Symbolic Logic*, 17(1): 1-35, 2024. Based on thesis work (2020).
- (16) **Thijs Benjamins**, Nick Bezhanishvili and Tommaso Moraschini. Local Finiteness and Colorings for Varieties of Heyting Algebras of Bounded Width. *Trends in Logic, volume dedicate to A.V. Kuznetsov*, Springer, to appear. Based on thesis work (2020).
- (17) David Fernandez-Duque and **Yoàv Montacute**. Dynamic Cantor Derivative Logic. *Computer Science Logic (CSL 2022)*, 19:1-19:17, 2022. Based on thesis work (2020).
- (18) David Fernandez-Duque and **Yoàv Montacute**. Untangled: A Complete Dynamic Topological Logic. *The Annual Conference the Association for the Advancement of Artificial Intelligence (AAAI 2023)*, pp. 6355-6362, 2023. Based on thesis work (2020).
- (19) David Fernandez-Duque and **Yoàv Montacute**. Dynamic Cantor Derivative Logic. *Logical Methods in Computer Science*, 19(4), 2023. Based on thesis work (2020).
- (20) David Fernandez-Duque and **Yoàv Montacute**. Dynamic Tangled Derivative Logic of Metric Spaces. *The Annual Conference the Association for the Advancement of Artificial Intelligence (AAAI 2024)*, pp. 10509-10516, 2024. Based on thesis work (2020).
- (21) Miriam Backens, Hector Miller-Bakewell, Giovanni de Felice, **Leo Lobski**, John van de Wetering. There and back again: A circuit extraction tale. *Quantum* 5: 421, 2021. Based on project work (2020).

## Selected publications based on work produced in 2021

- (22) Bahareh Afshari and **Dominik Wehr**. Exact bounds for acyclic higher-order recursion schemes. *Information and Computation*, vol. 290, article number 104982, 2023. Based on thesis work (2021).

- (23) Bahareh Afshari and **Dominik Wehr**. Abstract cyclic proofs. *Mathematical Structures in Computer Science*, 34(7): 552–577, 2024. Based on thesis work (2021).
- (24) Maria Aloni, **Aleksi Anttila** and Fan Yang. State-based Modal Logics for Free Choice. *Notre Dame Journal of Formal Logic*, 65(4), 367–413, 2024. Based on thesis work (2021).
- (25) Johan van Benthem, Balder ten Cate and **Raoul Koudijs**. Local Dependence and Guarding. In *Advances in Modal Logic (AIML 2022)*, pp. 135–154, 2022. Based on project work (2021).
- (26) Nick Bezhanishvili, **Anna Dmitrieva**, Jim de Groot and Tommaso Moraschini. Positive modal logic beyond distributivity. *Annals of Pure and Applied Logic*, 175 (2), Article 103374, 2024. Based on thesis work (2021).
- (27) Nick Bezhanishvili and **Antonio Cleani**, Blok-Esakia theorems via stable canonical rules. *The Journal of Symbolic Logic*, to appear. Based on thesis work (2021).
- (28) **Damiano Fornasiero** and Tommaso Moraschini, Trees and spectra of Heyting algebras. *Indagationes Mathematicae*, accepted for publication. Based on thesis work (2021).
- (29) Victoria Gitman and **Jonathan Osinski**. Upward Löwenheim-Skolem-Tarski numbers for abstract logics. *Annals of Pure and Applied Logic*, 176 (8), article number 10358336-52, 2025. Based on thesis work (2021).
- (30) David Fernandez-Duque and **Quentin Gougeon**. Fixed Point Logics and Definable Topological Properties. In *Workshop on Logic, Language, Information and Computation (WoLLIC 2022)*, 36-52, 2022. Based on thesis work (2021).
- (31) David Fernandez-Duque and **Quentin Gougeon**. Fixed Point Logics on Hemimetric Spaces. In *Logic in Computer Science (LICS 2023)*, 1-13, 2023. Based on thesis work (2021).
- (32) David Fernandez-Duque and **Quentin Gougeon**. Fixed point logics and definable topological properties. *Mathematical Structures in Computer Science*, 34(2): 81–97, 2024. Based on thesis work (2021).
- (33) **Damiano Fornasiero**, Johannes Marti, **Giovanni Varricchione**. Some completeness results in derivational modal logic. In *Advances in Modal Logic (AiML 2024)* pp. 335–356, 2024. Based on project work (2021).
- (34) **Quentin Gougeon**. Some completeness results in derivational modal logic. *Journal of Logic and Computation* 34 (7), pp. 1211–1248, 2024. Based on thesis work (2021).
- (35) Yurii Khomski and **Hrafn Valtýr Oddsson**. Paraconsistent and paracomplete Zermelo-Fraenkel set theory. *The Review of Symbolic Logic*, 17 (4), pp. 965–995, 2024. Based on thesis work (2021).
- (36) **Bas Kortenbach**, Luca Incurvati and Julian Schloeder. Multilateral Supervaluationism and Classicality. *Journal of Philosophical Logic*, 54: pp. 247-290, 2025. Based on thesis work (2021).
- (37) **Nima Motamed**, **Arie Soeteman**, Simon Rey, and Ulle Endriss. Participatory Budgeting with Multiple Resources. In *Proceedings of the 19th European Conference on Multiagent Systems (EUMAS-2022)*, pages 330-347, Springer, September 2022. Based on project work (2021).

