

2021

O1 INTELLECTUAL OUTPUT
Output type: Studies / analysis –
Best practice guidelines / report

REVIEW



BEST PRACTICES

In Educating Sustainability
and Heritage

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**Enhancing of Heritage Awareness and
Sustainability of Built Environment in
Architectural and Urban Design Higher Education**



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REVIEW: Best Practices In Educating Sustainability and Heritage

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In current time, as a society, we face multiple challenges and dualities: enable growth yet prevent disruption of the existing urban structure, give a response to the needs of the present without compromising the ability of future generations to meet their own needs, preserve the unique architectural and urban heritage that testifies about our past yet innovate within the architectural and urban design for our present.

With the architectural profession's ongoing stratification between architectural theory and praxis, future architects must take both critical and constructive positions regarding future spatial development. A contemporary built environment will have to balance heritage awareness and sustainable approaches while creating new shapes and conditions for new realities. In this complex scenario, a profile of future architects is under question, along with the institutions' structures and programs that are educating them.

Bearing this in mind, HERSUS partners strive to reassess these dualities in the educational process, hence enhancing and testing innovative and creative teaching practices in the field of sustainability of the built heritage. The project strives to improve educators' and researchers' competence and motivation to include curricula elements that will have tangible results, preparing architectural students and educators to become real actors of the environmental change.

Previously mentioned challenges require vital research and continuous improvement of curricular and extracurricular activities in higher education. To have a successful outcome, they must be transnationally carried out and need to achieve a balance between theory (research and education) and practice (institutional and professional). Both locally and globally alternative practices are developed parallel to institutional architectural education, creating

different methodologies and built structures. Within this arena, HERSUS research project is striving to explore new perspectives and challenges regarding the teaching-learning of heritage awareness and sustainability.

This publication presents the results of the first four months of the project and is structured in three main parts:

- Built Architectural and Urban projects (20 projects, four from each of the five partner organizations)
- Pedagogical and Educational Models (20 courses, four from each of the five partner organizations)
- Influence of National Policies on the Sustainability of Heritage (one report per each partner organization)

The applied approach balanced between different geographies, cultures, and scales provides new insight into the complexity of the definition of heritage in the contemporary context, testifying that heritage transposes from an urban artifact to the urban landscape. It confirms the increasing complexity of thinking about urban and architectural heritage, representing a growing challenge for both researchers and educators to implement such topics in curricula.

The prepared publication's quality was contributed by architectural offices and individuals from five different countries, public bodies, and students whose works were used to illustrate the specific course methodologies.

Vladan Djokić, HERSUS project leader

Pedagogical and Educational Models



Serbia (Belgrade)



Italy (Venice)



Cyprus (Nicosia)



Greece (Thessaloniki)



Spain (Seville)

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Emanuela Sorbo
Sofia Tonello

course

01

Integrated Design Lab – Focus 3 Regeneration and Conservation of Historic Buildings and Environments

B77001

UNIVERSITY LEVEL COURSE DETAILS

Institution

✗ Università Iuav di Venezia

Type of Institution

✗ Higher Education Institution

District

✗ Venice, Italy

Department

✗ Department of Architecture and Arts

Faculty

✗ N/A

Study program to which this course belongs

✗ [B77] - Master Degree Program in Architecture (taught in English)

Level

✗ Postgraduate (2nd Cycle)

Year/Semester

✗ Year 2 / Semester 1

Course Type

✗ Lecture
✗ Studio design
✗ Theoretical project

Elective or Compulsory Course

✗ Compulsory

ECTS

✗ 18 ECTS

Lectures/week (hours)

✗ 35

Studios/labs/week

✗ N/A

A diagram that illustrates the position of the course in the structure of the study program:

Courses

1st semester FALL/WINTER 2019/20

30 credits
In the first semester students are trained in urban design and its techniques, with a specific focus on the topics of landscape and environmental sustainability.
The two theoretical courses concentrate on:

- the economic and social phenomena which regulate urban settlements
- the introduction of concepts and perspectives for the construction and control of the complex processes of urban growth and its growth in the 21st century
- the analysis of, and theories on, the contemporary city

Integrated Design Lab focus 1
Sustainable Urban Design & Performance: 6 credits
Architectural and urban design 6 credits
prof. Aldo Agosti
Urban and landscape planning 6 credits
prof. Enrico Fontana
Landscape Architecture 6 credits
prof. Luigi Lubini

Sustainable Property Investment and Valuation

Final-estate appraisal 4 credits
prof. Sergio Caporin
Theory of the city
Urban and landscape planning 6 credits
prof. Maria Chiara Tio

**2nd semester
WINTER/SPRING 2020**
30 credits - 4 credits internship
The second semester focuses on interior design, with a distinct attention to building innovation. The two theoretical courses aim at developing specific topics that are also central to the programme of the integrated design lab, such as:

- exploring the re-inventing potential of contemporary drawing through a careful review of both its traditional and contemporary forms;
- the history of contemporary architecture made in Italy in relation to 20th century interior design traditions

Students may also be given the opportunity to work at a qualified Italian studio for a training period.

Integrated Design Lab Focus 2 Architecture, Interior and Creative Exhibition Design

10 credits
Interior design and staging 6 credits
eminent visiting professor
Architectural technology 6 credits
prof. Danilo Trabucchi
Building physics and energy systems 4 credits
prof. Massimiliano Scappa
History of contemporary architecture
Architectural history 6 credits
prof. Angelo Maggi

Theory and History of Representational Methods

Drawing 6 credits
prof. Agostino De Rosa
chosen by the student
4 credits internship

3rd semester FALL/WINTER 2020/21

30 credits
The third semester focuses on the restoration and reuse of built heritage through

conservation, construction and interior design. It introduces the theme of structural conservation – a most appropriate one with reference to Italian cities – through calculation and structural design in seismic areas, structural consolidation, etc.
The courses provide advanced theoretical knowledge in the fields of:

- architectural history as related to design, projecting and planning
- theories of contemporary architecture.

Integrated Design Lab focus 3 Regeneration and Conservation of Historic Buildings and Environments

18 credits
Architectural and Urban design 6 credits
prof. Fernando De Lillo
Architectural restoration 6 credits
prof. Emanuela Sorlini
Structural engineering 6 credits
prof. Salvatore Russo

Heritage and Project

Architectural history 6 credits
prof. Vitale Zanchetti

Analysis and Theory of Architecture

Architectural and urban design 6 credits
prof. Niko Padoa-Schioppa

4th semester WINTER/SPRING 2020/21

30 credits - 8 (1/2) chosen by the student

In the last semester, students are tutored to complete their final thesis. The Research Lab provides appropriate methodology to work at the thesis project through research on architectural and urban design and by using the most updated multimedia tools and applications. It also offers a seminar on the field specific languages of architecture, urban planning and design and an writing in academic English.
The courses aim at:

- focusing on the themes related to urban theories and the issues of political and applied economics as related to settlements/urban phenomena
- focusing on the topics of 21st century design theory
- planning and writing the thesis.

Research Lab 1 Visual and Narrative towards the Thesis Project

12 credits - 6 credits for the final thesis, which is conducted by a tutor professor and an external tutor
Architectural and urban design 4 credits
eminent visiting professor
Drawing 4 credits
guest lecture
English literature 4 credits
prof. Silvia Scattola

* As an alternative to the Research Lab, students can choose an Erasmus exchange programme of 12 credits (three semesters at a university abroad as research time) + 6 credits for the final thesis, which is realized by a tutor professor and an external tutor.

City Dynamics and Economics

Applied economics 4 credits
prof. Margherita Turvani
chosen by the student (1/2) (1/2)
6 credits

Academic/ Teaching Personnel

- ✕ Full Professor Fernanda de Maio
- Full Professor Salvatore Russo
- Associate Professor Emanuela Sorbo

Program of Study Content

- ✕ Design Project

COURSE CONTENT AND STRUCTURE

The architectural and urban design course aims to convey a method to the new project's definition in an ancient and relevant context. Architectural Restoration Course includes lecture-format lessons, workshop-format review activities, and seminars. The Structural Design Course provides basic knowledge related to the mechanical aptitudes of materials that most connote historical buildings and monumental structures.

The sessions dedicated to the review activities in the educational training contribute the students' independence in the evaluation process for conservation and architectural design.

THE COURSE PURPOSE AND OBJECTIVES IN GENERAL AS WELL AS IN RELATION TO SUSTAINABILITY AND CULTURAL HERITAGE

The course's objective is to provide the student with the critical tools to evaluate the need for new construction and a sense of responsibility towards history driven by architectural heritage.

From Architectural Restoration's point of view, the main goal is to achieve a critical awareness and the analytical and planning tools necessary to master the complexity and existing architecture's restoration design. Regarding the Structural design module, the aim is to provide knowledge and essential information useful for the first sizing calculations in the presence of consolidation, recovery, and retrofitting interventions of historical buildings and monument structures, or parts of them.

THE LEARNING OUTCOMES IN GENERAL (SKILLS, ABILITIES, KNOWLEDGE) WITH REGARD TO SUSTAINABILITY AND CULTURAL HERITAGE

The educational path passes through the historical and material dimensions of architecture as the basis of the architectural restoration project. This approach will enable students to deal with (and apply) a broad spectrum of analytical methods. The path's focus will be on describing and analysing the building in its material substance (regarding survey, languages, techniques, materials, and decay mechanisms) and developing conservation strategies and thought in the normative, cultural and theoretical horizon.

KEY FEATURES



TO WHAT EXTENT DOES THE COURSE ADDRESS ASPECTS OF SUSTAINABILITY AND PROMOTE CULTURAL HERITAGE AS A BASE FOR SOCIAL, ECONOMIC AND ENVIRONMENTAL DEVELOPMENT

SOCIAL

low	medium	high
-----	--------	------

ECONOMIC

low	medium	high
-----	--------	------

ENVIRONMENTAL

low	medium	high
-----	--------	------

THE EDUCATIONAL /TEACHING METHODOLOGY (GENERAL PRINCIPLES, PEDAGOGY AND MANAGEMENT STRATEGIES USED FOR CLASSROOM INSTRUCTION)

The teaching review activity ensures continuous verification of training and the progress of the design exercise. The exam will consist of an oral test. The student have to illustrate the design choices, the graphics and drawings developed during the training, and the knowledge and skills. Students can work individually or in groups. The clarity, synthesis, and language's properties demonstrated in the conversation will contribute to the final grade.

TEACHING/LEARNING MATERIALS (DIDACTIC MATERIALS, RESOURCES, SOFTWARE, ETC.)

The teaching materials (such as slides, study guides, manuals) are available online at the professor's institutional home page. Students can find the theoretical tools as well as a digital copy of the main publications discussed during the course on the same page.

OBSTACLES, IMPEDIMENTS, PROBLEMS AND CHALLENGES REGARDING TEACHING SUSTAINABILITY OR/ AND CULTURAL HERITAGE IN THIS COURSE (IF ANY). PLEASE MENTION THEM BRIEFLY

✕ Yes, in sustainability

Sustainability has different definitions. Understanding the main values according to Cultural Heritage issues will be one of the challenges for IUAV teaching.

PRACTITIONERS/PROFESSIONALS/ EXPERTS INVOLVED IN THE EDUCATIONAL PROCESS? IF YES, PLEASE MENTION THEIR EXPERTISE AND THEIR ROLE IN THE COURSE

✕ Yes

During the restoration course, professionals and experts, such as architects from the Ministry of Cultural Heritage of the local Superintendencies, are involved in researches concerning case-studies and preservation strategies.

