

Master's Programme in Logic

Student Handbook

University of Gothenburg

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1. VÄLKOMMEN!

Welcome to the Master Programme in Logic at the University of Gothenburg. Logic has a unique position at the intersection of mathematics, computer science, philosophy, and linguistics, and the programme is designed to reflect this broad perspective. During your studies you will encounter foundational topics in mathematical and philosophical logic, engage with contemporary research, and gradually develop your own academic profile through specialised courses and thesis work.

The aim of this booklet is to gather practical information about the programme and student life in Gothenburg. You will find an overview of the structure of the master's programme, descriptions of elective and specialization courses, information about our research group and scientific activities, opportunities for exchange studies, and guidance on the academic and social environment surrounding the programme.

The Master's Programme in Logic is closely connected to the [Logic@GU](#) research group, allowing students to participate in seminars, lectures, and other research activities throughout their studies. We hope that your time in Gothenburg will be intellectually stimulating, personally rewarding, and the beginning of lasting connections within the international logic community.

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2. STRUCTURE OF THE MASTER

The programme is structured to guide students from a broad foundation in logic towards increasing specialization and independent research. All courses are 7.5 credits, with the exception of the Master Thesis which is 30 credits.

First Semester	Logic & Completeness (LOG112)	Set Theory (LOG121)	Research Seminar
	Models of Computation (LOG115)	Modal Logic (LOG131)	
Second Semester	Proof Theory (LOG221)	Expressibility & Incompleteness (LOG215)	
	Philosophy of Logic (LOG250)	Model Theory (LOG211)	
Third Semester	Elective Course I	Elective Course II	
	Research Skills in Logic (LOG311)	Elective Course III	
Fourth Semester	Master Thesis (LOG410/420)		

The **first and second semesters** provide the core theoretical background. Together they cover the principal areas of contemporary logic, including proof theory, model theory, computability theory, set theory, modal logic, and philosophy of logic. These courses are intended to give all students a common foundation regardless of whether their previous background is primarily in mathematics, computer science, philosophy, or linguistics.

The **third semester** allows students to develop their own profile through elective courses and specializations. The course *Research Skills in Logic* serves as a bridge between coursework and independent research, introducing students to the practices of academic writing, presentation, and research planning. At this stage students are encouraged to explore potential thesis topics and begin discussions with prospective supervisors.

The **fourth semester** is entirely devoted to the Master's Thesis. By this point students will have identified a research area and a supervisor, and the focus shifts from coursework to conducting and communicating original research.

Throughout all four semesters, students can participate in the Research Seminar in Logic. The seminar provides an opportunity to meet researchers, learn about current developments in the field, and become part of the research group.

3. ELECTIVE COURSES

The following is a collection of elective courses that may be offered during your stay at the Master in Logic. Which of the elective courses will be offered in the third semester within the programme will most often depend on the students interest and the teachers availability. The students are always encouraged to contact the teachers or the coordinator of the master directly to inquiry concerning their interests. Most usually in recent times courses marked with a diamond ($\diamond$) were always part of the offer.

- Advanced Set Theory (LOG270)
- ◊ Advanced Topics in Proof Theory (LOG365)
- ◊ λ -calculus, types and foundations of programming languages (LOG370)
- ◊ Logic, Games and Automata (LOG290)
- ◊ Category Theory (LOG350)
- Functorial Semantics (LOG390)
- Topos Theory (LOG380)
- History of Logic (LOG280)
- Philosophy of Mathematics (LOG360)
- Specialization in Logic 1-5 (LOG230/240/320/330/340)

3.1. What is a Specialization in Logic? Specializations in Logic can be filled with different content and are usually offered as individual *reading courses*. They can be used for preparing you for the thesis work. Below you will find some possible specializations. Other specializations, determined in consultation with the study tutor, are possible.

