

SLUkurs

Syllabus

PNSoo25 Systems Analysis, Model Building and Simulation, 6.0 credits

Syllabus approved

2006-03-07

Subjects

Statistics, Computer Science and Systems Science

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

None

Objective, including learning outcomes

The course is intended to give basic knowledge and insights in systems analysis philosophy, methods and applications. Emphasis is put on modelling and simulation

of static and dynamic systems. It is possible to extend the course with 3 credits. During the extended part the individual student has the possibility to apply one of several simulation methods on his own planned or ongoing research in form of a project. Then you should also apply for PNG0009, Systems Analysis, Model Building and Simulation - Project, 3 credits (4.5 ECTS credits)

Content

The course begins with the fundamentals of systems philosophy with stress on concepts such as "system", "model", "purpose", "feed-back", "relation between structure and behaviour" etc. An important part of the course treats how to carry out a systems analysis project including: defining the problem in operational terms, modelling, validation, problem solving, result evaluation, result presentation and implementation.

The major part of the course is devoted to practising different types of model building and simulation of static as well as dynamic and deterministic as well as stochastic systems. Also techniques like sensitivity analysis, model fitting and optimisation will be treated and exercised. About 30 different systems will be modelled, simulated and analysed. The course will consist of lectures and laboratory exercises.

The 4 credit course consists of two periods on an almost full time basis: The first period lasts for three weeks and consists of a mixture of lectures and exercises. The next period is reserved for individual work on the project and is only done by those who want 4+3 credits. The last period is one week and consists of completion of sum subjects (and presentation of individual projects) as well as an examination.

Requirements for examination

Approved laboratory exercises and a written examination.

Additional information

It is possible to extend the course with 3 credits. During the extended part the individual student has the possibility to apply one of several simulation methods on his own planned or ongoing research in form of a project. Then you should also apply for PNG0009, Systems Analysis, Model Building and Simulation - Project, 3 credits (4.5 ECTS credits)

Responsible department

Department of Energy and Technology