EXTERNAL PARTICIPANTS, VISITORS GUEST LECTURERS, ETC, INVOLVED IN THE EDUCATIONAL PROCESS? IF YES, PLEASE MENTION THEIR EXPERTISE AND THEIR ROLE TO THE PROGRAM OF STUDY

✕ Yes

Seminars and lectures are organized according to the course's themes and led by visitor/guest professors or professionals to present different aspects and research concerning case-studies and strategies of preservation, conservation and reuse.

RELATIONSHIP BETWEEN THE COURSE AND THE CURRENT LOCAL NEEDS/ REQUIREMENTS OF LABOUR MARKET IN THE FIELD OF ARCHITECTURAL AND URBAN DESIGN IN RELATION TO SUSTAINABILITY AND HERITAGE

The course aims to concentrate on Venitian historical preserved buildings focusing on strategic urban areas related to Venice to be more adherent with the local needs and requirements.

TO WHOM IT IS ADDRESSED (TARGET AUDIENCE)

- bachelor's degree awarded by the regulations referred to in the Italian Ministerial Decree 270/04 at a course belonging to the L-17 class;
- bachelor's degree in architectural sciences (class 4) according to the Italian Ministerial Decree 509/99 obtained at luav;
- degree or university diploma (also foreign), which allows the recognition of the mandatory 108 ECTS planned for degree programmes related to class L-17.
- B2 proficiency level (or equivalent) in the English language.

Workload/weekly study hours

✗ N/A

Language

✗ English

Evaluation Methods

✗ Project

✗ Project Presentation

Grading System

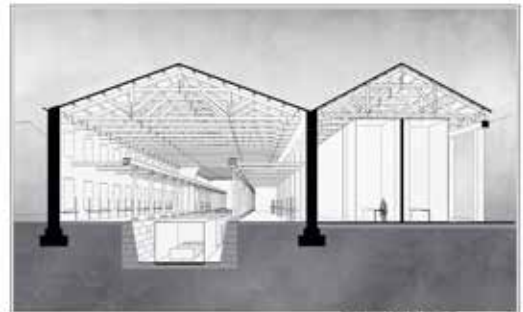
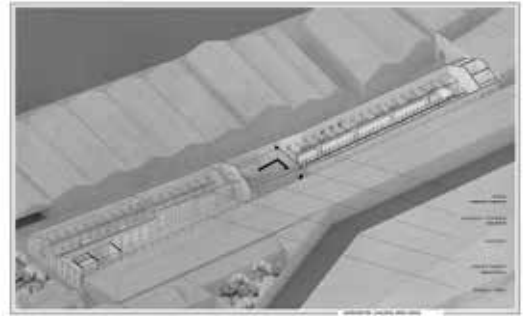
✗ Numerical

Employment influence evaluation
(alumni feedback about employability)

✗ Employed in Private Sector

✗ Employed in Public Sector

✗ Self Employed



RESULTS

The following works of students are the results of the A. Y. 2020/2021 course led by Professor Fernanda de Maio, Professor Salvatore Russo and Professor Emanuela Sorbo.

The course aims to understand the site (The Venetian Arsenal) and enhance it through the design purposes.

The buildings considered for the project are located between the Biennale and the Military Area.

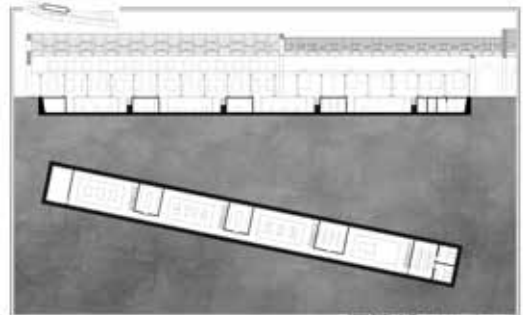


Figure 1 to 4. Educational interdisciplinary path: research, documentation, values assessment, design strategies, and proposal.

Authors: Davidovska, Solano, Joosten

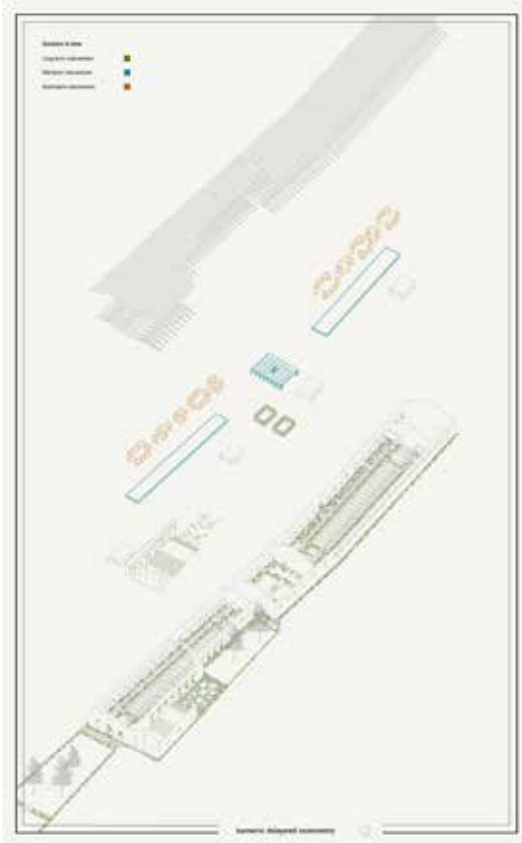


Figure 5 to 11. Educational interdisciplinary path: research, documentation, values assessment, design strategies, and proposal.
Authors: Perotti, Squarcina, Zanin

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Emanuela Sorbo
Sofia Tonello

course

02

Studio 2 Sustainable City Project

B76005 [Laboratorio 2 Il Progetto Sostenibile Per La Citta']

UNIVERSITY LEVEL COURSE DETAILS

Institution

✗ Università Iuav di Venezia

Type of Institution

✗ Higher Education Institution

District

✗ Venice, Italy

Department

✗ Department of Architecture and Arts

Faculty

✗ N/A

Study program to which this course belongs

✗ [B76] - Master Degree Program in Architecture (taught in Italian)

Level

✗ Postgraduate (2nd Cycle)

Year/Semester

✗ Year 1 / Semester 2

Course Type

✗ Lecture

✗ Studio design

✗ Theoretical project

✗ Workshop

Elective or Compulsory Course

✗ Compulsory

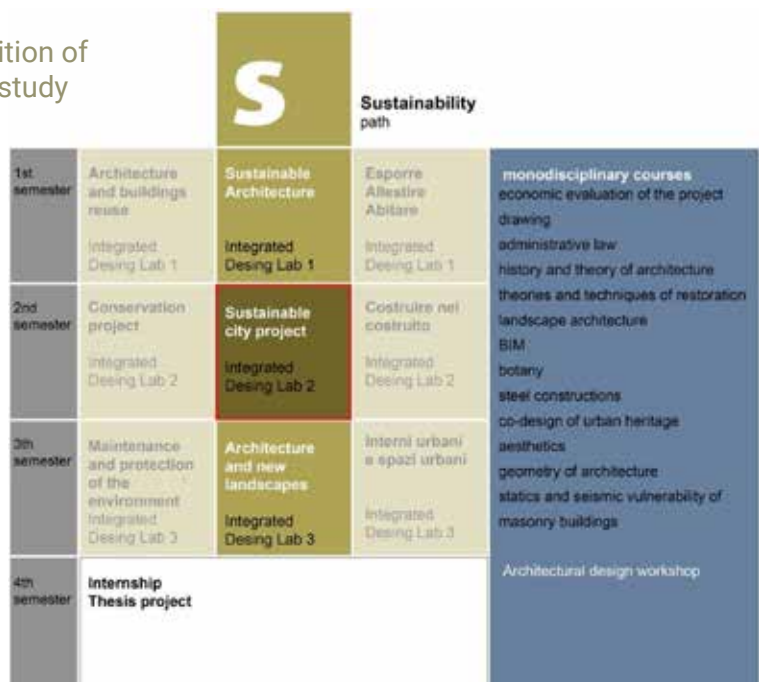
ECTS

✗ 18 ECTS

Lectures/week (hours)

✗ 12

A diagram that illustrates the position of the course in the structure of the study program:



Studios/labs/week

✗ N/A

Academic/ Teaching Personnel

✗ Full Professor Benno Albrecht
Associate Professor Federico Rupi
Researcher Olimpia Mazzarella

Program of Study Content

✗ Design Project

COURSE CONTENT AND STRUCTURE

The students have to analyse the concept of "place attachment" and apply their analysis to a wide range of conditions. (Revitalisation and evolution in Italian historical centres, the fight against abandonment in small rural centres, etc.). The Structural Design module aims to provide students familiarity with materials' mechanical behavior, the structural aspects of architectural analysis and design. The Transport module aims to make students understand the dynamics that govern the mobility processes and the intervention project on the connections between infrastructures and the local context and, in particular, the urban environment, depending on the city object of the project exercises.

THE COURSE PURPOSE AND OBJECTIVES IN GENERAL AS WELL AS IN RELATION TO SUSTAINABILITY AND CULTURAL HERITAGE

The course strives to investigate "place attachment" as a multidimensional concept concerning the single person, the psychological process, and the place's dimensions. The meaning of places does not come from individual experiences, rather from the interaction and sharing people. The psychological process consists mainly of three elements: affection, cognition, and behaviour. The places attachment influences individual and collective behaviours and consequently the desire for the maintenance, modernization, or conservation of places.

THE LEARNING OUTCOMES IN GENERAL (SKILLS, ABILITIES, KNOWLEDGE) WITH REGARD TO SUSTAINABILITY AND CULTURAL HERITAGE

The learning awaited outcome is to improve the students' ability and knowledge regarding the identification of cultural values of social and urban decay.

The course aims to analyse the concept of "place attachment". The didactic track starts from the identification of the values and problems of the site as cultural expressions. It ends with the design process of rehabilitation from the urban to the architectural scale according to social, economic, and environmental needs.

KEY FEATURES



TO WHAT EXTENT DOES THE COURSE ADDRESS ASPECTS OF SUSTAINABILITY AND PROMOTE CULTURAL HERITAGE AS A BASE FOR SOCIAL, ECONOMIC AND ENVIRONMENTAL DEVELOPMENT

SOCIAL



ECONOMIC



ENVIRONMENTAL



THE EDUCATIONAL /TEACHING METHODOLOGY (GENERAL PRINCIPLES, PEDAGOGY AND MANAGEMENT STRATEGIES USED FOR CLASSROOM INSTRUCTION)

Lectures and weekly reviews with discussion in small groups of the projects.

TEACHING/LEARNING MATERIALS (DIDACTIC MATERIALS, RESOURCES, SOFTWARE, ETC.)

The students can refer to working files and didactic materials available online at the institutional home page of the professor.

OBSTACLES, IMPEDIMENTS, PROBLEMS AND CHALLENGES REGARDING TEACHING SUSTAINABILITY OR/ AND CULTURAL HERITAGE IN THIS COURSE (IF ANY). PLEASE MENTION THEM BRIEFLY

Yes, in cultural heritage

The course deals with cultural heritage in terms of "sense of place" and "place attachment". But, it does not include the historical-critical and constructional aspects.