- (38) **Lorenzo Pinton** and Maria Aloni. You may like or dislike this talk, and we do care which: Sluicing and free choice. In *Proceedings of Sinn und Bedeutung (SuB) 27*, (Prague, September 2022). Based on thesis work (2021).
- (39) **Wijnand van Woerkom** and Benno van den Berg. The Frobenius Equivalence and Beck-Chevalley condition for Algebraic Weak Factorisation Systems. *Theory and Applications of Categories*, Accepted for publication. Based on thesis work (2021).

## Selected publications based on work produced in 2022

- (40) **Rodrigo Nicolau Almeida**. Polyatomic logics and generalized Blok-Esakia theory. *Journal of Logic and Computation*, 34(5): 887–935, 2024. Based on thesis work (2022).
- (41) **Søren Brinck Knudstorp**. Modal Information Logics: Axiomatizations and Decidability. *Journal of Philosophical Logic*, 52(6): pp. 1723–1766, 2023. Based on thesis work (2022).
- (42) **Søren Brinck Knudstorp**. Logics of Truthmaker Semantics: Comparison, Compactness and Decidability. *Synthese*, vol 202, article number 206, 2023. Based on thesis work (2022).
- (43) **Søren Brinck Knudstorp**. The Modal Logic of Minimal Upper Bounds. In *Proceedings of the 15th Tbilisi Symposium on Logic, Language and Computation (TbiLLC 2023)*. To appear. Based on thesis work (2022).
- (44) **Mike Cruchten**. Kleene Theorems for Lasso Languages and  $\omega$ -Language. *Proceedings of Theory and Applications of Models of Computation 2024*, Lecture Notes in Computer Science, Springer, pp. 111–123, 2024. Based on thesis work (2022).
- (45) Balder ten Cate and **Raoul Koudijs**. Characterising Modal Formulas with Examples. *ACM Transactions on Computational Logic*, 25(2): 12:1–12:27, 2024. Based on thesis work (2022).
- (46) **Maurice Dekker**, Johannes Kloibhofer, Johannes Marti and Yde Venema. Proof Systems for the Modal  $\mu$ -Calculus Obtained by Determinizing Automata. *Proceedings of International Conference on Automated Reasoning with Analytic Tableaux and Related Methods (TABLEAUX 2023)*, pp. 242–259, 2023. Based on project work (2022).
- (47) Lennert Jansen, **Štěpán Lars Laichter**, Arabella Sinclair, Margot Goot, Raquel Fernández, and Sandro Pezzelle. Controllable Text Generation for All Ages: Evaluating a Plug-and-Play Approach to Age-Adapted Dialogue. In *Proceedings of the 2nd Workshop on Natural Language Generation, Evaluation, and Metrics (GEM), Abu Dhabi, United Arab Emirates (Hybrid), 2022*. Association for Computational Linguistics, pp. 172–188, 2022. Based on project work (2022).
- (48) **Gianluca Micheli**, **Sabina Domínguez Parrado** and **Elynn Weijland**. Ignorance and Temporal Prepositions: A new team-based approach. *Proceedings of the European Summer School on Logic, Language and Information (ESSLLI 2022) Student Session*, pp. 154–166, 2024. Based on project work (2022).
- (49) **Daniël Otten**, and Benno van den Berg. Conservativity of Type Theory over Higher-Order Arithmetic. In *Proceedings of Computer Science Logic (CSL 2024)*, 44:1-44:23, 2024. Based on thesis work (2022).