- Formal Theories of Truth
- Semantic Paradoxes and the Logic of Truth
- Quantified Modal Logic
- Dependence Logic
- Provability Logics
- Semantics of Dependent Type Theory
- Models of Arithmetic
- Decision Theory
- Advanced Model Theory

3.1.1. What is a Reading Course? Often a Specialization in Logic will be organised in the form of a reading course. This reflects our ambition to remain flexible and accommodate the interests of individual students. A reading course allows a student (or a small group of students) to study a topic under the guidance of a member of staff. The teacher responsible for the course will propose a selection of books, articles, or other research materials and will meet regularly with the student to discuss the material, answer questions, and provide direction. Assessment may take different forms depending on the topic, but commonly includes written work, presentations, or oral examinations. Reading courses are particularly useful for exploring advanced subjects that are not offered regularly as taught courses, and they often serve as a natural preparation for Master's thesis work.

3.2. Electives at other departments. Students are also encouraged to choose elective courses taught at partner departments and will receive guidance to help build a profile matching their individual plans. Such courses will need to be applied for (in time) through universityadmissions.se and they need to get the course confirmed by a study tutor. Applications for external elective courses are open from the 15th March to the 15th of April for the Fall semester and from the 15th September to 15th of October for the Spring semester. These courses may have prerequisites that the master does not provide. Below you will find a list of some of the courses at GU that we think may be of interest:

- Computational semantics (LT2813)
- Artificial Intelligence: Cognitive Systems (LT2318)
- Topology (MMA100)

- Discrete Mathematics (MMG610)
- Algebraic Structures (MMG500)
- Functional Programming (DIT143)
- Types for Programs and Proofs (DIT235)

4. MASTER THESIS

The Master thesis is a focal point of the second year of the Master and the fourth semester is dedicated to its writing, within the 30-credit course LOG410.

The process of finding your supervisor and thesis topic should start at the beginning of the second year. Students are encouraged to bring up the topic with their mentor, who will guide them through the options. Since many projects have prerequisite advanced courses, students are encouraged to think about your thesis plans early.

Each member of the Logic Group has proposed some research topics or thesis projects that master students might choose for their thesis. Projects are subject to available resources and not all topics or teachers will be available every year.

- Master Thesis Projects
(<https://canvas.gu.se/courses/45028/pages/master-thesis-projects>)

5. PREREQUISITES AND STUDENT PROFILE

5.1. Who is the programme for? The Master's Programme in Logic welcomes students with a broad range of academic backgrounds who share an interest in logic and formal reasoning. Historically, many students have entered the programme from mathematics, theoretical computer science, philosophy, and linguistics, but applications from neighbouring disciplines are also encouraged.

The programme has a strong emphasis on symbolic and formal methods. Much of the material is mathematical in nature and students will regularly encounter definitions, proofs, formal systems, and abstract structures. While no single disciplinary background is expected, students should be comfortable engaging with precise and rigorous modes of reasoning and should be willing to acquire new technical skills when necessary.

Students with backgrounds in mathematics and theoretical computer science often find opportunities to deepen their understanding of the foundations of computation, proof, and mathematical structure. Students arriving from philosophy can explore the logical core of analytic philosophy by engaging directly with the mathematical theories of inference, meaning, truth, and rationality. Students with a background in linguistics often encounter formal semantics, type theory, and logical approaches to natural language. One of the strengths of the programme is precisely that these perspectives meet and interact.

5.1.1. Formal prerequisites. The official admission requirements are published on the programme webpage and should always be regarded as authoritative. In general, applicants are expected to hold a Bachelor's degree (or equivalent) and to have completed prior studies that provide an appropriate preparation for advanced work in logic. Students who are uncertain whether their background is suitable are encouraged to contact the programme coordinator.

5.2. Your future colleagues. One of the most distinctive aspects of the programme is the diversity of its student body. In a typical cohort, mathematics and computer science together form the dominant backgrounds, with philosophy, linguistics, and related subjects making up a smaller proportion. Classroom discussions often bring together very different perspectives on the same logical phenomenon. You may find yourself discussing incompleteness with a mathematician, formal semantics and type theory with a computer scientist, or modal logic with a philosopher. Logic occupies a unique position at the crossroads of several disciplines, and many students discover that some of their most valuable learning experiences come from interacting with peers whose academic training differs substantially from their own. The programme therefore offers not only specialized training in logic, but also an opportunity to become part of a genuinely interdisciplinary community united by a shared fascination with formal thought.