PRACTITIONERS/PROFESSIONALS/ EXPERTS INVOLVED IN THE EDUCATIONAL PROCESS? IF YES, PLEASE MENTION THEIR EXPERTISE AND THEIR ROLE IN THE COURSE

Yes

During the course, practitioners, professionals and experts are involved in seminars and lectures to present themes and applied case-studies.

EXTERNAL PARTICIPANTS, VISITORS GUEST LECTURERS, ETC, INVOLVED IN THE EDUCATIONAL PROCESS? IF YES, PLEASE MENTION THEIR EXPERTISE AND THEIR ROLE TO THE PROGRAM OF STUDY

Yes

Seminars and lectures are organized by the teacher and led by visitor/guest professors to enhance different points of view on the case study.

RELATIONSHIP BETWEEN THE COURSE AND THE CURRENT LOCAL NEEDS/ REQUIREMENTS OF LABOUR MARKET IN THE FIELD OF ARCHITECTURAL AND URBAN DESIGN IN RELATION TO SUSTAINABILITY AND HERITAGE

The course reflects on the concept of place attachment. The analysis can be applied to a wide range of conditions all over the world; for example the revitalization and evolution in Italian historic centers, the fight against abandonment in small rural centers, etc.

TO WHOM IT IS ADDRESSED (TARGET AUDIENCE)

- bachelor's degree awarded by the regulations referred to in the Italian Ministerial Decree 270/04 at a course belonging to the L-17 class;
- bachelor's degree in architectural sciences (class 4) according to the Italian Ministerial Decree 509/99 obtained at luav;
- degree or university diploma (also foreign) which allows the recognition of the mandatory 108 ECTS planned for degree programmes related to class L-17.

Workload/weekly study hours

N/A

Language

Italian

Evaluation Methods

- Project
- Project Presentation

Grading System

Numerical

Employment influence evaluation
(alumni feedback about employability)

- ✗ Employed in Private Sector
- ✗ Employed in Public Sector
- ✗ Self Employed

RESULTS

The following works of students are the results of the previous year course led by BENNO ALBRECHT, ANDREA SARDENA and OLIMPIA MAZZARELLA.

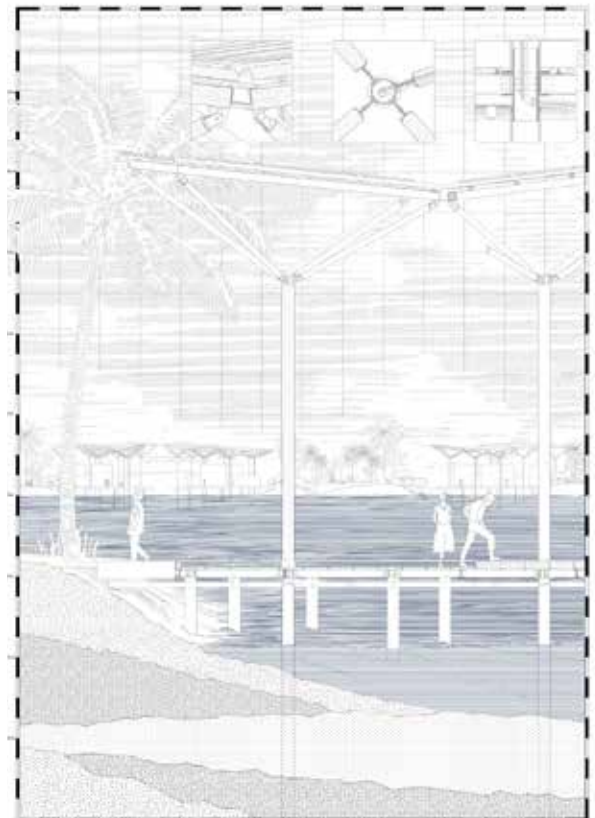
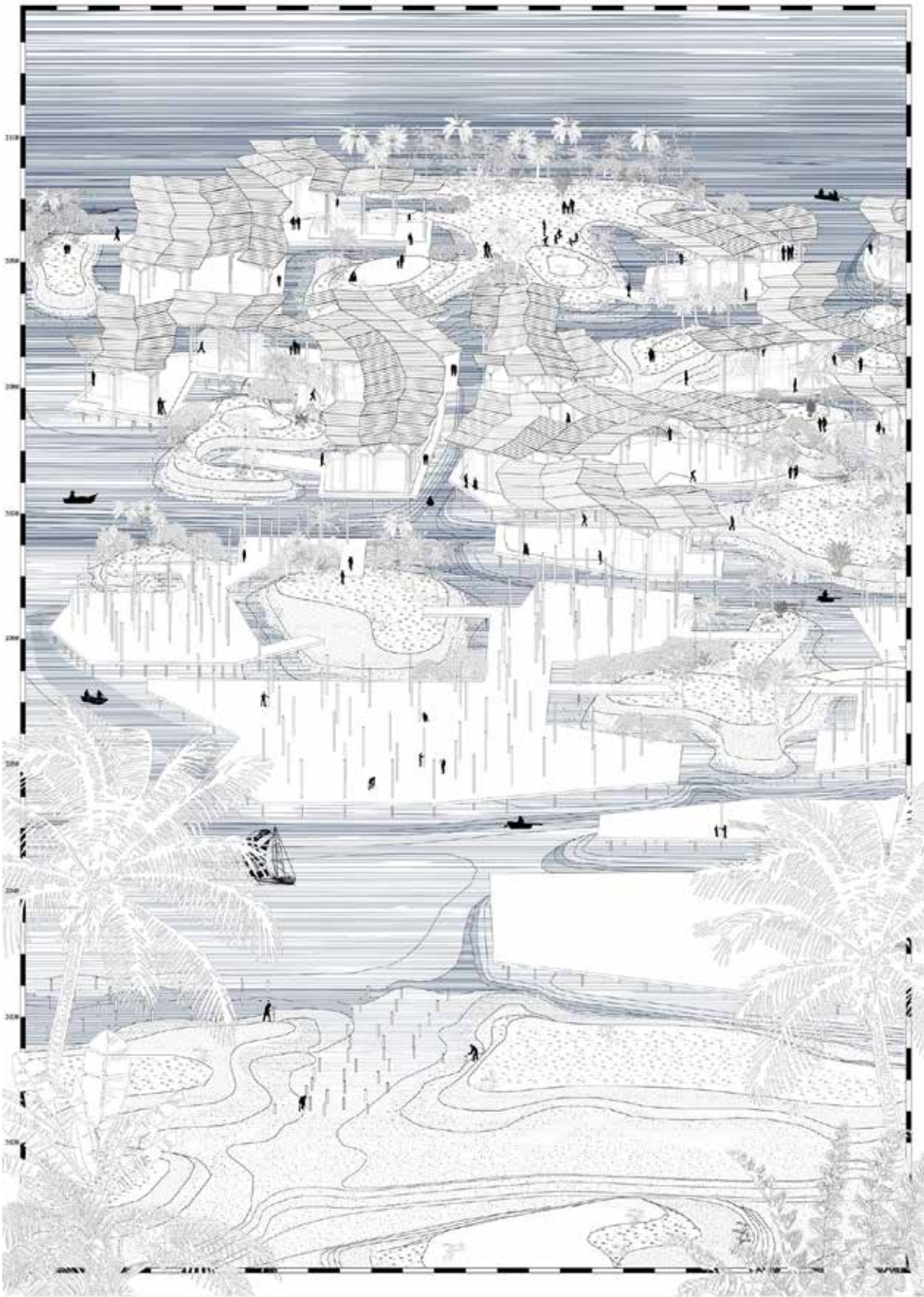


Figure 1, 2 and 3. Student works

Francesca Gallo, Stephanie Marija Krosnjak, Andra Herenciu



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Emanuela Sorbo
Sofia Tonello

course

03

Restoration Theories and Techniques

B76010 [Teorie e tecniche del restauro]

UNIVERSITY LEVEL COURSE DETAILS

Institution

✗ Università luav di Venezia

Type of Institution

✗ Higher Education Institution

District

✗ Venice, Italy

Department

✗ Department of Architecture and Arts

Faculty

✗ N/A

Study program to which this course belongs

✗ [B76] - Master Degree Program in Architecture (taught in Italian)

Level

✗ Postgraduate (2nd Cycle)

Year/Semester

✗ Year 1 / Semester 2

Course Type

✗ Lecture

✗ Studio design

✗ Theoretical project

Elective or Compulsory Course

✗ Compulsory

ECTS

✗ 6 ECTS

A diagram that illustrates the position of the course in the structure of the study program:

		C Conservation path			
1st semester	Architecture and buildings reuse Integrated Desing Lab 1	Sustainable Architecture Integrated Desing Lab 1	Esporre Abitare Integrated Desing Lab 1	monodisciplinary courses economic evaluation of the project drawing administrative law history and theory of architecture	
2nd semester	Conservation project Integrated Desing Lab 2	Sustainable city project Integrated Desing Lab 1	Costruire nel costruito Integrated Desing Lab 2	History and theory of restoration landscape architecture BIM botany steel constructions co-design of urban heritage	
3th semester	Maintenance and protection of the environment Integrated Desing Lab 3	Architecture and new landscapes Integrated Desing Lab 1	Interni urbani e spazi urbani Integrated Desing Lab 3	aesthetics geometry of architecture statics and seismic vulnerability of masonry buildings	
4th semester	Internship Thesis project			workshop intensive Architectural design workshop	

Lectures/week (hours)

✕ 6

Studios/labs/week

✕ N/A

Academic/ Teaching Personnel

✕ Restoration Theories and Techniques is a course with three different divisions led by three different professors. Students can choose the professor with whom they attend the teaching classes. Each professor may deal with the issue by balancing the relationships between preservation, operation, and cultural vision. The following description concern the course led by Professor Emanuela Sorbo.

Program of Study Content

- ✕ Design Project
- ✕ Research Methodology Course

COURSE CONTENT AND STRUCTURE

The course consists of critical, theoretical, and operational components. The theoretical part considers the relationships between preservation, operation, and cultural vision through rules and case studies. The design exercise focuses on the methodologies for assessing the conservation status and the design features of a selected case-study, a historical building in particular conditions of decay and abandonment.

THE COURSE PURPOSE AND OBJECTIVES IN GENERAL AS WELL AS IN RELATION TO SUSTAINABILITY AND CULTURAL HERITAGE

The objective of the Restoration Theories and Techniques course is to acquire knowledge and skills of the methods of analysis and design of the architectural heritage that can interface on different horizons:

- protection guidelines through cultural connections and reference application cases;
- historical architecture understanding,

evaluation, and analysis in the connection between the past stratifications, and the material traces as a preliminary basis of the project;

- conservation and restoration strategies characterized by a contemporary normative, cultural and theoretical horizon;
- elaboration of project outlines.

The course focuses on historical building rehabilitation and restoration according to the theoretical path and the technical tools taught during the lectures. The didactic track starts from identifying the ancient building as part of the cultural heritage through the historical, social, economic, and environmental evaluation. The final goal is the design process of restoration according to social, economic, and environmental needs.

KEY FEATURES



TO WHAT EXTENT DOES THE COURSE ADDRESS ASPECTS OF SUSTAINABILITY AND PROMOTE CULTURAL HERITAGE AS A BASE FOR SOCIAL, ECONOMIC AND ENVIRONMENTAL DEVELOPMENT

SOCIAL

low	medium	high
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ECONOMIC

low	medium	high
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ENVIRONMENTAL

low	medium	high
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THE LEARNING OUTCOMES IN GENERAL (SKILLS, ABILITIES, KNOWLEDGE) WITH REGARD TO SUSTAINABILITY AND CULTURAL HERITAGE

The exam consists of an interview on the theoretical, critical, and design process with drawings and theories relating to the case study.

