Traffic Engineering and Control

Programme course

6 credits

Trafikteknik och trafikstyrning

TNK101

Valid from: 2017 Spring semester

Determined by
Board of Studies for Industrial Engineering and Logistics

Date determined
2017-01-25

Offered for the last time
Autumn semester 2018

Replaced by
TNK120

Main field of study
Transportation Systems Engineering

Course level
Second cycle

Advancement level
A1X

Course offered for
- Intelligent Transport Systems and Logistics, Master's programme
- 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
Basic knowledge of traffic theory and traffic planning and simulation models

Intended learning outcomes

The aim of the course is to give fundamental theoretic and practical knowledge about dynamic traffic models and its applications.

After completion of the course the student will be able to

- Describe the fundamental traffic flow theories and formulate and analyze basic traffic flow relations
- Describe the basic notation, theory, and models for analysis of capacity and level-of-service at intersections and apply it on real world problems
- Describe and design signal setting strategies for isolated intersections and describe signal settings for coordinated intersections
- Formulate and utilize macroscopic traffic flow simulation models for traffic analysis, including shockwave analysis
- Describe and utilize dynamic traffic assignment models for evaluating and analyzing traffic management and control systems
- Describe and utilize methods for evaluating traffic impact on the environment
- Describe different types of traffic models' advantages, disadvantages, and suitability for analyzing different types of traffic facilities and traffic control and management systems
- Discuss and analyze the relevance of the course and the course content in relation to the scope of the master program that the student are taking and in relation to a future working carrier as a traffic engineer

Course content

- Traffic flow theory
- Capacity models for intersections
- Traffic signals
- Experiments with intersection capacity computations
- Traffic management and control
- Macroscopic traffic flow simulation
- Experiments with macroscopic simulation model and a traffic control systems
- Dynamic traffic assignment and mesoscopic traffic simulation
- Experiments with dynamic traffic assignment and traffic management

Teaching and working methods

The course consists of lectures and laborations

Examination

UPG2	Project work	3 credits	U, 3, 4, 5
UPG1	Hand-in assignments	3 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
Johan Olstam

Education components
Preliminary scheduled hours: 41 h
Recommended self-study hours: 119 h

Course literature
Webbsida med kompendiematerial samt utdelat material

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.