

GEO-E3030 Road Maintenance and Rehabilitation

Spring 2021, draft 26.4.2021

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:

Year 2021 Prof. Leena Korkiala-Tanttu after that Augusto Cannone Falchetto

Learning goals:

After this course, the students will be able to identify and differentiate road maintenance and rehabilitation techniques, machinery types and procurement processes. The students will be able to evaluate structural and functional conditions of the road based on various distress monitoring methods and incorporate the concept of road asset management within this framework. Students will recognize the role of maintenance and rehabilitation in the life cycle of a road and can perform simple cost calculations as a basis of decision-making. The students will be able to apply pavement management concepts including traditional Pavement Management System (PMS) and new developments to the asset management of roads.

Content:

The course covers the fundamental principles underlying the maintenance and rehabilitation of paved and unpaved roads including approaches for rehabilitation of in-service pavement systems such as full-depth reclamation method and overlay of asphalt pavements. This includes technology for the hot in-place recycling and plant recycling of reclaimed asphalt. Winter and summer maintenance of roads and streets is also addressed. Pavement management concept, asset management and life cycle aspects are discussed.

The course consists of lectures, exercises, excursion and examination. The course is virtual. The exercises are compulsory so you have to attend the virtual exercise (you are allowed to miss only one exercise session). All the exercises have to be submitted before the exam 04.06.2021 from 9-12. The weight of the 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. Instructor/s will provide you with a response to your feedback in MyCourses.

Timetable:

Lectures on Tuesdays starting from 20th April 2021 at 14:15-16:00 and on Wednesdays 12:15-14:00. Exercises as well starting from Friday 23rd April at 10:15.

20.04.2021 Overview of Road Maintenance and Rehabilitation, introduction of the course
Leena Korkiala-Tanttu,

20.4.2021 Road rehabilitation methods and asset management - Teiden ylläpidon menetelmät ja ohjaus Specialist of Road maintenance **Katri Eskola**, Finnish Transport Infrastructure Agency

28.04.2021 Road monitoring and condition measurements - Teiden kuntomittaukset **Eeva Huuskonen-Snicker**, Destia Oy

05.05.2021 Maintenance and rehabilitation of public low-volume roads, **Anne Valkonen** 45 mins. Private roads, **Nina Raitanen** 45 mins.

11.05.2021 Reuse of asphalt pavement on the road (remixing) **Peetu Syrjänen** and Hot reuse methods in asphalt plant, **Lasse Forsten**, PEAB

12.5.2021 Street maintenance and rehabilitation, **Pekka Isoniemi and Ville Alatyyppö**, City of Helsinki

18.05.2021 Road maintenance – Teiden hoito Työpäällikkö **Eero Mikkola**, Destia Oy

19.5.2021 Maintenance and rehabilitation methods – an international overview- **Augusto Cannone Falchetto**, Aalto

25.05.2021 BIM in road maintenance - BIM teiden hoidossa ja ylläpidossa **Manu Marttinen**, Infrakit

Exercises and excursion on Fridays, from 9:15 to 12:00

23.04.2021 Rehabilitation methods **Anne Valkonen starting from 9:15-12:00**

30.04.2021 Project work, hands-on-instruction **Anne Valkonen** - not recorded

07.05.2021 Project work, hands-on-instruction **Anne Valkonen** - not recorded

21.05.2021 Project work, presentations, comparison, feedback, self and peer assessment and discussion **Anne Valkonen** and other teachers

28.05.2021 Possible virtual visit **to stationary asphalt plant or paving work**

PÄIVITÄ MYÖS MC:hen aikataulu

Course timetable:

Time	Tu 14:15-16:00	We 12:15-14:00	Fr 9:15-12:00
Week 16	Tu 20.4 Intro, Leena, Road rehabilitation methods and asset management, Katri Eskola	-	Rehabilitation methods and overview of exercise, Anne
Week 17		Road monitoring and condition measurements - Eeva Huuskonen-Snicker	Project work, Anne
Week 18	Maintenance and rehabilitation of railways, NN	Maintenance and rehabilitation of public low-volume roads, Anne Valkonen Private roads, Nina Raitanen	Project work, Anne
Week 19	Reuse of asphalt pavement on the road (remixing) Peetu Syrjänen, Peab and Hot reuse methods in asphalt plant, Lasse Forsten	Street maintenance and rehabilitation, Pekka Isoniemi and Ville Alatyppö	
Week 20	Returning of group works	Maintenance and rehabilitation methods – an international overview- Augusto Cannone Falchetto,	Project work and feedback, Anne and others
Week 21	BIM in road maintenance - BIM teiden hoidossa ja ylläpidossa Manu Marttinen, Infrakit		Possible virtual visit to stationary asphalt plant or paving work
Week 22			JUNE 4th EXAM, starting 9:00

The exam will be held on Friday, June 4th between 9 and 12, at K215, Otakaari 4 or as e-exam.