Polski Komitet Narodowy
Międzynarodowej Rady Ochrony Zabytków
ICOMOS

FONDAZIONE ROMUALDO DEL BIANCO

SAPIENZA
UNIVERSITÀ DI ROMA

POLITECHNIKA LUBELSKA

UNIVERSIDAD POLITÉCNICA MADRID

SAPERE AUDE
VILNIUS GEDIMINAS
TECHNICAL UNIVERSITY

FONDAZIONE FLAMINIA
PER L'UNIVERSITÀ
IN ROMAGNA

Sustainable
Urban
Rehabilitation in
Europe

ARCHITECTURAL DESIGN
Introduction to the course

Erasmus+

Main Aim

The main purposes and objectives of the course are:

- Gaining knowledge on climate change and regeneration of the Cultural Heritage at building scale
- Gaining knowledge on solutions to overcome barriers for the regeneration and the retrofit of existing buildings
- Ability in the recognition of human factor impact in building retrofit and urban regeneration and in tackling it through the development of public private partnerships and other models and instruments
- Ability to solve design project issues related with adaptive reuse and temporary use of Cultural Heritage

Initial requirements

Initial requirements in terms of knowledge, skills and other competences:

1. Basic knowledge on the impact of the built environment on climate change

2. Knowledge on building retrofit: main barriers and practices to overcome them

3. Abilities in identifying building architectural and construction characteristics, building identity and heritage value

Learning outcomes

Knowledge:

- on climate change related challenges affecting the building stock
- on solutions to overcome barriers for the regeneration and the retrofit of existing buildings

Skills:

- in identifying strategies to upgrade the efficiency and the performances of buildings
- in defining solutions for adaptive reuse and temporary use of buildings with CH values

Social competences:

- awareness of the impact of human behavior on renovation practices and solutions to tackle it

Architectural design study plan

No. of hours		ECTS
lecture	15	1
exercises		
lab		
design	60	4
Total	75	5

Lectures and modules (1/3)

Modules	Programme Contents/hours	Lectures
W1	Introduction to the course: main contents and modalities/1 hour	1. Introduction to the course + Introduction to the design project
W2	Climate change and regeneration of CH at building level: main challenges affecting the existing building stock and the urgency to regenerate it /3 hours	2. Climate change and implications for buildings 3. Cultural Heritage in EU and the role of architecture 4. Relationship between new buildings and heritage (video 45')

Lectures and modules (2/3)

Modules	Programme Contents/hours	Lectures
W3	Regeneration and retrofitting processes and strategies for upgrading the efficiency and the performances of the existing building stock (densification, demolition and rebuilding, urban retrofitting, etc.). Main issues affecting existing buildings and main barriers for historical buildings retrofitting /4 hours	5. Barriers to energy efficiency 6. Energy efficiency for historic buildings 7. Benefit of energy efficiency 8. Renovation programmes for existing buildings: case studies
W4	Social, environmental and economic dimensions of building retrofit and urban regeneration: the human factor and consumer behaviour as a driver rather than a barrier for regenerating the existing buildings /3 hours	9. Social, environmental and economic dimensions of building retrofit 10. Social housing in EU 11. Human factor in building energy savings

Lectures and modules (3/3)

Modules	Programme Contents/hours	Lectures
W5	Adaptive and temporary reuse of CH: practical strategies and skills for solving design project issues related to adaptive reuse, rehabilitation, reconstruction /4 hours	12. Adaptive reuse: drivers and barriers 13. How to manage building adaptive reuse 14. Adapting buildings and cities: tools and actors 15. Adaptive and temporary reuse: case studies

Design work

Public heritage regeneration: the former barracks SANI, Bologna

Design work

Public heritage regeneration: the former barracks SANI, Bologna

- Barracks in the city of Bologna dedicated to Giacomo Sani, a career soldier who participated in the wars of independence and was later elected deputy of the Kingdom of Italy
- Situated in the area of Casaralta, north of the historic centre of Bologna and inside the historic working class district of Bolognina. Situated on the other side of the rail lands serving the city's central station and beneath the lines of the railway ring around the city
- Significantly large site, measuring 105,540 square meters, situated at the centre of a part of the city that played an important role in the industrial development of Bologna
- Constructed to produce and conserve food for the army, the Barracks occupies a strategic position in the entire northern territory
- It was composed of various constructions including storage silos, refrigeration warehouses, boxing and canning factories, slaughterhouse, bakeries, etc.

Design work

List of attachments

HISTORIC MAPS
01 - 1884 Map of fortified Bologna
02 - Historic map of the Barracks in 1930

FRAMEWORK MAPS
03 - Mobility System 1:10,000
04 - Open Spaces 1:10,000
05 - Public Facilities 1:10,000
06 - Urban Functions 1:10,000

SITE PLANS OF THE FORMER SANI BARRACKS
07 - Building Chronology 1:2,000
08 - Criteria for Post-Demolition Conservation 2015 1:2,000
09 - Comparison between the Current and Early 20° Century Site Perimeter 1:2,000

THE STATE OF THE ART
10 - Survey
11 - Photographs
12 - Aerial photograph 2016
13 - Bird's eye view photograph 2016

Design work

Design phases	Hours
01_Analysis of the urban environment	20
02_Concept and sketches	20
03_Building characteristics and representation	20
Total	60

Examination

Assessment method description	Pass threshold
Written examination of lecture contents	30%
Design elaboration	70%

Main references

	Basic literature
1	M. Eames, T. Dixon, M. Hunt, S. Lannon (Eds.), 2014, Urban Retrofitting for Sustainability. Mapping the Transition to 2050, Routledge, London
2	A. Troi, Z. Bastian (Eds.), 2015, Energy Efficiency Solutions for Historic Buildings: A Handbook, EURAC research/Passive House Institute. ISBN 978-3038216469
3	E.H.K. Yung, E.H.W. Chan, 2012, Implementation challenges to the adaptive reuse of heritage buildings: Towards the goals of sustainable, low carbon cities, Habitat International 36 (3) 352-361
	Additional literature
1	D. Barthel-Bouchier, 2016, Cultural Heritage and the Challenge of Sustainability, Routledge, London and New York
2	European Commission, 2015, Identifying macro-objectives for the life cycle environmental performance and resource efficiency of EU buildings, JRC Science and Policy Report
3	S. Syngellakis (Ed.), 2013, Retrofitting of Heritage Structures. Design and evaluation of strengthening techniques, Wessex Institute of Technology.

Polski Komitet Narodowy Międzynarodowej Rady Ochrony Zabytków ICOMOS

Fondazione Romualdo del Bianco

Sapienza Università di Roma

Politechnika Lubelska

Universidad Politécnica de Madrid

Sapere Aude — Vilnius Gediminas Technical University

Fondazione Flaminia per l'Università in Romagna

Sustainable Urban Rehabilitation in Europe

Project "SURE - Sustainable Urban Rehabilitation in Europe"
implemented in frames of Erasmus+ Programme
Key Action 2: Strategic Partnership Projects
Agreement n° 2016-1-PL01-KA203-026232

**Project "SURE - Sustainable Urban Rehabilitation in Europe"
implemented in frames of Erasmus+ Programme
Key Action 2: Strategic Partnership Projects
Agreement n° 2016-1-PL01-KA203-026232**

This publication has been funded within support from the European Commission.

Co-funded by the
Erasmus+ Programme
of the European Union