6. TEACHERS AND RESEARCH GROUP

The [Logic@GU research group](#) at the University of Gothenburg (Department of Philosophy, Linguistics and Theory of Science) brings together expertise in **mathematical, philosophical, and computational logic**, with strong links to formal semantics and the philosophy of language. The group's research spans (among other areas) proof theory, models of arithmetic, dependence logics, modal logic, and categorical semantics, and it sustains a lively programme of seminars, public lectures, and graduate training. A continuously updated overview of members (including PhD students and visitors) is available on the group page: logic-gu.se/group/.

- **Bahareh Afshari**, *Professor*. Research in proof theory and its connections to computational logic, including expressibility, complexity, and fixed point logics.
- **Graham E Leigh**, *Professor*. Work at the interface of mathematical, philosophical, and computational logic, including proof theory, theories of truth, non-classical logics, and modal logic.
- **Fredrik Engström**, *Senior Lecturer*. Research in models of arithmetic, theories of truth, dependence logic and generalized quantifiers, with additional interests in the cognitive aspects of logical reasoning.
- **Martin Kasa**, *Senior Lecturer*. Background in philosophical logic (including formal systems for trial-and-error processes), with current interests in argumentation theory and philosophy of language.
- **Rasmus Blanck**, *Associate Senior Lecturer*. Research across logic, philosophy, and linguistics, including metamathematics of arithmetic, formal semantics, and probabilistic semantics for natural language.
- **Ivan Di Liberti**, *Associate Senior Lecturer*. Work in categorical logic and the foundations of mathematics and geometry, including topos theory and syntax–semantics dualities.
- **Gianluca Curzi**, *Researcher*. Interests ranging from proof theory, linear logic, and type theories to computational complexity and probabilistic computation, including the complexity-theoretic aspects of cyclic proofs.

Beyond these core teachers, the group includes a vibrant cohort of doctoral researchers and visitors, and it maintains international collaborations and visibility through its recurring activities and events. In particular, Logic@GU is a member of the [Scandinavian Logic Society](#), contributing to the broader Nordic logic community and its outreach.

6.1. Scientific Activities of the Group. Logic@GU runs a year-round programme of research events, combining local in-person activities in Gothenburg with online formats that connect the group to international audiences. A central entry point is the seminars page: logic-gu.se/seminars/, which maintains the schedule and archives of talks.

- **Research Seminar in Logic (bi-weekly).** The group hosts a recurring research seminar (typically on alternate Fridays at 10:15, often at *Humanisten*), featuring invited speakers and internal presentations across all areas of logic represented in the group. Details and updates appear on [the seminar listing](#).
- **Nordic Online Logic Seminar (monthly).** The [NOL Seminar](#) is a monthly online series (initiated in 2021) with broad, expository talks designed for a wide logic audience. It began with a Nordic focus and now regularly features speakers worldwide; practical information and upcoming talks are posted at logic-gu.se/nol/.
- **Lindström Lectures (annual).** The [Lindström Lectures](#) are an annual flagship event established in 2013 in memory of Per Lindström. Each year, a distinguished logician gives both a public lecture and a specialized research presentation connected to the logic seminar. The series page (with yearly editions and archives) is logic-gu.se/lindstrom-lectures/.
- **GothCaT Seminar.** The group also cohosts the [GothCaT Seminar](#), a seminar series shared with the department of Computer Science at Chalmers. The seminar focuses on category theory and type theory.

Taken together, these activities make Logic@GU a natural hub for logic in Gothenburg: a place where core research seminars, international online talks, public-facing annual lectures, graduate training, and community events mutually reinforce one another.

6.2. Mentorship. Every student in the Master's Programme in Logic is assigned a personal mentor from among the teachers of the programme. The mentor's role is to provide academic guidance throughout the student's studies and to help them make informed choices about courses, specializations, and long-term academic goals.

As students progress through the programme, the mentor will help them identify areas of interest and explore possible directions for future research. In particular, during the third semester, the mentor will assist students in preparing for the Master's Thesis by discussing potential topics and helping them identify the most appropriate supervisor for their project.

