LOG350   Category theory, 7.5 credits
Kategoriteori, 7,5 högskolepoäng
Second Cycle

Confirmation
This course syllabus was confirmed by Department of Philosophy, Linguistics and Theory of Science on 2019-05-31 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 programme: 1) Logic, Master's programme (H2LOG), and can also be offered as a freestanding course.

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

Entry requirements
Admission to the course requires

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

or the equivalent. English 6 or equivalent is also 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 category theory,
- contrast categorical logic with other disciplines in logic,
- describe the relationship between category theory, set theory and type theory,

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 category theoretic results in for example mathematics and computer science.

Course content

The course starts with general category theory before moving on to more advanced topics. To begin, a number of central concepts in category theory, such as categories, functors, natural transformations, limits, exponentials and adjunctions, are introduced. Thereafter, selected advanced topics in category theory are covered. The course focuses on the connections between category theory, set theory, type theory, and logic.

Form of teaching

Teaching is given in the form of lectures, seminars, exercises, individual assignments and/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 the form of oral student presentations and written home assignments.

A student who has taken two exams in a course or part of a course without obtaining a pass grade is entitled to the nomination of another examiner. The student needs to contact the department for a new examiner, preferably in writing, and this should be approved by the department unless there are special reasons to the contrary (Chapter 6 Section 22 of the 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. The same applies to placements and professional placements (VFU), although this is restricted to just one additional examination session.

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.

Additional information

The course requires access to a computer (or the equivalent) with Internet connection.