

# **GEO-E3030 Road Maintenance and Rehabilitation**

Spring 2019, updated 18.2.2019

## **Prerequisites:**

Basic knowledge in Road Pavement Design and Bituminous Mixtures or equivalent: GEO-E1030 Structural Design of Roads, GEO-E2050 Bituminous Materials and Mixtures

## **Course status and level:**

Master's Programme in Geoengineering, Advanced course, L

## **Responsible teacher:**

Prof. Leena Korkiala-Tanttu

## **Learning goals:**

After this course student is familiar with road maintenance and rehabilitation techniques, machinery and procurement processes. Student is able to evaluate structural and functional condition of road based on various distress monitoring methods and understands the concept of road asset management. Student recognises the role of maintenance and rehabilitation in the life cycle of a road and can perform simple cost calculations for basis of decision-making. Student is familiar with pavement management concepts including traditional PMS systems and new developments for asset management of roads.

## **Content:**

Course covers the fundamental principles underlying the maintenance and rehabilitation of paved and gravel roads including approaches for rehabilitation of in-service pavement systems such as full-depth reclamation method and overlay of asphalt pavements. Course covers technology for the hot in-place recycling and stationery recycling of reclaimed asphalt. Winter and summer maintenance of roads is covered. Pavement management concepts and asset management via lifetime engineering are discussed.

The course consists of lectures, exercises, excursions and examination. The exercises are compulsory (you can be away once). All the exercises have to be returned before exam 31.5.2019. The weight of exam is 50 % and exercises 50% of the final grade.

Course material and feedback: Lecture and exercise material. Additional material Doré & Zubeck: Cold Regions Pavement Engineering. Feedback is collected through Webropol system. We will give you our counter-feedback in MyCourses.

## **Timetable:**

Lectures on Tuesdays starting from 10<sup>th</sup> April 2019 at 12:15-14:00 in room R8. Exercises and excursions as well starting from Friday 26<sup>th</sup> April at 10:15. Exercises are held in R8.

16.4. Overview of Road Maintenance and Rehabilitation, introduction of the course Leena Korkiala-Tanttu, Road rehabilitation methods and asset management - Teiden ylläpidon menetelmät ja ohjaus (Päällysteasiantuntija Katri Eskola, Liikennevirasto)

23.4. Road monitoring and condition measurements - Teiden kuntomittaukset (Eeva Huuskonen-Snicker, Destia Oy)

**OBS. Fr 3.5. 10:15-12:00** Life cycle based maintenance, tools to design maintenance, Timo Saarenketo, Roadscanners Oy

7.5. Hot-in-place recycling - REMIX päällysteiden ylläpitomenetelmä (Michalina Makowska)

14.5 Road maintenance – Teiden hoito (Työpäällikkö Eero Mikkola, Destia Oy)

21.5. BIM in road maintenance - BIM teiden hoidossa ja ylläpidossa (Työpäällikkö Manu Marttinen, NCC Roads Oy)

Exercises and excursions mainly on Fridays at 12:15 to 15 pm.

26.4 Rehabilitation methods (Senior advisor Taina Rantanen, Destia Oy) **starting from 10:15-12:00**

26.4 Project work, hands-on-instr. (Senior advisor Taina Rantanen, Destia Oy)

3.5. Project work, hands-on-instr. (Senior advisor, Taina Rantanen, Destia Oy)

10.5. Street maintenance and rehabilitation - Visit to City of Helsinki: HKR, Helsingin kaupungin rakennusvirasto, katu- ja puisto-osasto, ylläpitotoimisto and STARA (Pekka Isoniemi, yksikön päällikkö head of the unit ja Ville Alatyppö, Hakamäenkujan tukikohta)

17.5. Project work, hands-on-instr. (Senior advisor, Taina Rantanen, Destia Oy)

24.5 Visit to NCCRoads Oy stationary asphalt plant-- (työpäällikkö Manu Marttinen, NCCRoads Oy). Ämmässuo / Vuotila

The exam will be held on 31<sup>st</sup> May between 9-12, K215, Otakaari 4.