POLI25
Using the Geographical information systems for the quantitative and qualitative landscape analysis

Reference professor: Alessandra Pandolfi (+393493616277, alessandramaria.pandolfi@polimi.it)

Politecnico di Milano
Dipartimento Dastu
via Bonardi 3
20133 Milano

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	3rd 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
Telephone	
Fax	
Email	alessandramaria.pandolfi@polimi.it
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 (4 hrs of frontal lecture): numeric cartography basics for the Gis software use. Elements introducing the use of spatial cartographic data for the landscape analysis. *Tuesday morning* (4 hrs of frontal lecture): 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 frontal lecture, 2 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* (1 hr of frontal lecture, 3 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* (2 hrs of frontal lecture, 2 of practical applications): case studies and possible use of the landscape analysis in the planning tools. Practical exercises. *Friday morning* (4 hrs): written and practical exam *Friday afternoon* (4 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

POLI 25 DETAILED PROGRAM

Monday morning (9-13) ROOM CS 0.11: overview of the course and introduction to freeware Gis softwares for the landscape analysis. Gis softwares and their use.

Monday afternoon (14-18) ROOM CS 0.11: numeric cartography basics for the Gis software use. Elements introducing the use of spatial cartographic data for the landscape analysis.

Tuesday morning (9-13) ROOM CS 0.11: introducing WebGIS applications and use. Introduction to the web applications and other web-based tools for the geographic analysis.

Tuesday afternoon (14-18) ROOM CS 0.11: numeric cartography basics for the Gis software use. Elements introducing the use of spatial cartographic data for the landscape analysis

Wednesday morning (9-13) ROOM CS 0.11: database collection, organization and management for the quantitative and qualitative landscape analysis. Elements about data collection and examples of existing databases.

Wednesday afternoon (14-18) ROOM CS 0.11: 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 (9-13) ROOM CS 0.12: landscape evaluation exercises. Case studies and possible use of the landscape analysis in the planning tools. Practical exercises.

Thursday morning (14-18) ROOM CS 0.12: Visit to the Politecnico Datacenter

Friday morning (9-13) ROOM CS 0.10: preparation of the practical exam

Friday afternoon (14-18) ROOM CS 0.10: practical exam