The synthetic list of the material required for the exercise consists of:

- historical-constructive analysis in axonometric section;
- evaluation of the state of conservation of the elements being analysed (walls, floors, vaults, pillars, columns);
- project outlines (formal, technological, structural, functional solutions);
- project visions (critical paper, with technique and representation chosen by the student).

THE EDUCATIONAL /TEACHING METHODOLOGY (GENERAL PRINCIPLES, PEDAGOGY AND MANAGEMENT STRATEGIES USED FOR CLASSROOM INSTRUCTION)

The course includes introductory ex-cathedra lectures, laboratory-type revision activities, workshop sessions, and seminars with invited lecturers.

There are moments of collective review to develop a critical discussion within the course and monitor students' progress. Students are invited to exhibit and collectively present the drawings derived from the examination path conducted up to that moment. The presentation methods may also include the use of digital media.

TEACHING/LEARNING MATERIALS (DIDACTIC MATERIALS, RESOURCES, SOFTWARE, ETC.)

The teaching materials (such as slides, study guides, manuals) are available online at the professor's institutional home page. Students can find the theoretical tools as well as a digital copy of the main publications discussed during the course on the same page.

OBSTACLES, IMPEDIMENTS, PROBLEMS AND CHALLENGES REGARDING TEACHING SUSTAINABILITY OR/ AND CULTURAL HERITAGE IN THIS COURSE (IF ANY). PLEASE MENTION THEM BRIEFLY

✗ Yes, in sustainability

Sustainability has different definitions. Understanding the main values according to cultural heritage issues will be one of the challenges for IUAV teaching.

PRACTITIONERS/PROFESSIONALS/ EXPERTS INVOLVED IN THE EDUCATIONAL PROCESS? IF YES, PLEASE MENTION THEIR EXPERTISE AND THEIR ROLE IN THE COURSE

✗ Yes

During the restoration course, professionals and experts as architects from the Ministry of Cultural Heritage of the local Superintendencies are involved in research concerning the case-studies and preservation strategy.

EXTERNAL PARTICIPANTS, VISITORS GUEST LECTURERS, ETC, INVOLVED IN THE EDUCATIONAL PROCESS? IF YES, PLEASE MENTION THEIR EXPERTISE AND THEIR ROLE TO THE PROGRAM OF STUDY

✗ Yes

The course aims to extend the comprehension of the historical buildings and cultural heritage now dismissed. During the course, external participants, visitors and guests are involved to provide a dialogue between the students and local institutions, such as Municipalities and national institutions as Superintendence.

RELATIONSHIP BETWEEN THE COURSE AND THE CURRENT LOCAL NEEDS/REQUIREMENTS OF LABOUR MARKET IN THE FIELD OF ARCHITECTURAL AND URBAN DESIGN IN RELATION TO SUSTAINABILITY AND HERITAGE

According to the course's focus, every year is improved by the collaboration with local institutions, such as Municipalities and national institutions as Superintendence, with the aim to focus the course on applied case-studies.

TO WHOM IT IS ADDRESSED (TARGET AUDIENCE)

- bachelor's degree awarded by the regulations referred to in the Italian Ministerial Decree 270/04 at a course belonging to the L-17 class;
- bachelor's degree in architectural sciences (class 4) according to the Italian Ministerial Decree 509/99 obtained at luav;
- degree or university diploma (also foreign) which allows the recognition of the mandatory 108 ECTS planned for degree programmes related to class L-17.

Workload/weekly study hours

✗ N/A

Language

✗ Italian

Evaluation Methods

- ✗ Oral Exam
- ✗ Project
- ✗ Project Presentation

Grading System

✗ Numerical

Employment influence evaluation (alumni feedback about employability)

- ✗ Employed in Private Sector
- ✗ Employed in Public Sector
- ✗ Self Employed

RESULTS

The following students' works are the results of the previous years (A. Y. 2019/2020) course led by Professor Emanuela Sorbo.

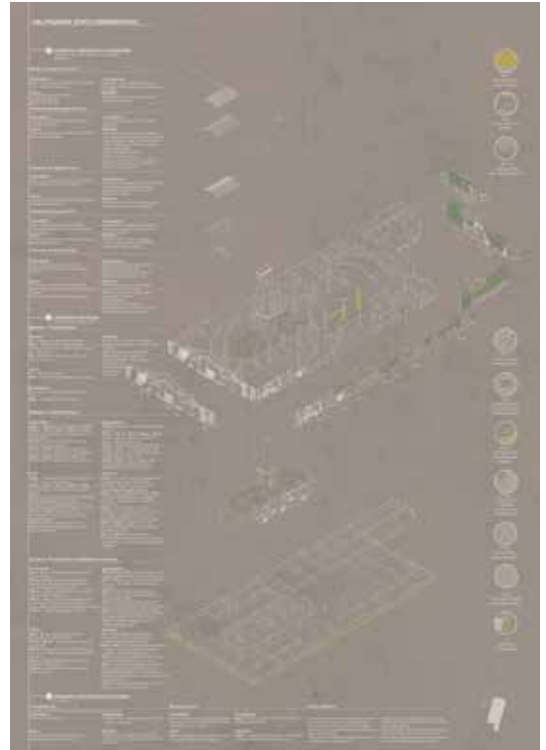
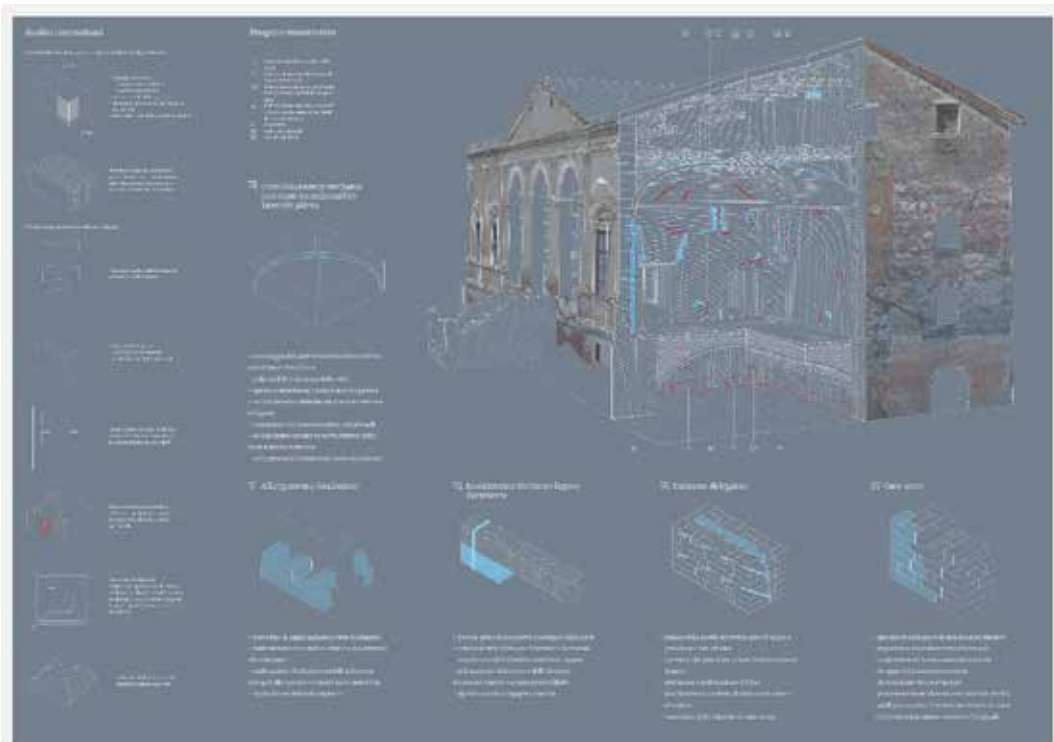
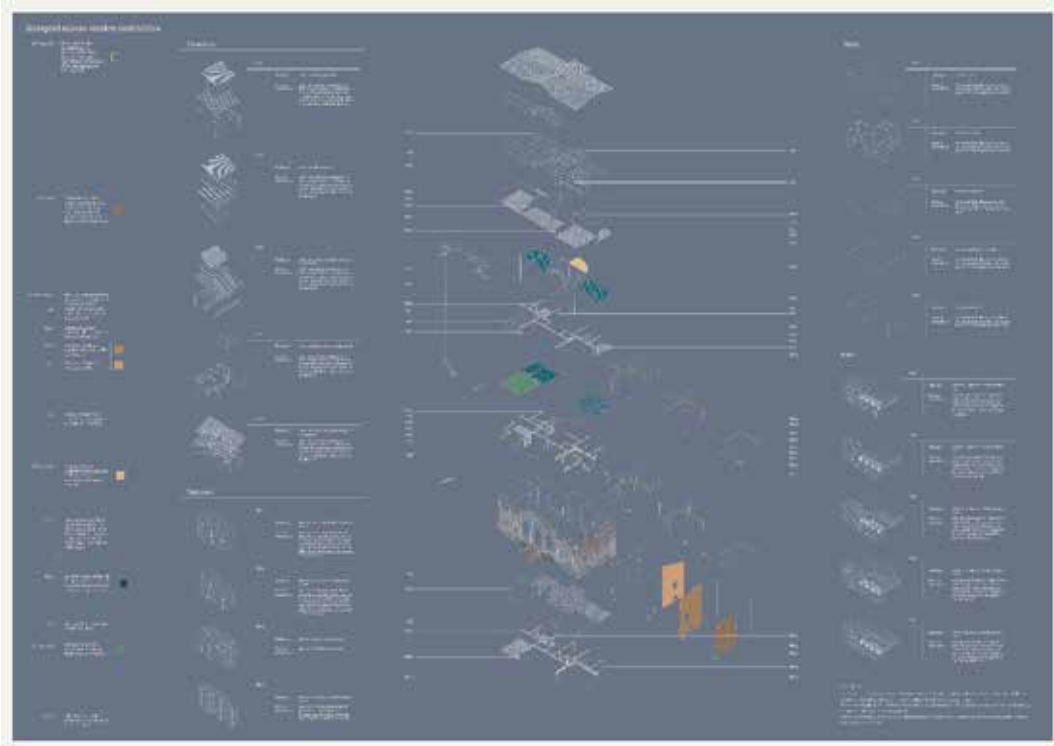


Figure 1-2. Guerra Gregory Klin, Treviso. CDP.
Authors: Calisti, Cane, Kovacic, Longa, Magro

Course path:
 - HTAE - Historical Technical Architectural Evaluation;
 - TCAE - Technical Conservative Architecturale Evaluation;

- CDP - Conservation Design Process | Solutions and Strategy.

