



LUNDS UNIVERSITET
Lunds Tekniska Högskola

Course syllabus

Kapacitet och punktlighet i järnvägstrafik

Capacitiy and Punctuality in Railway Transportation

VTVG05, 7,5 credits, G2 (First Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED V

Date of Decision: 2023-03-21

General Information

Compulsory for: IBYI3

Language of instruction: The course will be given in Swedish

Aim

The aim is to go from the basics of railway transportation, through more advanced concepts, up to the research frontier. Except disciplinary competences, the aim is also to prepare the student for larger independent projects, and to give tools to and experience of independently pose and answer research questions using both literature studies and data of various kinds.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- Understand the foundations of railway transportation and the capacity allocation process.
- Be able to read and interpret a graphical timetable.
- Understand the terms capacity and punctuality, and know what influences them.

Competences and skills

For a passing grade the student must

- Independently seek and utilise relevant research literature.
- Handle and analyse timetable and delay data.
- Construct graphical timetables for mixed railway operations.
- Calculate and describe relevant key performance indicators for actual and scheduled operations, with regards to capacity utilisation, robustness and punctuality.

Judgement and approach

For a passing grade the student must

- Show an open, constructive and reflective approach to their own learning and work, as well as that of their peers.
- Based on timetables, delay data and research literature, critically evaluate railway operations and give constructive, targeted advice to industry stakeholders.

Contents

Capacity and timetable planning, including:

- Run, dwell, headway and buffer times;
- Stopping patterns, meetings, passes and associations between trains;
- Cyclical and noncyclical timetables, homogenous and heterogenous operations, maintenance works;
- The capacity allocation process, prioritisation criteria;
- Timetable quality, robustness, and how to achieve them.

Analysis of delays and punctuality, including:

- Arrival, departure, dwell, and run time delays;
- The distribution of delays in size, space and time;
- Valuation of delay time, quality/delay fees, and recourse;
- Punctuality, regularity, and influencing factors;
- Measurement and evaluations systems, quality assessment and improvement.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)

Assessment: Oral and written presentation of individual project report.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Admission

The number of participants is limited to: No

Reading list

- Trafikverket: Kapacitet på järnväg – en kunskapsöversikt. 2019.
- Nelldal, Bo-Lennart, Lindfeldt, Anders & Lindfeldt, Olov : Kapacitetsanalys av järnvägsnätet i Sverige – Delrapport 1. , Hur många tåg kan man köra? En analys av praktisk och teoretisk kapacitet. 2009.
- Lindfeldt, Anders : Kapacitetsanalys av järnvägsnätet i Sverige – Delrapport 2, Bearbetning av databas över infrastruktur, trafik, tidtabell och förseningar. 2009.
- Nelldal, Bo-Lennart: Kapacitetsanalys av järnvägsnätet i Sverige – Delrapport 3., Förslag till åtgärder för att öka kapaciteten på kort sikt. KTH, 2009.
- Nelldal, Bo-Lennart: Kapacitetsanalys av järnvägsnätet i Sverige – Delrapport 3., Förslag till åtgärder för att öka kapaciteten på kort sikt. KTH, 2009.
- Nelldal, Bo-Lennart: Några slutsatser av fem års forskning på kapacitet och kvalitet i järnvägstrafik - eller Doktor Lindfeldts recept. KTH, 2010.

Contact and other information

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