

201800054

Network Equilibrium Analysis[Cursus informatie](#) [Rooster](#)

Cursus	201800054	Collegejaar	2018
Studiepunten (ECTS)	5	Aanvangsblok	2B
Cursustype	Cursus	Aanmeldingsprocedure	Zelf aanmelden via OSIRIS Student
Voertaal	Engels	Inschrijven via OSIRIS	Ja
Contactpersoon	prof.dr.ir. E.C. van Berkum		
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Docenten			
Docent	prof.dr.ir. E.C. van Berkum		
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Leerdoelen

After this course, the student is able to:

- Explain and apply combinatorial optimization techniques related to transport networks;
- Explain and apply concepts and mathematical optimization techniques related to equilibrium problems in transport;
- Apply numerical solution methods in an assignment using Matlab;
- Analyse and assess different concepts of equilibria in transport networks.

Inhoud

This course provides insight in some of the fundamental properties of transport policies and traffic management, where individual choice behavior affects network performance.

Basic concepts of graph theory, routing problems, characteristics of graphs, optimization problems with and without boundary conditions, linear programming, Lagrangian and Karush-Kuhn-Tucker conditions, unicity, multi-variate optimization methods, convex combination method, heuristic equilibration techniques and evolutionary algorithms are applied to transport network problems. Specifically, the determination and analysis of system optimum, user equilibrium, price of anarchy and application to the network design problem are areas that are studied.

The main topics covered in the course are:

- Application of graph theory, combinatorial optimization and nonlinear optimization to transport networks;
- Route set generation and choice in transport networks;
- Price of Anarchy;
- Braess paradox;
- Network Design Problems;
- Network performance measures.

This course will be assessed by means of assignments.

Voorkennis

Recommended:
Network Modelling
Public Transport Modelling

DEELNEMENDE OPLEIDING

Master Civil Engineering and Management

Verplicht materiaal

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Aanbevolen materiaal

-

Werkvormen

Hoorcollege

Aanwezigheidsplicht Ja

Opdracht

Aanwezigheidsplicht Ja

Werkcollege

Aanwezigheidsplicht Ja

Toetsen

Assignments