- (50) **Marie Christin Schmiddlein** and Ulle Endriss. Voting by Axioms. In *Proceedings of the 22nd International Conference on Autonomous Agents and Multiagent Systems (AAMAS-2023)*, May 2023. **Runner-up for the Best Paper Award** [1,015 submissions, 1 winner, 1 runner-up]. Based on thesis work (2022).
- (51) **Marie Christin Schmiddlein** and Ulle Endriss. Voting by Axioms (Extended Abstract). In *Proceedings of the 33rd International Joint Conference on Artificial Intelligence (IJCAI-2024)*, August 2024. Invited contribution to the IJCAI Sister Conference **Best Paper Track**. Based on thesis work (2022).

## Selected publications based on work produced in 2023

- (52) Balder ten Cate and **Jesse Comer**. Craig Interpolation for Decidable First-Order Fragments. *Proceedings of 27th International Conference on Foundations of Software Science and Computation Structures (FOSSACS 2024)*, pp. 137-159, 2024. **ETAPS Best Paper Nomination**. Based on project work (2023).
- (53) **Jesse Comer**. Lovász Theorems for Modal Languages. In *Advances in Modal Logic (AiML 2024)*, pp. 269–292, 2024. Based on thesis work (2023).
- (54) Mario Giulianelli, **Iris Luden**, Raquel Fernández and Andrey Kutuzov. Interpretable Word Sense Representations via Definition Generation: The Case of Semantic Change Analysis. In *Proceedings of the 61st Annual Meeting of the Association for Computational Linguistics (ACL), Toronto, Canada, 2023*. Association for Computational Linguistics, pp. 3130–3148, 2023. Based on thesis work (2023).
- (55) **Valentin Müller**. Labelled Sequent Calculi for Inquisitive Modal Logics. In *Proceedings of the Workshop Logic, Language, Information, and Computation (WoLLIC 2024)*, pp. 122–139, 2024. Based on thesis work (2023).
- (56) **Valentin Müller**. Geometric Theories in Inquisitive Modal Logic. *Journal of Logic and Computation*. Accepted for publication. Based on thesis work (2023).
- (57) **Valentin Müller**. Natural Deduction, Normalization and Subformula Property for Kreisel-Putnam Logic. In *Advances in Modal Logic (AiML 2024)*, pp. 565-586, 2024. Based on thesis work (2023).
- (58) **Valentin Müller**. Higher-Level Natural Deduction and Normalization for Inquisitive Logic. *Journal of Philosophical Logic*. Accepted for publication. Based on thesis work (2023).
- (59) **Michael A. Müller**, **Blaz Istenic Urh**, **Teodor-Stefan Zotescu**, and Ulle Endriss. Breaking the Cycle: Preference-based Aggregation for Cyclic Argumentation Frameworks. In *Proceedings of the 10th International Conference on Computational Models of Argument (COMMA-2024)*, September 2024. Based on project during course Computational Social Choice (2023).
- (60) **Iris Luden**, Mario Giulianelli, and Raquel Fernández. Beyond Perplexity: Examining Temporal Generalization in Large Language Models via Definition Generation. *Computational Linguistics in the Netherlands Journal*, 13: 205–232. 2024. Based on thesis work (2023).

