UNIVERSITY OF GOTHENBURG

DEPARTMENT OF PHILOSOPHY, LINGUISTICS AND THEORY OF SCIENCE

LOG290 Logic, Games and Automata, 7.5 credits

Logik, spel och automata, 7,5 högskolepoäng

Second Cycle

Confirmation

This course syllabus was confirmed by Department of Philosophy, Linguistics and Theory of Science on 2021-11-08 to be valid from 2022-01-17, spring semester of 2022.

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

For admission to the course successful completion of Logical theory (LOG111) and Modal logic (LOG131), or the equivalent, is required.

Learning outcomes

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

Knowledge and understanding

- demonstrate advanced knowledge and understanding of the mathematical theory underlying state-based systems,
- relate the newly acquired specialist knowledge with the fundamental areas of logic,

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,
- formulate computational properties of finite state-based systems by means of the three theoretical perspectives logic, games and automata,

Judgement and approach

- critically discuss, analyse and evaluate the results and concepts in the course from the perspective of the three formalisms.

Course content

The course covers the mathematical theory that underlies reactive systems, typically finite state-based systems equipped with a system for interaction with the environment. The theory is studied through three theoretical perspectives: logic, games and automata: Automata theory is a powerful model of computing for state-based systems, logic provides a formal language for the specification of correctness properties, and by using ideas from game theory mathematical models of the system-environment interaction can be built.

Form of teaching

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

Language of instruction: English

Assessment

The course is assessed individually in written form. There may be compulsory homework assignments during the course. The marking teacher may request supplementation of the examined student performance.

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 similar) with internet access.