201100012

Mathematical Optimization in Transport

Course info

Course module	201100012	**Starting block**	2A
Credits (ECTS)	7.5	**Application procedure**	You apply via OSIRIS Student
Course type	Course	**Registration using OSIRIS**	Yes
Language of instruction	English	**Number of insufficient tests**	-
Contact person	prof.dr.ir. E.C. van Berkum		
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Lecturer(s)			
Lecturer	prof.dr.ir. E.C. van Berkum		
Lecturer	dr. G.J. Still		

Learning goals

Course objectives:
- Deal with the basic concepts of continuous and combinatorial optimization
- Become acquainted with concepts and mathematical techniques related to transport networks and equilibrium problems
- Apply analytical and numerical solution methods using Matlab.

Content

Course Description
Background and context:
This course provides mathematical techniques which are commonly used Traffic Engineering.

Course content:
Basic concepts of graph theory, routing problems, characteristics of graphs, optimization problems with and without boundary conditions, linear programming, Langrangian and Karush-Kuhn-Tucker conditions, unicity, multi-variate optimization methods, convex combination method, heuristic equilibration techniques, system optimum, user optimum

Assumed previous knowledge
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PARTICIPATING STUDY
M-CEM

PARTICIPATING STUDY
M-CME

Required materials
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Recommended materials
Course material
"Combinatorial optimization, networks and matroids", E. Lawler, 1976, Holt, Rhinehart & Winston, New York (available as a free download)

Course material
"Urban transport networks, equilibrium analysis with mathematical programming methods", Y. Sheffi, 1985, Prentice Hall, Englewood Cliffs (available as a free download)

Instructional modes

Assignment

Instruction/lecture (Required)

Lecture (Required)

Project (Required)

Tests

Test