

Course guide

210345 - RBH - Neighborhood and Housing Regeneration: Urban Analysis with Geographic Information Systems

Last modified: 03/07/2025

Unit in charge: Barcelona School of Architecture
Teaching unit: 753 - TA - Department of Architectural Technology.
Degree: DEGREE IN ARCHITECTURE STUDIES (Syllabus 2014). (Optional subject).
Academic year: 2025 **ECTS Credits:** 5.0 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer:

Others: Primer quadrimestre:
ROLANDO MAURICIO BIERE ARENAS - 1SM
PAÚL ANDRÉS ESPINOZA ZAMBRANO - 1SM
SARA VIMA GRAU - 1SM

REQUIREMENTS

Urban Planning II (second course)

TEACHING METHODOLOGY

- Lecture / Expository Method
- Participatory Expository Class
- Practical Classes
- Cooperative Learning
- Case Study
- Group Workshop

LEARNING OBJECTIVES OF THE SUBJECT

The main objective of this course is to train students in socio-urban and housing analysis, as well as in the analysis of urban-territorial and housing realities, integrating urban regeneration analysis and strategies with the tools of Geographic Information Systems (GIS).

STUDY LOAD

Type	Hours	Percentage
Hours large group	50,0	40.00
Self study	75,0	60.00

Total learning time: 125 h

CONTENTS

General structure

Description:

The contents of the subject are structured in blocks that integrate the conceptualization of urban regeneration with the strategy of the majority of habitability in residential areas, with the practical application of GIS for territorial and urban analysis.

1. Introduction and Conceptual Framework

- Introduced the world of habitability: basic concepts and a retrospective of the regeneration and rehabilitation of disadvantaged neighborhoods.
- Introduced the Geographic Information Systems (GIS) and the geolocation data: main functionalities and applications in the urban and territorial area.
- Installation and configuration of the QGIS software (software and open code) to be used in the course.

2. GIS Foundations and Urban Data Sources

- Introduced to conventional GIS software: Types of spatial data, basic spatial operations and data bases, spatial references and various spatial analyses.
- Bases and structures of open data: Sources of open data of territorial, urban, building level (qualities, history, volumetrics, uses) and sectorial (e.g., energetic), together with other sources of non-institutional data.

3. Methodologies of Socio-Residential and Urban-Territorial Analysis with GIS

- Approach methods to the socio-spatial reality of neighborhoods: qualitative and quantitative methods, studies from multiple scales (village, plot, building, premises, habitat).
- Operations of transformation, aggregation, filtering and relation of data for urban analysis.
- Calculation and interpretation of urban and social indicators: densities, building history, predominant uses, volumetrics.
- Diagnostic methodologies and protocols for the study of large building parks, the residential and constructive reality of the historic centers and areas of the second half of the 20th century, identifying deficiencies and improvement strategies.

4. GIS Applications in Urban Regeneration and Case Studies

- Habitat and vulnerability to Barcelona: physical factors with relevant but not exclusive aspects.
- Studies on the practical aspects of urban regeneration and rehabilitation, both in relation to the area of Barcelona and the Metropolitan Area (AMB). Urban regeneration and social infrastructure: review of cases and actions.
- Management tools of urban regeneration, with a focus on the case of Barcelona.

5. Final Application Work

Development of a proposal for applied analysis of the urban environment to serve open data and the QGIS, demonstrating the integration of the connections and the acquired capabilities.

Specific objectives:

- To understand the different strategies for improving livability through urban regeneration and rehabilitation programs, with an emphasis on the application of new methodologies for approaching and evaluating the physical and social reality of neighborhoods, including aspects of vulnerability.
- To acquire skills to approach the study of residential spaces in a transversal and in-depth manner, considering their multiple scales and shaping factors (architectural, social, and urban).
- To apply methods and resources to diagnose the physical livability conditions of residential buildings and their surroundings, identifying existing shortcomings or deficiencies and establishing study parameters of a technological, environmental, and social nature to address interrelationships in an orderly manner. • Gain training in the use of Geographic Information Systems (GIS) tools, especially open-source software such as QGIS, for the import, transformation, integration, analysis, and representation of geolocated data in a methodologically accurate manner.
- Gain technical skills for downloading and managing open data from various official and non-institutional public sources (collaborative platforms, social networks, sensors).
- Develop the ability to apply criteria for analyzing the territory, the city, and buildings from a social perspective, geared toward public decision-making with an impact on the territory.
- Integrate the acquired knowledge with other subjects, urban planning, and techniques, using analytical tools and procedures to complement the learning process and facilitate its application in future professional practice.

Related activities:

Continuous evaluation

Full-or-part-time: 49h



Theory classes: 32h
Practical classes: 17h

GRADING SYSTEM

Continuous Assessment (100%)

- Group work and exercises (80%)

A central group work will be carried out that will consist of analyzing a case study in Barcelona. This analysis will be approached through the concept of habitability, from three main scales and factors: Urban/Social, Architectural/Residential and Technological, actively integrating the use of GIS tools and methodologies for the collection, analysis and representation of data. The methodical monitoring of the case studies, the preparation of results and maps in partial deliveries, the understanding of the analysis criteria and the operations of the tool, as well as the conceptual analysis criteria will be assessed.

- Oral presentations (20%)

The ability to criticize, discuss and communicate the results of the work, both partial and final, will be assessed, as well as the adequacy of the technical means used. The presentations will allow the originality of the proposals and the ability to produce the results to be assessed.

Individual assignments and exercises (if applicable)

Although they do not have an explicit percentage in the final group assessment, individual progress in the use of GIS tools and the completion of classroom practices will be a fundamental part of the continuous assessment, serving as a basis for teamwork and the acquisition of technical skills.

Final Assessment:

For students who do not pass the continuous assessment, a second assessment must be established, which will consist of a final test of a global nature. The format and content of this test (written, oral and/or submission of work) will be defined according to the criteria of the responsible teaching staff. This test will seek to accredit the internalization of the analysis criteria, the appropriate use of databases and the understanding of the basic operations of the GIS tool applied at the territorial and urban scales.

BIBLIOGRAPHY

Basic:

- Nuevo libro.