Figure 3-4. Villa Gazzotti Grimani (by Andrea Palladio). CDP.
 Authors: Madinelli Pettinà, Vesentini



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Emanuela Sorbo
Sofia Tonello
Fabrizio Antonelli

course

04

APPLIED PETROGRAPHY: DETERIORATION OF STONE AND LITHOID BUILDING MATERIALS

SSIBAP [Elementi di petrografia applicata. Degrado dei materiali lapidei e litoidi]

UNIVERSITY LEVEL COURSE DETAILS

Institution

✗ Università Iuav di Venezia

Type of Institution

✗ Higher Education Institution

District

✗ Venice, Italy

Department

✗ Department of Architecture and Arts

A diagram that illustrates the position of the course in the structure of the study program

Study program to which this course belongs

✗ Scuola di Specializzazione IUAV in Beni Architettonici e Paesaggistici - SSIBAP

Level

✗ Postgraduate (3rd cycle)

Year/Semester

✗ Year 1/ Semester 1

Course Type

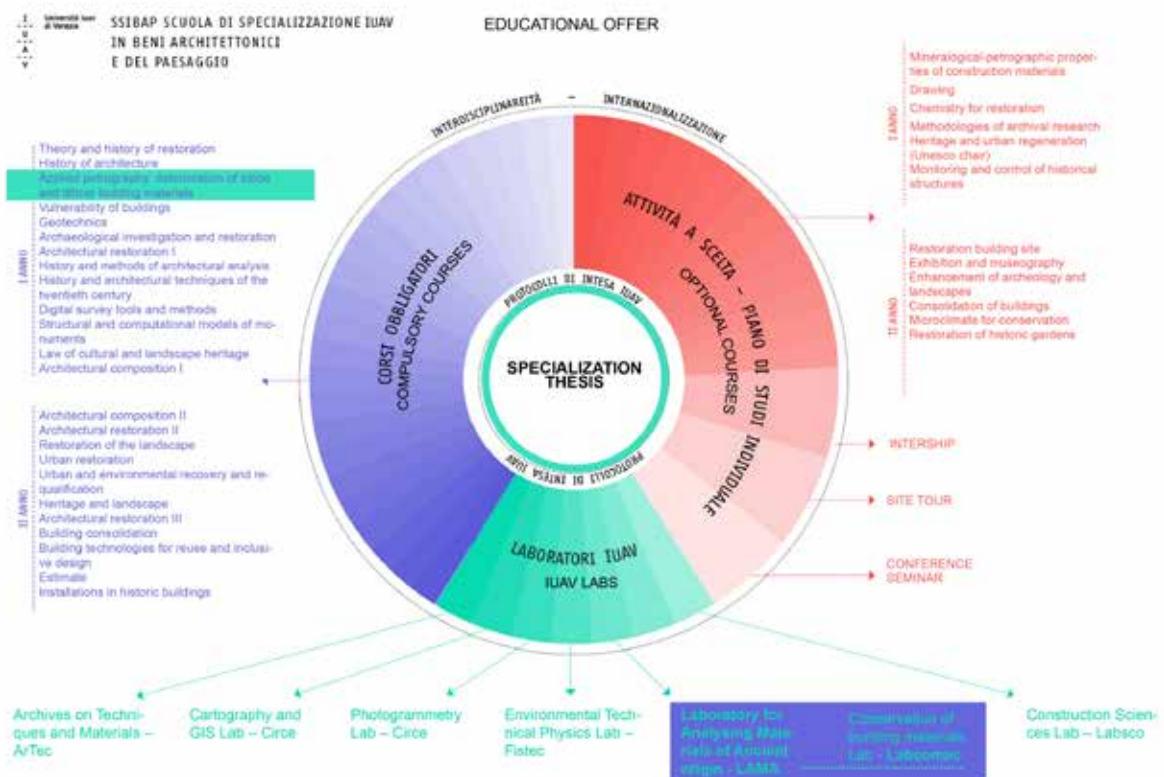
✗ Lecture

Elective or Compulsory Course

✗ Compulsory

ECTS

✗ 4 ECTS



Lectures/week (hours)

✕ 4/week

Studios/labs/week

✕ N/A

Academic/ Teaching Personnel

✕ Associate Professor Fabrizio Antonelli

Program of Study Content

✕ Written Thesis

COURSE CONTENT AND STRUCTURE

The course consists of 5 lesson-days, each of them being 4-hours-long.

The topics of the course will be

- the deterioration of stone and lithoid materials in natural and anthropic environments: intrinsic and extrinsic factors. Macro and microscopic morphologies of the deterioration;
- the main forms of physical decay and chemical alteration of stones in place: vocabulary, causes, and mechanisms of deterioration. Conservation issues;
- the impact of atmospheric pollution and biodeteriogens on the materials of historical buildings;
- the technical and scientific investigations preliminary to the restoration work.

THE COURSE PURPOSE AND OBJECTIVES IN GENERAL AS WELL AS IN RELATION TO SUSTAINABILITY AND CULTURAL HERITAGE

The course aims to provide students with the indispensable basic knowledge about the main physical decay and chemical weathering processes to which the stone and lithoid materials of the historical buildings undergo, in order to be able to predict possible behaviours and potential suitability and durability of specific materials in function of both expected environmental conditions and intended use.

THE LEARNING OUTCOMES IN GENERAL (SKILLS, ABILITIES, KNOWLEDGE) WITH REGARD TO SUSTAINABILITY AND CULTURAL HERITAGE

The course integrates with and completes the courses “Construction materials and mineralogical-petrographic properties.” and “Chemistry of cultural heritage”. This scientific and methodological path aims to provide the vision of the problem of conservation of materials and the project on ancient building stone decorations and buildings with recognised cultural value. The course provides the student with the basis to develop, with the referent teacher and the LAMA laboratory, part of the specialisation thesis’s research path. In this way, aspects relating to (cultural) sustainability are reflected in the attempt

KEY FEATURES



TO WHAT EXTENT DOES THE COURSE ADDRESS ASPECTS OF SUSTAINABILITY AND PROMOTE CULTURAL HERITAGE AS A BASE FOR SOCIAL, ECONOMIC AND ENVIRONMENTAL DEVELOPMENT

SOCIAL



ECONOMIC



ENVIRONMENTAL



to provide trainees with the tools for the knowledge, analysis, and historical conservation of materials in their multiplicity of historical, cultural, and authenticity values.

THE EDUCATIONAL /TEACHING METHODOLOGY (GENERAL PRINCIPLES, PEDAGOGY AND MANAGEMENT STRATEGIES USED FOR CLASSROOM INSTRUCTION)

The course counts ex-chair lessons of a technical-theoretical nature with reports relating to case studies.

The course contents are matched with the teacher's research materials and with a visit to the Laboratory for Analysing Materials of Ancient origin (LAMA), allowing students to see the main laboratory instruments mentioned in the course according to the topics covered.

The comparison with research and its application in the field of Cultural Heritage is the opportunity for SSIBAP students to develop an awareness linked not only to the theory of restoration but also to the scientific activities related to the conservation project of ancient surfaces.

TEACHING/LEARNING MATERIALS (DIDACTIC MATERIALS, RESOURCES, SOFTWARE, ETC.)

The professor signals a select bibliography at the end of each lesson.

Furthermore, during the lessons, various emblematic cases are presented, both relating to the city of Venice and other architectural and archaeological contexts in the Mediterranean. This method allows students to have a direct perception of the various issues dealt with during the course.

OBSTACLES, IMPEDIMENTS, PROBLEMS AND CHALLENGES REGARDING TEACHING SUSTAINABILITY OR/ AND CULTURAL HERITAGE IN THIS COURSE (IF ANY). PLEASE MENTION THEM BRIEFLY

✗ Yes, both in sustainability and heritage

Sustainability has different definitions. Understanding the main values according to cultural heritage issues will be one of the challenges for IUAV teaching.

PRACTITIONERS/PROFESSIONALS/ EXPERTS INVOLVED IN THE EDUCATIONAL PROCESS? IF YES, PLEASE MENTION THEIR EXPERTISE AND THEIR ROLE IN THE COURSE

✗ Yes

The course organization (20 hours) doesn't consider the possibility of additional lecturers during the course. The SSIBAP educational track aims to involve the students in academic and research activities such as conferences or lectures held by external guests or by School professors.

EXTERNAL PARTICIPANTS, VISITORS GUEST LECTURERS, ETC, INVOLVED IN THE EDUCATIONAL PROCESS? IF YES, PLEASE MENTION THEIR EXPERTISE AND THEIR ROLE TO THE PROGRAM OF STUDY

✗ Yes

The course organization (20 hours) doesn't consider the possibility of additional lecturers during the course. The SSIBAP educational track aims to involve the students in academic and research activities such as conferences or lectures held by external guests or by School professors.

RELATIONSHIP BETWEEN THE COURSE AND THE CURRENT LOCAL NEEDS/ REQUIREMENTS OF LABOUR MARKET IN THE FIELD OF ARCHITECTURAL AND URBAN DESIGN IN RELATION TO SUSTAINABILITY AND HERITAGE

The LAMA laboratory investigations are currently used for research activities concerning stone and lithoid materials but are also part of the design of built heritage. In the field of conservation, knowledge, and restoration of ancient monuments. The

course aims to introduce specialists in the practical activities concerning restoration.

TO WHOM IT IS ADDRESSED (TARGET AUDIENCE)

- Degree in Architecture – Old order
- Specialisation or Graduate Degree – Degree class "Architettura e Ingegneria edile" (Architecture and Building Engineering) (4/S, LM-4)
- Specialisation or Graduate Degree – Degree classes Archaeology (2/S, LM-2)
- Specialisation or Graduate Degree – Degree classes "Conservazione dei beni architettonici e ambientali" (Conservation of architectural and landscapes heritage) (10/S, LM-10)
- Specialisation or Graduate Degree – Degree classes "Conservazione e restauro del patrimonio storico-artistico" (Conservation and restoration of the historical-artistic heritage) (12/S)
- Specialisation or Graduate Degree – Degree classes "Conservazione e restauro dei beni culturali" (Conservation and restoration of cultural heritage) (LM- 11)
- Specialisation or Graduate Degree – Degree classes in Arts History (95/S, LM -89)
- Italian and foreign citizens with a degree from foreign universities, if deemed fit by the Specialisation School

Workload/weekly study hours

X N/A

Language

X Italian

Evaluation Methods

X Oral Exam

Grading System

X Numerical

Employment influence evaluation (alumni feedback about employability)

- X Employed in Private Sector
- X Employed in Public Sector
- X Self Employed

RESULTS

Students' following works are the master degree thesis path supervised by professors Fabrizio Antonelli, Emanuela Sorbo and Elena Tesser. This work is an example of the possible activities students can do in collaboration with the LAMA LAB. and the experts and professionals involved.