- (61) **Frank Wildenburg**, Michael Hanna, and Sandro Pezelle. Do Pre-Trained Language Models Detect and Understand Semantic Underspecification? Ask the DUST! *Findings of ACL*, pp. 9598–9613, 2024. Based on thesis work (2023).

## Selected publications based on work produced in 2024

- (62) Alexandru Baltag and **Wessel Kroon**. Dynamic logic for interrogative epistemology. In *6th Workshop on Dynamic Logic – New trends and applications (DALí 2025)*. Accepted for publication. Based on thesis work (2024).
- (63) Alexandru Baltag, Malvin Gattinger and **Djanira Gomes**. Virtual Group Knowledge and Group Belief in Topological Evidence Models. In *6th Workshop on Dynamic Logic – New trends and applications (DALí 2025)*. Accepted for publication. Based on thesis work (2025).
- (64) Hans van Ditmarsch, Malvin Gattinger and **Wouter J. Smit**. Completeness and Decidability of Protocol-Dependent Knowledge in Gossip. In *6th Workshop on Dynamic Logic – New trends and applications (DALí 2025)*. Accepted for publication. Based on thesis work (2024).
- (65) Aybüke Özgün, Sonja Smets and **Teodor-Stefan Zotescu**. Evidence-diffusion in social networks: a topological perspective. In *Logic, Rationality, Interaction, (LORI 2025)*. Accepted for publication. Based on thesis work (2024).
- (66) **Fiona Spencer**, Maria Aloni and Tom Roberts. Wondering about Mood in Romance: the view from Italian inquisitive predicates. *Paper presented at workshop “Advances in the semantics of clause-embedding predicates: theories, cross-linguistic data, and experimentation” 19–21 June 2024, Konstanz*. Based on thesis work (2024).



## APPENDIX K

# STUDENT AWARDS

In this Appendix, we present the awards received by Master of Logic students during the years 2019–2025. Some of these prizes have already been mentioned in previous chapters.

- (1) **Rodrigo Nicolau Almeida** won the Dutch Logic Association’s **VvL best thesis award** for the MoL thesis entitled “Polyatomic Logics and Generalised Blok-Esakia Theory with Applications to Orthologic and KTB”, (2022).
- (2) **Anna Dmitrieva** won the Dutch Logic Association’s **VvL best thesis award** for the MoL thesis entitled “Positive modal logic beyond distributivity: duality, preservation and completeness”, (2021).
- (3) **Damiano Fornasiere** won the Italian Logic Association’s **AILA best thesis award** for the MoL thesis entitled “Representable Forests and Diamond Systems”, (2021).
- (4) **Søren Brinck Knudstorp** won the Dutch Logic Association’s **VvL best thesis award** for the MoL thesis entitled “Modal Information Logics”, (2022).
- (5) **Jesse Comer** received an **ETAPS Best Paper Nomination** at the 27th International Conference on Foundations of Software Science and Computation Structures (FoSSaCS-2024), based on project work (2023).
- (6) **Raoul Koudijs** won the Dutch Logic Association’s **VvL best thesis award** for the MoL thesis entitled “Learning Modal Formulas via Dualities”, (2022).
- (7) **Davide Quadrellaro** won the Italian Logic Association’s **AILA best thesis award** for the MoL thesis entitled “Lattices of DNA-Logics and Algebraic Semantics of Inquisitive Logic”, (2019).
- (8) **Valentin Müller** won the Dutch Logic Association’s **VvL best thesis award** for the MoL thesis entitled “On the Proof Theory of Inquisitive Logic”, (2023).
- (9) **Marie Christin Schmidlein** was **Runner-up for the Best Paper Award** [1,015 submissions, 1 winner, 1 runner-up] at the International Conference on Autonomous Agents and Multiagent Systems (AAMAS-2023) based on thesis work (2022).
- (10) **Isabelle Trindade** received the **Amsterdam Merit Scholarship (AMS)**, (2025).
- (11) **Dominik Wehr** won the Dutch Logic Association’s **VvL best thesis award** for the MoL thesis entitled “An Abstract Framework for the Analysis of Cyclic Derivations”, (2021).

