

POLI25

Using the Geographical Information Systems for the quantitative and qualitative landscape analysis

Reference professor: Giovanna Sona

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Politecnico di Milano
Dipartimento Dastu
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Number of participants: 10 to 20

English level: Basic/medium

Other requirements: a personal notebook/computer

Keywords: GIS, landscape, spatial analysis, geostatistics, cartography, database

Course exam: written exam at the end of the course (closed questions)

Prerequisites: none, just curiosity and willingness to learn something new

Objectives: developing skills in the spatial quantitative and qualitative analysis of landscape through the use of GIS tools

Main bibliography references:

Geospatial analysis: a comprehensive guide to principles, techniques and software tools / Michael J. de Smith, Michael F. Goodchild, Paul A. Longley

Next generation geospatial information: from Digital Image Analysis to Spatiotemporal Databases / Edited by Peggy Agouris and Arie Croitoru

Course code	POLI25
Course title	Using the Geographical Information Systems for the quantitative and qualitative landscape analysis
Institution	Politecnico di Milano
Course address	piazza Leonardo da Vinci 33
City	Milano
Minimum year of study	3 rd year
Minimum level of English	fair
Minimum level of French	N/A
Key words	GIS, landscape, spatial analysis, geostatistics, cartography, database
Language	English
Professor responsible	Alessandra Pandolfi
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Participating professors	
Number of places	Minimum: 10, Maximum: 20, Reserved for local students: no
Objectives	Developing skills in the spatial quantitative and qualitative analysis of landscape through the use of GIS tools. Landscape is “an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors” (Council of Europe, European Landscape Convention, 2000). The changing conditions of this complex factor that determines the variability of our local and national contexts can be

effectively measured thanks to quantitative and qualitative indicators, which could be calculated using GIS, thanks to elements of geostatistics and numeric cartography. This course will illustrate, then, the speculative basics of the need of using GIS for the quantitative and qualitative landscape analysis.

Program to be followed

Monday morning (3 hrs of frontal lecture, 1 of practical applications): overview of the course and introduction to freeware GIS softwares for the landscape analysis. GIS softwares and their use.

Monday afternoon (2 hrs of visit on site): visit to a urban landscape site in the city of Milan to be analyzed in the following days.

Tuesday morning (4 hrs of frontal lecture): numeric cartography basics for the GIS software use. Elements spatial cartographic data for the landscape analysis. Elements of geostatistics for the landscape analysis. Introduction to the multivariate statistics (cluster analysis) and other statistical tools for the geographic analysis.

Tuesday afternoon (2 hrs of practical applications): using a GIS for the geostatistic analysis. Features and use of the main GIS tools. Main quantitative indicators to be calculated for the landscape analysis.

Wednesday morning (2 hrs of frontal lecture, 2 of practical applications): database collection, organization and management for the quantitative and qualitative landscape analysis. Elements about data collection and examples of existing databases.

Wednesday afternoon (2 hrs of practical applications): using a GIS for the landscape analysis. Features and use of the main GIS tools. Main qualitative indicators to be calculated for the landscape analysis.

Thursday morning (2 hrs of frontal lecture, 2 of practical applications): case studies and possible use of the landscape analysis in the planning tools. Practical exercises.

Thursday afternoon (2 hrs of visit on site): final visit to the urban landscape site in the city of Milan analyzed during the week.

Friday morning (4 hrs): written and practical exam

Friday afternoon (2 hrs): exams correction

Course assignment

Written and practical exam on the course exercises made by students during classes

Prerequisites

Some basic knowledge about landscape theories

The course is mainly addressing Architects, Urban Planners and Civil/Environmental Engineers

Requirements: a personal notebook/computer

Course exam

Written and practical

Architecture and town planning

Environmental sciences

Natural environments and wildlife

Sociology and cultural studies