



DEPARTMENT OF PHILOSOPHY, LINGUISTICS AND THEORY OF SCIENCE

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 to be valid from 2019-09-02, autumn semester of 2019.

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

Logic

Specialization

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

Entry requirements

For admission to the course the following are required

- a Degree of Bachelor, or equivalent, in either philosophy, mathematics, linguistics, or computer science (or an equivalent subject), and
- successful completion of at least 7.5 credits of Logical theory (LOG110) and of Set theory (LOG120), or equivalent skills and knowledge.

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 and defines the concept of a category. Examples of categories, constructed in set theory, are presented. Then, a number of central concepts in category theory defined by using abstract limits and universal properties are presented. The course also provides an introduction to topos theory, and its connection to logic and set theory. Finally, two central concepts in general category theory are defined and exemplified: functors and natural transformations.

Form of teaching

Teaching is given in the form of lectures, seminars, exercises, individual assignments and 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.

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 sessions (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.