



DEPARTMENT OF PHILOSOPHY, LINGUISTICS AND THEORY OF SCIENCE

LOG211 Model theory, 7.5 credits

Modellteori, 7,5 högskolepoäng

Second Cycle

Confirmation

This course syllabus was confirmed by Department of Philosophy, Linguistics and Theory of Science on 2020-01-13 and was last revised on 2023-05-29 to be valid from 2023-08-28, autumn semester of 2023.

Field of education: Science 100%

Department: Department of Philosophy, Linguistics and Theory of Science

Position in the educational system

The course can be part of the following programmes: 1) Logic, master's programme (H2LOG) and 2) Computer Science, Master's Programme (N2COS) and can also be given as a freestanding course.

Main field of studies

Logic

Specialization

A1F, Second cycle, has second-cycle course/s as entry requirements

Entry requirements

For admission to the course the following are required

- at least 7.5 credits of Logical theory (LOG111) or Logic in Computer Science (DAT060 or DIT201), and of,
- Set theory (LOG121),

or the equivalent thereof. In addition, language proficiency equivalent to English 6 is required.

Learning outcomes

On successful completion of the course the student will be able to:

Knowledge and understanding

- describe and demonstrate an understanding of central concepts, methods and constructions in model theory,
- contrast model theory with other disciplines in logic,
- describe the relationship between the expressive power of logical languages and their ability to characterise structures,

Competence and skills

- formulate and present proofs of the most important results in the course as well as of lemmas that are used in the proofs,
- summarise and in writing give an account of a well delimited subarea of model theory or its applications,

Judgement and approach

- critically discuss, analyse and evaluate results in the course as well as their applications.
- demonstrate the ability to work over disciplinary borders and apply model theoretic results in for example mathematics and computer science.

Course content

Model theory is the study of first-order structures on the basis of the relationship with logical languages. Questions that are studied concern, among other things, the expressive power of logical languages in terms of the ability to classify structures, and what sort of models can be constructed. The course covers basic concepts and results in model theory, and also let the student specialise in a well delimited field of model theory.

*Sub-courses***1. The basics of model theory** (*Modellteorins grunder*), 4.5 credits

Grading scale: Pass with Distinction (VG), Pass (G) and Fail (U)

The sub-course treats basic and key concepts and results in model theory, including: definability, homomorphisms, elementary extensions, compactness and categoricity.

2. Specialisation within model theory (*Specialisering inom modellteori*), 3 credits

Grading scale: Pass with Distinction (VG), Pass (G) and Fail (U)

The sub-course entails an in-depth study in an area of model theory or an application of a model-theoretic method in a neighboring area. The in-depth subject must be chosen in consultation with the course coordinator.

Form of teaching

The teaching is given in the form of lectures, exercises and individual assignment.

Language of instruction: English

Assessment

The course is examined individually in written form. In addition to a written exam on the first part of the course, the second part of the course is examined through an individual written in-depth work. The grading teacher may request completion of examined student achievements.

If a student has failed the same course component twice and wishes to change examiners before the next examination opportunity, a request to this effect must be sent in writing to the department responsible for the course, and shall be granted, unless there are special reasons to the contrary (Chapter 6, Section 22, Higher Education Ordinance).

If a student has received a recommendation from the University of Gothenburg for special educational support, where it is compatible with the learning outcomes of the course and provided that no unreasonable resources are required, the examiner may decide to allow the student to sit an adjusted exam or alternative form of assessment.

In the event that a course has ceased or undergone major changes, students are to be guaranteed at least three examination sessions (including the ordinary examination session) over a period of at least one year, but no more than two years, after the course has ceased/been changed. As regards internship/placement, only one additional examination opportunity applies.

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U). For the grade Pass with distinction (VG) in the whole course, Pass with distinction on both the modules is required.

Course evaluation

Students participating in, or having completed the course, are given the chance to anonymously submit their opinions and suggestions for the course in a course evaluation. A short version of the course evaluation, together with the reflections of the course coordinator, is published and made available to the students within a reasonable time after the course has finished. The next time the course will be given, a short version of the course evaluation will be presented together with any implemented measures.

Additional information

The course requires access to a computer (or similar) with internet access.

The course may not be included in a degree together with the course LOG210.