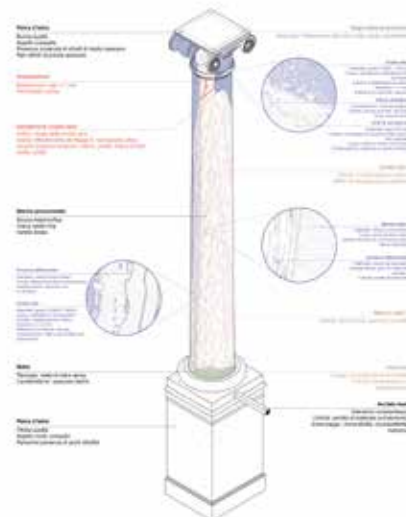
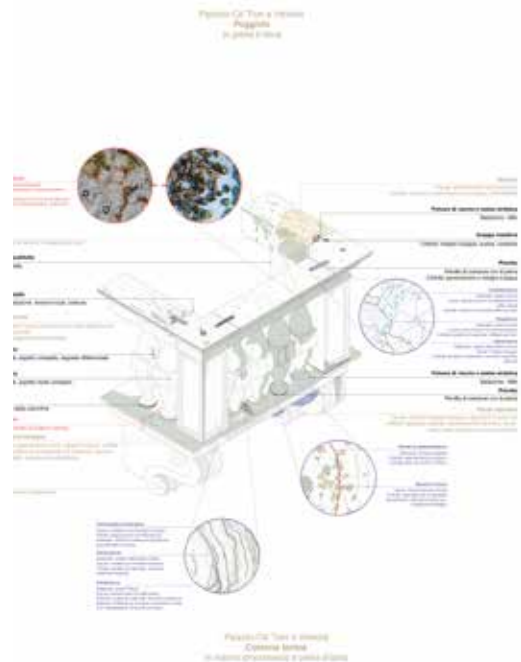
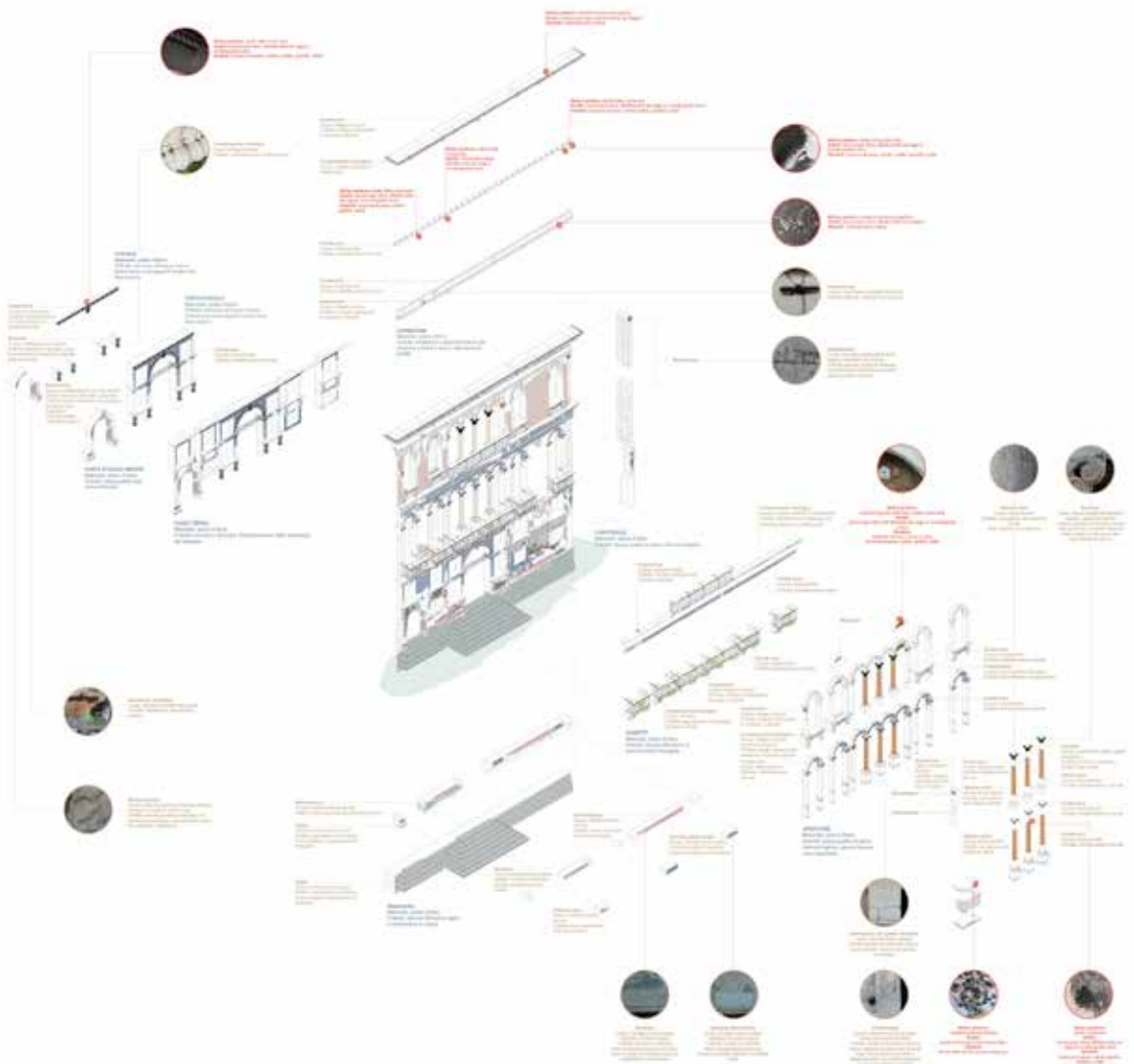


Figure 1-3. Student project.
Authors: Enrico Da Pian, Martina Segafredo

Palazzo Ca' Tron a Venezia
Morfologie del degrado



Influence of National Policies on the Sustainability of Heritage



Serbia (Belgrade)



Italy (Venice)



Cyprus (Nicosia)



Greece (Thessaloniki)



Spain (Seville)

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Enrico Anguillari

report

Influence of national policies on the sustainability of heritage from the architectural and urban design perspective

Reasoned (and not exhaustive) chronicle of the main national urban, landscape and environmental legal provisions, with reference to cultural / built heritage and sustainable development. From 1860 to 2020.

1860 - 1870

> 1861 - the Kingdom of Italy is born
The first legislative act with urban-building references was the law of March 20 1865, n. 2248 for the administrative unification of the Kingdom: in Annex A) provided the right for the Municipal Councils to deliberate on the "regulations of hygiene, building and local police".

The subsequent Regulation implementing this law, the R.D. June 8 1865, n. 2321 identified as a fundamental content of the Municipal Building Regulations, aimed above all at the aesthetic and hygienic safeguarding of buildings, "the plans for enlargement and leveling, or for new alignments of streets, squares or promenades".

> Law 25.6.1865, n. 2359 - Discipline of forced expropriations for reasons of public utility (Repealed)

This law constitutes the fundamental discipline in the field of urban planning - construction, until the entry into force of the fundamental law of urban planning of 1942. The law provided for the expropriation for the construction of public works (roads, railways, canals), including the possibility of expropriating monuments belonging to private individuals, if they were ruined for neglect.

It introduced the institution of the "regulatory plan" for municipalities with a population of over 10,000 inhabitants, a building planning document that is not compulsory. It consisted of two parts: a building master plan, the scope of which was the perimeter of the existing city; an expansion plan, the scope of which was the external district.

1900 -1910

> Law 20.6.1909, n. 364 - Rules for the inalienability of antiquities and fine arts (Repealed)

In the last twenty years of the nineteenth century, there was growing attention towards the protection of artistic heritage. The first national protection law is the law of June 12 1902 n. 185 which established the "Single Catalog" of state-owned monuments and works of historical, artistic and archaeological interest; then modified and systematized with the law June 20 1909, n. 364 (Rosadi-Rava law).

The modern discipline on cultural heritage owes to the Rosadi law its founding principles:

- establishes the principle of inalienability of the cultural heritage of the State and of public and private entities;
- affirms the possibility for the public administration to subject privately owned works considered of "important interest" to protection restrictions;
- promotes the systematic practice of archaeological research;
- outlines the organization and administration, both central and peripheral, responsible for the conservation and protection of cultural heritage.

The aim that the Rosadi law proposes is the reconstruction and maintenance of the historical memory of people. That is, of that set of exemplary testimonies, unique and unrepeatable, to which an aesthetic value is previously attributed and which illustrate the culture of people, from its genesis to its recent developments. Therefore, heritage is considered as a means towards a cognitive purpose, of which the State must act as a guarantor, through targeted policies of protection and dissemination of the acquired knowledge.

1930 -1940

> 1930 - the National Institute of Urban Planning (INU) is born

> 1932 – Italian Restoration Charter

The Italian Restoration Charter was drawn up in 1932 by the Higher Council for Antiquities and Fine Arts, taking up the structure and contents of the Athens Charter drawn up the previous year.

> 1938 - Instructions for the Restoration of Monuments

> Law 1.6.1939, n. 1089 - Protection of artistic and historical interest assets (Repealed), and

> Law 29.6.1939, n. 1497 - Protection of natural beauties (Repealed)

In 1939, the main reform of the twentieth century regarding the protection of cultural heritage was established. The Minister of National Education, Giuseppe Bottai, promotes and guarantees it during the fascist government.

In the legislative corpus of the Bottai reform - based on the two aforementioned laws - which remained in force, without variations or adaptations, until the Consolidated Law of 1999, a broad and articulated perspective emerges regarding the role of cultural assets and landscape beauties.

In Bottai's intentions, the historical, artistic, cultural and environmental heritage is the center around which the identity and unity of a people are built and gathered.

Law no. 1497 of 1939 introduces an organic discipline of landscape protection, understood as "beauty belonging to nature".

In art. 5 provides for the formation of Landscape Plans.

Law no. 1089 of 1939, outlines the subject of protection, and focuses on the main key concepts in the field of heritage protection:

- the procedure of the restriction on private assets recognized as of public interest;
- the provisions for the conservation, integrity and safety of assets;
- the "public enjoyment", in terms of access for visitors, both for State and private assets covered by public interest recognition;

Therefore, the basic concepts and terms of today's conservation and protection discipline are therefore acquired in the Bottai reform.

1940 -1950

> Law 17.8.1942, n. 1150 - National Urban Planning Law

The law fully establishes the General Regulatory Plans (PRG), replacing the old law of 1865.

The Law provided that the PRG were implemented primarily through Detailed Plans and listed the contents for the Building Regulations.

> 1948 - the Constitution of the Italian Republic is promulgated

The public function of cultural and environmental heritage protection rises to the highest legislative dignity with the introduction, in the Republican Constitution, of Article 9.

Paragraphs 1 and 2 states that «the Republic promotes the development of culture and scientific research. It protects the landscape and the historical and artistic heritage of the Nation».

With this solemn declaration, the Italian Republic has given itself a "cultural status" and has adopted the specific policy of assuming as essential tasks of the State the promotion, the development and the cultural growth of the community. In this context, the landscape and the historical and artistic heritage protection are considered primary components of this process (going beyond purely and exclusively patrimonial evaluations).

1950 -1960

> Law 27.10.1951, n. 1402 - Reconstruction plans of towns damaged by the war (Repealed)

For the Municipalities included in specific lists, the law provided the obligation to adopt a "reconstruction plan"; through successive extensions, many municipalities were able to benefit from that particular regime until the early 1980s.

> 1951 - Italia Nostra is born with the aim of preserving and protecting historic centers and natural environments.

> 1960 - Gubbio Charter

It recognizes the national importance of the problems affecting historic centers and highlight the urgency to classify the settlements with historical-environmental value and areas that must be protected and restored, as a prerequisite for the development of the modern city. The document provides the safeguarding restrictions and the suspension of any building intervention, pending the preparation of Conservative Recovery Plans. The Charter rejects the criteria of refurbishment and of stylistic additions, of the demolition of even modest buildings, of the thinning of the urban fabric, of isolation of the monuments, of new interventions in the historical built environment not included in an overall picture of urban transformations.

1960 -1970

> Law 6.8.1967, n. 765 - Amendments and additions to the urban planning law of 17.8.1942, n. 1150.

Called "Legge Ponte", its fundamental innovation concerns the "urban standards": the maximum ratios between the spaces for residential settlements and the public spaces reserved for collective activities, school buildings, such as areas for education, areas for equipment of common interest, public greens or car parks. This set of values has been fixed with two successive decrees, respectively the D.M. 1404 and the D.M. 1444 of 1968.