The mentoring system is intended to ensure that students receive continuous scientific guidance throughout the programme. Together with the Programme Coordinator, who oversees the overall academic structure of the Master's Programme, the mentor forms an important source of support and advice during the student's time at Gothenburg. Students are encouraged to make active use of both roles and to discuss their plans, interests, and aspirations openly as they develop their academic profile.

7. COMMUNITY AND NETWORK

7.1. The FLoV room, J412. Room J412 at Humanisten is assigned to the Department of Philosophy, Linguistics and Theory of Science. It functions as an informal common room for students. Students are welcome to use the room between classes, while studying on campus, or simply to meet fellow students. The room is intended as a social and communal

space where students from different programmes and research areas can interact. In recent years it has been furnished with board games and other recreational activities, and it is common for students to gather there for coffee breaks, informal discussions, games, or study sessions. While many academic interactions take place in classrooms, seminars, and offices, J412 provides a more relaxed environment and is often one of the easiest ways to become acquainted with other students and members of the department community.

7.2. Alumni program. The University of Gothenburg [Alumni Network](#) is a university-wide initiative aimed at maintaining long-term contact with former students after graduation. It is open to anyone who has studied at the university, and registration is free. Once enrolled, alumni become part of a global network that supports professional and social connections across disciplines and countries. The network provides access to events such as lectures, seminars, networking meetings, and webinars, as well as newsletters with updates on research, education, and career opportunities. It also facilitates collaboration between alumni and the university through mentoring, guest lecturing, internships, and research partnerships, supporting both lifelong learning and knowledge exchange between graduates and current students.

8. STUDENT LIFE IN GOTHENBURG

Studying in Gothenburg means becoming part of an academic and social community that extends well beyond the classroom. The University of Gothenburg is distributed across the city rather than concentrated on a single campus. In this sense, as the University itself puts it, “the whole city is our campus.” University buildings, libraries, museums, cafés, parks, cultural institutions, and student organisations together form the broader environment in which student life takes place.

Gothenburg is large enough to offer the cultural and social opportunities of a major European city, while remaining sufficiently compact for most central areas to be reached conveniently by tram, bus, bicycle, or on foot. It also combines urban life with unusually easy access to forests, lakes, the sea, and the islands of the southern archipelago.

8.1. Finding a student community. The [Erasmus Student Network Göteborg \(ESN Göteborg\)](#) is one of the most accessible ways to meet students from outside one's own programme or department. Although its activities are especially oriented towards international and exchange students, its events bring together students from many different countries and academic backgrounds. Activities may include welcome events, language exchanges, excursions, cultural activities, and informal social gatherings throughout the academic year.

Students can participate simply by attending events, but it is also possible to become involved in ESN as a volunteer. Volunteers help to organise activities and work as part of an international team. This can be an especially valuable way to form friendships, become acquainted with Gothenburg, and engage with cultural perspectives beyond one's immediate academic environment. Information about volunteering is available through the [ESN Göteborg website](#).

The University's student unions and student associations provide further opportunities to participate in academic, cultural, sporting, and social activities. Depending on their interests, students may find associations devoted to particular subjects, national or

linguistic communities, sports, music, theatre, games, or broader questions of student welfare and representation.

Student engagement at Gothenburg is not limited to social activities. Through student unions and representative bodies, students participate in decision-making concerning educational quality, the study environment, and university governance. Student representatives sit on committees and boards throughout the University, ensuring that students have a direct voice in matters affecting their education.

8.2. Clubs, hobbies, and intellectual life. For students interested in intellectually stimulating activities outside the formal curriculum, Gothenburg offers chess clubs, board-game communities, programming groups, language exchanges, reading circles, and public lectures. Such activities can provide an opportunity to meet people beyond one's programme while continuing to pursue academic or strategic interests in a more informal setting.

The city is home to the renowned [SS Manhem Chess Club](#), one of Sweden's largest and most active chess organisations. The club welcomes players with different levels of experience and organises regular playing evenings, training activities, tournaments, and team competitions.

Board-game events and communities can be found both within student organisations and elsewhere in the city. Students interested in programming and technology may similarly encounter workshops, hackathons, meet-ups, and student groups connected to Gothenburg's universities and technology sector. Language exchanges and reading groups provide further opportunities to meet Swedish and international participants, while the University and the city's libraries, museums, and cultural institutions regularly organise public lectures and discussions.

