Agent-Based Modelling

Single subject and programme course

7.5 credits

Agentbaserad modellering

771A21

Valid from: 2019 Spring semester

Determined by
The Quality Board at the Faculty of Arts and Sciences

Date determined
2017-10-20

Main field of study
Computational Social Science

Course level
Second cycle

Advancement level
A1N

Course offered for
- Master´s Programme in Computational Social Science

Entry requirements
A bachelor's degree or equivalent in the humanities, social-, cultural-, behavioural-, natural-, computer-, or engineering-sciences.
English corresponding to the level of English in Swedish upper secondary education (English 6/B).

Intended learning outcomes
After completion of the course, the student should on an advanced level be able to:
- Describe key applications of agent-based simulation modeling (ABM) in the social sciences;
- Explain the logic behind and the explanatory role of agent-based modeling;
- Design and program different types of agent-based models;
- Run agent-based computational experiments;
- Evaluate the results of agent-based simulations through various forms of statistical sensitivity analyses.

Course content
Agent-based modeling is a methodology for analyzing how groups of interacting individuals or other types of agents bring about various macro outcomes. This course provides a detailed introduction to the agent-based modelling (ABM) technique. The course covers all the steps in the process of developing an ABM, from theoretical design to model implementation and model evaluation. During intensive computer labs, ABMs are implemented using object-oriented programing, including the treatment of variables, commands, and procedures. The course includes practical work with various types of computer-based experiments, as well as methods for evaluating the robustness of simulation results using various statistical sensitivity analyses.

Teaching and working methods

The teaching consists of lectures, readings, computor labs and seminars. Homework and independent studies are a necessary complement to the course.

Language of instruction: English

Examination

The course is examined through written assignments, active participation in seminars, completed computer labs, and a final written individual assigment. Detailed information about the examination can be found in the course's study guide.

If the LiU coordinator for students with disabilities has granted a student the right to an adapted examination for a written examination in an examination hall, the student has the right to it. If the coordinator has instead recommended for the student an adapted examination or alternative form of examination, the examiner may grant this if the examiner assesses that it is possible, based on consideration of the course objectives.

Students failing an exam covering either the entire course or part of the course twice are entitled to have a new examiner appointed for the reexamination.

Students who have passed an examination may not retake it in order to improve their grades.

Grades

ECTS, EC

Other information

Planning and implementation of a course must take its starting point in the wording of the syllabus. The course evaluation included in each course must therefore take up the question how well the course agrees with the syllabus.

The course is carried out in such a way that both men´s and women´s experience and knowledge is made visible and developed.

Department

Institutionen för ekonomisk och industriell utveckling