

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

A.Y. 2022-2023. Period IV, Spring 2023. March 1 to April 21, 2023

Course plan on March 29, 2023 (*Tentative*)

### **Responsible teacher:**

Augusto Cannone Falchetto

### **Course status and level:**

Master's Programme in Geoengineering, Advanced course, L

**Content:** The course provides an overview of different aspects of the maintenance and rehabilitation of roads.

**Prerequisites:** Basic knowledge of Road Pavement Design or equivalent: GEO-E1030 Structural Design of Roads. Completion of GEO-E2050 Bituminous Materials and Mixtures is an advantage.

**Course mode:** The course is offered in face-to-face mode mainly. If needed, online lecturing will be used, and students will be informed about it. The class is organized as a series of seminars from domestic and international experts.

**Sessions:** Lectures are on Wednesday (Room 266, h. 12:15-14:00) and Thursday (Room 253, h. 12:15-14:00), with the Friday session devoted to exercise/project (Room 265, 09:00-12:00).

Your participation is essential to facilitate your learning progress. Please, participate, discuss, and ask questions during the course. Changes in the plan are likely; you will be informed in the best timely manner possible. All efforts are being made for the class to work out as smoothly as possible!

### **Intended learning outcomes\***

After this course, the students will be able:

- Identify rehabilitation methods and asset management strategies for road and streets and private roads
- Recognize LCA/EPD concepts
- Define road monitoring and conditions
- Evaluate the reuse of asphalt pavement on Finnish roads through hot technology
- Select basics maintenance and rehabilitation methods
- Identify the best winter maintenance strategies adopted in Finland
- Evaluate the feasibility of using alternative paving materials for maintenance purposes
- Perform a critical literature review at a scientific level
- Conduct a lecture

\*The intended learning outcome might differ depending on the possible changes in the class schedule and organization during Period IV

## Schedule (Tentative)

Week	Date	Time	Room	Topic
09	Wed 03/01	12.15–14.00	266	<b>L01.</b> Road rehabilitation methods and asset management, Katri Eskola
	Thu 03/02	12.15–14.00	253	<b>L02.</b> Introduction to the course, Augusto Cannone Falchetto, and Kateryna Krayushkina
	Fri 03/03	09.00–12.00	265	<b>P01.</b> Project session
10	Wed 03/08	12.15–14.00	Online	<b>L03.</b> LCA/EPD and the recent legislative and implementation activities at the Federal and State levels – a U.S. perspective, Amlan Mukherjee
	Thu 03/09	12.15–14.00	253	<b>L04.</b> Road monitoring and condition measurements, Eeva Huuskonen-Snicker, Teemu Uusikauppila
	Fri 03/10	09.00–12.00	265	<b>P02.</b> Project session
11	Wed 03/15	12.15–14.00	266	<b>L05.</b> Maintenance in the perspective of road and street design, Noora Eklöf and
	Thu 03/16	12.15–14.00	253	<b>L06.</b> Private roads, Nina Raitanen
	Fri 03/17	09.00–12.00	265	<b>P03.</b> Project session
12	Wed 03/22	12.15–14.00	266	<b>L07.</b> Reuse of asphalt pavement on the road (remixing) and Hot reuse methods in asphalt plant, Leo Kaariniemi
	Thu 03/23	12.15–14.00	253	<b>L08.</b> Maintenance and rehabilitation methods –a catalog overview, Augusto Cannone Falchetto
	Fri 03/24	09.00–12.00	265	<b>P04.</b> Project session
13	Wed 03/29	12.15–14.00	266	<b>L09.</b> Winter maintenance, Jarkko Pirinen
	Thu 03/30	12.15–14.00	Online	<b>L10.</b> On the use of alternative materials for sustainable maintenance and rehabilitation processes, Lily Poulikakos, EMPA
	Fri 03/31	09.00–12.00	265	<b>P05.</b> Project session
14	Wed 04/05	12.15–14.00	266	<b>L11.</b> Non-destructive testing technology for asphalt roads' distresses, Di Wang
	Thu 04/06	-	-	<b>No Lecture</b>
	Fri 04/07	-	-	<b>No Lecture</b>
15	Wed 04/12	-	-	<b>No Lecture</b>
	Thu 04/13	12.15–14.00	253	<b>L12.</b>
	Fri 04/14	09.00–12.00	265	<b>P06.</b> Project presentation and submission of the final project report.
16	Fri 04/21	09.00–12.00	<b>160a</b>	<b>Final Exam – Replaced by weekly quizzes</b>

## Instructors

ACF	Augusto Cannone Falchetto	<a href="mailto:augusto.cannonefalchetto@aalto.fi">augusto.cannonefalchetto@aalto.fi</a>
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## Assessment

The grade (100%) is composed of five weekly quizzes (**Q**) 30% and Project (**P**) 70% (50% report and 20% presentation). Grading is 0-5. The Final grade must be at least 50% to pass the course.

### Project:

The project consists of an exercise on maintenance and rehabilitation. Based on data, information, and pictures, you will identify the appropriate strategies for the assigned road section. Dr. Kateryna Krayushkina will be responsible for the project.

## Materials and resources

- Lecture Notes
- Project assignment

### Other resources

- Doré, G. & Zubeck, H.K. (2009). *Cold Regions Pavement Engineering*. McGraw-Hill; ASCE Press
- Huang, Y.H. (2004). *Pavement Analysis and Design*. Pearson, 2nd edition.
- <https://pavementinteractive.org/>
- FHWA - [Preservation](#)
- FHWA - [Maintenance](#)
- FHWA - [Rehabilitation](#)

Loaning of textbooks at the Department of Civil Engineering is being arranged. More information will be provided during the first week.