1970 -1980

> Law 22.10.1971, n. 865 - Public housing programs and coordination; rules on expropriation for public utility
The rules on expropriation for public utility and the amendments to the National Urban Planning Law are reinforced. The field of application of the expropriation is very broad: it concerns the acquisition of the areas and buildings necessary for the construction of public housing, of the areas included in the plans, of those necessary for the construction of urbanization works, as well as for the renewal, also conservative, of existing urban areas.

> 1972 – Restoration Charter

The Restoration Charter was drawn up in 1972 taking up the structure and contents of the Venice Charter drawn up in 1964. It emphasizes the importance of the historical aspect of a building, and introduces for the first time the concept of conservation of the urban environment that surrounds the monumental buildings.

> 1975 – the Ministry for Cultural and Environmental Heritage is established The "Antiquities and fine arts" become "Cultural assets" to underline not only the cultural significance of what must be protected but also its patrimonial value.

> Law 1.3.1975, n. 44 - Measures intended to protect the national archaeological, artistic and historical heritage

> Law 5.8.1978, n. 457 – Regulations for residential construction
Title IV provides the identification of Zones and Building Recovery Plans. In article 31, the various building interventions are defined: ordinary and extraordinary maintenance, restoration, rehabilitation, building and urban planning renovations.

1980 -1990

> Law 28.2.1985, n. 47 - Rules on controlling of urban planning-building activity, sanctions, recovery and amnesty of building work. The so-called "building amnesty", created to remedy the deficit of the public treasury by exploiting illegal activities, had the opposite effect (from an investigation by the Ministry of Public Works., it is noted that, only in 1985, there was a production of about 200,000 illegal housing).

> Law 8.8.1985, n. 431 - Urgent provisions for the protection of areas of particular environmental interest (Galasso law)
On November 26, 1984, the Official Gazette published the Decree of the Minister of

Cultural and Environmental Heritage, concerning the Declaration of notable public interest of coastal land, lakes, rivers, streams, waterways, mountains, glaciers, parks, reserves, woods, forests. The Regions managed to invalidate part of the Law Decree.

In this context, Law 431 was released in August 1985, requiring the Regions to submit their territory to specific regulations for use and environmental enhancement through the drafting of Landscape Plans.

> 1986 - the Ministry of the Environment is established

In the environmentalist trend, some decrees of 1988 related to the implementation of EEC directives was promulgated.

They refer to air quality standards (DPR 203) and water (DPR 236) and to environmental impact analysis (VIA) (Law 146/94 and DPR 12.4.96) containing the list of works subject to this evaluation procedure.

Then, the laws on the Basin and Hydrogeological Structure Plans (Law 183/89) and on Energy Saving which provide for the formation of regional and municipal plans to be added to the PRG (Law 10/91). On March 1 1991, the maximum limits for noise exposure in residential and outdoor environments are introduced, followed by the law on noise pollution (n. 447/95). Both provide for Municipal Acoustic Zoning Plans.

The issue of human exposure to magnetic and electric fields enters the attention of governments first with a Presidential Decree of April 23 1992, then with the Decree of the Ministry of the Environment no. 381 of 98 and subsequently with law no. 36 of 2001 which also delegates the regulatory functions to the Municipalities.

The list of unhealthy industries dating back to 1912 is updated (DM 5.9.94), and a law on protected areas is approved (394/91).

In March 1999, the Directive has been adopted for the arrangement of the subsoil technological infrastructures and for the formation of plans to that effect (PUGGS) to be added to the PRG.

1990 - 2000

> Law 19.4.1990, n. 84 - Organic plan for the

inventory, cataloging and processing of the risk map of cultural heritage, in relation to the Single European Act.

In 1990, following the Single European Act (1981), the aforementioned law was approved, concerning the formation of an organic plan for the inventory and cataloging (with uniform criteria) of all assets (artistic-historical, archaeological, historical, scientific, archival, book), public or private, which constitute an important testimony of the history of civilization and culture; as well as the development of a risk charter for cultural heritage.

> Law 6.12.1991, n. 394 - Framework law on protected areas

Establishment of the register of Italian protected areas

> Law 4.12.1993, n. 493, Article 11
Urban Recovery Programs

> 1993 – CIPE Resolution 28.12.1993 - National plan for sustainable development in the implementation of Agenda 21
With the National Plan for Sustainable Development in implementation of Agenda 21 (CIPE resolution 28.12.1993) the objectives and actions most congruent with the environmental condition of our country and with its social and economic characteristics were selected, considering the sectors already identified by the European Community in the Fifth Program. In addition, some urgencies were indicated in the productive sectors (industry, agriculture, tourism), in basic infrastructures (energy and transport) and in the waste problem. The Plan does not give operational indications but identifies a way to start a sustainable development policy at the national level

“Pursuing sustainable development means seeking an improvement in the quality of life while remaining within the limits of environmental susceptibility. Sustainable development does not mean blocking economic growth, also because even in some areas of our country, the environment itself is a victim of poverty and of degradation it causes. An action plan for sustainable development

must not only promote the conservation of resources, but also encourage productive activities compatible with future uses. It follows that the application of the concept of sustainable development is on the one hand dynamic - i.e. linked to knowledge and the actual state of the environment and ecosystems - on the other it recommends a precautionary approach with regard to situations and actions that can compromise environmental balances, activating a continuous process of error correction."

> Law 11.2.1994, n. 109 - "Merloni law"
A framework law on public works.

> Ministerial Decree of 8.10.1998 - Promotion of innovative programs in the urban environment called "urban regeneration and sustainable development of the territory programs" (PRUSST).

PRUSST has two fundamental objectives:

- the construction, upgrade and completion of facilities (both network and punctual, territorial and urban) capable of promoting and guiding opportunities for economic, environmental and social sustainable development. All that, with regard to the protection of environmental value, to the enhancement of the historical, artistic and architectural heritage, and ensuring the population's wealth increase.
- the creation of an integrated system of actions aimed at the expansion and construction works of industrial, commercial and craft production settlements, the promotion of the hospitality industry and the redevelopment of central and peripheral urban areas affected by degradation phenomena.

> 1998 - the Ministry for Cultural and Environmental Heritage changes its name, becoming the Ministry for Cultural Heritage and Activities

The term "activity" indicates those policies aimed at promoting and enhancing national cultural heritage, also in management and economic terms.

The new name reflects the idea that assets have to be "dynamized" in the context of activities and circumscribes the functions of cultural heritage protection. The law n. 368 of 1998 attributes to the Minister of Cultural Heritage and Activities also the competences

on entertainment and sport, that is, on promotion and enhancement activities.

> Legislative Decree 29.10.1999, n. 490 - Consolidated law on cultural and environmental heritage.

Sixty years after the Bottai laws, all the current legislation on cultural heritage comes to the reorganization. In substance the Veltroni-Melandri consolidated law overlaps with the Bottai law, absorbing its norms and definitions and extensively integrating them with other connecting norms.

It consists of two titles, which respectively concern cultural heritage (articles 1-137) and environmental heritage (articles 138-166).

The main issue discussed was the definition of cultural heritage. Two lines of thought are compared:

- the normative conception of cultural heritage, according to which only those assets expressly identifiable on the basis of existing laws can be considered cultural heritage;

- the unitary conception, according to which all the evidence having a civilization value are cultural assets.

Art. 4 incorporates an open definition of cultural heritage and provides new categories of cultural assets "identified by law as cultural assets as a testimony having the value of civilization".

2000 - 2010

> D.P.R. 6.6.2001, n. 380 - Consolidated law of legislative and regulatory provisions on construction

> Law 1.6.2002, n. 120 - Ratification and execution of the Kyoto Protocol to the UN Framework Convention on Climate Change, done in Kyoto on December 11 1997

> Decree of the Ministry of Infrastructure and Transport 27.5.2002 - Programs concerning the economic and social revitalization of cities and adjacent areas in crisis, to promote sustainable urban development. URBAN - ITALIA

> CIPE Resolution 2.8.2002, n. 57 - Environmental action strategy for sustainable development in Italy

> Legislative Decree 22.01.2004, n. 42 - Code of cultural and landscape heritage
The Code replaces the concept of “environmental good” with the notion of “landscape”, related to urban planning. Sustainable development is mentioned as a perspective towards which undertaking actions and transformation interventions of the landscape context.

> Legislative Decree 3.4.2006, n. 152 - Environmental regulations.
States that the “sustainable development principle must make it possible to identify a balanced relationship between inherited resources to be saved and those to be handed down. In this sense the principle of solidarity is included in the dynamics of production and consumption to safeguard and improve the quality of the environment.
Answers to issues involving environmental aspects must be founded in the perspective of guaranteeing sustainable development, in order to safeguard the correct functioning and evolution of natural ecosystems from the negative changes that can be produced by human activities”.

> Ministerial Decree 28.4.2008 - Guidelines for overcoming architectural barriers in places of cultural interest

2010 - 2020

> 2013 - the Ministry for Cultural Heritage and Activities changes its name to become the Ministry of Cultural Heritage and Activities and Tourism

> CIPE Resolution 22.12.2017, n. 108 - National Strategy for Sustainable Development
The Strategy outlines a vision of the future and of the development focused on sustainability, as a shared and essential value for facing global challenges.
Starting from the “Environmental action strategy for sustainable development in Italy 2002-2010”, the Strategy offers on a broader perspective and becomes a reference framework for sectoral and territorial policies in Italy, designing an important role for institutions and civil society in the long path

of implementation, which will last until 2030. The Strategy hinges on a renewed global framework, aimed at strengthening the often-fragmented path of sustainable development worldwide. The Strategy represents the first step to outline at the national level the principles and objectives of the UN 2030 Agenda for Sustainable Development, assuming the four guiding principles: integration, universality, transformation and inclusion. In this context, among the strategic choices set out in the document is “Creating resilient communities and territories, safeguarding landscapes and cultural assets” in order to “Ensure the development of resources, sustainable management and safeguarding of territories, landscapes and cultural heritage”.

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Conclusion



Serbia (Belgrade)



Italy (Venice)



Cyprus (Nicosia)



Greece (Thessaloniki)



Spain (Seville)



strengths / weaknesses / aspects that can be improved

RELATE OUTPUTS



The insights to different contexts and Schools of Architecture and Urban design enabled the creation of outputs on three levels:

- The internal output (for the consortium partners): The report presents an intellectual knowledge base that will be used as a starting ground for the generation of further intellectual outputs providing the consortium partners the compelling insight into various methodologies, needs, and specific methods.
- The turnaround output (the external output that may re-enter the project as an input): deriving from the analysis of the built projects and national policies, that provides insight into the best practices, technological advancements, actual needs, and the limitations and challenges that practice brings with it. By allowing insights into the gap between theory and practice, the report presents valuable material for improving higher education.
- The external output (intended for practitioners and researchers): The report can be perceived as a global contribution to education in the field of architecture and urbanism- a sort of an open-source database that other researchers may use to gain insight into state of the art. On the other hand, the research on policies regarding sustainability and heritage testifies about the speed and unpredictability of urban development and socio-political conditions, their influence on policies, and the need for continuous policy updates and constant critical assessment justified by the situation and comparison between different countries.

Having this in mind, we firmly believe that the open-source access type will enable this publication to reach these perceived output levels and to come to readers from all around the world.

