Ph.D. programme in Civil Systems Engineering

Basic course

Geographic Information Systems to support decision-making processes

eng. Gerardo Carpentieri

Credits: 3 CFU
Number of hours: 18 frontal hours
Date: 14, 16, 21, 23, 28, 30 January 2025

Objectives: The course aims to provide students with the fundamental knowledge and skills necessary for collecting, reading, interrogating, analysing and representing alphanumeric and spatial (vector and raster) data in GIS environment. The course will be divided into a first theoretical part and a second application part. The theoretical part will present the functions underlying the acquisition, management, interrogation, processing and return of spatial data in GIS environment. The application part will be developed interactively with the students and dedicated to providing the necessary skills for reading, measuring, interpreting and monitoring spatial phenomena according to a specific cognitive objective through open-source software (QGis). The exercises will show how using Geographical Information Systems can support urban and territorial systems' governance decision-making processes.

Course programme: The course will cover general GIS concepts, data types and attributes, geoprocessing operations, and the creation of thematic maps and decision support tools.

Teaching materials: Lecture notes and/or indication of websites provided by the teacher.

Assessment methods: Final interview

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Lectures Program

N	Date	Schedule	Duration	Room	Topic / Teacher
1	14/01/25	13:30 - 16:30	3 hours	-	- Introduction to GIS - The use of GIS to support urban and territorial governance process
2	16/01/25	13:30 - 16:30	3 hours	-	- The classification and use of data in Geographic Information Systems (GIS); - Data types; - Data and attributes in GIS.
3	21/01/25	13:30 - 16:30	3 hours	-	- Data production; - Spatial data analysis - Creating thematic maps.
4	23/01/25	13:30 - 16:30	3 hours	-	Exercitation using vector and raster data at micro scale
5	28/01/25	13:30 - 16:30	3 hours	-	Exercitation using vector and raster data at urban scale
6	30/01/25	13:30 - 16:30	3 hours	-	Exercitation using vector and raster data at territorial scale

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