(12) **Louise Wilk** received the **Amsterdam Talent Scholarship (ASTS)**, (2024).

# APPENDIX L

## STUDENT AND ALUMNI SURVEYS

In this appendix we reproduce the results (in Dutch) of the Dutch National Student Enquête from 2020-2024 (copied from UvAdata), according to which more than 85% of our students are very satisfied with the content of the programme, and the results of a recent survey amongst MSc Logic graduates where the programme scores an average of 8.87 (on a scale from 1 to 10).

### L.1 National Student Enquête (MSc Logic)

#### Essentiële uitkomsten Nationale Studenten Enquête (NSE)

	18/19	19/20	20/21	21/22	22/23	23/24
Inhoud			97,4	92,9	93,5	91,2
Docenten			94,7	85,7	89,1	91,2
Toetsing en beoordeling			81,6	78,6	71,7	58,8
Studiefaciliteiten			63,2	76,2	80,4	73,5
Informatievoorziening			97,4	85,7	84,8	76,5
Studiebegeleiding			81,5	79,4	70,7	60,6
<b>Aantal respondenten</b>			<b>36</b>	<b>41</b>	<b>45</b>	<b>34</b>

*Bron: UvAdata/NSE; "NSE"; laatst geladen 17-7-2024, weergave van 11-11-2024*

#### Definitie: Essentiële uitkomsten Nationale Studenten Enquête (NSE)

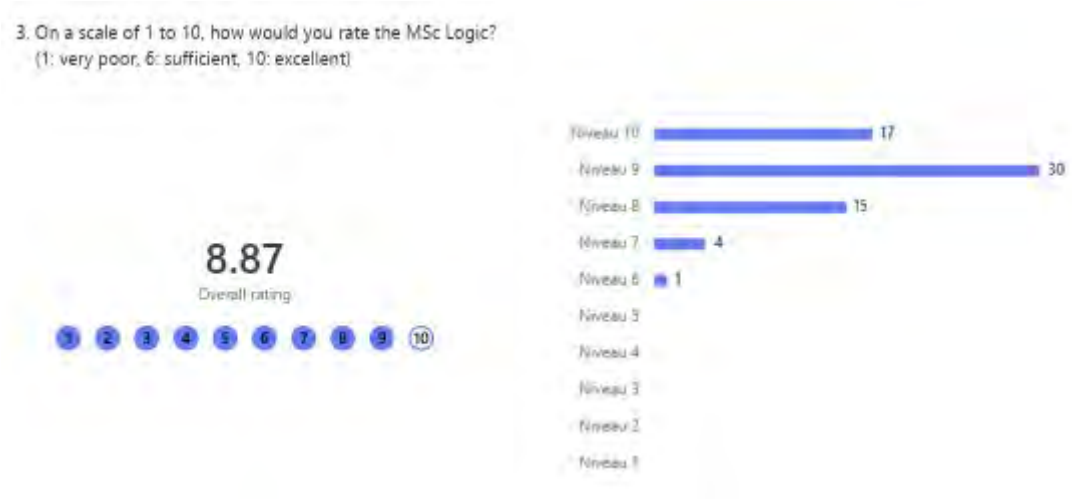
Het percentage (zeer) tevreden response voor geselecteerde indicatoren uit de uitkomsten van de Nationale Studenten Enquête (NSE) per jaar.

Here are the English translations of the seven assessment criteria presented to students: (1) Course Content; (2) Teaching Staff; (3) Assessment and Grading; (4) Study Facilities; (5) Information Services; (6) Academic Guidance.

More details can be found at [Statistics & Numbers: Annual Report MSc Logic 2023-2024](#).