8.3. Student discounts and cultural institutions. Students should make active use of the benefits associated with their student status. The digital [Mecenat card](#) provides access to discounts in areas such as books, technology, food, fitness, travel, clothing, entertainment, and cultural activities. Since participating companies and individual offers change regularly, it is useful to consult the Mecenat application or website before making larger purchases or booking activities.

Mecenat may also display the student-travel symbol required for discounted public transport. Students who satisfy the relevant conditions can purchase certain longer-period Västtrafik tickets at the youth price. A valid digital student identification displaying the appropriate travel symbol must be available during the journey. Since the precise conditions may change, the current rules should always be checked on the [Västtrafik student-discount page](#). Student discounts and free-entry arrangements make it possible to participate regularly in this cultural life without necessarily incurring substantial costs.

8.4. The archipelago and outdoor life. One of the distinctive advantages of studying in Gothenburg is the proximity of the sea and the archipelago. The southern archipelago includes islands such as Styrö, Donsö, Brännö, Asperö, and Vrångö. The islands are car-free and provide walking paths, swimming places, cafés, small settlements, and quiet locations for reading, picnics, or day trips.

The islands can be visited throughout the year, although weather conditions, daylight, and the availability of cafés and other services vary considerably between seasons. Ferries depart principally from Saltholmen, which is connected to the city by tram, while some services also depart from Stenpiren in the city centre.

The ferries form part of the ordinary [Västtrafik](#) public-transport network. The appropriate Västtrafik ticket can therefore be used for the tram or bus journey and for the ferry, making visits to the islands particularly convenient for students who already hold a period ticket. Routes, ticket information, and departure times are available through the Västtrafik To Go application. Practical information can also be found in the official guide to [reaching the Gothenburg archipelago](#).

Swimming is an important part of outdoor life in Gothenburg, with options ranging from sandy beaches and coastal rocks to forest lakes and urban harbour pools. Popular locations include Askimsbadet, Smithska udden, Saltholmen, Delsjöbadet, Härlanda tjärn, and the harbour bath in Jubileumsparken. Facilities, accessibility, water quality, and seasonal opening arrangements differ between locations and should be checked before visiting. The independent Instagram account [@badjavlarna](#) provides informal reviews, ratings, and practical suggestions concerning swimming places in Gothenburg and elsewhere along the west coast, while official information about municipal bathing places and water quality is available from the City of Gothenburg.

Gothenburg's surrounding landscape offers more than the archipelago. Forests, nature reserves, lakes, and walking areas can be reached from the city by public transport. These provide opportunities for hiking, running, swimming, picnics, and seasonal activities. The combination of urban transport and nearby nature makes it possible to move quickly from the city centre to comparatively quiet natural environments.

The city and its surroundings can also be explored from the water. Kayaks and canoes can be rented at several locations, with possibilities ranging from the central canals and harbour to nearby lakes and the archipelago. Guided tours are available for those who prefer a structured introduction. An overview of available activities can be found in the official guide to [canoeing and kayaking in Gothenburg](#).

8.5. Annual events. Gothenburg hosts several large annual events that temporarily transform the atmosphere of the city and provide natural opportunities for students to participate as visitors, volunteers, performers, or spectators.

[Göteborg Film Festival](#) takes place during the winter and is the largest film festival in the Nordic countries. Its programme includes films from Sweden and around the world, presented in cinemas and other venues across the city. In addition to screenings, the festival organises talks, workshops, concerts, parties, and meetings with filmmakers. It is therefore both a major cultural event and an opportunity to encounter films that may not otherwise receive wide theatrical distribution.

Each spring, the city hosts [Göteborgsvarvet](#), a major international half-marathon whose route passes through several districts and across the river. Students may take part as runners, volunteers, or spectators. Participation as a runner requires advance registration, and available places may be filled well before the race. Music, organised viewing areas, and large audiences along the route transform the event into a city-wide celebration rather than an occasion intended only for registered participants.

