Supply Chain Optimization

Programme course

6 credits

Optimering av försörjningskedjor

TAOP18

Valid from: 2017 Spring semester

Determined by
Board of Studies for Industrial Engineering and Logistics

Date determined
2017-01-25

Main field of study
Mathematics, Applied Mathematics, Industrial Engineering and Management

Course level
Second cycle

Advancement level
A1X

Course offered for
- Mathematics
- Design and Product Development
- Industrial Engineering and Management - International, M Sc in Engineering
- Industrial Engineering and Management, M Sc in Engineering
- Mechanical Engineering, M Sc in Engineering
- Mathematics, Master's programme
- Mechanical Engineering, Master's programme

Entry requirements
Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites
(valid for students admitted to programmes within which the course is offered)
Basic course in optimization, including network programming. Solid knowledge in computer programming. Recommended prerequisite: Knowledge in optimization modelling language (AMPL or ZIMPL), large scale optimization.

Intended learning outcomes
The course aims to give the students an ability to model optimization problems, and an insight in how mathematical theory can be used to formulate and solve practical problems, with emphasis on applications in supply chain, distribution and transportation planning. The course also aims to give a deeper knowledge about combinatorial optimization, i.e. optimization problems with an underlying graph structure.

Course content
Supply chain optimzation problems, Sequencing and scheduling problems in production planning, Classical machine scheduling problems, Capacitated lot-sizing problem, Transportation and routing problems, Local search/tabu search, Column generation, Ampl-modelling.

Teaching and working methods
The course is built up around a number of cases (practical applications), where the students work with problem analysis, modelling and solving using software as Matlab and Ampl/Cplex. The lectures cover theory and optimization methodology. The cases are discussed and the students present the results of their work. Other practical applications are discussed.

Examination
PRA1	Oral and written presentation of case studies	6 credits	U, 3, 4, 5

Grades
Four-grade scale, LiU, U, 3, 4, 5

Department
Matematiska institutionen

Director of Studies or equivalent
Ingegerd Skoglund

Examiner
Nils-Hassan Quttineh

Course website and other links
http://courses.mai.liu.se/GU/TAOP18

Education components
Preliminary scheduled hours: 42 h
Recommended self-study hours: 118 h

Course literature
Fastställs senare.

Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.