Planning of Air Traffic

Programme course

6 credits

Planering av flygtrafik

TNK051

Valid from:

Determined by
Board of Studies for Industrial Engineering and Logistics

Date determined
2017-01-25

Main field of study
Transportation Systems Engineering

Course level
Second cycle

Advancement level
A1X

Course offered for
- Communication and Transportation Engineering, M Sc in Engineering

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
Transport System, Industrial Economics, Optimization, Object-Oriented Programming, Physical Modelling.

Intended learning outcomes
This course will provide a general overview of the air transportation system, and give the students the ability to identify and handle planning problems that may occur. By the conclusion of the course participants should have a general understanding of how commercial air traffic is handled by airlines, aviation authorities and airports, as well as how these entities interact and coordinate with each other. In particular, the course will develop and strengthen the participants' abilities in the following areas:

- Apply knowledge and methods from a wide range of previous courses, and when required, acquire new knowledge
- Integrate knowledge from multiple disciplines, like e.g. logistics and transportation planning, economics, optimization, programming and automatic control, and apply these in new contexts.
- Analyze and structure relevant planning problems in the air transportation system.
- Take initiative and find creative solutions, as well as present these in a professional manner.
- Search for and critically judge relevant information from different sources.
- Develop simple computerbased tools for analysis of planning problems in the air traffic sector.

Course content

Planning of Air Traffic will be comprised of input from three areas: airlines, air traffic controllers and airports. The airlines' primary goal when planning is to achieve the most efficient transportation of passengers and or goods between various airports. For this to be possible, airlines need to offer their services at airports where these services are necessary or requested. Airlines need to have an appropriate fleet of aircraft as well as an effective schedule in order to meet these needs while flying the routes and times that are most profitable. Airlines are an airport's primary customers, but airports also profit indirectly from passengers who use the additional services they provide, e.g. restaurants and boutiques. In order to create an effective flow of passengers, cargo and airplanes to and from airports, a well developed infrastructure and support organization is necessary. Air traffic control authorities, in Sweden primarily the Swedish Civil Aviation Administration (SCAA), have the main objective of guaranteeing safe air traffic, but they are also responsible for managing the total flow of aircraft to reduce congestion and delays. During the course, planning problems from all actors will be considered.

Teaching and working methods

In addition to participation in lectures and seminars, and partaking of course literature, the participant is required to submit a number of "hand-in" assignments. One field trip will be taken, if possible.

Examination

UPG2	Hand-in assignments	6 credits	U, 3, 4, 5

Grades

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

Department

Institutionen för teknik och naturvetenskap

Director of Studies or equivalent

Erik Bergfeldt

Examiner

Christiane Schmidt

Course website and other links

http://www.itn.liu.se/~toban17/courses.html

Education components

Preliminary scheduled hours: 52 h
Recommended self-study hours: 108 h

Course literature

Additional literature

Books

Barnhart, Cynthia, Belobaba, Peter, Odoni, Amedeo R., (2003) *Applications of Operations Research in the Air Transport Industry*
<searchLink fieldCode="JN"
term="%22Transportation+Science%22">Transportation Science</searchLink>.
Nov2003, Vol. 37 Issue 4, p368-391. 24p.

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.