# “Mobility Service Design-and-Management and Economics of Mobility”

**Syllabus SCA.06/2**

**Lubomir Cernicky**

October, 20th, 2018

Version 1

# Name of the course

# Mobility Service Design-and-Management and Economics of Mobility

# ECTS credits

6 Credits, (**45 hours of Theory + 30 hours of Exercises & Lab**), 3rd semester

# Objectives

This lecture gives students knowledge of transport systems from a mobility point of view.

Students are given an idea of designing infrastructure and services for people, where various subsystems are designed to cooperate with each other, including properly designed transfer points.

Important parts of this course are shared mobility and electro mobility. Students gain knowledge of various sharing systems. Also, students gain knowledge of specific requirements of electro mobility on the infrastructure and on the vehicle circulation. Mobility behaviour changes are also included in.

Every system/service require information system and technology support. Students are continuously given knowledge of these systems/technologies.

After this course students are able not only to design mobility services, but they manage to assess various impacts of these systems on the environment, quality of life, and other city systems. Students are also able calculate economic influence of these services.

# Learning outcomes

The general expectation regarding the knowledge to be provided/acquired is as follows:

* Mastering of mobility plans creation and implementation
* Mastering of infrastructure designing for mobility services
* Mastering of mobility services designing and linking
* Acquiring knowledge of shared mobility
* Acquiring knowledge of information systems and technologies used in mobility services
* Understanding problems and advantages of electro mobility
* Understanding environmental impact of the transportation systems and mobility services
* Acquiring basic knowledge of mobility services in low emission zones
* Mastering of mobility services assessment and calculations of services’ costs and benefits

# Contents

1. Mobility plans and their importance
   1. Definition and content
   2. Citizens and stakeholders participation
   3. How to design and develop a mobility plan
   4. Objectives, targets, goals
   5. Mobility survey
   6. Planning and implementing measures
   7. Monitoring
   8. Best practices from abroad
2. Planning infrastructure and services for people
   1. Pedestrians
   2. Public transport
   3. Cyclists
   4. Cars
   5. Parking
   6. Mobility of disabled people
3. Transportation terminals and multimodal travelling
   1. Analysis
   2. Design
4. Electro-mobility and impact on transport system
   1. Infrastructure needed
   2. E - buses - technologies and route planning
   3. E - bicycles
   4. E - scooters
   5. E - cars
   6. Influence of electro – mobility on peoples´ transport behaviour
5. Shared mobility
   1. Car sharing
   2. Carpooling
   3. Taxi services sharing (UBER, TAXIFY, WETAXI)
   4. Bike sharing
   5. Business model
   6. Mobility as a service (MaaS)
6. Information and communication systems and technologies
   1. Infrastructure
   2. Public transport
   3. Sharing systems
7. Energy consumption and environmental impacts
   1. Calculation of transport impacts
      1. Consumption
      2. Emissions
      3. Voice, vibration
   2. Various transport mode comparison
8. Designing services in low emission zones
   1. Access policy
   2. Mobility inside low emission zones
   3. Parking policy
   4. City logistics
9. CBA of investments

# Teaching method

Lectures

The slides contain theoretical background of each chapter, which is combined with the samples of transport/traffic/mobility solutions from foreign countries - photos/pictures. The slides are systematically explained by the Lecturer. Mini videos are also important part of the slides. These slides should be provided to students (or uploaded in the MOODLE system).

Exercises

Students solve projects, which are focused on transportation impact assessment (ecological, environmental). There will be various case studies (e.g. design of new bike sharing system) and one part the projects will be creation of cost-benefits assessment for the new system.

# Assessment method

Projects are assessed from the quality point of view. Theoretical knowledge is assessed at the final oral and/or written examination. Student may sign up for the final examination only in the case that their projects are of a set quality (e.g. 60%).

# Textbooks - Publications - Software

**Textbooks**

* ITE: **Transportation planning handbook**, 3rd edition
* Guide to Cost-Benefit Analysis of Investment Projects, ISBN 978-92-79-34796-2, doi:10.2776/97516 <https://ec.europa.eu/inea/sites/inea/files/cba_guide_cohesion_policy.pdf>
* Vukan R. Vuchic: Urban Transit Systems and Technology, Online ISBN:9780470168066, DOI:10.1002/9780470168066
* Joseph Chow: Informed Urban Transport Systems, 1st Edition, Classic and Emerging Mobility Methods Toward Smart Cities

**Selected relevant Publications**

* Bocarejo, J. P, Velasquez, J. M. Díaz, C. A. and Tafur, L. E. (2012) Impact of Bus Rapid Transit Systems on Road Safety Lessons from Bogotá, Colombia, Transportation research record.: Journal of the Transportation Research Board, No. 2317, Transportation Research Board of the National Academies, Washington, D.C., pp. 1–7.
* Marsden G; Mullen CA; Bache I; Bartle I; Flinders M (2014) Carbon reduction and travel behaviour: Discourses, disputes and contradictions in governance, Transport policy., 35, pp.71-78. doi: 10.1016/j.tranpol.2014.05.012
* Mullen, CA, Tight, M, Whiteing, A and Jopson, A (2014) Knowing their place on the roads: what would equality mean for walking and cycling? Transportation research. Part A, Policy and practice., 61. 238 - 248. <http://eprints.whiterose.ac.uk/id/eprint/78039>
* Paul Timms, Miles Tight & David Watling (2014) Imagineering mobility: constructing utopias for future urban transport. Environment and planning. A, Environment and planning. 2014, volume 46, pages 78–93. doi:10.1068/a45669
* Louise Butcher (2016) Access to transport for disabled people Briefing Paper, Number SN00601, 14 April 2016 House of Commons Library http://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN00601

Others

<https://www.ite.org/>