UCLouvain

lgciv2015

2025

Bridges, roads and construction management

The version you're consulting is not final. This course description may change. The final version will be published on 1st June.

4.00 credits	45.0 h	Q2

Language :	English > French-friendly
Place of the course	Louvain-la-Neuve
Prerequisites	LGCIV1022, LGCIV1023, LGCIV1032, LGCIV1072, LGCIV2071
Main themes	The "Bridges, Roads and Construction Management" course covers the general concepts of bridge and road design, calculation and maintenance, as well as construction project management.
Learning outcomes	**At the end of this learning unit, the student is able to :** In line with the AA reference framework of the "Master in Civil Construction Engineering" program, this course contributes to the development, acquisition and assessment of the following learning outcomes: 1 • (AA1.1, AA1.2, AA1.3) • (AA2.1, AA2.2, AA2.3, AA2.4, AA2.5) • (AA4.1, AA4.2, AA4.3, AA4.4) • (AA5.1, AA5.2, AA5.3, AA5.4, AA5.5, AA5.6) • (AA6.1, AA6.2, AA6.3, AA6.4) More specifically, at the end of this project, the student should be able to: 2 • Apply the technical knowledge taught in the prerequisite courses to deal with a road or bridge project in its entirety; 3 • Analyze a problem in all its dimensions and ask the right questions to make the right design make the right choices in terms of design, materials, geometric shapes, execution processes, etc 4 • Design one or more technical solutions to meet specifications; 5 • Apply the concepts of calculation and dimensioning covered in the prerequisite courses. 6 • Draw up a bill of quantities and a site schedule.
Evaluation methods	Written or oral exam, depending on the year and the course holder
Teaching methods	Lectures combined with site visits and/or case study analysis.
Content	**Roads :** Road types. Road layout design. Road structure: role and characteristics of different layers. Road geotechnics: laboratory and in situ tests. Earthworks, sub-bases and foundations: materials and implementation principles. Pavement drainage Soil treatment (improvement and stabilization) Auscultation - pathologies. Maintenance. **Bridges :** Notions of maintenance and design.

	Management of a group of bridges in a given area. Bridge types: slab bridge, girder bridge, rigid frame bridge, arch bridge, cable-stayed bridge, suspension bridge, movable bridge. Materials used. Bridge construction methods, with or without prefabricated structural elements. Possible spans according to type. Specific bridge elements: supports, expansion joints, waterproofing, drainage systems, pedestrian parapets, safety barriers, instrumentation, etc. Bridge pathologies. A link will be made with technical prescriptions or design details that can reduce the impact of these pathologies. Bridge management : Concepts of bridge management systems (load testing, inspection, indicators, monitoring, etc.). Bridge design. Actions on bridges (permanent loads, variable loads, accidental actions). **Construction management :** Discover the different stages of a project from conception to final acceptance. Learn about the different methods of awarding contracts. Establish the principles of price calculation: work, cost and sales prices. Learn the principles of work scheduling (activities, duration and links) in order to prepare a site schedule and establish the critical path. Learn the various aspects of work execution: administrative management, budget control, quality management, safety, etc...
Inline resources	Available on Moodle
Bibliography	Available on Moodle
Faculty or entity in charge	GC

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Civil Engineering	GCE2M	4		🔍
Master [120] in Architecture and Engineering	ARCH2M	4		🔍