UNIVERSITY OF GOTHENBURG

DEPARTMENT OF PHILOSOPHY, LINGUISTICS AND THEORY OF SCIENCE

LOG210 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 2016-05-27 to be valid from 2017-01-16, spring semester of 2017.

Field of education: Science 100%
Department: Department of Philosophy, Linguistics and Theory of Science

Position in the educational system

The course is included in the degree programme Logic, Master's programme, 120 credits (H2LOG) and can also be offered as a freestanding course or contract education.

The course can be part of the following programme: 1) Logic, Master's Programme (H2LOG)

Main field of studies	*Specialization*
Logic	A1F, Second cycle, has second-cycle course/s as entry requirements

Entry requirements

For admission to the course successful completion of at least 7.5 credits of Logical theory (LOG110) and of Set theory (LOG120), or equivalent skills and knowledge, 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,

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

The course starts with detailed proofs of compactness and omitting types for first-order logic. Students is then introduced to a number of central methods, constructions and results with a focus on model completeness, automorphism groups and omega categoricity, ultraproducts, o-minimality, interpretability and back-and-forth equivalence.

Quantifier elimination and zero-one laws serve as an introduction to applications of model theory to computer science. The course also deals with Morley's theorem and the basics of stability theory.

Form of teaching

Teaching is given in the form of lectures, seminars, exercises and individual assignment or group assignments. Compulsory attendance can apply to certain course components, which is indicated in the course schedule.

Language of instruction: English

Assessment

The course is assessed individually in written form. In addition to the final written examination, there may also be compulsory home work assignments during the course.

If a student, who has failed the same examined component twice, wishes to change examiner before the next examination, a written application shall be sent to the department responsible for the course and shall be granted unless there are special reasons to the contrary (Chapter 6, Section 22 of Higher Education Ordinance).

In cases where a course has been discontinued or has undergone major changes, the student shall normally be guaranteed at least three examination occasions (including the ordinary examination) during a period of at least one year from the last time the course was given.

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).

Course evaluation

Students who are currently taking the course or have completed it will be given the opportunity to express their views and share their experiences in an anonymous course evaluation. A compilation of the course evaluation and the course coordinator's reflections on it will be made available to the students within reasonable time after the end of the course. The next time the course is taught the compilation and any measures based on it will be presented to the students.