[West Pride](#) is Gothenburg's annual LGBTQI arts and culture festival. Its programme includes lectures, debates, exhibitions, performances, workshops, nightlife, and activities organised in cooperation with cultural institutions and organisations throughout the city. The Pride Parade is the festival's largest public event, bringing participants and spectators together in support of equality, diversity, and LGBTQI rights. Many activities are free of charge, making the festival readily accessible to students and other residents.

During the summer, Gothenburg hosts [Way Out West](#), one of Sweden's most prominent music festivals. The main festival takes place over several days in Slottsskogen and presents international and Swedish artists across a wide range of musical genres. When the programme in the park ends for the evening, *Stay Out West* continues with concerts at clubs and other venues throughout central Gothenburg. The festival also includes film, cultural programming, talks, and a fully vegetarian food offering.

Göteborgskalaset, known until 2025 as Göteborgs Kulturkalas, is a free city festival held in central Gothenburg towards the end of the summer. Its programme includes concerts, food, performances, cultural activities, and events for different age groups at locations such as Götaplatsen, Kungstorget, and other public spaces.

In September, Gothenburg hosts Bokmässan, or the Gothenburg Book Fair, at the Swedish Exhibition and Congress Centre. It is the largest meeting place for literature and the written word in the Nordic region, bringing together authors, publishers, journalists, researchers, cultural organisations, and readers. The programme includes seminars, interviews, debates, exhibitions, and book presentations, although different tickets may be required for the exhibition floor and the seminar programme.

[Liseberg](#) is Gothenburg's amusement park and one of the city's most prominent seasonal attractions. In addition to rides and games, it contains gardens, restaurants, performance spaces, and concert stages. The park normally operates during three principal seasons: summer, Halloween, and Christmas. Its concerts, gardens, Christmas market, decorations, and seasonal atmosphere may also be of interest to visitors who are less attracted by amusement rides.

8.6. Keeping informed about events and student life. Several online resources are useful for learning about everyday student life and keeping track of activities in Gothenburg.

The official [@studyinsweden](#) Instagram account publishes material about academic life, Swedish customs, travel, housing, and the everyday experiences of international students. Much of its content is created by international student ambassadors, and the account occasionally features student takeovers that present life at particular universities or in particular cities.

The Instagram account [@gothenburgevents](#) provides an informal selection of concerts, exhibitions, markets, festivals, and other activities taking place around the city. Since information posted on social media may change at short notice, dates, prices, and booking arrangements should be confirmed with the relevant organiser.

The official [Gothenburg events calendar](#) provides a more comprehensive and regularly updated overview of exhibitions, concerts, festivals, sporting events, theatre performances, markets, and free public activities.

Further information about university life and student organisations is available through the following resources:

- Campus and Student Life
gu.se/en/study-in-gothenburg/campus-and-student-life
- Student Unions and Student Associations
gu.se/en/study-in-gothenburg/campus-and-student-life/student-unions-and-student-associations
- Student Life in Gothenburg – Student Ambassador Webinar
youtube.com/watch?v=e5y6nPEkgX8
- Study in Sweden
studyinsweden.se
- Events in Gothenburg
goteborg.com/en/events

Taken together, the programme community, student associations, ESN, Gothenburg's neighbourhoods and cultural institutions, and the surrounding natural environment offer several different routes into student life. Students are encouraged to explore beyond their immediate programme while also contributing to the smaller academic and social community surrounding the Master's Programme in Logic.

9. WEBPAGES

- Study Logic at GU
(<https://www.gu.se/en/study-gothenburg/study-logic>)
- Master in Logic at GU
(<https://www.gu.se/en/study-gothenburg/logic-masters-programme-h2log>)
- Course Catalogue
(<https://www.gu.se/en/study-gothenburg/more-about-the-master-program-in-logic>)
- Canvas of the Master
(<https://canvas.gu.se/courses/45028/assignments/syllabus>)
- Research in Logic at GU
(<https://www.gu.se/en/research/logic-research-group>)
- Logic Group
(<https://logic-gu.se/>)
- Logic Courses at Maths Department
(<https://www.gu.se/studera/hitta-utbildning/breddning-matematikprogrammet>)
- Master Thesis collection
(<https://gupea.ub.gu.se/collections/a5270929-ae14-4ecd-8422-05bdc316ee45/search>)