CONTEXTUAL IMPLICATIONS



SERBIA / UBFA

When discussing urban policies that tackle the question of sustainability in relation to urban heritage, it is crucial to highlight identified duality. On the one hand - Serbia follows the contemporary paradigms and perspectives concerning sustainability in planning and urban development, as evidenced by the analysed specific strategic documents, planning laws and chapters in planning documents in this publication. On the other hand, laws in the heritage domain are often obsolete, since the current Law dates from 1995 with a minimal change adopted in 2011. Consequently, in recent years, efforts have been made to identify various problematic segments of this law that partially disable the sustainability of heritage but also neglect specific types of heritage.

Specific local case studies of built architectural and urban design projects confirm the focus on the development of new participatory and intercultural approaches to heritage, and the exceptional strength and will of the architects and urban planners to preserve and enhance the qualities of architectural and urban heritage, despite the insufficiently defined regulations. Different scales of presented case studies of built heritage, from urban scale to scale of the single architectural object, confirm the importance of multiscale approach in heritage treatment in practice, but also in education and research.

In the context of education there is evident focus on the constant improvement of existing and the development of new programs and educational approaches. The Faculty's tradition, and keeping up with the trends make it a driver of changes and an institution where innovations, experiments

and research take place. The school also aims at promoting internationalisation and knowledge exchange through different cross-border cooperation between students, researchers and staff, especially in the context of heritage awareness and sustainability of the built environment in architectural and urban design.

ITALY / IUAV

Strengths

Iuav is thought to share roots, methods, experiences and foundational words as multicultural bridges to link Venice and the world. Those elements are connected with some key figure conceived as Masters (like Aldo Rossi, Manfredo Tafuri, Bernardo Secchi, Massimo Cacciari just to mention few). This particular approach towards History reflects the teaching methodologies for which the knowledge in a critical and creative approach towards the existing reality is the School's leading soul. The educational path proposed to the students reflects a willing attitude to connect local and national Institutions with academic activities through all the classes. The analysis reveals transversal experiences of interdisciplinarity, internationalization and intersectorialization in the academic activities to propose to the students a reflective, critical and creative environment, looking at Heritage as a source of inspiration and strong debate.

Sustainability is expressed as a theme in courses as well, with a technical approach linked with the scientific aspects as energetical control (as monitoring) or environmental policy (related to the urgency of the effects of climate change on Venetian materials and environment)

Weakness

The educational path is less conceived to link Heritage with Sustainability according to a different and diverse way to define Sustainability.

A strategic definition of Sustainability from a social, environmental, economic and cultural point of view (as a common shared language among the partners) has to be

considered for a strategical synthesis that would be fundamental to find an operational approach to teaching.

Aspects to be improved

The main challenge is turning into a holistic vision of educational path: relate diverse definition of Heritage (built environment, monuments, historical buildings, historical centers, urban area) with multiple ideas of Sustainability (environmental, social, economic, technical, cultural) overcoming the separation between a critical approach (linked to Heritage) with an applied-based approach (related to Sustainability).

The educational path has to be conceived as training to master the process of competency rather than competences.

CYPRUS / UCY

The overall assessment of the content and the structure of the outlined courses and study programs are deemed adequate to meet the current needs and requirements of the local market in the field of architectural and urban design in relation to sustainability and heritage. Explicit learning outcomes (skills, abilities, knowledge) focus on providing theoretical and practical knowledge in the field of conservation and passive environmental design aspects of listed buildings, thus preparing students for practice in the private or public sector or in applied research.

An additional positive aspect of the aforementioned academic programs is the collaboration of students with public administrators and local legislators, thereby immersing them in the reality of actual professional work. Students may gain access to less accessible listed buildings and monuments and also to governmental archives of the Department of Antiquities and the Department of Town Planning and Housing, which are otherwise not easily accessible to the general public.

Through the study of local case studies the knowledge basis on the architectural cultural heritage of this island-country is further enriched. The engagement with

aspects dealing with the field of vernacular architecture provides insight into local building techniques and the use of local materials and methods of construction. In this way, good practices for maintenance and restoration may be better understood and implemented now and in the future.

At the same time, the interdisciplinarity of the programs ensures the collaboration of students of different backgrounds (architects, archaeologists, engineers) under the guidance of professionals engaged in the maintenance and restoration of monuments and vernacular structures. Consequently, a holistic approach is adopted by the students, thereby allowing them to acquire a deeper understanding of the whole process of a renovation and / or energy retrofit project.

Despite the comparative benefits of the outlined courses, the overall educational model of this academic institution regarding sustainability and cultural heritage may be further improved. Although the content of the courses addresses both cultural heritage and sustainability, cultural heritage in the case of the program “Energy Technologies and Sustainable Design” is not addressed unless a heritage case-study building is selected in the courses. Respectively, environmental aspects related to conservation are addressed in a limited degree in the program “Conservation and Restoration of Historic Buildings and Sites”, leading to the conclusion that while more synergies between sustainability and cultural heritage have been established, further links between the two programs are possible.

GREECE / AUTH

The report reviewed Programs of Study, Courses, Case studies, the national legal and regulatory framework for sustainability and cultural heritage. A synthetic appraisal of the above sections can yield themes to be discussed in the broader context of all the schools of Architecture represented in the HESRUS consortium.

With regard to the programs reviewed, these share an emphasis on the role of the design studio in architectural education. In all three programs, the design studio is the medium for consolidating knowledge, integrating theory and design practice, from an interdisciplinary perspective.

Another common theme of the programs and studios is their focus on the historic context offered by the city of Thessaloniki, a palimpsest spanning 2350 years of existence, which serves as a further medium in discussing relations between sustainability, resilience and the restoration and reuse of cultural heritage. While perspectives may vary in the themes and knowledge discussed in the three curricula, these also share common educational practices/methodologies, including site visits, on-site work, seminars, the involvement of practitioners, etc.

Ultimately, this analysis has been successful in highlighting the potential for further integration between programs of study dealing with sustainability and heritage at the School of Architecture, AUTH, while also providing insight in the complex and interdisciplinary nature of the task at hand. All courses reviewed declare to address aspects of sustainability and promote cultural heritage as a base for social, economic and environmental development and hence have a common objective which could be approached in a more inclusive manner, for example through common research agendas or studio themes/ projects.

Furthermore, the case studies reviewed raise issues of prevalence and priority in dealing with the historical context. They mostly entail robust analysis, yet biased towards the main target of intervention – whether it be the bioclimatic intervention or a restorative/reuse paradigm. There is also indication that the regulatory framework pertaining to environmental upgrades of historic buildings should be supplemented to include processes that take into account the nuances of restorative architectural methodologies, and practices. Finally, the analysis of the regulatory framework, involved stakeholders, incentives and policies provides only a synopsis of

the multiplicity of legal and authoritative overlaps that exist in domains of sustainable cultural heritage and is offered as a means for contextualization of the above findings but also as a case to be discussed in the broader context of all the regulatory frameworks reviewed by the schools of Architecture represented in the HESRUS consortium.

SPAIN / USE

As a first general conclusion, we can confirm that cultural heritage constitutes a central theme in our educational, professional and normative context of Andalusia. Among the four pillars of sustainability -environmental, economic, social and culture- this last one is the main sustainable vector. It is the gate, the node from which we entail the other three. Although we have also identified a substantial development of a more technical approach to sustainability -both in the academic and professional context, we can conclude that culture and heritage as key factors for sustainable development constitute the predominant vector of the architectural projects, educational models and urban policies in Andalusia.

Since the foundation of the Andalusian government, cultural heritage has become a local resource: since the eighties a common practice to reuse architectural heritage for public institutions -such as the main building of the presidency and other ministries buildings; the Center of Contemporary Art or the Andalusian Institute of Historical Heritage. This constant reference to cultural heritage is not only instrumental: cultural heritage is within the actual definition of the image and character of Andalusia.

The decentralized condition of Spanish geopolitics after the rigid centralization of the country under a dictatorship of almost 40 years, derived in the transference of the power of heritage legislation: Andalusian heritage law has become a Spanish reference within the last trends of an international framework. Together with the developed urban policies, both the professional practice and the educational

approach to heritage are, in general, in line with an updated conceptual framework.

The concept of cultural heritage has therefore overcome in Andalusia obsolete preconceptions: on the one hand, it already contemplates a complex, multiscalar condition of heritage: from building, to city to landscape. On the other, complexity also regards to what is considered heritage: it is already committed with those categories of heritage that are most vulnerable due to their low protection and appreciation by society and institutions and therefore most at risk of disappearance, always open to the protection and conservation of those emergent types of heritage. From the monument, to the emergent heritage of our built environment: such as industrial heritage, cultural landscapes or social housing. This has derived in the emphasis of the local value, but within an international context. Intangible heritage has also become critical for an integral heritage assessment.

This connects to the social, the human values associated with a place. A place is for the community, which has witnessed the incorporation of the debate around the need for participation. In this aspect, we have verified its consideration in the pedagogical models, or in some case studies of the professional practice, pointing out the methodological effort of the institutional agents such as the Andalusian Institute of Historical Heritage. Nevertheless, we can conclude that we still have to work on concluding that we have to still work on a more generalized integration, both in education and in the transference to the professional practice.

Finally, this complexity leads us to interdisciplinarity, which is, as we have seen in the case studies, present both in architectural projects, pedagogical models and even in urban policies. However, there is a long way to go in this aspect, still existing resistance in a certain sector of the discipline to accept the role of the architect in this new collaborative paradigm. Even the main trend that accepts and practices interdisciplinarity, needs to transcend mere dialogue and integrate other disciplines' knowledge.

In a more general geopolitical context, there is a real tension between this consolidated commitment with heritage and sustainability with the Spanish and Andalusian speculative pressure on urban development: construction constitutes a key sector on the economy, creating governmental contradictions inside the public organigrams. This is a real challenge for the years to come.

We have also identified a constant dialogue and transference among university, professional practitioners and institutions working on heritage. On the one hand, the architects involved in the professional practice are also at the university and transmit their experience to the university. On the other, the institutional emphasis on heritage has resulted in intensive research on the field, with different research groups working on heritage at the School of Architecture and at Seville University in general, transferring this research experience to teaching processes. Finally, the school of architecture of Seville university has been characterized by the close and fertile collaboration in research and teaching with public institutions, such as the main Andalusian institution on built heritage, the Andalusian Institute of Historical Heritage, a national and international reference in the field.

In terms of educational and pedagogical approach, we can confirm that the presence of heritage in education is transversal and interdisciplinary at the School of Architecture at Seville University. We have analyzed the school curricula, having identified an extensive and generalized reference to heritage and sustainability both in the contents, the goals, the abilities and results of all the courses of the main degree program on Architecture.

As conclusion, and although monographic courses and specialized Master programs are essential, transversal training in heritage awareness and sustainability of our built environment in each and every course constitutes a central issue for any updated graduate program on architecture. On the one hand, this is the place where the student, the future architects, initiates and develops

awareness and conviction. Constant exposition is key for being able to go from heritage and sustainability as one field of expertise in architecture, and becoming the main framework for architects.

Train in creativity is essential in a field in constant change: the key is to train in being ready to create new methods, ways of identifying new values, intervening singular and unique architectures. The tools, the methods, the theory and the regulations are just not enough. Through the analysis of both courses and the specialized programs, we can affirm the commitment with creativity in the context of heritage education, not as opposed to rational knowledge, scientific methods, but complementary to it. Finally, Creative methods training is not only to intervene, but in the processes of heritage knowledge and assessment, position our understanding of design as educators and architects as an integral process within the heritage of our built environment.



HERSUS