

Course

Advanced Road Traffic Operations

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| Date: | 9 December 2014, 20 & 27 January, 3 February 2015 |
| Time: | see schedule below |
| Location: | t.b.a. |
| Course leader: | Dr. Victor Knoop |
| Lecturers: | Dr. Victor Knoop, Prof. Serge Hoogendoorn |
| Days: | 3 |
| ECTS: | 1 (attendance) / 3 (with assignment) |
| TUD GS credits: | 2 (attendance) / 5 (with assignment) |
| Course fee: | Free for TRAIL/Beta/OML members, others please contact the TRAIL office |
| Registration: | www.rstrail.nl |

Objectives

This course aims to provide empirical facts, theories, models, and tools to interpret, understand, predict, apply to freeway facilities. It will focus on motorways with discontinuities (no networks) and will take both a microscopic and macroscopic perspective.

Course description

After successful completion of this course, the student is able to:

- Comment on main traffic phenomena;
- Explain calculations of traffic operations in moving coordinates;
- Comment on the effect of multiple lanes;
- Comment on hysteresis and the capacity drop;
- Explain the necessary elements for a valid node model;
- Comment on the use of the Network Fundamental Diagram.

Assignment and assessment

During the course, different papers on the topics (see below) will be discussed. Each student is supposed to read and present one paper. Also, they need to read other papers, and in groups students should write a chapter on one of the topics, and review other chapters.

The grading will be based on all these elements, and is as follows:

- 30% Presentation of own paper
- 20% Comments on presentations by others (2 selected prepared)
- 20% Summary writing (group) on different topic
- 10% Commenting on summary by other group
- 20% Revising of summary of own part (group)

Program

The following topics will be discussed:

- 0) Intro en review of traffic flow theory
- 1) General traffic phenomena on freeways - observations
- 2) Variational theory, lagrangian coordinates, node descriptions
- 3) Mutli-lane traffic flow theory management

- 4) Hysteresis & capacity drop
- 5) Network Fundamental Diagram

Time schedule

9 December 2014: 13.30 - 16.00 h. - nr. 0
20 January 2015: 10.30 - 16.00 h. - nr. 1 & 2
27 January 2015: 10.30 - 16.00 h. - nr. 3 & 4
3 February 2015: 13.30 - 16.00 h. - nr. 5

Course material

Articles and prints of the slides will be handed out during the course.
During the course, the students will prepare their own book summarizing the content of the course.

Prerequisite

Knowledge of the basics of traffic flow theory (fundamental diagram) is useful. Session nr. 0 will revisit these basics to refresh the knowledge.