Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

SLUkurs

Syllabus

PFG0016 Optimization in dynamic and stochastic decision problems, 7.5 credits

Syllabus approved

2005-10-03

Subjects

Economy

Education cycle

Third cycle

Grading scale

Pass / Failed
The requirements for attaining different grades are described in the course assessment criteria which are contained in a supplement to the course syllabus. Current information on assessment criteria shall be made available at the start of the course.

Language

English

Prior knowledge

The participants should have some knowledge of calculus, linear and nonlinear optimization before the course starts.

Objective, including learning outcomes

After the course, the participants should have:
- fundamental knowledge of general optimization methods that can handle dynamic

and stochastic decision problems. This includes stochastic dynamic programming, stochastic optimal control, multi stage stochastic programming and other conceptually related methods from adaptive optimization.
- fundamental understanding of the principles and algorithms of these methods.
- fundamental understanding of implicit and explicit assumptions consistent with relevant applications of those methods.
- ability to apply these methods to new research problems from current research projects.
- ability to correctly and efficiently present and discuss relevant problem descriptions, model definitions, solution approaches, model results and interpretations.

Content

Economic dynamic and stochastic decision problems.
Deterministic dynamic optimization in discrete time with discrete state space.
Deterministic dynamic optimization in discrete time with continuous state space.
Deterministic dynamic optimization in continuous time.
Optimal solutions to deterministic dynamic decision problems.
Stochastic dynamic optimization in discrete time.
Stochastic dynamic optimization in continuous time.
Optimal solutions to stochastic dynamic decision problems.
Applications to decision problems in forest company management in forest production, forest logistics and forest industry mills. (It does not matter if the course participant mainly is interested in the forest sector or some other sector. The decision problems are very similar in most sectors and the solution methods are the same.)

Requirements for examination

Written exam.

Additional information

Responsible department

Department of Forest Economics