## L.2 Alumni Survey

The alumni survey was conducted online between 1 June and 31 July 2025, with a total of 67 alumni participating. Below we present the main evaluation table, showing the overall score for the programme as awarded by the alumni. More details on the survey can be found at [Alumni Survey Results](#).



## APPENDIX M

# REPORT OF THE PROFESSIONAL ADVISORY BOARD

The Graduate School of Informatics has a Professional Advisory Board. However, the Master of Logic has its own board, consisting of past MoL graduates. Two of them are now full professors of logic at leading universities (Stanford University and Peking University), and the third is a Director of Strategy in a private company. We believe that having our own Professional Advisory Board makes it better tailored to the needs of the Master of Logic programme and more aligned with its specific requirements.

Below we provide the latest report of the Professional Advisory Board of the MSc Logic.

[Report of the Professional Advisory Board.](#)

## APPENDIX N

# SWOT ANALYSIS

In this final appendix, we report on a SWOT analysis conducted on 26 May 2025 during a Mentor Meeting of the Master of Logic programme. Approximately 20 people participated actively, including MoL lecturers and supervisors. No current MoL students were present.

<p><b>Strengths</b></p> <ol style="list-style-type: none"><li>1. Interdisciplinary, flexible curriculum well integrated with research at ILLC</li><li>2. Strong international student community</li></ol>	<p><b>Weaknesses</b></p> <ol style="list-style-type: none"><li>1. Perceived lack of cohesion of the curriculum</li><li>2. Limited scholarship opportunities for international students</li></ol>
<p><b>Opportunities</b></p> <ol style="list-style-type: none"><li>1. Alumni network</li><li>2. Closer ties with ongoing research on foundational AI &amp; Quantum Computing</li></ol>	<p><b>Threats</b></p> <ol style="list-style-type: none"><li>1. Budget cuts in Dutch academia</li><li>2. Less control of some parts of the MoL administration</li></ol>

Table N.1: MoL SWOT analysis, May 2025

The interdisciplinary character of the programme, its flexibility, and its strong integration with ILLC research were identified by most participants as the main **strengths** of the MSc Logic—along with our fantastic international community of talented and motivated students, whom we attract each year thanks to our strong international reputation.

Two **weaknesses** identified in the Master of Logic programme are a perceived lack of focus and cohesion, and the limited financial support available to international students.

The issue of focus arises from the diversity of topics covered in our courses—reflecting the broad range of research interests among ILLC lecturers—and the programme’s overall flexibility. The connections between the various themes are not always made explicit. To address this, the programme places strong emphasis on individual guidance through our mentoring system. Academic mentors help students design a coherent, personalized path through our broad, interdisciplinary curriculum, while non-academic mentors are available to offer advice on career opportunities outside of academia.

In terms of financial support, we currently offer only one dedicated scholarship for international students: the Beth Scholarship, generously funded by [the Beth Foundation](#). In addition, the Amsterdam Merit Scholarship (AMS)—awarded by the university—is available to only a few candidates each year. Although highly competitive, we are pleased that one Master of Logic student has been awarded an AMS scholarship for the upcoming academic year.

Last year, one of the Master of Logic students also received the Amsterdam Talent Scholarship (ASTS) from the Faculty of Science. Unfortunately, this scholarship has since been discontinued due to budget cuts. This underscores the fact that the limited number of scholarships prevents us from attracting even more outstanding international students. Each year, we admit excellent candidates who, unfortunately, are unable to join the programme due to financial constraints.

We are, however, very grateful to the Beth Foundation for consistently providing one new scholarship each year<sup>1</sup>. In recent years, recipients have come from Argentina, South Africa, New Zealand, Singapore and Nepal.

We see two main **opportunities** for the programme. The first lies in the community of MoL alumni. We already have a professional advisory board and a system of non-academic mentorship, both of which draw on the expertise and experience of MoL alumni. Building on the existing MoL Alumni Network, we plan to further formalise our connections with the alumni community and integrate them more closely into the ILLC's international research networks.

