



# FAK3001 Introductory Course in Logic 7.5 credits

Inledande kurs i logik

This is a translation of the Swedish, legally binding, course syllabus.

## Establishment

Course syllabus for FAK3001 valid from Spring 2017

## Grading scale

G

## Education cycle

Third cycle

## Specific prerequisites

Entry requirements for Ph.D. studies.

## Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

## Intended learning outcomes

Upon completing the course, the student should be able to

- analyze, and exhibit in standard logical symbolism, the predicatelogical structure of ordinary-language sentences;
- express in ordinary language the content of sentences containing logical symbolism;
- construct deductions in a formal system of intuitionistic predicate logic;
- construct deductions in a formal system of classical predicate logic;
- apply fundamental concepts of classical model theory, such as model, satisfaction, truth, and logical consequence;
- explain the concepts of soundness and completeness;
- engage in critical reaction on similarities and differences between, on the one hand, the logical vocabulary of ordinary language, and, on the other, their counterparts in logical theory.

(The concept of predicate logic, as applied above, is to be understood in the sense of first-order predicate logic, including sentential logic.)

## Course contents

Sentential connectives and quantifiers; analysis of the logical structure of sentences; free and bound variables; formal deductions in intuitionistic and classical predicate logic; basic set-theoretical concepts; first-order model theory; the concepts of soundness and completeness. If time allows, some mention

of alternative deduction formats, constructivist criticism of classical logic, and Gödel's incompleteness theorems. The principal aim of the course is not technical prowess, but theoretical insight and a capacity for critical reaction on logical theory as a form of philosophical conceptual analysis.

## Disposition

The first part of the course is focussed on sentential logic; then scope is broadened to encompass full predicate logic. Instruction takes the shape of lectures and seminars devoted partly to exposition, partly to discussion of home assignments.

## Course literature

Dag Prawitz: ABC i symbolisk logik. (Swedish) Complementary material will be supplied during the course.

## Examination

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Home assignments spread out over the length of the course. Grades: P, F.

## Other requirements for final grade

Satisfactory completion of home assignments.

## Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.