The second opportunity is to capitalise on the growing success of emerging neighbouring disciplines such as Artificial Intelligence (AI) and Quantum Computing. The ILLC has both the talent and expertise—among students and staff—to contribute to principled and foundational approaches in these fields. In recent years, we have seen an increasing number of foundational AI and Quantum Computing courses in our curriculum, which is helping to strengthen the programme's connection to these rapidly evolving areas.

Budget cuts in Dutch higher education have been identified as the main **threat** to the programme. Concretely, this could materialise in two forms: First, relatively small courses (those with fewer than 20 registered students) are at risk of being cancelled. This is a realistic threat that has already been mentioned multiple times by the UvA administration. While the Master of Logic offers a number of large courses (with more than 70-80 students), we also have several excellent courses aimed at a more specialised audience. These small courses are equally important for our programme, so it is vital that we retain them.

Second, budget cuts could prevent us from hiring teaching assistants from the Master of Logic student body. Most of our teaching assistants are PhD candidates at the ILLC. However, this community cannot fill all the necessary TA positions, so we often hire motivated and qualified Master of Logic students—usually second-year students who have already taken the course the previous year. These teaching assistants are crucial to the success of our courses, and we hope to maintain the practice of hiring them.

Regarding the risk of less control over the MoL administration, this stems from the fact that the position of the Master of Logic coordinator has now been moved to the central office of the Faculty of Science, where coordinators of other MSc programmes are also based. While this move creates opportunities for alignment among coordinators of MSc programmes and support in case of sick leave, it also poses certain challenges. There is now less direct contact between the coordinator and MSc Logic students. Moreover, it is not clear whether the university

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<sup>1</sup>A few weeks after completing this SWOT analysis, we were notified by the Beth Foundation that in the 2025/26 academic year, they will be able to fund two new Beth Scholarships. This is an extremely positive development.

administration will provide support for the MoL to maintain its own webpage and student database, although we consider both to be valuable tools for the programme. For the time being, the ILLC office has kindly agreed to maintain these.

## APPENDIX O

### GLOSSARY

AB	Admissions Board
BKO	Basiskwalificatie Onderwijs (Basic Teaching Qualification)
CWI	Centrum Wiskunde & Informatica
EB	Examinations Board
EC	European Credit: a credit point under the European Credit Transfer System
ESC	Education Service Centre (at the UvA's Faculty of Science)
ESSLLI	European Summer School in Logic, Language and Information
FTE	Full-Time Equivalent
FGW	Faculteit der Geesteswetenschappen (Faculty of Humanities)
FNWI	Faculteit der Natuurwetenschappen, Wiskunde en Informatica (Faculty of Science)
FSR	Facultaire Studentenraad (Student Council of the Faculty of Science)
ICT	Information and Communication Technologies
ILLC	Institute for Logic, Language and Computation
IvI	Informatics Institute, University of Amsterdam
HGL	Hoogleraar (Full Professor)
L&C	Logic and Computation (programme track/specialisation)
L&L	Logic and Language (programme track/specialisation)
L&M	Logic and Mathematics (programme track/specialisation)
L&P	Logic and Philosophy (programme track/specialisation)
LY	Logic Year
MoL	Master of Logic
NSE	Nationale Studenten Enquête (Dutch National Student Enquête)
NVAO	Nederlands-Vlaamse Accreditatieorganisatie
NWO	Nederlandse Organisatie voor Wetenschappelijk Onderzoek
OC	Opleidingscommissie (Programme Committee)
OER	Onderwijs- en Examenregeling (Teaching and Examination Regulations)
SKO	Senior Kwalificatie Onderwijs (Senior Teaching Qualification)
TA	Teaching Assistant
UD	Universitair Docent (Assistant Professor)
UHD	Universitair Hoofddocent (Associate Professor)
UvA	Universiteit van Amsterdam (University of Amsterdam)
VU	Vrije Universiteit (Free University), Amsterdam